

# Trend and determinants of contraceptive use among women of reproductive age in Ghana

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## Abstract

*The study examined the trend in contraceptive use among sexually active women of reproductive age in Ghana. The study also investigated the socioeconomic determinants of contraceptive use. Cross tabulations and logistic regression analyses were performed on data from the Ghana Demographic and Health Surveys 1988 - 2008. The results indicate low contraceptive use among women with marked variation in contraceptive use across various socioeconomic groups and administrative regions. Evidence from the logistic regressions suggests that improving education and reducing poverty are critical in improving contraceptive use and reducing unmet need for family planning. Child survival, access to family planning services and knowledge of contraceptive methods were also found to be significant determinants of contraceptive use. The importance of improving financial and infrastructural access to contraceptives was confirmed by the findings of the study.*

**Keywords:** Contraceptives; Trend Analysis; Logistic; Ghana

## Résumé

*L'étude a examiné l'évolution de l'utilisation des contraceptifs chez les femmes sexuellement actives en âge de procréer au Ghana. Elle a également analysé les déterminants socio-économiques de l'utilisation des contraceptifs. Des analyses de tableaux croisés et de régression logistique ont été effectuées sur les données des enquêtes démographiques et de la santé au Ghana de 1988 à 2008. Les résultats indiquent une faible utilisation de la contraception chez les femmes avec une variation marquée de l'utilisation de contraceptifs dans différents groupes socio-économiques et des régions administratives. La régression logistique montre que le niveau d'éducation et la réduction de la pauvreté sont importants dans l'amélioration de l'utilisation de contraceptifs et la réduction des besoins non satisfaits en matière de planification familiale. La survie de l'enfant, l'accès aux services de planification familiale et la connaissance des méthodes de contraception sont également des déterminants significatifs de l'utilisation des contraceptifs. L'importance de l'accès financier et infrastructurel aux contraceptifs a été confirmée par les résultats de l'étude.*

**Mots clés:** Contraceptifs; analyse des tendances; logistique; Ghana

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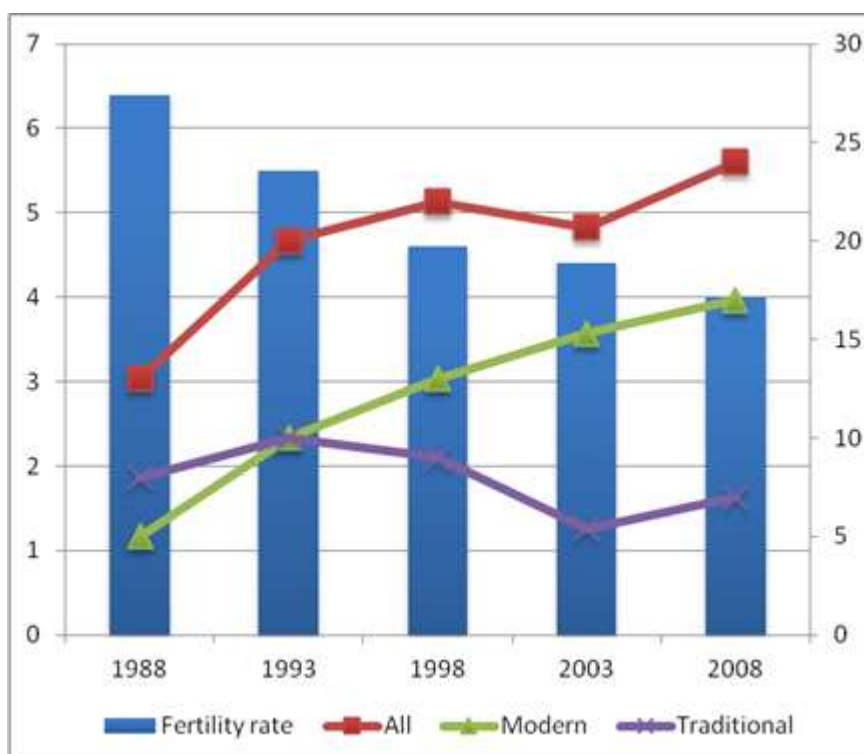
## Introduction

The use of contraceptives is widely considered as an important step in the efforts to control population growth. At the micro level, contraceptives serve as critical tools for spacing birth and controlling family size. Some forms of contraceptive also play the dual role of controlling family size and protection against sexually transmitted diseases (STDs)<sup>i</sup>. The benefits of a well-spaced child birth and controlled family size are enormous at the micro level. These include improved maternal and child health, reduced induced abortion cases and improved household welfare. At the macro level, the benefits of a well-controlled population growth include improved infrastructure and reduced burden on national budgets.

The benefits of family planning and controlled population growth as a whole are well explicated by the quantity-quality trade-off theory proposed by Becker and Lewis (1973) and Willis (1973). The theory is applicable at both the micro and macro levels. For instance, at the micro level, the quality of life in households with larger sizes may be relatively lower than households with smaller sizes. Households with fewer numbers are more likely to provide quality basic needs such as education and health than households with larger numbers. There is, therefore, the need for households to trade off their quantity (in terms of family size) to improve quality (wellbeing).

In Ghana, several efforts have been made to reduce population growth and to reap its benefits through effective family planning methods including improved contraceptive use. Such efforts include the Contraceptive Social Marketing (CSM) project (1987-1990), the Ghana Family Planning and Health Programme (FPHP) (1990-1996) and the Ghana Population and AIDS Project (GHANAPA) (1996-2000) (Hong *et al.*, 2005). Some targets have also been set in recent years to complement these efforts. For instance, the National Policy of Ghana on fertility and contraceptive use targets the reduction of total fertility rate from 5.5 in 1994 to 3.0 by the year 2020, achieving a contraceptive prevalence rate of 50% by the year 2020 and reducing annual population growth rate from 3% in 1994 to 1.5% by 2020 (USAID, 2012). These targets are also important in achieving the Millennium Development Goal (MDG) targets on child and maternal health<sup>ii</sup>.

In response to these policy targets, the 2008 Ghana Demographic and Health Survey (GDHS) suggests that total fertility rate reduced to an average of 4 children per woman. Also, modern family planning methods use among married women ages 15-49 years increased to 17% (see Figure 1).



**Figure 1:** Trend in Fertility and Contraceptive use in Ghana

**Source:** Authors' construct from GDHS data sets

While the consistent reduction in fertility rate is expected to correspond to a consistent increase in contraceptive use, this was not the case in Ghana. Contraceptive use showed inconsistent trend over the years (see Figure 1). Also there exist wide variations in total fertility rate across the various administrative regions of Ghana. For instance, while total fertility rate was 2.5 children per woman in the Greater Accra region, the Northern region recorded about 6.8 children per woman (Ghana Statistical Service, 2008).

Moreover, the country's unmet need<sup>iii</sup> for family planning also remain significant with about 35% of women wanting to either space births or cut child birth but are not using any contraception. It is estimated that meeting the unmet need for family planning will not only help Ghana meet its population policy targets but also increase contraceptive use from 1.6 million women in 2010 to more than 2.8 million in 2015 and about 4.3 million in 2020 (USAID, 2012).

Understanding the factors that influence the use of contraceptives in Ghana will, therefore, be a critical step in achieving the population policy targets. Several factors have been identified to be associated with the use of family planning methods or contraceptives. These factors include social, economic, cultural and religious. Kimani et al. (2013) found socio economic variables including education and wealth to be significant determinants of contraceptive use in Kenya. They also found that contraceptive use increased with less cultural conservatism and a favourable environment for contraceptive use.

Similarly, Tawiah (1997) identified three important variables that influenced the use of contraceptives to be user's approval, discussion of family planning with partner's and user's level of education. Interestingly, religion, desire for more children, marital duration, husband's approval of contraception type and husband's education level were not significant determinants of contraceptive use. Blunch (2008) found education and religion to be significant determinants of the use of contraceptives.

While these studies and many others made good efforts to estimate the determinants of contraceptive use, their analyses were mainly restricted to the binary decision of whether to use contraceptives or not. The purpose of the current study is twofold; first is to analyse the trend in the use of contraceptives across various socioeconomic

characteristics and regions and second is to determine which socioeconomic factors have significant influence on contraceptive use.

### Conceptual framework

The current study presents a conceptual framework based on previous studies including Bongaarts et al. (1984) and Asimwe et al. (2013). As mentioned earlier, contraceptive use is considered as an important determinant of fertility. This is conceptualized by Bongaarts et al. (1984) who identified five proximate determinants of fertility namely; index of marriage ( $C_m$ ), index of lactational infecundability ( $C_i$ ), index of abortion ( $C_a$ ), index of pathological sterility ( $C_p$ ) and index of contraception ( $C_c$ ) (Ross et al., 1986, Stover, 1997). The basic model is shown in equation (1) below:

$$tfr = c_m * c_i * c_a * c_p * c_c * tf \quad (1)$$

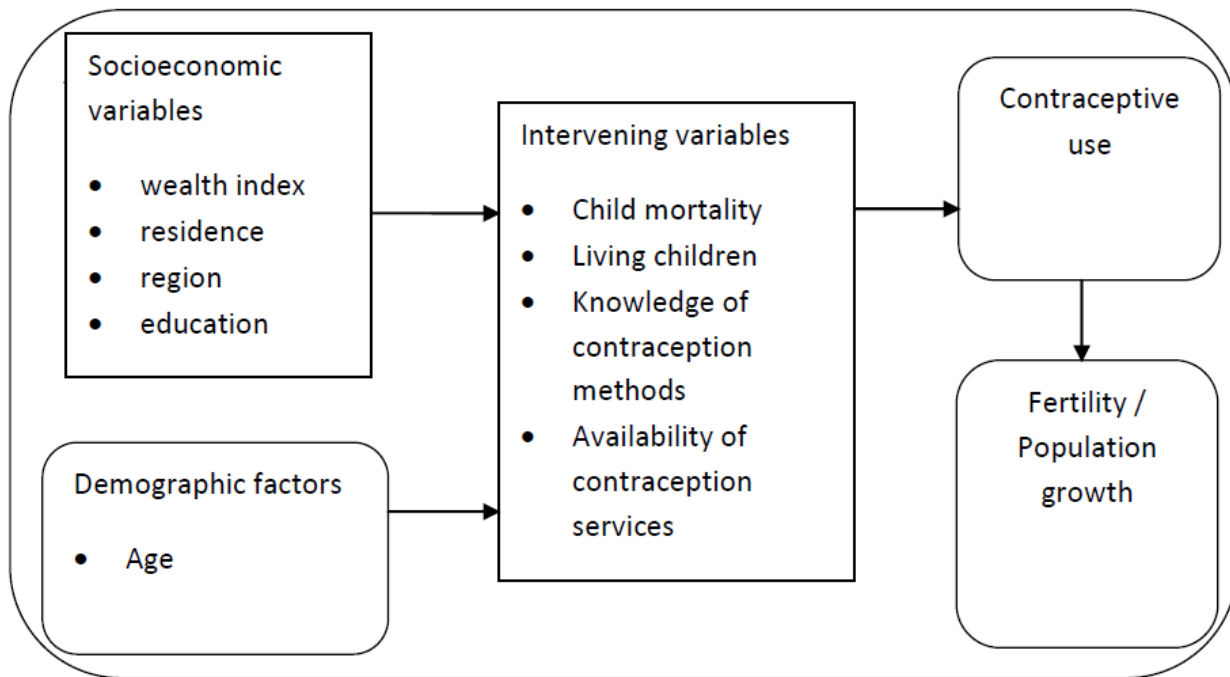
Where  $tfr$  is total fertility rate and  $tf$  is total fecundity.

Each of the proximate determinants in equation (1) also depend on other factors. However since the focus of the current study is on determinants of contraceptive use, only factors that influence  $C_c$ , in equation (1), will be explored. In line with the objectives of the current study, an expression for the determinants of contraceptive use can be presented as follows:

$$c_c = \sum_i^I se_i + \sum_j^J x_j + \sum_k^K d_k \quad (2)$$

where  $se_i$  represents socioeconomic variables,  $x_j$  represents cultural factors and  $d_k$  represents demographic factors.

This suggests that the socioeconomic, cultural and demographic variables influence fertility through their influence on contraceptive use. This idea is further illustrated in Figure 2 below:



**Figure 2:** Conceptual Framework

**Source:** Authors' modification from Kimani et al (2013)

### Data and Methods

The study employed data from various years of the Ghana Demographic and Health Survey (GDHS). The trend analysis was performed using GDHS data from the survey years of 1988, 1993, 1998, 2003 and 2008, while econometric analysis were based on the 2008 and 2003 datasets. This was because the main economic variable (i.e. wealth index quintiles) included in the econometric analysis was only available in the two datasets. The GDHS data is collected on individuals and households covering largely health and demographic characteristics. The data used in this study contains a nationally

representative sample with interviews conducted on women between the ages of 15-49 years across all regions of the country.

The analysis reported in the current study was however restricted to women between 15 and 49 years who were married and sexually active (excluding pregnant women) at the time of data collection. This was to ensure that the sub-sample used in the analysis comprise respondents who are sexually active and are more likely to use contraceptives. Table I below shows the sample selection for the study.

**Table I: Sample for the study**

Survey year	Total number of women sampled	Married and sexually active women	Women included in study (excludes pregnant women)
1988	14,216	12,468	11,138
1993	13,298	11,749	10,736
1998	13,188	11,444	10,441
2003	15,086	13,388	12,277
2008	11,888	10,280	9,504

**Source:** Authors' compilation from GDHS data sets

The use of contraceptives includes both modern and traditional types of contraception. The modern contraceptives include injections, female sterilization, IUD, pills, diaphragm, norplant, foam and Jelly, male and female condoms. The traditional

types of contraception include withdrawal and periodic abstinence. As noted by Tawiah (1997) current contraception use is preferred over ever use of contraceptive because the former has a greater precision in measurement as bias in reporting is

reduced and has more direct policy implications. Based on this, current contraceptive use was adopted in this study.

The analyses were performed in two stages. In the first stage, univariate and bivariate descriptive analysis were conducted using simple tabulations, cross-tabulations and chi-square tests to ascertain the association between contraceptive use and other socioeconomic variables over time. These analyses were done to portray the trend in the use of contraceptives in Ghana. The analysis covered the period from 1988 to 2008 using five (5) rounds (i.e. 1988, 1993, 1998, 2003 and 2008) of the GDHS. The second stage analysis involved regression analysis to determine the factors that influence the use of contraceptives employing data from the 2003 and 2008 GDHS. The regression analysis was conducted on the use of all forms of contraceptives and only modern contraceptives. A logistic regression was used in both analysis since the outcome variable was binary in nature (1 if respondent used any method of contraception and 0 otherwise). The second analysis also used a logistic regression analysis with the outcome variable taking the value of 1 if respondent used modern method of contraception and 0 if otherwise.

The explanatory variables included in the regression analysis were mainly socioeconomic such as residence, poverty, child survival and education. The residence variable was categorised into rural and urban. Poverty was captured with a wealth index quintile (1-poorest, 2-poor, 3-middle, 4-rich and 5-richest). The a-priori expectation was that women from wealthier households were more likely to use contraceptives relative to their counterparts from poor households. The child survival variable was captured by the number of living children and this is expected to associate negatively with contraceptive use. The education variable was categorised into no education, primary, secondary

and tertiary education attainments. It is hypothesised that education significantly influenced contraceptive use and women with higher levels of education were more likely to use contraceptives. Access to family planning services and knowledge of contraceptive methods were considered to be important determinants of contraceptive use. Access to family planning services was captured in the analysis by visit from family planning worker while knowledge is captured by women who heard of family planning method on television or radio. Television and radio were used because majority of respondents watched television or listened to radio daily (GDHS, 2003 and 2008). Other explanatory variables included in the analysis include age of respondents and household size.

## Results

### Trend and pattern in contraceptive use

Table 2 provides a summary of the percentage distribution of contraceptive method and the sources of contraceptives for various survey years among sexually active women in Ghana. The summary shows a large proportion of sampled women (about 85.1%) not using any form of contraceptive in 1988. This proportion reduced in the survey year 2008 to about 74.6%. This suggests that majority of sexually active women in Ghana do not use any form of contraceptives with a consistent trend over all the survey years. Except for the year 1988, when the proportion of women who used traditional contraceptive methods was higher than modern method users, all other years show consistently high proportions of women in favour of modern contraceptive methods. For instance approximately 9.0% and 7.0% of women sampled in 1988 used traditional and modern methods compared to 5.6% and 19.1% in 2008, respectively.

**Table 2: Trend in contraceptive use by method and source**

	<b>1988</b> <b>No. (%)</b>	<b>1993</b> <b>No. (%)</b>	<b>1998</b> <b>No. (%)</b>	<b>2003</b> <b>No. (%)</b>	<b>2008</b> <b>No. (%)</b>
No method	9362(85.05)	8275(77.08)	8123(77.80)	8868(72.23)	7087(74.57)
Folkloric method	NA	64(0.60)	75(0.72)	130(1.06)	74(0.78)
Traditional Method	1002(9.00)	1116(10.39)	711(6.81)	722(5.88)	532(5.60)
Modern Method	774(6.95)	1281(11.93)	1532(14.67)	2557(20.83)	1811(19.06)
<b>No. of Women</b>	<b>11,138(100)</b>	<b>10,736(100)</b>	<b>10,441(100)</b>	<b>12,277(100)</b>	<b>9,504(100)</b>
<b>Source of modern method</b>					
Government clinic/pharmacy	316(42.59)	683(53.40)	969(56.62)	1423(55.65)	952(60.22)
Government home delivery	8(1.08)	41(3.21)	34(2.24)	23(0.90)	12(0.76)
Private clinic	181(24.39)	122(9.54)	521(34.34)	308(12.05)	109(6.89)
Private pharmacy	152(20.49)	393(30.73)	30(1.98)	677(26.48)	454(28.72)
Church/friend	77(10.38)	26(2.03)	50(3.30)	51(1.99)	25(1.58)
Others	8(1.08)		14(0.92)	44(1.72)	3(0.19)
<b>No. of Women</b>	<b>742(100)</b>	<b>1,279(100)</b>	<b>1,517(100)</b>	<b>2,557(100)</b>	<b>1,581(100)</b>

**Source:** Authors' computation

In terms of the source of contraceptives, the findings show that government clinics and pharmacies have been the major sources of contraceptives over the years. In 1988, about 42.6% of women who used contraceptives indicated these government facilities as the source. Private clinics and pharmacies constituted about 24.4% and 20.5%, respectively. The situation did not change much in 2008 with about 60.2% of women sourcing contraceptives from government clinics and pharmacies. Private clinics and pharmacies made up 6.9% and 28.7% respectively. Government supported home contraceptive delivery services was the lowest source over the years. About 1.1% of sampled women in 1988 used contraceptives from government supported home delivery. This proportion reduced to about 0.76% in 2008.

Table 3 shows the pattern and trend in the association between contraceptive use and socio-economic characteristics of sexually active women in Ghana. The estimated Pearson's Chi-square values and probabilities, which tests the hypothesis of independence, are reported to show the statistical significance of association. The findings suggest that contraceptive use was higher among women from

urban areas than their counterparts from rural areas. In the year 1988, contraceptive use was about 11.2% in rural areas as against about 21.8% in urban areas. Similarly in 2008, about 27.7% of women from urban areas used contraceptives relative to about 21.6% in rural areas. This association was statistically significant and consistent across all the survey years included in the analysis. It can also be observed that the proportion of rural women who used contraceptives increased consistently between 1988 and 2003 but declined in 2008.

Furthermore, women's educational attainment showed strong association with the use of contraceptives in Ghana with higher education attainments associating positively with contraceptive use. For instance in 1993, while about 10% of sexually active women without any educational attainment used contraceptives, about 57.9% and 74.2% of women with secondary and tertiary education, respectively, used contraceptives. Similar observation was made in the year 2008 where contraceptive use among women with secondary and tertiary education was about 33.5% and 31.5%, respectively, relative to 17.4% among women with

no education. The general trend suggest that contraceptive use among women increased with

higher educational attainments.

**Table 3: Trend in contraceptive use by socioeconomic characteristics**

	1988 No. (%)	1993 No. (%)	1998 No. (%)	2003 No. (%)	2008 No. (%)
<b>Place of Residence</b>					
Rural	1002(12.68)	1434(18.60)	1480(18.60)	2098(24.08)	1519(23.46)
Urban	774(23.90)	1027(32.10)	838(33.76)	1311(36.76)	898(29.65)
<b>Chi-Square</b>	<b>215.72</b>	<b>288.97</b>	<b>252.01</b>	<b>202.81</b>	<b>41.66</b>
	<b>(Pr=0.00)</b>	<b>(Pr=0.00)</b>	<b>(Pr=0.00)</b>	<b>(pr=0.00)</b>	<b>(pr=0.00)</b>
<b>Education attainment</b>					
None	691(11.20)	547(10.27)	712(13.52)	1231(19.64)	734(17.38)
Primary	937(20.34)	1562(32.29)	411(22.52)	732(31.90)	629(29.61)
Secondary	111(36.88)	260(57.91)	1114(34.89)	1341(37.92)	1007(33.48)
Tertiary	37(60.66)	92(74.19)	81(51.92)	105(58.09)	47(31.54)
<b>Chi-Square</b>	<b>359.32</b>	<b>1.200</b>	<b>607.39</b>	<b>494.33</b>	<b>269.53</b>
	<b>(Pr=0.00)</b>	<b>(Pr=0.00)</b>	<b>(Pr=0.00)</b>	<b>(pr=0.00)</b>	<b>(pr=0.00)</b>
<b>Wealth quintile</b>					
Poorest				695(18.39)	558(17.95)
Poorer				745(26.41)	489(23.21)
Middle				725(31.65)	406(25.71)
Richer				558(31.85)	507(33.55)
Richest				686(41.98)	457(38.15)
<b>Chi-Square</b>				<b>364.60</b>	<b>252.08</b>
				<b>(pr=0.00)</b>	<b>(pr=0.00)</b>
<b>Age group</b>					
15-19	8(6.67)	17(15.60)	12(15.38)	12(14.81)	11(16.42)
20-24	111(13.84)	139(19.09)	138(21.26)	155(25.16)	130(23.51)
25-29	279(15.35)	361(23.38)	328(23.50)	477(29.16)	281(22.52)
30-34	376(17.65)	533(22.55)	464(26.44)	712(32.10)	468(29.09)
35-39	450(19.42)	622(29.04)	637(28.40)	854(31.00)	637(29.48)
40-44	391(20.12)	508(25.73)	433(19.18)	752(30.12)	530(27.66)
45-49	161(8.02)	281(14.99)	306(14.83)	447(18.07)	360(18.46)
<b>Chi-Square</b>	<b>155.83</b>	<b>130.74</b>	<b>148.66</b>	<b>168.45</b>	<b>94.51</b>
	<b>(Pr=0.00)</b>	<b>(Pr=0.00)</b>	<b>(Pr=0.00)</b>	<b>(Pr=0.00)</b>	<b>(pr=0.00)</b>
<b>Region of Residence</b>					
Western	112(11.49)	249(27.48)	208(20.49)	361(35.32)	195(22.2)
Central	152(12.69)	203(20.26)	180(18.11)	157(20.74)	212(30.77)
Greater Accra	394(32.35)	402(39.33)	377(37.48)	445(38.70)	318(40.51)
Volta	250(19.28)	336(27.65)	189(20.52)	221(23.71)	273(30.33)
Eastern	234(14.10)	346(30.84)	377(34.75)	313(29.23)	247(28.72)
Ashanti	213(10.85)	286(16.73)	361(26.98)	605(33.59)	426(31.72)
Brong Ahafo	190(14.36)	326(31.05)	211(29.68)	562(39.33)	219(27.55)
Northern	231(15.35)	188(13.39)	98(9.89)	255(14.39)	90(6.80)
Upper West		38(7.68)	165(15.17)	377(28.43)	288(26.35)
Upper East		87(10.73)	152(11.76)	113(11.11)	149(17.47)
<b>Chi-Square</b>	<b>324.26</b>	<b>507.53</b>	<b>487.94</b>	<b>556.46</b>	<b>425.68</b>
	<b>(Pr=0.00)</b>	<b>(Pr=0.00)</b>	<b>(Pr=0.00)</b>	<b>(Pr=0.00)</b>	<b>(Pr=0.00)</b>
<b>No. of Women</b>	<b>11,138</b>	<b>10,736</b>	<b>10,441</b>	<b>12,277</b>	<b>9,504</b>

Source: Authors' computation

Note: Pr is Probability value (P-value)

The association between wealth status and contraceptive use was reported only for the years 2003 and 2008 where the wealth status variable was available. A positive association was established

between wealth status and contraceptive use. Contraceptive use was highest among women from richest households. In 2003, about 16.4% of women in the poorest wealth quintile used contraceptives

relative to about 40% usage among women in the richest quintile. Similarly, in 2008, about 16.6% and 35.7% contraceptive usage was recorded among sexually active women in the poorest and richest wealth quintiles, respectively.

The association established between women's age and contraceptive use suggests a bell-shape where contraceptive use rises with age then eventually falls after some age range. Similar association was observed across all the years and in most cases, proportion of contraceptive use increased till 35-39 age range then start to decline. For example in 1998, contraceptive use increased from about 15.4% among women within the age range 15-19 to 28.4% for women within the age range 35-39 then declined to 14.8% for women within the range of 45-49 years. Similar observations were made for the years 1993 and 2008.

In terms of regional differences in the use of contraceptives in Ghana, the results in Table 3 show marked variation across various administrative regions. A trend analysis also suggests that some regions improved in the use of contraceptives while others showed decline. The Greater Accra region consistently recorded the highest proportions of contraceptive usage between 1988 and 2008. No other region showed consistent increase in the proportion of contraceptive use over the survey years. The region with the lowest proportion of women who were using contraceptives varied over time. The proportion of women who used contraceptives was lowest in the Ashanti region in 1988 (10.9%), Upper West region in 1993 (7.6%), Northern region in 1998 (9.9%), Upper East region in 2003 (11.11%) and Northern region in 2008 (6.8%). In general, the trend suggest that the northern, Upper East and Upper West regions were the least performers in terms of contraceptive use. However, there has been a significant improvement

in contraceptive use in the Upper West region over the years.

### **Econometric results**

Table 4 shows four different logistic regression results. The first results in column two shows the socioeconomic factors that influence contraceptive use (irrespective of the method type) while the results in the third column show factors that influence modern contraceptive use. Both analysis were done using data from the 2008 GDHS. Similar analysis were conducted using the 2003 GDHS and the results are reported in columns four and five of Table 4.

The results show a contrasting association between place of residence and contraceptive use in 2008 and 2003. In 2008, rural women were over 1.4 and 1.3 times more likely to use all forms of contraception and modern contraceptives, respectively, relative to urban women. In contrast, a weaker association was established between rural residence and contraceptive use in 2003, as reflected in the smaller odds ratios (0.78 and 0.69 for all and modern contraceptive use, respectively) relative to urban women. That is, while rural women were found to be more likely to use contraceptives in 2008, the relationship was less likely to occur in the 2003 survey year. The relationships were statistically significant at 1%.

Relative to women from poor households (reference group), the odds of contraceptive use among women from wealthier households was higher. However, trend analysis suggest that the odds of contraceptive use was higher in 2008 than 2003 for women in the richest wealth quintile. For instance in 2008, women in the richest wealth quintile were over 2.6 times more likely to use contraceptive compared to the odds of 1.5 in 2003. Similarly, women in the richest wealth quintile were over 2.5 times more likely to use modern contraceptives compared to 1.7 in 2003.



**Table 4: Logistic regression for the determinants of contraceptive use**

Variable (Reference)	Survey year 2008		Survey year 2003	
	All contraceptive use	Modern contraceptive use	All contraceptive use	Modern contraceptive use
Place of residence (urban)	1.46*** (1.26-1.68)	1.35*** (1.16-1.58)	0.78*** (0.69-0.88)	0.69*** (0.60-0.79)
Wealth quintiles (Poor)				
Poorer	1.14* (0.99-1.32)	1.04 (0.89-1.22)	1.23*** (1.09-1.39)	1.60*** (1.39-1.83)
Middle	1.39*** (1.17-1.66)	1.45*** (1.20-1.75)	1.39*** (1.21-1.59)	1.58*** (1.35-1.86)
Rich	2.02*** (1.65-2.47)	1.83*** (1.47-2.28)	1.19** (1.00-1.41)	1.26** (1.04-1.52)
Richest	2.64*** (2.09-3.34)	2.53*** (1.96-3.27)	1.50*** (1.24-1.83)	1.79*** (1.44-2.22)
Number of living children	1.18*** (1.12-1.29)	1.15*** (1.08-1.22)	1.08*** (1.03-1.13)	1.21*** (1.15-1.27)
Total children ever born	0.92*** (0.87-0.97)	0.96 (0.91-1.02)	1.04** (1.00-1.08)	0.97 (0.93-1.01)
Access to method	1.36*** (1.19-1.54)	1.33*** (1.16-1.53)	0.89* (0.79-1.01)	1.00 (0.88-1.14)
Knowledge of Method				
Heard method on Television	1.11* (1.00-1.24)	1.02 (0.90-1.15)	1.29*** (1.16-1.44)	1.25*** (1.10-1.41)
Heard Method on Radio	1.15** (1.01-1.31)	1.00 (0.87-1.15)	1.19*** (1.07-1.33)	1.09 (0.97-1.23)
Education attainment (None)				
Primary	1.69*** (1.48-1.93)	1.27*** (1.09-1.47)	1.59*** (1.42-1.78)	1.56*** (1.38-1.77)
Secondary	1.80*** (1.57-2.06)	1.38*** (1.19-1.59)	1.93*** (1.72-2.15)	1.82*** (1.61-2.06)
Tertiary	1.41* (0.97-2.05)	1.26 (0.83-1.90)	4.48*** (3.25-6.19)	3.46*** (2.50-4.80)
Age	0.99*** (0.98-0.99)	0.98*** (0.97-0.99)	0.96** (0.95-0.97)	0.96*** (0.95-0.96)
No. of observations	9,481	9,481	12,267	12,267

**Note:** \*\*\*significant at 1%; \*\*significant at 5%; \*significant at 10%. Coefficients are odds ratios with 95% confidence intervals reported in parenthesis.

**Source:** Authors' computation

The results also suggest that women with higher number of living children were more likely to use contraceptives. This relationship was consistent over time, irrespective of the method type, and highly significant at 1%. On the contrary, women with higher number of children ever born were found to be less likely to use contraceptives even though the relationship was only significant for women who used all types of contraceptives.

The study also explored the influence of access to family planning services on contraceptive use. Access was measured by visit from family planning worker to respondent within 12 months preceding the survey. The results suggest that access to family planning service had important influence on contraceptive use in 2008 than in 2003. In 2008, women who were visited by a family planning worker were about 1.4 and 1.3 times more likely to use all and modern contraceptives, respectively,

relative to women who did not have any visit. In contrast, the relationship was weak and marginally significant in the 2003 survey year.

Another important determinant of contraceptive use was women's knowledge of contraceptive methods. The results show in both 2003 and 2008 that women who had heard of contraceptive methods via television or radio were more likely to use contraceptives, irrespective of the method type. The relationship was however more significant in the 2003 survey year.

Table 4 also shows a consistently positive association between higher education attainments and contraceptive use. The odds of using both all and modern contraceptives were higher and significant for women with primary and secondary education attainment in 2003 and 2008. In contrast the odds were higher and more significant for women with tertiary education attainment in 2003 compared to 2008. For instance in 2003, relative to women with no education, the odds of using a modern contraceptive was over 3.4 times higher for women with tertiary education compared to 1.2 in 2008. Similarly, relative to women with no education, the odds of using any method of contraception was over 4.8 times higher for women with tertiary education in 2003 compared to 1.4 in 2008.

## Discussion

The findings suggest that there exists significantly high proportion of women who do not use any method of contraception in Ghana. The proportion of women who used modern contraceptive methods was also relatively more than traditional method with the later reducing over time. Even though the use of modern contraceptive methods was low it showed steady increase over time. This is important as modern contraceptive methods are considered to be, relatively, more effective in family planning. Some studies have reported low usage of modern contraceptives in sub-Saharan Africa as a whole, even though there has been some signs of improvement over the past decade (United Nations Population Division, 2003). The improvement in the use of modern contraceptives in Ghana can be attributed to efforts by government to encourage modern contraceptive use (USAID, 2012).

The high proportion of non-use of contraceptives raises concerns but explains the high unmet need for contraception that persist among women in the country. Various reasons have been cited for non-use of family planning methods in Ghana. Aside demand for more children and respondents

opposition, the most frequently cited reason for non-use of family planning method was the fear of side effects. For instance, the proportion of respondents who cited fear of side effects as main reason for non-use of contraceptives were about 24.6% in 2008, 20.7% in 2003 and 12.8% in 1998 (GDHS various years). This implies the need for increased public education on the side effects of contraceptive method use and how to deal with this side effects. This will go a long way to remove perceived fear among women.

It is also evident that majority of sexually active women in Ghana prefer to get contraceptives from government clinics and pharmacies relative to other private sources. This can be explained by the efforts made by the government of Ghana to ensure that family planning methods are accessible with limited financial constraints. For instance, in most rural and urban communities, family planning services are made available at minimum cost in public health facilities. It was however observed that efforts to increase contraceptive services through home delivery have not been very successful over the years. This may however be an effective means of reducing the proportion of sexually active women who do not use contraceptives and also reduce the unmet needs of this population.

The results on the link between socioeconomic status and contraceptive use generally suggest strong association, judging from the highly significant chi-square test of dependence. As expected, women's education and wealth status showed positive association with contraceptive use. The proportion of contraceptive use was high for women with high educational attainment and wealth status. Contraceptive use was also generally higher among urban women than rural women. This may be explained by the easy access to family planning services in urban areas relative to rural areas. Also the relatively high levels of civilization and standard of living in urban areas discourage large family size and hence increase the use of family planning methods. Ignorance about family planning methods and peculiar cultural factors may pose limitations to the use of contraceptives in rural areas (Kimani et al., 2013).

The three northern regions of Ghana recorded the lowest proportions of contraceptive use across the survey years. The greater Accra region recorded the highest proportion of contraceptive use and this was consistent across all the survey years. This explains the differences in fertility rates across the regions. For instance, the DHS report on regional

disparity in fertility rates in Ghana show that while fertility rate was 2.5 children per woman in the greater Accra region, the northern region had a rate of 6.8 children per woman (Ghana Statistical Service, 2008). The Northern region is generally considered to be among the poorest in the country with low educational attainments.

The logistic regression results on the determinants of contraceptive use generally suggest that socioeconomic factors continue to play critical role in the use of contraceptives. For instance, the findings show that women with higher education and wealth status are more likely to use all and modern contraceptives relative to their counterparts with no education and poor wealth status. This was expected as these socioeconomic factors influence the behaviour of women towards contraceptive use. For instance, wealthier and educated women are expected to be more conscious about their health and that of their families hence more likely to use family planning methods. Some previous studies have also established significant positive relationship between socioeconomic status and contraceptive use among women (Tuoane *et al.*, 2003, Curtis and Neitzel, 1996, Clement and Madise, 2004). In terms of trend analysis woman's wealth status showed higher influence in 2008, relative to 2003 while education attainment showed higher influence in 2003, relative to 2008. This trend conforms with similar findings by Asiimwe *et al.* (2013).

The finding on the relationship between number of living children and contraceptive use was also expected. Women with more living children will prefer to control child birth relative to their counterparts with fewer living children. This may be explained by the high child mortality rate in the country. Most families therefore choose to have more living kids to reduce the effects of child mortality.

The findings also suggest that access to contraception services and woman's knowledge of contraceptive method were important covariates in 2008 and 2003, respectively. This was expected as efforts to improve access to family planning services were much more intensified in 2008 than in 2003. The variable was, therefore, identified as a highly significant positive determinant of contraceptive use in 2008. On the other hand, the influence of woman's knowledge seems to have reduced over the years with weaker association in 2008 than in 2003.

## Conclusion

The study sought to examine the pattern and trend in contraceptive use among sexually active women in Ghana. The study also investigated the socioeconomic determinants of contraceptive use. Data from various survey years of the GDHS was employed in the analysis with cross tabulations and logistic regression techniques used.

The findings of the study suggest significant low usage of contraceptives over the years among sexually active women in Ghana. There was also evidence of significant variations in usage across socioeconomic status and administrative regions in the country. The econometric results suggest that education, wealth status, number of living children, access to family planning services and knowledge of contraceptive methods were significant determinants of contraceptive use. There was, however, some variations in the influence of these explanatory variables over time.

The findings show the need for further efforts to be made so as to improve the use of contraceptives among sexually active women in Ghana. While government has initiated various activities in the national policy targets by the year 2020, there is still need to improve the knowledge of family planning through public education programmes, especially in rural communities. This will go a long way to create awareness of the importance of family planning to the family and country as a whole. Also such public education exercises will be critical in changing the erroneous perceptions that are held against the use of contraceptives.

There is also the need for national policies to consider making contraceptive services more accessible with regards to both availability and cost. Debates are ongoing regarding whether or not family planning should be included in the services offered under the National Health Insurance Scheme. Such issues need to move from becoming mere debates to issues that go onto the policy agenda. Further, as emphasised in the road map for repositioning family planning in Ghana, there is need for an increase in (1) political commitment, (2) public awareness and acceptance of family planning as important to national health and socioeconomic development, and (3) funding for family planning commodities and services (Ghana Health Service, 2006).

### Competing interest

Authors declare that they have no competing interests

### Author's contribution

Both authors conceived the study, undertook analysis and contributed to the write up of the manuscript. Both authors read and approved the final manuscript.

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<sup>i</sup> The focus of the current study is, however, on contraceptives as family planning methods

<sup>ii</sup> MDG targets on child health is to reduce infant and under five mortality by two thirds between 1990 and 2015. Similarly, the target on maternal health is to reduce maternal mortality by three quarters between 1990 and 2015

<sup>iii</sup> Unmet need for family planning or contraception is defined as the percentage of married women who want to space their next birth or stop child bearing entirely but are not using contraception.