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Current prevalence and socio-demographic factors associated with unmet need for contraception among women in union in sub-Saharan Africa.

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Abstract: This study analyzes the prevalence and sociodemographic factors associated with unmet need for contraception among women in union in sub-Saharan Africa. Using secondary data from recent Demographic and Health Surveys, statistical tests revealed an overall prevalence of 20.7% of unmet need for contraception (13.9% for birth spacing and 6.8% for birth control). Furthermore, multinomial logistic regression shows that women aged 25-34 and 35-49 years have a reduced risk of unmet need for spacing but an increased risk for control. Women who have reached their desired fertility have a reduced need for spacing [RRR=0.87; CI=0.80-0.95, p<0.01], while those with unwanted children have an increased need for control [RRR=3.80; CI=0.80-0.95, p<0.01]. CI=3.50-4.12, p<0.001]. Similarly, women living with a partner have a higher risk of unmet need for spacing [RRR=1.07; CI=1.01-1.13, p<0.05], but those with at least primary education have a low risk for limitation. Therefore, the study recommends that family planning (FP) program managers and Non-Governmental Organizations increase efforts to improve access to FP services, promote women's education. It is also essential to increase awareness among small families and men aspiring to have high fertility about the benefits of FP for health and well-being.

Keywords: Associated factors, Unmet needs, Spacing, Limiting, Sub-Saharan Africa

1. Introduction

Since the 1990s, reproductive health has taken on increasing importance, largely thanks to the resolutions adopted at the International Conference on Population and Development held in Cairo (Egypt) from September 5 to 13, 1994. Thus, many of the international commitments have led, over time, to an improvement in modern contraceptive prevalence in developing regions, with a still high level of unmet need [1]. In these regions, 214 million of the 885 million women of childbearing age who wish to avoid pregnancy do not use modern contraception [2,3]. In Sub-Saharan Africa, where modern contraceptive prevalence stands at 22% [4], the prevalence of unmet need is estimated at nearly 23% [5–7]. Studies have shown that the prevalence of unmet need varies between SSA countries, with an estimated prevalence of 16.1% in Nigeria [8], 17.86% in Gambia, 20.79% in Mozambique [9] and 38% in Angola [6].

However, it is recognized that the unmet need for family planning (FP) in SSA increases the risk of maternal and infant mortality [10]. Indeed, an unmet need for contraception can lead to unplanned pregnancies, posing risks for women, their families, and society [2,11]. According to a study carried out in Bangladesh, the unmet need for contraception has been shown to increase women's risk of unwanted pregnancy 16-fold [12]. One consequence of unplanned pregnancies is unsafe abortion, which can lead to health risks for mothers [11,13]. There are 18 million unsafe abortions taking place

every year in developing countries, contributing to high rates of maternal death and injury in SSA [11]. However, young women, older women, and those with close or multiple pregnancies face increased risks of complications and death for themselves and their babies [14]. According to the United Nations, 800 women die every day worldwide as a result of complications related to pregnancy and childbirth [15]. Furthermore, around 95% of maternal deaths, which could be prevented in 2020, occurred in developing regions, with 70% of these deaths occurring in SSA [16].

Nevertheless, previous research has shown that 90% of abortion-related morbidity and mortality, 20% of unwanted pregnancies, and 32% of maternal deaths could be prevented with effective contraception [17]. Similarly, projections have indicated that the complete elimination of the unmet need of 214 million women worldwide in 2017 would avert around twenty-nine percent of additional maternal deaths [3]. In this context, the prevalence of unmet need is an indicator for measuring progress towards achieving target n°3 of the Sustainable Development Goals [6,18]. In this context, the prevalence of SNBs is an indicator that can be used to measure progress towards achieving Target 3 of the Sustainable Development Goals [19].

In addition, studies have highlighted socio-demographic inequalities in unmet need in developing countries. Ahinkorah et al., in their study of young women in SSA, found that young women who lived with a partner had a higher risk of having an unmet need for contraception [20]. In Pakistan, the likelihood of a married woman having an unmet need for family planning decreases with increasing age and number of living children [21]. A study in Nepal also reported that women with four or more children are 2.24 times more likely to have an unmet need for family planning than those with just one child [22]. Further on, examining the types of unmet need in Burkina Faso, Cameroon and Côte d'Ivoire, Akoto et al. reported that the weight of unmet need for birth spacing decreases with women's age, while that of unmet need for birth limitation increases with women's age [23].

Despite this empirical research, often at the level of one or more countries, no study has specifically looked at the types of unmet need for contraception among married women in SSA over the past five years. This study fills this gap by analyzing recent data from Demographic and Health Surveys (DHS) conducted between 2019 and 2024 in 13 SSA countries. This study aims to examine the current prevalence of unmet need for birth spacing and limitation, and to identify associated socio-demographic factors among women in union. Understanding these inequalities will provide valuable insights into the determinants of unmet need for contraception and contribute to a better reorientation of family planning interventions in SSA.

2. Materials and Methods

Data

The data used in this study come from recent demographic and health surveys conducted between January 2019 and June 2024 in sub-Saharan African countries. These are cross-sectional, nationally representative surveys for each of the countries included. They are conducted every five years to obtain varied and up-to-date information, notably on reproductive health, family planning, and other demographic data for women of childbearing age. The study is based on DHS data from thirteen countries that were conducted with a reference period from January 2019 to June 2024: Burkina Faso, Ivory Coast, Gabon, Gambia, Ghana, Kenya, Liberia, Madagascar, Mozambique, Rwanda, Senegal, Sierra Leone, and Tanzania. All data are available on the DHS website, www.dhsprogram.com. In these surveys, a two-stage stratified cluster sampling technique was used to recruit survey participants [6]. Thus, for analysis purposes, the "IR woman" database of each survey was exploited, and each database contains the responses of women of childbearing age. The study includes women aged 15-49 who are in union (legally married or living with a partner) and for whom the responses to the variables used are complete, i.e., a sample of 115,616 women in union in all the countries combined. Infertile or menopausal women were not included in this study.

Study variables

The study used unmet need for contraception as the dependent variable, which was generated from the unmet need for contraception variable from each of the countries' DHS data. Based on the study sample, this variable has five modalities: unmet need for spacing, unmet need for limiting, use for spacing, use for limiting, and no unmet need. It was recoded in "trichotomous" form, taking the value "2" when the woman has a birth-limiting unmet need, "1" when the woman has a birth spacing unmet need, and "0" if not. In fact, women in union, fertile, pregnant/amenorrhea at the wrong time or not pregnant/amenorrhea, who want to delay the next birth but are not currently using a contraceptive method are considered to have a birth spacing unmet need. In addition, women in union, fertile, pregnant/amenorrhea at the wrong time or not pregnant/amenorrhea, who do not want any more children but are not currently using a contraceptive method are considered to have unmet birth limitation needs.

The main independent variables are related to the woman's socio-demographic characteristics, which have been taken into account in many studies [24–26]. They are composed of age cohort (15-24 years, 25-34 years, 35-49 years), desired fertility gap (more children than desired, achieving desired fertility, fewer children than desired), and union status (married & living with a partner). Desired fertility gap (more children than desired, achieving desired fertility, fewer children than desired) and union status (married & living with a partner). Other explanatory variables have been used to control for the effect of sociodemographic factors on types of unmet need, in view of their availability and significant association with types of unmet need for contraception in previous studies [20,21,27–29]. Some of these variables have been recoded. Apart from the country variable, these are the women's level of education, which has been classified as "none", "primary", and "secondary/plus". Religion was recoded into "Christian", "Muslim", and "other religions". Employment status was grouped into two modalities: "unemployed" and "employed". Media exposure was constructed from three variables: "having heard about family planning on the radio in recent months", "having heard about family planning on television in recent months" and "having heard about family planning in newspapers/magazines in recent months". It was grouped into two modalities: "not exposed to any media" and "exposed to at least one media". Spousal characteristics were also considered. The spouse's level of education was recoded as "none", "primary", "secondary and higher" and "don't know". As for the spouse's fertility preference, it comprises three modalities: "same number of children", "wants more children", "wants fewer children" and "don't know".

Analysis method

Firstly, the prevalence of birth spacing and limiting SNBs was estimated for Sub-Saharan Africa and for each country. Then, Pearson's Chi-squared test, with a significance level of 5%, was performed to assess the prevalence of unmet need for birth spacing and limitation according to socio-demographic and control variables. Finally, adjusted multinomial logistic regressions were performed to examine the effect of sociodemographic variables on unmet need for contraception among women in union in SSA. In total, two models were tested, the second of which was chosen to identify the socio-demographic factors associated with unmet need for spacing and limiting births among women in union in SSA. The first multinomial logistic regression model (Model 1) was tested to assess the net effect of each of the socio-demographic variables on the types of unmet need for contraception in the presence of the other socio-economic variables. Thus, all socio-demographic variables were simultaneously included in this model. Similarly, to obtain Model 2, all socio-demographic, economic, spouse and country variables were simultaneously included. It should be noted that all analyses were carried out using Stata 17 software and took into account the svyset and svy commands to adjust the cluster sampling techniques of the surveys. This technique made it possible to take account of primary sampling units, sample strata, and sample weights in the estimates.

3. Results

Prevalence of unmet need for birth spacing and limitation

Analysis of Figure 1 shows that the prevalence of unmet need for contraception in the 13 SSA countries was 20.7%, with 13.9% for birth spacing and 6.8% for birth limitation. In terms of countries, the lowest prevalence of unmet need was in Rwanda for birth spacing (6.5%) and Burkina Faso for birth control (4.2%), while the highest prevalence of unmet need was in Gabon (23.0%) and Liberia (12.9%) for birth spacing and birth control, respectively.

At a threshold of 1‰, the results of the bivariate analysis indicate significant associations between socio-demographic factors and unmet need for birth spacing and limitation (Table 1). Indeed, women in the 25-34 and 35-49 age cohorts are more likely to have unmet need for spacing (45.7%) and limiting (72.7%) births, respectively. Women having fewer children than desired had a higher proportion of unmet need for spacing (86.3%) and limiting (45.9%). According to marital status, unmet needs for birth spacing (69.6%) and birth limitation (76%) were high among married women, compared with 30.4% and 24% respectively, among women living with a partner. The results also show that women who didn't know their partner's fertility preference and those whose partner wanted fewer children had the highest unmet need levels for spacing (30.5%) and limiting (34.1%), respectively. According to marital and employment status, many married women and those in employment had the highest unmet need for spacing and limiting.

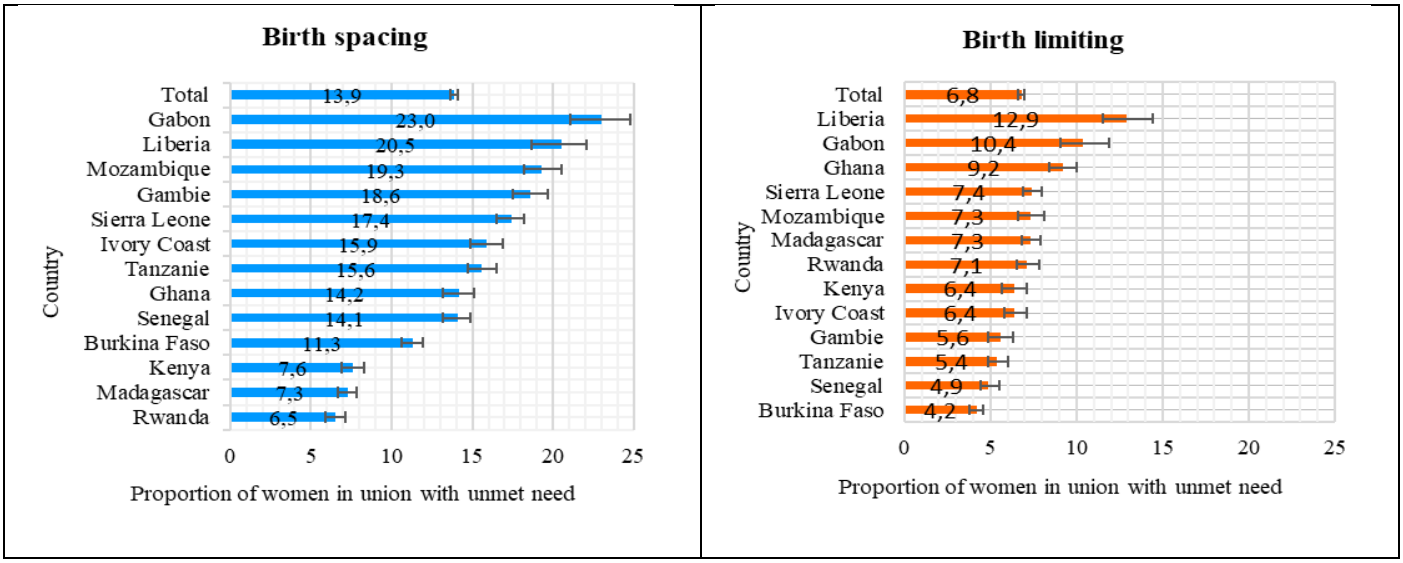

Figure 1: Prevalence of unmet need for birth spacing and limiting

Table 1: Prevalence of unmet needs according to the characteristics of women in union in SSA

Variables	Sample		Unmet needs				p-value
			Spacing		Limiting		
	N	%	%	95% IC	%	95% IC	
Age cohort							
15-24 years	25 594	22,1	32	[31,1-32,9]	4,2	[03,6-04,8]	0.0000
25-34 years	43 502	37,6	45,7	[44,7-46,7]	23,1	[21,9-24,4]	
35-49 years	46 520	40,3	22,3	[21,5-23,2]	72,7	[71,4-74,0]	
Marital status							
Married	86 570	74,9	69,6	[68,7-70,6]	76	[74,8-77,3]	0.0000
Living with a partner	29 046	25,1	30,4	[29,4-31,3]	24	[22,8-25,2]	
Desired fertility gap							
Have fewer children	91 475	79,1	86,3	[85,6-87,0]	45,9	[44,5-47,4]	0.0000
Fertility achieved	12 434	10,8	6,9	[06,4-07,4]	25,8	[24,6-27,1]	
More children	11 707	10,1	6,8	[06,3-07,3]	28,3	[27,0-29,5]	
Spouse's fertility preference							
Want the same	39 652	34,3	30,5	[29,6-31,4]	34,1	[32,7-35,4]	0.0000
Want more	35 190	30,4	28	[27,2-28,9]	30,6	[29,3-31,9]	
Want less	7 176	6,2	5,3	[04,9-05,8]	6,4	[05,8-07,1]	
Don't know	33 598	29,1	36,2	[35,2-37,1]	28,9	[27,6-30,2]	
Place of residence							
Urban	41 401	35,8	42,5	[41,5-43,5]	39,9	[38,5-41,4]	0.0000
Rural	74 215	64,2	57,5	[56,5-58,6]	60,1	[58,6-61,5]	
Standard of living							
Very poor	27 771	24	22,7	[21,9-23,5]	22,6	[21,5-23,7]	0.0000
Poor	23 790	20,6	21	[20,2-21,8]	20,4	[19,4-21,5]	

Medium	23 299	20,1	20,1	[19,3-20,9]	19,8	[18,7-20,9]	
Rich	21 389	18,5	19,4	[18,5-20,2]	18,4	[17,2-19,6]	
Very rich	19 367	16,8	16,8	[16,0-17,7]	18,8	[17,5-20,1]	
Level of education							
None	47 645	41,2	39,1	[38,2-40,1]	43,9	[42,5-45,3]	
Primary	34 442	29,8	28,2	[27,3-29,1]	31,3	[30,0-32,6]	0.0000
Secondary	33 529	29	32,7	[31,7-33,6]	24,8	[23,5-26,2]	
Employment status							
Non employed	37 203	32,2	40,5	[39,5-41,5]	27,1	[25,8-28,4]	0.0000
Employee	78 413	67,8	59,5	[58,5-60,5]	72,9	[71,6-74,2]	
Spouse's level of education							
No	43 569	37,7	36,2	[35,3-37,1]	35,9	[34,6-37,2]	
Primary	29 346	25,4	21,6	[20,8-22,4]	27	[25,8-28,2]	0.0000
Secondary	37 116	32,1	35,3	[34,4-36,3]	31,1	[29,7-32,6]	
Don't know	5 585	4,8	6,9	[06,4-07,5]	6	[05,2-06,8]	
Media exposure							
No	64 669	55,9	60,7	[59,7-61,7]	56,7	[55,2-58,1]	0.0000
Yes	50 947	44,1	39,3	[38,3-40,3]	43,3	[41,9-44,7]	
Total	**115 616**	**100**	**13,9**	**[13,7-14,2]**	**6,8**	**[06,6-07,0]**	

Multinomial logistic regressions of unmet need for contraception

The results of multinomial logistic regression (Model 2) show that women in the 25-34 years and 35-49 cohorts were less likely to have spacing unmet need [RRR=0.84 and 0.39; p<0.001] and more likely to have limiting unmet need [RRR=2.50 and 5.59; p<0.001] than those in the 15-24 cohort. Women who were cohabiting had a higher risk of having a birth spacing SNB than those who were married [RRR=1.07; CI=1.01-1.13, p<0.05]. The probability of having an unmet need for spacing was low among women who had achieved fertility [RRR=0.87; CI=0.80-0.95, p<0.01] while the probability of having a birth limitation unmet need was highest in women who had more children than desired [RRR=3.80; CI=3.50-4.12, p<0.001] followed by women who had reached their fertility [RRR=3.31; CI=3.04-3.60, p<0.001].

Controlling for control variables, women who were employed, resided in rural areas, lived in a rich household, and were exposed to the media had a significantly lower risk of having an unmet need for birth spacing and limiting.

Table 2 (model 2) also shows that the risk of having an unmet need for limiting decreases as the level of education increases. Indeed, compared to women with no education, those with primary education and those with secondary education or higher were respectively 12% and 23% less likely to have an unmet need for birth control. In addition, women who were unaware of their spouse's fertility preference were 1.33 times [CI=1.25-1.41; p<0.001] more likely to have an unmet need for birth spacing than those whose husband wanted the same number of children as the wife. Similarly, among women whose husbands wanted more children, the risk of having an unmet need for birth limitation increased by 12% [CI=1.04-1.22; p<0.01] compared with those whose husbands wanted the same number of children. The study further revealed that all countries had high risks of both unmet need for birth spacing and birth limitation, except for Kenya, Madagascar and Rwanda, which had low risks of unmet need for birth spacing, respectively a risk of 0.77 [CI=0.68-0.88; p<0.001], 0.71 [CI=0.64-0.79; p<0.001] and 0.73 [CI=0.64-0.83; p<0.001] respectively (Table 2 - Model 2). However, the highest risks of unmet need in FP are observed in Gabon and Liberia, respectively 2.47 times [CI=2.14-2.85; p<0.001] and 2.29 times [CI=2.02-2.60; p<0.001] for birth spacing, and 2.72 times [CI=2.19-3.38; p<0.001] and 3.62 times [CI=3.03-4.33; p<0.001] for birth limitation.

Table 2: Multinomial logistic regression models of types of unmet need for contraception on the characteristics of women in union

Variables	Model 1	Model 2

	RRR adjusted [95%IC]		RRR adjusted [95%IC]	
	Spacing	**Limiting**	**Spacing**	**Limiting**
Age cohort (Ref.: 15-24 years)				
25-34 years	0,83***[0,79-0,88]	2,51***[2,13-2,96]	0,84***[0,80-0,89]	2,50***[2,12-2,95]
35-49 years	0,39***[0,37-0,42]	5,75***[4,90-6,75]	0,39***[0,37-0,42]	5,59***[4,75-6,58]
Marital status (Ref.: Married)				
Living with a partner	1,21***[1,15-1,27]	1,12***[1,04-1,20]	1,07* [1,01-1,13]	0,96ns [0,88-1,04]
Desired fertility gap (Ref.: Have fewer children)				
Fertility achieved	0,79***[0,72-0,86]	3,15***[2,91-3,42]	0,87** [0,80-0,95]	3,31***[3,04-3,60]
More children	0,99ns [0,90-1,08]	3,68***[3,40-3,98]	1,04 ns [0,95-1,14]	3,80***[3,50-4,12]
Spouse's fertility preference (Ref.: Wants the same)				
Want more			1,05ns [0,99-1,11]	1,12** [1,04-1,22]
Want less			1,03ns [0,93-1,14]	1,10ns [0,97-1,25]
Don't know			1,33***[1,25-1,41]	1,08ns [0,99-1,17]
Place of residence (Ref.: Urban)				
Rural			0,92** [0,87-0,97]	0,86***[0,79-0,93]
Standard of living (Ref.: Very poor)				
Poor			0,90** [0,85-0,96]	0,87** [0,80-0,95]
Medium			0,86***[0,80-0,92]	0,78***[0,71-0,86]
Rich			0,77***[0,71-0,83]	0,73***[0,65-0,81]
Very rich			0,69***[0,63-0,76]	0,70***[0,61-0,80]
Level of education (Ref.: None)				
Primary			1,01ns [0,95-1,07]	0,88** [0,80-0,96]
Secondary			0,97ns [0,90-1,04]	0,80***[0,71-0,89]
Employment status (Ref.: Not employed)				
Employee			0,83***[0,79-0,87]	0,92* [0,85-0,99]
Spouse's level of education (Ref.: None)				
Primary			0,95ns [0,89-1,02]	0,95ns [0,87-1,04]
Secondary			0,97ns [0,91-1,04]	0,91ns [0,83-1,01]
Don't know			1,10ns [0,99-1,22]	1,13ns [0,96-1,34]
Media exposure (Ref.: No)				
Yes			0,91***[0,87-0,96]	0,92* [0,86-0,98]
Country (Ref.: Burkina Faso)				
Côte d'Ivoire			1,53***[1,38-1,70]	1,54***[1,32-1,80]
Gabon			2,47***[2,14-2,85]	2,72***[2,19-3,38]
Ghana			1,70***[1,52-1,89]	2,26***[1,93-2,63]

Gambie			1,75***[1,58-1,94]	1,40***[1,18-1,66]
Kenya			0,77***[0,68-0,88]	1,26* [1,05-1,50]
Liberia			2,29***[2,02-2,60]	3,62***[3,03-4,33]
Madagascar			0,71***[0,64-0,79]	1,86***[1,60-2,15]
Mozambique			1,63***[1,47-1,81]	1,98***[1,68-2,33]
Rwanda			0,73***[0,64-0,83]	1,14ns [0,97-1,34]
Sierra Leone			1,89***[1,73-2,07]	1,81***[1,57-2,08]
Sénégal			1,24***[1,12-1,37]	1,10ns [0,94-1,30]
Tanzanie			1,56***[1,40-1,72]	1,48***[1,25-1,74]

Ref : Reference ; ns : not significant ; *: p<0,05; **: p<0,01; ***: p<0,001

4. Discussion

This study examined the prevalence and sociodemographic factors associated with unmet need for birth spacing and limitation among women in union in SSA. It showed a significant association between socio-demographic factors and unmet need for birth spacing and limiting.

Descriptive analyses showed that the level of unmet need for birth spacing was higher than that of birth limitation in the thirteen SSA countries included in this study. In fact, almost 14% of women in union had an unmet need for birth spacing, compared with 7% of women in union who had an unmet need for birth limitation. This result can be explained by demographic dynamics widely observed in Africa, where young women, at the beginning of their reproductive lives, express a desire to have several children, but wish to better control birth spacing. According to Bradley et al., unmet spacing needs generally predominate in contexts where desired fertility remains high, and birth limitation behaviors are still not widespread [30]. Furthermore, in many West and Central African countries, the supply of contraceptive services is often focused on short-term methods, which indirectly influences the type of need expressed. [31]. This difference is also observed at the country level, which shows that much more needs to be done to reduce the unmet need for birth spacing among women in union in SSA countries. Several previous studies have also revealed that women in union express more unmet need for spacing than unmet need for limitation [32–35]. On the other hand, women feel much more unmet need for birth limiting than for birth spacing in India [36] and in Mexico [28]. However, these discrepancies in prevalence may be due to the sample size considered and the context in which the studies were conducted.

The multivariate results reveal socio-demographic factors associated with unmet need for spacing and limiting births among women in union. Indeed, as the woman's age cohort advances, the risk of having unmet need for birth spacing decreases, whereas the risk increases when it comes to unmet need for limitation. These trends could be explained by the fact that younger generations (aged 15 to 24) who have not yet reached their final offspring are more inclined to space their births, while at the end of their fertile lives, older women are more inclined to want to limit births rather than space them. Oginni and co-authors had concluded from the DHS data that older women in Nigeria were more likely to have an unmet need to limit births than younger women, who find it more difficult to space their births [26]. This suggests that FP services in SSA countries should address young women's unmet need for birth spacing and older women's unmet need for limiting.

Multivariate analyses also showed that women who lived with a partner were more likely to have an unmet need for birth spacing. This result could be explained by these women having less access to reproductive health services due to social factors such as stigmatization in contexts where marriage is highly valued. Furthermore, in some countries, family planning services were originally designed exclusively for married women [28]. As a result, legally married women may benefit from greater reproductive health protection. This result is in line with the findings of Ahinkorah and coauthors in their study on young women using DHS data from 30 sub-Saharan African countries [20]. These showed that the fact that a woman was living with a partner increased her risk of having an unmet need for contraception by 35%.

As expected, the results of the multinomial logistic regression show that women at peak fertility were significantly less likely to have an unmet need for birth spacing and more likely to have an unmet need for limitation than women with fewer children. We believe that women in union who are at the beginning of their fertile life have a greater desire to space births, whereas at a certain point in their fertile life, women who have reached their fertility have a greater desire to limit the size of their family. A previous study conducted in Benin using DHS data showed that women who had reached or exceeded their ideal number of children made greater use of modern contraceptive methods [37].

It is also important to note that in SSA countries, even if women in union wish to use a modern contraceptive method, they use it less frequently, given the problems of limited accessibility to FP services and the lack of availability of contraceptive products. This reflects the high risk of unmet need for birth control among women who have more children, and among women who have reached their fertility peak. Indeed, the product security system in SSA countries suffers from structural and organizational problems, with stock-outs of contraceptive products at the operational level (Maternal and Child Health and Family Planning Division, 2017).

If we consider the household's standard of living, the results indicate that women belonging to households of average and wealthy economic status had a low risk of having unmet needs for birth spacing and limitation compared to those living in very poor households. As mentioned above, for employed women, this result could be explained by the fact that women from affluent households are financially better able to meet the costs associated with contraceptive use. Consequently, they have better access to FP services than those living in poor households [21]. However, this result is contrary to that of Kourouma, who showed in his study carried out in Guinea that a woman in the wealthy group is 65% more likely to have an unmet need for birth control [39].

Multivariate analyses show that the fact that a woman in union is employed reduces the risk of having an unmet need for spacing and limiting births. Our results are in line with those of a study carried out in Cameroon. Indeed, this study showed that women's employment status discriminates against the unmet need for birth spacing [40].

Generally, when women have a means of obtaining contraceptive methods, they are more likely to satisfy their contraceptive needs. Indeed, our results could mean that employed women would have the monetary means to satisfy their contraceptive needs than unemployed women. On the other hand, women who did not know their spouse's fertility preference and those whose husbands wanted more children were respectively more likely to have unmet needs for spacing and limiting births than those whose husbands wanted the same number of children. This result has been found in other previous studies [32,41,42]. For example, a study in Rwanda found that women who did not know their husbands' fertility preferences were more likely to have an unmet need for birth control than those whose husbands wanted the same number of children [41].

Women with primary education and those with at least secondary education are less likely to have an unmet need for birth control. This suggests that these women, being better informed about the benefits of effective contraceptive use, are more likely to use FP services. Otherwise, education is an important factor in women's participation in contraceptive decision-making [29,43]. Our results are consistent with the conclusions found by other previous studies [32,44–46]. For example, in Uganda, unmet need was lower for women with secondary or higher education [45] and in Kenya, unmet need was lower for women with secondary education or higher [44].

Although living in the city exposes women to modernity, which in turn can influence their reproductive behavior concerning the use of FP services [23], this study found that rural women were less likely than urban women to have an unmet need for spacing and limiting births. This could suggest that there is a gap between the growing desire and the ability of urban women to control their fertility, given that there would be limited access to contraceptive services and insufficient supply of certain types of contraceptive methods in this area. In this respect, it can be noted that if there were more family planning information and services, contraceptive prevalence could increase and unmet need would be reduced among women living in urban areas [35]. These results are consistent with the results of the study carried out in Eritrea [35] and contradict the results obtained during studies carried out in Ethiopia [27,47].

According to our results, women's exposure to at least one of the media (radio, TV, or newspaper/magazine) reduces the risk of having an unmet need for spacing and limiting births. This result reflects the role of the media in awareness campaigns to change reproductive health behavior. It informs women about the availability and usefulness of different FP methods, and influences social norms around contraceptive use. As a result, effective, high-quality media campaigns can help reduce the unmet need for birth spacing and limiting [48]. This result is in line with the study of Asif & Pervaiz (2019) who highlighted the reducing effect of media exposure on the risk of having an unmet need for birth spacing and limiting in Pakistan.

Study strengths and limitations

The study has a number of strengths, even if it does have a few limitations worth noting. Indeed, the strength of this study lies in the multi-country analysis based on nationally representative data. Another strength is the multinomial regression approach used, which enabled us to make a better estimate of the unmet need for spacing and limiting births, as well as the associated parameters. The sample size of this study also reinforces the validity of the conclusions drawn from the analyses. As such, this study is useful for policy-makers and FP program actors in creating intervention strategies. However, the study does have some notable limitations. It does not claim to have identified all the factors that explain the unmet need for contraception among women in union in SSA. In fact, the databases used do not provide all

the useful information on certain variables needed to analyze the determinants of unmet need for contraception. These include the couple's discussion of contraception, and the husband's and wife's attitudes to contraception, which may further clarify the variation in the phenomenon under study, and the health care supply. Furthermore, the fact that national surveys were conducted in different years across countries may introduce a temporal bias, making it difficult to interpret observed gaps as being solely due to structural differences between countries. Despite these limitations, our results may provide useful ideas for developing strategies to reduce the burden of unsafe abortion, inducing maternal morbidity and mortality.

5. Conclusions

The study reveals a high prevalence of unmet need for spacing in all countries, with the prevalence of unmet need for birth spacing higher than the prevalence of unmet need for birth limitation. In the countries included in the analyses, the prevalence of unmet need is lower in Rwanda and higher in Gabon for birth spacing, while it is lower in Burkina Faso and higher in Liberia for birth limitation. A number of variables have also been identified as determinants of both types of unmet need. These are age cohort, desired fertility gap, spouse's fertility preference, place of residence, household standard of living, employment status, and media exposure. In addition to these variables, marital status was also identified as a determinant of unmet need for birth spacing, while the woman's level of education was identified as a determinant of unmet need for birth limitation. In view of the results of this study, it is recommended that those in charge of FP programs and non-governmental organizations mobilize greater efforts to improve access to FP services and further promote the enrollment of women in school. It is also crucial to raise awareness among women under the age of 35, small families, and spouses who tend to have high fertility, of the need to protect their health and that of their families by spacing their births reasonably and appropriately.

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Institutional Review Board Statement: In accordance with the protocol of demographic and health surveys, approval from the ethics committee was obtained for all the data that we mobilized in this study. Also, during all these surveys, the consent of the respondents was required before any interview. The data were made accessible to us on the DHS website via the link https://dhsprogram.com/ after describing and explaining the objectives of the study.

Informed Consent Statement: Informed consent was obtained at the time of collection of each EDS and the data are freely available on the DHS website. As such, no additional consent is required to conduct this study.

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