A comparative analysis of contraceptive use among married and unmarried reproductive-aged women in rural northern Ghana: Implications for sexual and reproductive health interventions

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Abstract

Background: Ensuring universal access to sexual and reproductive health services is one of the key targets of the United Nations Sustainable Development Goals (SDGs). Although vital information on factors influencing the use of sexual and reproductive health services are required to guide appropriate interventions, such information is often lacking especially among underserved populations. This paper does a comparative analysis of the determinants of contraceptive use among married and unmarried reproductive-aged women in an impoverish and remote region of Ghana.

Methods: Population-based cross-sectional data from 7,242 women between 15-49 years of age collected from one of Ghana's poorest regions were used in this study. The prevalence and determinants of contraceptive use among married and unmarried respondents were assessed and compared using descriptive statistics, bivariate analysis and multivariate regression models.

Results: The prevalence of contraceptive use among study respondents was 17%, prevalence among married women was 25.5% while that of unmarried women was 5.5%. Among married women; educational level, occupation, partners place of stay, parity, and ability to refuse sex without severe consequence were factors that significantly predict contraceptive use (p-value <0.05). On the other hand, age and religious affiliation were significantly associated with contraceptive use for women who reported to be unmarried (p-value<0.05). However, factors significantly associated with contraceptive use for both married and unmarried respondents was district of residence and knowledge of where to obtain contraceptives (p-value <0.05).

Conclusion: Findings show that contractive update in the study area is still relatively low. The study reveals some differences as well as similarities in the factors influencing contractive use between married and unmarried reproductive-aged women in this impoverished settings. Reproductive health interventions aimed at improving access and use of contraceptives among women in the study area and other similar impoverished setting should be mindful of the

influencing factors identified by this study and how they differ between married and unmarried women.

Key Words: *Contraceptive use, reproductive-age women, sexual and reproductive health, GEHIP, northern Ghana.*

Introduction:

Achieving universal access to sexual and reproductive health services is one of the main targets of the United Nations Sustainable Development Goals (SDG 3.7 &5.6) [1]. Globally, although the rate of unintended pregnancies is declining, estimates still reveal that there are about 44% of all pregnancies are unintended (either mistimed or unwanted) and 99.1 million unintended pregnancies per year were recorded between 2010-2014 [2].

Unintended pregnancies have far-reaching implications on medical and social risks for children (e.g. birth weight and cognitive development) and their parents (e.g. education, employment etc.) including abortions and their associated risk [3,4]. For instance, studies have shown that mothers who report to having unwanted births were more likely to receive inadequate prenatal care and childhood vaccinations and have as far as 83% higher risk of neonatal mortality [5].

While the rate of decline of unintended pregnancies in developed countries have been quite steep, developing countries on the other hand have a fairly low decline rate [6]. In developing countries, an estimated 76 million unintended pregnancies are said to occur annually, 34 million of these result in unplanned births, 10 million end in miscarriages while 32 million are ended through induced abortions[7,8]. This could have been averted if women had access to and used contraceptives

This calls for the implementation of policies and programs to encourage family planning and the use of contraceptives especially in developing countries. In order to guide programs and policies aimed at reducing unintended pregnancies and ensuring universal access to sexual and reproductive health services, there is ample need for evidence on the determinants of reproductive service utilization and how this differs among different groups of people in order to designed more targeted and tailored interventions. This paper presents a comparative analysis of the determinants of contraceptive use among married and unmarried women in a predominantly

rural setting of Ghana. The goal is to fill the knowledge gap on the differences in contractive uptake among this different groups of women in order to guide reproductive health policies and programs development and implementation.

Methods and Materials

Study setting

The data used in this study was collected from the Upper East Region of northern Ghana. The Upper East Region is one of ten administrative regions in Ghana and among the three most impoverished regions of the country. It has a population of over one million people [9], the region is located in the north-eastern corner of Ghana between longitude 0° and 1^0 West and latitudes $10^0\ 30^0$ N and 11^0 N. It shears boarders with the Republic of Togo to the east, Burkina Faso to the north and to the west and north by the Upper West Region and the Northern Region of Ghana respectively. It has savanna grassland vegetation with a single raining season from May to September each year. Its total land area is 8,842sq km representing 2.7% of the total land mass of Ghana [10].

There are eight major ethinc groups in the region and 13 administrative districts. The main economic activity in this region is primarily subsistence agriculture. The region has three major religions namely; African traditional religion, Christianity and Islamic religion[10]. The region has one regional hospital located in Bolgatanga the regional capital, five district hospitals, about 26 health centers, over 35 clinics and about 212 CHPS compounds managed by the Ghana health service and Christian mission organizations [11,12]. Undoubtedly, this setting is typical of most rural and semi-urban communities in Sahelian Africa therefore, research findings from this setting would have relevance for many rural communities in sub-Saharan Africa.

Data source

This study makes use of secondary data collected from 7,693 women between 15-49 years old collected by the Ghana Essential Health Intervention Project (GEHIP). The project was a health system intervention and research program that was implemented in the Upper East Region from 2010 to 2015. The GEHIP approach involved strengthening the capacity of the health system

around the six WHO health system building blocks and improving the effectiveness of Ghana's community-based health planning and service program (CHPS). Details of the GEHIP program are described elsewhere [13,14]. This study utilizes end-line cross-sectional survey data that was collected for evaluating the impact of GEHIP on health outcomes.

Sampling strategy:

A two-stage sampling approach was used in the data collection process except for two districts (Kassena-Nankana East and West Districts). First of all, the Ghana Statistical Service (GSS) sampled and provided 66 Enumeration Areas (EAs) from all across the region except Kassena-Nankana East and West Districts. Guided by this sampling frame, physical identification of each EA was down followed by a household listing of members of all households in the sampled EAs. The second stage of sampling then involved the sampling of households proportional to the population size. Within sampled households; all females between the ages of 15-49 years were eligible to be interviewed. In the case of the two Kassena-Nankana districts, sampling was done using Navrongo Health Research Center (NHRC) demographic surveillance data. It should be noted that the two districts are traditionally the field sites of the NHRC which has been carrying out intensive health research activities in them for over 25 years now. The NHRC has developed an elaborate Health and Demographic Surveillance system (HDSS) that continuously monitors the health and population dynamics of this area[15]. A sample frame was therefore obtained from HDSS and a random sample of 2,500 women was sampled from these two districts for the survey.

Data collection:

Data collection utilized the paperless "Open Data Kit" (ODK) technology and tablets. This technique was developed at the University of Washington and it permits instantaneous data editing and correction at the time of interviews [16]. Data collection started on the 2nd of October 2014 and ended on the 31st of January 2015. The survey instrument collected detailed data on maternal and child health indicators, fertility, family planning, universal health coverage, autonomy and other important health indicators. During this survey, women who were not currently pregnant were asked the question: "*are you or your partner currently using anything (contraceptives) to prevent or avoid getting pregnant?* This analysis relies on this question to

explore the prevalence of contraceptive use in the study area and do a comparative analysis of contraceptive use among married and unmarried.

Data analysis

STATA 14 software is used for the analysis; descriptive statistics are used to describe the composition of variables, and cross tabulations involving chi-square test of association is employed in bivariate analysis to identify variables that are associated with respondents use of contraceptives. Furthermore, multivariate analysis using binary logistic regression models are used to explore the determinants/predictors of contraceptive use among married and unmarried respondents. The main outcome of interest in contraceptive use

The variables that have been tested in the bivariate analysis are age group, educational level, functional literacy (ability to read and write), place of residence, marital status, household socio-economic status (wealth index), religion, occupation and household autonomy. Only variables that were significant in the bivariate analysis were included in the multivariate regression models.

The variable for household socio-economic status (wealth index) was generated using Pprincipal Component Analysis (PCA) were household assets/possessions were used as a proxy for wealth, PCA is an approach that involves the use of scoring factors of each asset used to form an index for each household (A_j) based on the formula:

$$A_j = f_1 * (a_{j1} - a_1)/(s_1) + ... + f_N * (a_{jN} - a_N)/(s_N)$$

Where f_1 is the scoring factor' for the first asset, a_{j1} is the jth household's value for the first asset, a_1 and s_1 are the mean and standard deviation of the first asset variable overall households [17,18]. All other variables were recoded to correspond with available standardizes formats in the literature. Before variables were put into the regression models, they were first tested for the possibility of *multicollinearity* within predictor variables using the Variance Inflation Factor (VIF), the VIF was 2.08 signifying no *multicollinearity* between variables (a VIF value >5 would have signified high multicollinearity). In both bivariate and multivariate analysis, a p-value less than or equal to 0.05 is regarded as significant association while p-values above 0.05 are deemed not significant. Both p-values and confidence intervals have been reported in the regression model.

Results

A total of 7693 women aged 15-49 were involved in the study. However, 451 of the respondents were currently pregnant and therefore were not included in the analysis of this paper. Figure 1 presents a flow chart of study respondents indicating married and unmarried respondents and their respective contraceptive use percentages.
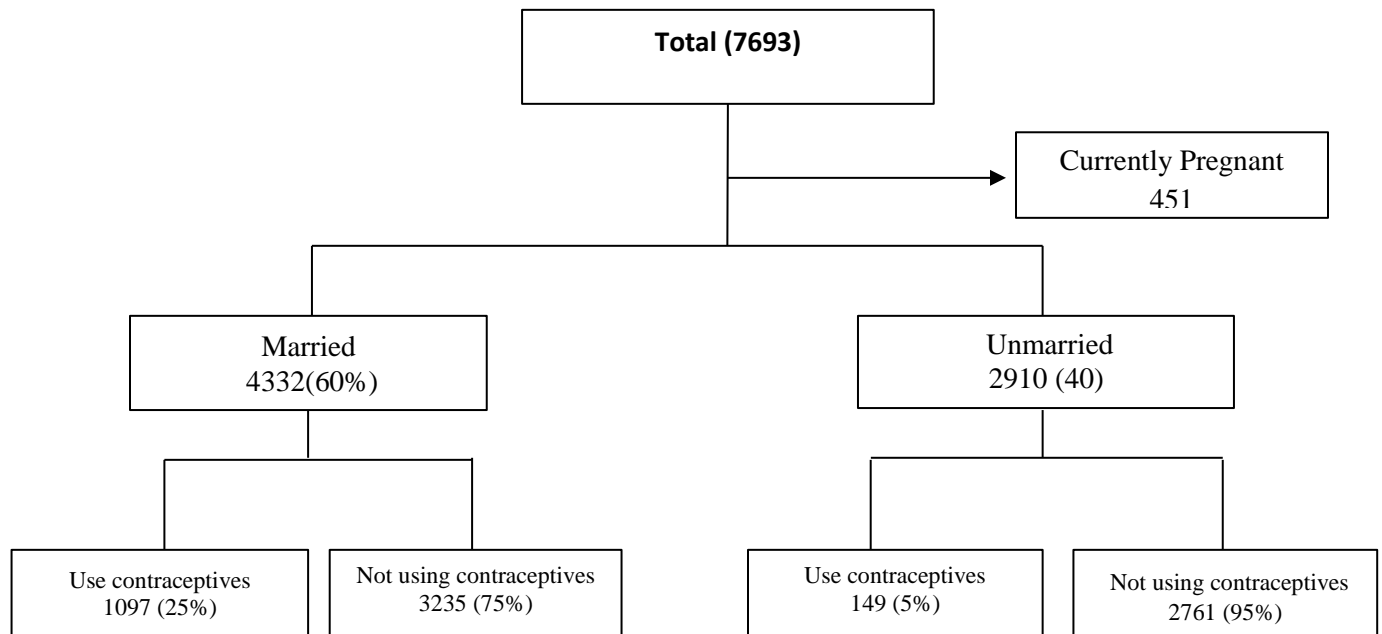
Figure 1 Study Respondents

The prevalence of contraceptive use among study respondents was 17%, prevalence among married women was 25% while that of unmarried women was 5.5%. Table 1 presents the background characteristics of study respondents. While Table 2 presents bivariate analysis of contractive use among study participants whiles Table 3 and 4 are the multivariate regression models for contraceptive use among married and unmarried respondents respectively.

Table 1: Background characteristics of respondents

Background Characteristics		Frequency	Percent (%)
Age Group	15-19	2,026	28
	20-34	2,945	41
	35-49	2,271	31
Level of Education	None	3,457	48
	Primary/Junior High School	2,876	40
	Secondary/ Tertiary	885	12
	Other	24	0
Functional Literacy (Ability to read and understand)	Yes	2,981	41
	No	4,261	59
Marital Status	Not married yet (single)	2,910	40
	Married	4,332	60
Availability of co-wives (among married women)	Yes	1,419	20
	No	2,864	40
	Don't know	49	1
Occupation	Farming	1,938	27
	Trading	1,247	17
	Artisan	900	12
	No occupation/housewife	1,007	14
	Civil Servant	168	2
	Student	1,966	27
	Other	16	0
Religion	Christianity	4,842	67
	Traditional	609	8
	Islam	1,639	23
	No religion	152	2
Place of Residence	Urban	666	9
	Semi-Urban	1279	18
	Rural	5297	73
District of Residence	Bolga M.	513	7
	Bongo	663	9
	Builsa	999	14
	Kasena-Nankan East	1,016	14
	Kasena-Nankana West	691	10
	Garu/Tempani	1,256	17
	Bawku West	551	8
	Talensi/Nabdam	835	12
	Bawku East	683	9
SES (Wealth Index)	Poorest	1531	21
	Poorer	2454	34
	Poor	529	7
	less Poor	1296	18
	Least Poor	1432	20

Table 2 Bivariate Analysis of Contraceptive Use Among All Study Respondents

Variables	Using contraceptives n (%)	Not Using n (%)	p-value
Age group			
15-19	55	1971	<0.000
20-34	695	2250	
35-49	496	1775	
Level of Education			
None	737	2720	
Primary/Junior High School	382	2494	<0.000
Secondary/Tertiary	125	760	
Other	2	22	
Functional Literacy (Ability to read and understand)			
Yes	310	2671	<0.000
No	936	3325	
Marital Status			
Not married yet (single)	149	2,761	
Married	1097	3235	<0.000
Availability of co-wives			
Yes	294	1125	<0.000
No	792	2072	
Don't know	11	38	
Occupation			
Farming	450	1488	
Trading	330	917	
Artisan	207	693	<0.000
No occupation/housewife	151	856	
Civil Servant	41	127	
Student	62	1904	
Other	5	11	
Religion			
Christianity	807	4035	
Traditional religion	105	504	0.097
Islam	313	1326	
No religion	21	131	
Place of Residence			
Urban	137	529	
Semi-Urban	213	1066	0.053
Rural	896	4401	
District of Residence			
Bolga M.	76	437	
Bongo	129	534	
Builsa	169	830	
Kasena-Nankan East	197	819	<0.000
Kasena-Nankana West	148	543	
Garu/Tempani	210	1046	
Bawku West	79	472	
Talensi/Nabdam	100	735	
Bawku East	132	551	

SES (Wealth Index)			
Poorest	229	1302	
Poorer	367	2087	<0.000
Poor	112	417	
Less Poor	260	1036	
Least Poor	278	1154	
Place of abode of current partner (married)			
Staying together	980	2635	<0.000
Staying Elsewhere	100	521	
Number of children			
None	85	2423	
1 to 4	730	2151	<0.000
5+	431	1422	
Ability to refuse sex without severe consequence			
Yes	790	2,176	0.003
None	1,097	3,235	
Knowledge of where to obtain FP			
Yes	1,236	3,544	<0.000
No	1,246	5,996	

Table 3: Contractive Use Among Married Women Logistic Regression Model

Determinants	OR	P>z	95% Conf. Interval	
Age group (compared to 15-19)				
20-34	1.327171	0.241	0.8271538	2.129451
35-49	1.231257	0.422	0.7407447	2.046582
Level of Education (Compared with No education)				
Primary/Junior High School	1.27365	0.026	1.030069	1.574832
Secondary/Tertiary	0.8423922	0.445	0.5424037	1.308296
Other	0.540523	0.587	0.0585875	4.986819
Functional Literacy (Compared with Yes)				
No	1.15088	0.587	0.0585875	4.986819
Occupation (Compared with Farming)				
Trading	1.21383	0.0550	0.9960	1.4793
Artisan	1.03049	0.806	0.8106	1.3101
No occupation/housewife	0.81856	0.129	0.6321	1.0600
Civil Servant	1.3578	0.3080	0.7545	2.4435
Student	2.4702	0.0090	1.2487	4.8867
Other	1.3424	0.5530	0.5080	3.5474
Religion (Compared with Christianity)				
Traditional religion	0.7344	0.0240	0.5616	0.9603
Islam	0.9814	0.8690	0.7850	1.2268
No religion	0.7064	0.2290	0.4010	1.2444
Location of Residence (Compared with Urban)				
Semi-Urban	0.74	0.072	0.53	1.03
Rural	0.84	0.256	0.63	1.13
District of Residence (Compared with Bolgatanga)				
Bongo	1.97	0.001	1.33	2.91
Builsa	1.49	0.038	1.02	2.17
Kasena-Nankan East	1.82	0.001	1.26	2.63
Kasena-Nankana West	1.95	0.001	1.32	2.88
Garu/Tempani	1.70	0.006	1.16	2.47
Bawku West	1.06	0.786	1.26	2.91
Talensi/Nabdam	0.84	0.400	0.57	1.25
Bawku East	1.91	0.002	1.26	2.91
SES; Wealth Index (Compared with Quintile1; Poorest)				
Quintile2	0.86	0.187	0.69	1.08
Quintile3	1.10	0.558	0.80	1.50
Quintile4	1.14	0.307	0.89	1.45
Quintile5 (Richest)	1.04	0.768	0.80	1.35
Place of abode of current partner (Compared together)				
Elsewhere	0.53	0.000	0.41	0.67
Number of Children (Compared with on child)				
1 to 4	2.82	0.00	1.53	5.20
5 or more	2.97	0.00	1.56	5.65
Ability to refuse sex without severe consequence (Compared with yes)				
No	0.83	0.03	0.71	0.98
Knowledge of where to obtain FP(Compared with Yes)				
No	0.01	0.00	0.00	0.03

Table 3 Contractive Use Among Unmarried Women Logistic Regression Model (N= 2,910)

Determinants	OR	P>z	95% Conf. Interval	
Age group (Compared to 15-19)				
20-34	2.21	0.006	1.26	3.87
35-49	1.37	0.447	0.61	3.05
Level of Education (Compared with No education)				
Primary/Junior High School	1.36	0.296	0.76	2.41
Secondary/Tertiary	1.98	0.081	0.92	4.26
Other	1.96	0.557	0.21	18.36
Functional Literacy (Compared with Yes)				
No	1.55	0.164	0.84	2.89
Occupation (Compared with Farming)				
Trading	1.03	0.940	0.54	1.96
Artisan	1.33	0.438	0.65	2.75
No occupation/housewife	1.21	0.587	0.61	2.42
Civil Servant	0.78	0.639	0.27	2.24
Student	0.52	0.120	0.23	1.18
Other	2.70	0.166	0.66	10.97
Religion (Compared with Christianity)				
Traditional religion	1.23	0.601	0.56	2.68
Islam	1.80	0.033	1.05	3.07
No religion	1.31	0.641	0.42	4.16
Location of Residence (Compared with Urban)				
Semi-Urban	0.81	0.48	0.45	1.46
Rural	0.77	0.32	0.45	1.30
District of Residence (Compared with Bolgatanga)				
Bongo	0.75	0.488	0.33	1.69
Builsa	0.74	0.438	0.34	1.59
Kasena-Nankan East	1.14	0.716	0.55	2.36
Kasena-Nankana West	1.35	0.427	0.64	2.85
Garu/Tempani	0.27	0.014	0.09	0.77
Bawku West	0.64	0.367	0.24	1.69
Talensi/Nabdam	1.27	0.55	0.58	2.78
Bawku East	2.00	0.151	0.78	5.17
Socioeconmic Studies (Compared with Quintile1; Poorest)				
Quintile2	0.61	0.062	0.37	1.02
Quintile3	0.94	0.882	0.44	2.04
Quintile4	0.97	0.911	0.53	1.76
Quintile5 (Richest)	0.96	0.872	0.55	1.67
Number of Children (Compared with on child)				
1 to 4	1.39	0.23	0.82	2.39
5 or more	1.71	0.19	0.76	3.86
Knowledge of where to obtain FP (Compared with Yes)				
No	0.04	0.00	0.02	0.10

Conclusion and Implications

This paper has sought to do a comparative analysis of factors influencing the use of contraceptive among married and unmarried women of reproductive age in a predominantly rural setting of Ghana. Overall our study reveals low utilization of contraceptives among these rural women. prevalence of contraceptive use was 17%. Prevalence among married women was 25% and that of unmarried women was 5.5%. In addition, this study provides information for a better understanding of the determinates of contraceptive use among females and how this differs between married and unmarried women.

We found that while educational status, occupation, partners place of stay, parity and ability to refuse sex without consequences were significantly predictive of contraceptive use among only married respondents. religious affiliation, age were those factors significantly associated with contraceptive use among unmarried respondents. Also, two factors that were significantly associated with contraceptive use for both married and unmarried respondents were district of residents and knowledge of where to obtain contraceptives.

Policy and programs aimed at improving contraceptive use among women in rural settings should be mindful of this factor and how they differs between married and unmarried women in order to make interventions more tailor to them.

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