Introduction

The right to reproductive choice and the contraceptive choices made to actualize reproductive preferences are established under a number of global agreements. For instance, International Conference on Population and Development (ICPD) adopted a the Programme of Action held that family planning programmes should understand that appropriate couples and individuals varied in method preference and that there was a need for women and men have information and access to the widest possible range of safe and effective family-planning methods in order to enable them to exercise free and informed choice (1). Also, the promotion of the widest availability of different contraceptive methods to facilitate method selection and meet people's needs and circumstances is one key strategy of the World Health Organization (2). Improving reproductive health is central to achieving the Millennium Development Goals on improving maternal health, reducing child mortality and eradicating extreme poverty (3)(4)(5) In Ghana, Contraceptive prevalence has generally stalled in the last decade at about 25%. The situation is not different in the Brong-Ahafo Region, where a mean CPR of about 25% has prevailed from 1998-2008 (6), leading some to speculate that Ghana's fertility transition may to a large extent be underpinned by abortions. Indeed, levels of mistimed and unwanted pregnancies remain high and unchanging as are indications that abortion plays a consistent role in shaping fertility dynamics in Ghana (7). Furthermore, the country also has relatively high levels of births to women over age 34, an indication of potential danger for maternal and child health in years to come. According to Johnson and others (2011), the need for improved family planning services and outreach is clear, in spite of Ghana's sustained fertility decline. Contraceptive use for women who desire to space or stop childbearing is of crucial importance as a determinant of maternal and infant survival. However, as in many developing countries, method choice is constrained by limited availability of supply.

Conceptually, contraceptive use and method choice is determined by women's motivation to space or limit childbearing (8). Method choice is again constrained by supply factors such as cost, proximity, time and the array of methods available (9), (10). Women's fertility preferences are also determined by demographic and socioeconomic factors such as age, education, occupation, etc. and are reinforced or affected in the interactions between women and other significant parties such as peers, spouse/partner, media, parents etc. While records exist separately on different aspects of this process, the opportunity to understand the various interactions as a coherent whole has so far been difficult.

The Kintampo North Municipality and the Kintampo South District are two primarily rural districts in the middle of Ghana. The two districts provide the setting for health research in the middle belt of Ghana, with the presence of the Kintampo Health research centre. The KHRC is one of three health research centres established by the Government of Ghana as field research centres. Maternal and child health has always been an important staple of research work undertaken at KHRC. It has become clear, however, especially in the last two years that Family Planning could perhaps be the missing link for a number of health challenges which have dogged the health delivery for a while. This study is based on a Sexual and Reproductive Health survey which was undertaken in 2011 mainly in response to this need. It aims to identify the methods chosen by non-pregnant women in union who desire to space or stop childbearing. It also intends to determine how contraceptive choices are influenced by women's fertility desires how these are in turn affected by demand generating and demand crystallizing factors such as socio-demographic and access factors. While it is clear that FP is important for women's health needs, there is still a dearth of

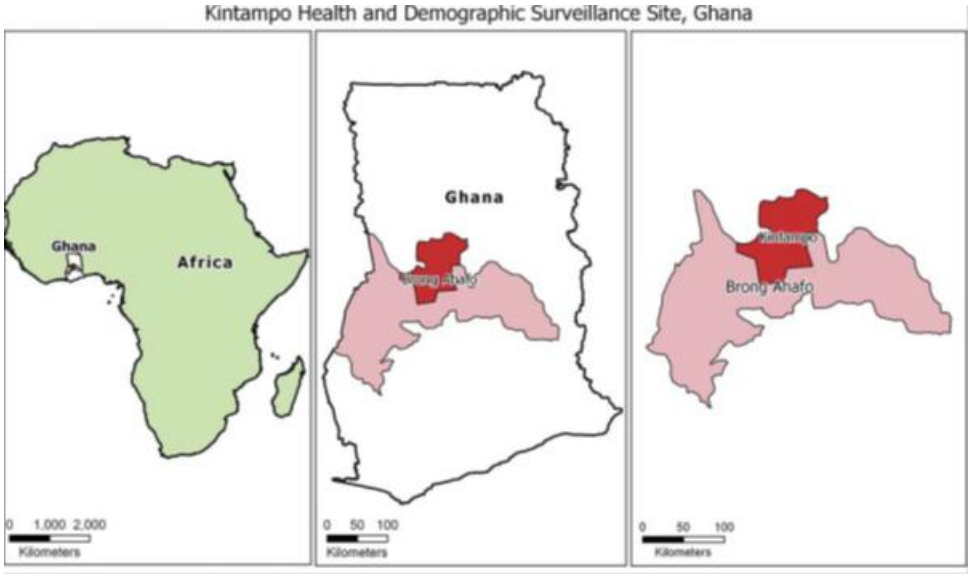
information concerning which methods women prefer and the factors which determine these choices. District health authorities compile records from hospitals and clinics. However, these do not always show which factors are the most important determinants of womens' contraceptive choice. These findings will therefore fill in the gaps and guide actionable steps for district health authorities.

Data and Methods

Overview of the the Kintampo Health and Demographic Surveillance Area

The Kintampo Health and Demographic Surveillance System (KHDSS) covers the Kintampo North Municipality and Kintampo South District in the Brong-Ahafo Region of Ghana. The KHDSS has monitored population dynamics in these two districts since January 2005. Until December 2010, each resident household was visited twice a year in two rounds of data collection. Since January 2011, there have been three rounds each year to update. Demographic and socioeconomic events such as births, deaths, migrations, education and household assets are recorded during these visits. The KHDSS has a surface area of 7,162 km^2, which is 18.1% of the total land area of the Brong-Ahafo Region (1) . Its strategic location makes it the geographical centre of Ghana (see Figure 1). The vegetation of the area is transitional, i.e. a mix of forest mainly in the south and savannah, mainly in north.

Figure 1: Location of the Kintampo Health and Demographic Surveillance System



By June 2011, the KHDSS had a total resident population of 142 366, residing in 156 communities and 31277 households. Three of the 156 communities are urban, i.e. with a resident population of 5000 or more (as defined by the Ghana Statistical Service) at the time of the survey. These are Kintampo township, Babator and Jema. Together, the urban communities constitute a third of the entire population of the KHDSS. The main sources of water are from streams and rivers (about 35%), hand-pumps (about 20%) and wells (about 25%). Only 3% of the households have water closet toilets, clustered mainly in Kintampo town.

About 40% of the population use open fields as toilets. Two-thirds of the population is farmers, with some small-scale merchandizing mainly in urban areas. The KHDSS has a total fertility rate of 4.4 and a life expectancy of 64 years as of 2010. Antenatal attendance among pregnant women is high, with more than 95% attending at least once.

Data source

The main source of data is the Sexual and Reproductive Health (SRH) Survey conducted by the Health and Demographic Surveillance System (KHDSS) of the Kintampo Health Research Centre (KHRC). The survey covered the Kintampo North Municipality and Kintampo South District of Ghana, which comprise the surveillance area. A simple random sample of 5576 women was drawn from a resident population of 35735 women aged 15 to 49 years from the KHDSS database, although sample of 4861 was required. This sample was deemed adequate to test the hypothesis that contraceptive prevalence rate (CPR) in the Kintampo HDSS is 29%,with a confidence interval (CI) of 95% and a precision of 0.012, together with an anticipated 15% loss to follow-up. This CPR is equivalent to that of the Brong-Ahafo Region from the 2008 Ghana Demographic and Health Survey (GSS et al, 2009). The current manuscript focuses on 1773 non-pregnant women in reproductive age 15 to 49 who were married or cohabiting, who desired to stop childbearing or have the next child after two or more years. This sample also excludes women who reported that they were unable to have children due to menopause, hysterectomy or any other reason. The interviews were conducted from July to December 2011 in all 156 villages comprising the KHDSS area.

Variables

The SRH survey asked women questions pertaining to their reproductive history, knowledge and ever-use of the Ghana Demographic and Health Survey list of contraceptive methods, current contraceptive use, fertility preferences and sexually transmitted infections. The outcome variable of interest in this study was the contraceptive method used by non-pregnant women in union or their partners during their last sexual intercourse. Available methods were categorized into four groups:

1. Long-lasting methods - methods that prevent pregnancy for months, years or permanently such as female and male sterilization, injectables, IUDs, injectables and implant,
2. Daily or episodic methods - methods used every day or applied before or soon after a sexual encounter such as pills, male and female condoms, diaphragm, foam, jelly and emergency contraception,
3. Natural methods – lactational amenorrhoea, rhythm and withdrawal
4. Not using any method at all

The explanatory variables of interest are grouped as:

1. Demand generating factors: These include individual demographic and socio-economic factors such as age, highest educational attainment, religion, ethnicity, occupation, household wealth quintile, district and type of place of residence, parity, number of living children and time since the last sexual intercourse. They also contain community factors such as modal educational attainment, modal ethnicity, modal religion, modal occupation, modal wealth quintiles, percent of

women with secondary education in the community, percent of women with professional/clerical occupations in the community, percent of households in least poor quintile in the community, mean parity and mean number of living children in the community.

2. Demand crystallizing factors: Media where FP messages were heard in the last few months (radio or television), places where FP messages were heard in the last few months (social activities or shops), visitation by FP fieldworkers and discussion of Family Planning with partner in the last few months.
3. Fertility preferences: Women's desire to space or stop childbearing.
4. Supply factors: Availability of a health facility in the community and the highest level of health facility available (i.e. hospital, health centre or private maternity home, or community health services compound). Health facilities are very important sources of FP information and logistics.

Analysis

There were three levels of analysis. The first level comprises basic descriptive statistics and tabulations of outcome and explanatory variables. At the bivariate level, each explanatory variable was separately fit in a multinomial regression model and a Wald test was performed. Only variables which were significant at 5% were included in multivariate models. After this, subsequent models were fit with variables which were significant at 5% after Wald test had been performed on them. This process was continued until a final model where all variables were significant at 5% according to the Wald test. Multivariate analyses involving multinomial logistic regression were performed using STATA 11.1 to account for the polytomous nominal categories in the outcome variables. Estimates are adjusted for sampling design using population weights in STATA's survey (svyset) feature, which also accounts for expected clustering within villages. The Wald test was selected in the absence of the likelihood test, which is not available with STATA's survey analysis feature.

Expected Outputs

Outputs to be shown are:

1. Tables showing percentage distribution of all explanatory variables and contraceptive method choice
2. Cross tabulations of all explanatory variables against contraceptive method choice with chi-squared tests for significance.
3. Multinomial logistic regression fitting:
    a. Each explanatory variable with a Wald test for significance at 5% are entered into model
    b. Final model with relative risk ratios presented

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