

# Correlates of Mistimed Pregnancy and Unmet Need for Family Planning among Women of Reproductive Age in Sandema, Ghana

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## Abstract

**Background:** Globally, an estimated 80 million unintended pregnancies comprising both mistimed and unwanted pregnancies are recorded yearly. Yet only half of the women at risk of mistimed pregnancy use contraceptives. In developing countries, over 100 million females have unmet need, and national surveys in Ghana indicate 23% unmet need rate. **Methods:** Using a cross-sectional community-based approach, a sample size of 300 women of reproductive age were selected using multi-step cluster sampling techniques. The study was quantitative, using structured interviewer-administered questionnaires. **Results:** Two-third (66%) of the women in reproductive age still had unmet need, 71% were currently pregnant, and more than a third (36%) confirmed ever having a mistimed pregnancy. Fifty-three percent (53%) of the women confirmed never communicating with their partners on family planning issues, a little below half (45%) took their own health care decisions. Seventy nine percent (79%) ever received family planning services from a health professional. Factors related to unmet needs included mistimed pregnancy, level of education, preferred birth/pregnancy interval, communication between partners and the autonomy to spend self-earnings. **Conclusion:** Considering that high rates of unmet need results in mistimed pregnancy, improved policies around the influence of unmet need on mistimed pregnan-

cies are needed.

## Keywords

Contraception, Family Planning, Mistimed Pregnancy, Ghana, Unintended Pregnancy

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## 1. Background

The problem of unintended pregnancy is crucial to demographers in the quest to understand fertility and to promote a woman's ability to determine when to have children [1]. Globally, an estimated 80 million unintended pregnancies, both mistimed and unwanted, occur each year [2]. Bowring *et al.*, (2020) [3] defined unintended pregnancy as a mistimed, or unplanned, at the time of conception. Each year, in the developing world, about half of the women at risk of experiencing mistimed pregnancy use a method of contraception [4]. The less use of contraception often leads to over 100 million women having an unmet need in developing countries [5]. An unmet need is a discrepancy between a woman's reproductive intentions and her birth control practices [6] [7]. Many women continue to have an unmet need for family planning [FP] as a result of various factors [8]. Besides, married women of reproductive age have an unmet need for contraception, inability to use family planning methods to prevent or limit pregnancy despite the interest of practising it [9]. This situation has existed in the last decade, with contraception prevalence being stagnant and the increase of unmet need occurring [10]. Previous studies in Pakistan revealed fear of side effects, spousal communication, cultural and social acceptance as the decisive obstacles to decreasing unmet need among women of reproductive age [11].

In Ghana, evidence from national surveys showed that a large number of women have an unmet need for FP, as the acceptance rate for FP services remains low [12]. Currently, about 30% of married women in Ghana have an unmet need for FP, 17% for birth spacing, and 13% for limiting [13]. The situation of unmet need is of significant concern in Ghana. Nevertheless, very few studies are available on the correlates of mistime pregnancies and unmet need for family planning [8]. This has resulted in a dearth of information on the relationship between unmet need and mistimed pregnancy. The objective of this study, therefore, is to establish the relationship between unmet need and mistimed pregnancy in Ghana.

## 2. Methodology

### 2.1. Study Designarea, Population, and Inclusion Criteria

We conducted a cross-sectional community-based study targeting women of childbearing age (15 - 45 years) in Sandema in the Builsa North District of the Upper East Region of Ghana. This region is well known for high prevalence of

teenage pregnancies and child marriage, with little reproductive health resources. The study involved only quantitative data collection methods and excluded women who were not within childbearing age. The selection of participants involved a multi-step sampling technique. For this study, women with an unmet need for FP were defined as those who have had a recent delivery, thus presumed to be fecund, and report not wanting any more children at all or wanting to delay the birth of their next child; but not using any method of contraception [14]. The data were collected using a pre-tested and validated questionnaire and analysed using the Statistical Package for Social Solutions (SPSS version 20).

## 2.2. Sample Size Determination and Sampling Technique

The sample size was calculated considering the 2021 unmet need rate of the region (23%), a confidence interval of 95% and the threshold of error at 5%. The sample size for this study was calculated using the modified Cochran's formula as follows:

$n = (Z^2 \times PQ)/d^2$ , where  $n$  represents the desired sample size,  $Z$  is the normal standard deviation, whose value at 95.0% confidence level is 1.96,  $P$  = current unmet need rate; 23% (0.23) [13],  $Q = 1 - P = 0.77$ , and  $d$  = the set margin of error; 0.05. Thus, minimum sample size,  $n = 273$ . The figure was upwardly adjusted to 300 to cater for possible non-respondents or recording errors.

The study considered women of childbearing age as the sampling unit. Sandema is the district capital of the Builsa North District, and the study used a systematic sampling technique in sampling 300 out of 4,941 houses. The total number of houses in the district (4,941) was divided by the estimated sample size (300), and a random number (3) was generated between 1 and 17 as a starting point. At the household level, simple random sampling was used in selecting respondents. Women were made to select pieces of papers on which "yes" and "no" were written. Any woman who selected *yes* was invited and interviewed until the sample size was reached.

## 2.3. Outcome Measurement

For this study, a woman was considered to have an unmet need if: (1) she was pregnant or had already given birth but reported that her pregnancy was not wanted at that time; or (2) she was fecund but wanted to stop or delay childbirth and yet was not using any contraceptive methods. Respondents were asked if they wanted to be pregnant at the time of conception. If such women considered the pregnancy to have come at the wrong time, then they were considered to have an unmet need. Women who had attained menopause or had self-reported fecundity were considered fecund. The study numerator did not include women who had successfully used natural FP to prevent or delay pregnancy for the past five years, since the study was investigating only modern family planning methods, because natural FP methods were not considered valid FP in this study. The

study also excluded women whose husbands were away for a considerable period because they were practicing abstinence or women who had children less than six months of age and were breastfeeding.

## **2.4. Methods of Data Collection and Analysis**

The study used a structured questionnaire for data collection. The consent forms and data collection instruments were interpreted to respondents in their preferred local language if they could not understand English. Before the data collection, supervisors and research assistants were given three days of intensive training on the aim of the study, procedures, issues on participant's confidentiality, handling of non-responses as well as data collection techniques. We explained the research protocol to every eligible woman in her preferred language. Only those women who acknowledged to have understood the study requirements and were willing to participate voluntarily were orally invited into the study. The study questionnaire was pre-tested on 50 respondents in the Navrongo Central of the same region. Navrongo Central is a district with similar demographic characteristics as Sandema district. Data were entered into Statistical Package for Social Sciences (SPSS) for cleaning and analysis. The descriptive statistics on the socio-demographic of participants were presented in frequency tables. Univariate logistic regressions were also performed to test associations between various variables at a significance level of  $p < 0.05$ .

## **3. Results**

### **3.1. Background Attributes of Respondents**

Three hundred (300) respondents were sampled for this study. An overview of the socio-demographic characteristics indicates that more than one-third (37%) of the study population were between the ages of 25 and 29 years, while those within the age group of 30-34 constituted only 17% of the sampled population. Also, 32% were senior high school graduates, 14% had completed tertiary education, and 16% were uneducated. A little below half (47%) were self-employed, 31% were unemployed, and one in every three of them worked at both public and private sectors. Majority of them were Christians (86%), 13% were Muslims, while four respondents (1%) were African Traditional Religious believers. More than half (71%) of the respondents were urban dwellers, while 29% were rural dwellers. More than half (66%) of the women in reproductive age still had unmet need, 71% were currently pregnant, and 36% confirmed ever having a mistimed pregnancy (**Table 1**).

### **3.2. Spousal Autonomy and Communication on Family Planning**

Overall, more than half (53%) of the women confirmed never communicating with their partners on family planning issues in comparison to 47% who had discussed family planning matters with their partners. Among those who ever engaged in discussions related to family planning, the majority (51%) confirmed

**Table 1.** Background attributes of respondents (N = 300).

Attribute	Freq.	Percentage
<i>Age of respondent (in years)</i>		
15 - 24	69	23
25 - 29	110	36.7
30 - 34	51	17
35 - 49	70	23.3
<i>Level of education</i>		
Not educated	48	16
Primary	40	13.3
Junior High School/Technical	74	24.7
Senior High School	95	31.7
Tertiary	43	14.3
<i>Type of employment</i>		
Public servant	27	9
Private servant	39	13
Self-employed	142	47.3
Unemployed	92	30.7
<i>Religious affiliation</i>		
Christian	257	85.7
Muslim	39	13
Traditionalist	4	1.3
<i>Place of settlement</i>		
Rural	87	29
Urban	213	71
<i>Currently pregnant</i>		
Yes	213	71
No	87	29
<i>Ever had a mistimed pregnancy</i>		
Yes	107	35.7
No	193	64.3
<i>Have unmet need</i>		
Yes	197	65.7
No	103	34.3
<i>Received FP from a health professional</i>		
Yes	236	78.7
No	64	21.3
<i>Preferred birth interval</i>		
6 months to 1 year	108	36
1 year to 6 months	72	24
18 months to 2 years	92	30.7
2 years to 6 months	20	6.7
More than 30 months	8	2.6

initiating the communication. Less than half (43%) of respondents' partners approved the use of family planning (FP) as against 57% who never approved the use of family planning. We also discussed spousal autonomy: less than half of the respondents (49%) had the authority to decide how to spend their earnings. Twenty-six per cent (26%) of respondents said their partners decided the spending decisions of their earnings. However, 21% of respondents took their collective spending decisions. Less than half (45%) of the respondents took health care decisions independently as compared to 32%, whose spouses/partner made the health care decisions on their behalf. Only one-fifth (22%) jointly took health care decisions with their spouses. In all, four-fifth (81%) of respondents had a positive perception of contraceptives (**Table 2**).

### 3.3. Bi-Variate Analysis of the Association between Socio-Demographic Characteristics and Unmet Need

**Table 3** shows the associations between respondents' socio-demographic characteristics and their unmet need. The results indicate that, respondents' level of education ( $p < 0.030$ ), history of mistimed pregnancy ( $p < 0.033$ ) and desired pregnancy/birth interval ( $p < 0.022$ ) were all statistically significant and related to respondents' unmet need. Aside from this, all other background characteristics did not have any statistical relationship with an unmet need (**Table 3**).

**Table 2.** Spousal autonomy and communication on family planning.

Attribute	Frequency (N)	Percentage
<i>Partners communicate on FP</i>		
Yes	141	47
No	159	53
<i>Person who starts communication (n = 213)</i>		
Respondent	109	51.2
Spouse/partner	104	48.8
<i>Approval of FP use by partner (n = 213)</i>		
Yes	92	43.2
No	121	56.8
<i>Autonomy on personal earning</i>		
Respondent decides	148	49.3
Spouse/partner decides	87	29
Respondent and spouse/partner jointly	65	21.7
<i>Autonomy on personal health care</i>		
Respondent	136	45.3
Spouse/partner	97	32.3
Respondent and spouse/partner jointly	67	22.4
<i>Perception towards contraceptives</i>		
Positive perception	243	81
Negative perception	57	19

**Table 3.** Associations between background characteristics and unmet need (Bi-variate analysis).

Independent Variable	Outcome variable: Unmet need		
	Yes, N (%)	No N (%)	p-value
<i>Age of women (years)</i>			
15 - 24	22 (36.7)	38 (63.3)	0.278
25 - 29	36 (30.3)	83 (69.8)	
30 - 34	17 (31.5)	37 (68.5)	
35 - 49	22 (32.8)	45 (67.2)	
<i>Level of education</i>			
No education	10 (20.0)	40 (80.0)	0.03
Primary	15 (40.5)	22 (59.5)	
Junior High/Technical School	23 (27.0)	62 (72.9)	
Senior High School	40 (44.4)	50 (55.6)	
Tertiary	9 (23.7)	29 (76.3)	
<i>Type of employment</i>			
Public or Civil servant	10 (33.3)	20 (66.7)	0.291
Private sector (NGOs)	14 (38.9)	22 (61.1)	
Self-employed	46 (31.5)	100 (68.5)	
Unemployed	27 (30.7)	61 (69.3)	
<i>Religious affiliation</i>			
Christian	84 (33.2)	169 (66.8)	0.411
Muslim	13 (29.6)	31 (70.5)	
African Traditional Religion (ATR)	0 (0.0)	3 (100.0)	
<i>Place of settlement</i>			
Rural	31 (27.7)	81 (72.3)	0.083
Urban	66 (35.1)	122 (64.9)	
<i>Currently pregnant</i>			
Yes	8 (28.6)	105 (71.4)	0.508
No	20 (44.9)	80 (55.1)	
<i>Ever had a mistimed pregnancy</i>			
Yes	58 (41.1)	84 (58.9)	0.033
No	45 (39.1)	113 (60.9)	
<i>Received FP from a health professional</i>			
Yes	31 (27.7)	81 (72.3)	0.581
No	66 (35.1)	122 (64.9)	
<i>Preferred birth interval (months)</i>			
6 - 12 months	19 (65.5)	10 (34.5)	0.022
18 months	37 (52.9)	33 (47.1)	
24 months	20 (33.3)	40 (66.7)	
30 months	12 (29.3)	29 (70.7)	
More than 30 months	4 (21.1)	15 (78.9)	

### 3.4. Associations between Spousal Autonomy, Communication on Family Planning (FP) and Unmet Need (Bi-Variate Logistic Regression)

In relating spousal autonomy, FP communication and unmet need, spousal discussion of FP ( $p < 0.002$ ) and autonomy on how to spend personal earning ( $p < 0.035$ ) were the only significant variables noted. However, initiator of FP discussion, decision making on health care, decision making on spending earnings, and other variables were not statistically significant (Table 4).

### 3.5. Predictors of Unmet Need for Untimed Pregnancies

The study also built a multiple logistic regression model to test for the significance and direction of the relationship between the unmet need as our outcome variable and respondents' socio-demographic variables. The model considered all variables that were significant at  $p < 0.05$  at the simple logistic regression level with adjusted odds ratios (AOR). The results indicated that, respondents with primary (AOR 1.32, 95%CI: 1.15 - 3.28), or tertiary level of education (AOR 1.58, CI: 0.12 - 1.81) were more likely to have an unmet need unlike their uneducated counterparts. Respondents with Junior High or Technical education had higher odds with unmet need, yet insignificant (AOR 1.50, 95%CI: 1.44 -

**Table 4.** Associations between spousal autonomy, communication on FP and unmet need (Bi-variate analysis).

Attribute	Unmet need		p-value
	Yes, N (%N)	No N (%N)	
<i>Partners communicate on FP</i>			
Yes	55 (40.4)	81 (59.6)	0.002
No	42 (25.6)	122 (74.4)	
<i>Person who starts communication</i>			
Respondent	37 (41.1)	53 (58.9)	0.349
Spouse/partner	18 (39.1)	28 (60.9)	
<i>Autonomy on personal earnings</i>			
Respondent decides	55 (36.7)	95 (63.3)	0.019
Spouse/partner decides	29 (37.2)	49 (62.8)	
Respondent and spouse/partner jointly	13 (19.1)	55 (80.9)	
<i>Autonomy on personal health care</i>			
Respondent independently	43 (31.6)	93 (68.4)	0.035
Spouse/partner	39 (42.9)	52 (57.1)	
Joint communication as couple	14 (20.0)	56 (80.0)	
<i>Perception towards contraceptives</i>			
Positive perception	18 (39.1)	28 (60.9)	0.086
Negative perception	37 (41.1)	53 (58.9)	



3.13). Regarding the preferred birth interval, women who preferred to delay their next pregnancy for a period of between 12 months or less (AOR 0.27, CI: 0.19 - 2.82), 18 - 24 months (AOR 0.30, CI: 0.12 - 0.59), 30 months (AOR 0.11, CI: 0.11 - 0.98, and more than 30 months (AOR 0.34, CI: 0.24 - 0.42), were all less likely to have an unmet need. Respondents who did not have a mistimed pregnancy were also less likely to have an unmet need (AOR 0.11, CI: 0.09 - 2.15). However, mistimed pregnancy significantly determined the unmet need among women. Similarly, as compared to women who take autonomous health decisions, women who allow their partners to make decisions on their behalf (AOR 2.27, CI: 0.09 - 2.34), and joint partner decision making (AOR 1.19, CI: 1.02 - 3.11) were more likely to determine unmet need (**Table 5**).

**Table 5.** Predictors of unmet need (multiple logistic regression).

Predictors	Unmet need	
	AOR	(95% CI)
<i>Level of education</i>		
<i>No education</i>	Ref	
<i>Primary</i>	1.32	1.15 - 3.28
<i>JHS/Technical</i>	1.50	1.44 - 3.13
<i>SHS</i>	1.33	0.63 - 2.48
<i>Tertiary</i>	1.58	0.12 - 1.81
<i>Preferred birth interval</i>		
<i>12 months</i>	Ref	
<i>18 months</i>	0.27	0.19 - 2.82
<i>24 months</i>	0.30	0.12 - 0.59
<i>30 months</i>	0.11	0.11 - 0.98
<i>More than 30 months</i>	0.34	0.24 - 0.42
<i>Ever had a mistimed pregnancy</i>		
<i>Yes</i>	Ref.	
<i>No</i>	0.11	0.09 - 1.15
<i>Partners communicate on FP</i>		
<i>Yes</i>	Ref	
<i>No</i>	0.91	0.67 - 2.08
<i>Autonomy on personal earnings</i>		
<i>Respondent decides</i>	Ref	
<i>Spouse or partner decides</i>	0.51	0.29 - 0.91
<i>Respondent and spouse/partner jointly</i>	0.28	0.18 - 1.18
<i>Autonomy on personal health care</i>		
<i>Respondent decides</i>	Ref.	
<i>Spouse/partner decides</i>	2.27	0.09 - 2.34
<i>Respondent and spouse/partner jointly</i>	1.19	1.02 - 3.11

95% CI: 95% confidence interval, AOR: Adjusted Odds Ratio.

## 4. Discussion

The study indicates that although women and their partners had a positive perception towards family planning (81%), unmet need among women was still high (66%). Elsewhere in Senegal, Sougou *et al.*, (2020) [15] also found as high as 26% of women with unmet need, as well as [16]. Reasons such as limited access to family planning services, less education on family planning and counselling, and the perception about side effects associated with contraceptives may account for this shortfall in translating perception into practice. Meanwhile, other regional surveys in Ghana recorded low unmet need (35.17%), contrary to the findings of our study [17]. Again, this as well as earlier studies have highlighted the significance of education on the impact of unmet need and mistimed pregnancy [14] [18] [19], as educational attainment resulted in increased maternal knowledge on pregnancy spacing [20] [21] [22]. A plausible reason could be that their level of education would have increased their knowledge of where, how, and when to access contraceptives.

Further, education may also result in increased decision-making autonomy: this weakens the top-down patriarchal imposition of decisions on spending, improved communication and when or what healthcare services to seek. Additionally, education demystifies the negative perception towards contraceptives and increases confidence in the use of FP services. However, similar studies in some low-income countries suggest that education is negatively associated with unmet need and was not a determinant of mistimed pregnancy [17]. Conclusively, the motivation for childbirth, limited access to FP services and non-abstinence from sex could account for the less influence of education on reducing unmet need.

National surveys in Ghana reported an unmet need rate of 23.4% [13], 19% in Nigeria [23], and 14% in Kenya [24]. Nevertheless, other researchers have argued that countries can reduce their unmet need rate by advancing efforts towards mutual spousal communication and emphasizing its relevance on mistimed pregnancy [22] [25]. These findings are similar to findings of this study and further supported by Mulatu & Mekonnen, (2016) [26]. Mutual spousal communication enhances understanding between couples. It improves decision making on the use of family planning services, thereby reducing the unmet need, and limiting mistimed pregnancies.

On the other hand, preliminary investigations among African Americans suggest that most couples lacked communication skills. Thus, such couples were more likely to nonverbally communicate about methods such as condoms, leading to increased mistimed pregnancies [27]. Though spousal communication, especially on approval of family planning is considered a significant factor in reducing mistime pregnancies [28]. The possible reason could be that the traditional, cultural, and religious limitations in the context of our study could influence partner decisions on approving family planning. However, this did not determine the unmet need of respondents, contrary to studies in Ethiopia where non-partner approval of contraceptive use still led to a reduction in unmet need

[29]. In the current study, reasons such as lack of autonomy in decision making to spend self-earnings, education and interest in birth spacing could determine the unmet need of respondents of this study.

Previous studies have cited employment status [11] and place of residence [4] as significant determinants of unmet need. Conversely, the current study reported work status and place of residence as potential access barriers to family planning services, therefore increasing the unmet need of the study population. However, barriers to FP services leads to increase incidents of mistime pregnancy among women of reproductive age [15]. Consequently, our study reported a high unmet need rate but with low mistimed pregnancy (9.4%) unlike the findings of Adhikari *et al.*, (2019) [30], who reported that more than half of childbirth was due to mistime pregnancies. Similarly, episodes of mistime pregnancies vary across African countries: previous research reported 34.9% in Tanzania [31], 30% in Ethiopia [32] and 25.9% in Nigeria [33]. In the current study, autonomy to spend own earning (49%) significantly influenced unmet need, similar to findings of Sougou *et al.*, (2020) [15], which reported that 6.26% of women were autonomous in making decisions on how to spend their earnings. Women's autonomy as a significant factor in determining the unmet need and mistimed pregnancy has been widely observed and acknowledged by many similar studies [11] [13] [34] [35]. When women are empowered on decision-making, their desire to direct resources into healthcare and family planning decisions also increases [36].

## 5. Conclusion

Even though most couples, in this study had a positive perception regarding family planning, less than half of them communicated on same. Most women in this study do not have their partner's approval to use family planning. In contrast, those who use family planning methods, mostly have access to services from a trained health professional. Evidence from literature indicates that there are constant efforts in dealing with unmet needs, however, the current study suggests that there is still a significant drop in the use of family planning services among women. It is relatively essential to shift focus from facility-based family planning services to community-based service provision and partner education.

## Limitations of the Study

The study is limited to only a section of the region and cannot be generalized for the entire country. The exclusion of women who were breastfeeding at the time of the study and those whose husbands were away for a considerable period, also form the basis for potential exclusion of qualified participants from the study. Additionally, the study underwent a considerable period of peer review as a pre-print and several changes were made prior to official journal review and publication, posing the possibility of limited relevance.

## **Declarations**

### **Ethical and Consent Issues**

Written informed consent was obtained from all participants, usually, after the study protocol to them. The willingness to participate in this study was purely voluntary, and participants were not given any benefits for their participation. To show consent, a participant could either thumbprint or sign the consent form. We ensured the privacy and confidentiality of participants during face-to-face interviewing process.

### **Consent to Publish**

Not applicable

### **Availability of Data**

Authors are unable to share data publicly because of ethical restrictions.

### **Sources of Funding**

We did not receive any external funding for this research.

### **Authors' Contribution**

EJD conceived the study idea and discussed with FDD. EJD supervised the implementation of the study. EJD, FDD, LB and MK analysed the data and wrote the draft manuscript. All authors read, commented, and approved the final manuscript.

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### **Conflicts of Interest**

The authors declare no conflicts of interest regarding the publication of this paper.

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### **List of Abbreviation**

FP: Family Planning

ATR: African Traditional Religion

AOR: Adjusted Odds Ratio

CI: Confidence Interval

Ref: Reference

GSS: Ghana Statistical Service