

# Extent of Awareness of Birth Control Methods and Their Use by Women in a Peri-Urban Area of Accra, Ghana

**Kwabena Asomanin Anaman, Joana Okailey Aku Okai**

Institute of Statistical, Social and Economic Research, University of Ghana, Accra, Ghana  
Email: kwabenaasomanin@hotmail.com, kanaman@ug.edu.gh

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## Abstract

The rapid population growth and economic expansion in Ghana over the last decade have made the management of its population increasingly important necessitating detailed confidential studies on use of birth control methods. This paper reports a highly confidential survey-based study undertaken to assess the extent of awareness of and factors influencing the use of birth control methods among 120 women aged between 15 and 49 years, in their reproductive lifespan, at Abokobi, a suburb of Accra, Ghana. The analysis showed that age was the main factor responsible for the general level of awareness of birth control methods. The use of birth control methods was positively related to the level of awareness of birth control methods, being in a current sexual relationship, and the number of children that the woman had. Students were less likely to use birth control methods than non-students suggesting the need for more recognition of abstinence as an alternative birth control method.

## Keywords

**Birth Control, Contraceptives, Economics of the Family, Family Planning, Reproductive Decisions**

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## 1. Introduction

During earlier human civilisations, an issue of high value to human societies was the ability to reproduce and to have as many children as possible. The larger the number of children a woman procreates, the greater the level of respect for the individual. In this modern era, many people look beyond subsistence living and prefer a more leisured, relaxed life and hence increasingly fewer societies are holding on to this perspective of life. This has led to an increased demand for scientific means for controlling birth rates. Many people in the modern era, dat-

ing from several centuries ago, have had the desire to decide when to have a child and when not to have one. In the modern era giving birth is one of the least motivating factors for people having sex especially for the unmarried who may want to have the pleasure of sex, but not with the intention of giving birth to children [1].

Contraceptives have been used in several forms for thousands of years throughout human history. A report by the United Nations Department of Economic and Social Affairs in 2011 indicates that the prevalence rate of contraceptive usage in the world increased from an average of 49.2% in 1980 to 62.7% in 2009. Sub-Saharan Africa which recorded an average prevalence rate of 11.2% in 1980 had its prevalence rate increased to 21.8% in 2009 [2]. However, many African women who need to avoid pregnancy and plan their families lack adequate access to modern contraceptive services. Modern contraceptive services are essential to women so that they can determine the size of their families, regulate childbirth and help to reduce maternal deaths and illnesses [3] [4].

A striking importance of birth control is the extent of pressure that large populations exert on economic and social facilities of a country. High levels of population create major limitations and constraints on economic progression and the ability of a country to make the necessary provision for the livelihood improvement of its citizens and the achievement of its national development targets and visions [5] [6]. For example, in Ghana, the annual growth rate of the population is 2.5% with the population doubling every 28 years. This high population growth puts pressure on infrastructure and public resources, especially in peri-urban and urban areas, around major cities such as Accra, the capital city of Ghana.

These peri-urban and urban areas in Ghana have even much higher population growth rates than the overall population growth rate of the country largely due to increasing rural-urban migration. For example, the Greater Accra region, one of the ten politically-administrative regions of Ghana, which hosts the national capital city, recorded a population of 4,010,054 in 2010, an increase from 491,817 in 1960, 851,614 in 1970, 1,431,099 in 1984, and 2,905,726 in 2000; an eight-fold increase over 50 years from 1960 to 2010, and an annual growth rate of 3.1% between 2000 and 2010 larger than the 2.5% annual growth of the entire population. Of particular importance to this study is that while the population increase in urban areas is in a greater part largely due to migration as compared to natural birth increase, in the agriculturally-dominated peri-urban areas close to the cities, the natural population increase is more dominant than that due to migration [7] [8].

In Ghana, since political independence on 6 March 1957, various governments have pledged a commitment to improve the quality of life of the people through measures such as the reduction of maternal and infant mortality. The population policy of the country was clearly articulated and documented in 1969 [9] [10]. This policy re-emphasised population control and a decrease in the total fertility rate with the belief that it would accelerate economic development based on the improved ability to take care of children and the young [11]. The population policy developed in 1969 was revised in 1994. The revised policy aimed to decrease the proportion of women below 20 years and above 34 years having births to 50% by the year 2010, decreasing to 80 percent rate by 2020 and also to make family planning services available, accessible and affordable to at least half of all adults by the year 2020. The use of contraceptives and birth control methods was to be a cornerstone of family planning services [9].

The prevalence rate of contraceptive use in Ghana increased from 12.9% in the 1980s to about 24% in 2010 [12]. The Ghana Statistical Service (GSS) (2004) reports that, out of four married women, one does not want any more children; yet less than half of their needs to limit future births are being met. The use of contraceptives in Ghana appears to be increasing largely due to campaigns of various governments. Analysis by Ghana Health Service showed that an increasing number of people are accessing family planning services from the private suppliers like pharmacy shops and drug stores as a result of the ease for obtaining such products. These factors indicate that access to family planning is improving [12] [13].

Among women and men aged 25 - 29, the median age at first sexual intercourse was 18.3 years and 19.6 years respectively in 2003 [9]. This trend is also reported in the 2008 Ghana Demographic and Health Survey report which indicates that men start sexual activity at a median age of about 20 years while women start at 18.4 years [14]. In general, women engage in sexual activity at an earlier age than men. In Ghana, the number of females enrolled in schools is lower than that of male enrolment as reported by the 2010 Population and Housing Census [7]. This lower enrolment could possibly impact on the ability and willingness of women to access information relating to their ability to control their birth rate by using family planning methods. Better-educated women are more willing to engage in innovative sexual lifestyles than for people who are less educated [15] [16].

Better educated women are also thought of having more knowledge of birth control methods and also of ways to obtain them than people who are less educated because of the level of literacy and much more familiarity with

modern institutions. For women especially, education has been seen as an important factor that promotes contraceptive usage in many developing countries like Ghana [17]. Awareness of contraception among women is therefore important and should be intensified to achieve the objective of reducing unplanned births.

While several research studies have been undertaken to assess the awareness and use of birth control methods by various groups of people in Ghana, the link between awareness of birth control methods and their use has not been fully analysed especially for low-income women in the child bearing age group. In particular, a distinction is needed to be made between general awareness of the existence of birth control methods, and specific awareness and information about the desirable attributes of the specific birth methods ideally required by women. Information about the desired attributes of birth control methods that meet the needs of women, especially those from low-income and disadvantaged backgrounds, must ultimately involve confidential personal-based surveys to elicit more accurate preferences of women in order to shape more appropriate policies.

The main objective of the study was to assess the extent of awareness and use of birth control methods by potentially child-bearing women between 15 to 49 years in Abokobi, a peri-urban, low-income area of Accra. The rest of the paper is organised as follows: the next section focuses on the review of relevant literature review followed by the presentation of the methodology. The results of the study are discussed in the fourth section. The conclusions and recommendations follow.

## 2. Literature Review

### 2.1. Definition and Types of Birth Control Methods

Birth control is the planned control of the birth rate by methods that prevent the conception of individuals [18]. Birth control is also defined as the spacing of children given birth to by individual families within a reasonable time period which helps the mother to give adequate care and effective weaning to a child before giving birth to another one. Birth control and family planning are often used interchangeably [19]. While birth control may be viewed as reducing the number of children a person may give birth to; family planning is equally perceived as scheduling or restructuring how to go about giving birth to a reasonable sizeable and manageable number of children by individual family units. In whichever case the essence of birth control or family planning is to give birth to a number of children which the individual family can take care of adequately [19].

Birth control methods are categorized into three groups based on their effectiveness and the nature of the products. These three groups are 1) long-acting contraceptive methods involving invasive procedures inside the human body such as surgery or implants which are reversible or non-reversible, 2) hormonal methods which are less invasive and have medium contraceptive impact, and 3) barriers and natural methods [20]-[22]. The first group of contraceptive methods which involve invasive procedures and have long-term acting effects includes implants, intra-uterine device (IUD), male sterilisation, female sterilisation and abortion. The second group consists of methods which involve minimal to modest invasive procedures into the human body and are largely hormonal in nature. This group includes injectable medicine, female pill and emergency contraceptive drug or pill. The third group, barriers and natural methods, includes condoms, rhythm or calendar method, foaming tablets and traditional birth control method based on planned abstinence of the woman from her husband or partner.

### 2.2. Awareness and Use of Birth Control Methods

The Cambridge Dictionary of the English language defines awareness as knowledge that something exists; or an understanding of a situation or subject based on the available information and experience. Basic information that a product exists is at the lower end of an awareness continuum scale for a product; at the higher end of the awareness continuum scale is high level of familiarity of the product including its prior use. Awareness of birth control methods is therefore the logical first step necessary for their use by women. Since intensity of awareness is related to the available information and experience, the extent of use of birth control methods is also dependent on the intensity of awareness of these methods.

Birth control methods play a crucial role in population management, poverty alleviation, and human development. Effective birth control methods have a wide range of benefits. These benefits include increased maternal and child survival, improved nutrition, better educational prospects, increased possibility of girls and women getting into places of authority both at home and in society, and the prevention of sexually-transmitted infections

[23] [24]. It is worthy of note that a certain level of awareness usually precedes the use of a particular birth control method. A certain level of awareness usually precedes the use of a particular birth control method. Factors influencing awareness of birth control methods identified in research works include locational endowment, personal factors such as education and age, economic factors as well as social and cultural factors [25].

Awareness of birth control methods especially contraceptives is high in Ghana. The 2003 Ghana Demographic and Health Survey (GDHS) confirmed this assertion by reporting that about 98 percent of women and about 99% of men had heard of at least one modern method of contraception. In the 2008 GDHS about 17% of married women used a modern method of family planning with an additional 7% using a traditional method. Injectable (6%) was the most frequently used method. This was followed by the pill; it was recorded that 5% of married women aged 15 to 49 years used this product in 2008 [12].

In a survey conducted among teenage pregnant women in Nigeria, there was a high level of general awareness as high as 91.7% among the women. This result showed the explorative instincts of youth hence their high level of awareness on birth control methods. From the study, the male condom and the combined oral pill ranked highest in terms of awareness. Despite the high level of general awareness of birth control methods, the use of more complicated methods was rare. The majority of youth who were aware of birth control methods received information from friends [26]. However, health workers were the major source of information on emergency contraception in Ghana [27]. The limitation of the latter study was that it failed to categorize the awareness related to the age of respondents; this categorisation could have possibly revealed the dependency of teenagers and youth on friends in terms of knowledge of contraception. In a population, the more innovative groups such as the younger, educated urban women were first to become aware of and also the first to use various contraceptives [28] [29].

There was a low level of patronage of contraceptives in city slums in Kenya. This was possibly be due to the fact that residents lived in poor conditions with low level of education and therefore did not appreciate contraceptive usage as compared to those who are were rich and well educated [30]. Educational attainment and employment status were some of the major factors influencing the use of birth control methods in Ghana. This was because education increases people's responsiveness and understanding of birth control methods. Employment status was identified as a major influence on the use of birth control methods as it related to urban working women who were busy following professional development path and were less likely to produce children as compared to non-professional women based in rural areas [29].

Religious beliefs have also been found as major factor that influences people's use of birth control methods. Fundamentalist adherents of some religions believe that child birth is a natural process ordained by God and therefore should not be hindered by any means. These fundamentalist believers are less likely to use contraceptives as established in some parts of Nigeria [31]. Husband-wife agreement, and spousal power relations can also influence use of contraceptives by women especially under marriage situations. Such power relations tend to be less important in non-marriage situations such as those involving career-minded young women who are unmarried and have consensual relations with men. The analysis of the influences of power relationships, within marriage and informal unions, on the use of contraceptives by women show mixed results [32].

### 2.3. Desirable Attributes of Birth Control Methods

Birth control methods or contraceptives are essentially products desired by people to use for particular purposes. From an economics viewpoint, any product demanded by people can be considered as a mix of desirable attributes or characteristics. It is the attributes of the product that the consumers demand [33]. For the case of contraceptive, a critical attribute is adequate information about the product. Desirable attributes of contraceptives suggested by low-income women in Mexico included minimization or absence of unpleasant side effects, effectiveness in avoiding pregnancy, partner acceptance which is related to the power-relation within the family-structure, and ease in inserting items into the human body. Other studies established that the three most important attributes required by women of demanded products were 1) effectiveness, 2) lack of side effects and 3) affordability [34] [35].

Affordability is important as enhanced family planning services targeted at low-income and rural people need to incorporate this attribute for sustainable use of these services [35] [36]. Availability and accessibility are also considered to be important attributes of birth control methods that are desired by women. Availability connotes the presence of a product in a particular community of women; however accessibility is related to the ease that

the woman can use the product and deals with the physical presence of a place to get the product and the amount of time that it takes to get to the place to get the product [37]. Other important attributes of birth control methods include their ability to prevent or minimize sexual infections and diseases from partners, self-administered means that reduce the need of trained medical personnel. The minimization and absence of side effects are also important desirable attributes of birth control methods. The side effects of various birth control methods, including probable acquisition of diseases from the partner, have been documented [38].

### 3. Methodology

#### 3.1. Description of Survey Procedures and Administration

The unit of analysis for the research study was females between the ages of 15 and 49 years at Abokobi, the capital town of the Ga East Municipal Assembly in the Greater Accra region of Ghana. The survey focussed geographically on the Abokobi township and involved the use of residential houses as the means through which the females could be contacted as these houses provided evidence of residential status of the respondents. Further given that the Government authorities do not have detailed information about people living in the area, the use of houses is the appropriate tool as these authorities, such as the local government District Assembly, has information on the number of houses in Abokobi Township. The survey of houses at Abokobi involved the scientific sampling procedures using the multi-stage cluster sampling procedures as used in Ghanaian and overseas contexts [39]-[42].

The sampling procedures were based on selecting an optimal size of 101 houses out of the total 404 houses in Abokobi as at the time of the survey. The desired maximum sampling error was 10%. The minimum optimal size ( $n$ ) of 101 was chosen based on a formula given as  $n = N/1 + N(e)^2$  where  $N$  is the total number of households and  $e$  is the margin of error (assumed to be 10% for this study) [43].

The survey was conducted over a period of five months from February to June 2014. A scientific calculator was employed using random sampling to choose randomly houses located in the eight different clusters. The houses in the clusters were numbered sequentially for easy tracking to avoid duplication. All women between the ages of 15 to 49 who were located in the randomly selected houses and were willing to participate in the study were interviewed. In two of the 101 houses, the contacted women were very busy with commitments and declined to be interviewed. Thus the 120 women interviewed came from 99 houses; 78 women came from single-household houses, and the remaining 42 women were from 21 houses that contained at least two households. The interviews were conducted based on ethical guidelines involving voluntary participation and clearly-expressed consent, and undertaken in the appropriate local Ghanaian language understood by the respondent.

The final questionnaire was developed after the pilot survey and it consisted of six main sections. Section A of the questionnaire captured general information on population and birth control methods in the Municipality. This section elicited the perceptions of respondents on birth control to control population. Section B dealt with the awareness of the different birth control methods. Section C focused on the use of birth control methods by the respondents. Section D requested details of the use and non-use of birth control methods. Section E elicited data relating to current use of birth control methods. Section F, the last component, asked questions related to the socioeconomic characteristics of the respondents including age, income level, education and marital status.

#### 3.2. Empirical Estimation of Models

The summary of the literature review suggests that in generality the use of birth control methods by adult women is dependent on the intensity of awareness of these products, and the attributes that are embodied in them. Other socio-economic factors such as age, education, employment, status, location and religiosity exert important influences on the use of birth control methods. A certain minimum amount of awareness about a birth control method is necessary before a woman can use the method. Hence, we use the generalisation of the Tobit model [44] to analyse the factors influencing awareness and use of birth control methods by women at Abokobi based on the sample selection model developed originally by Heckman [45]. The Tobit model is a one-stage estimation procedure while the generalized Tobit model of Heckman is a two-stage estimation procedure.

For the generalized Tobit model, in the first stage, a Probit equation model was used to estimate the likelihood of a woman using birth control methods. This first stage was dependent on the second stage model which was a multiple regression model dealing with factors influencing the level of general awareness of recognized birth

control methods. It is postulated that the likelihood of using birth control methods was dependent on the level of awareness of birth control methods. The first-stage probit model is described in Equation (1).

$$\text{EVERUSEBCM} = B_0 + B_1\text{CSEXRELA} + B_2\text{AWARENESS2} + B_3\text{EDU} + B_4\text{NCHILD} + B_5\text{STUDENT} + V_1 \quad (1)$$

where EVERUSEBCM was a dummy variable with 1 representing women who had ever used birth control methods (BCM) including those currently using BCM, and zero otherwise;

CSEXRELA was a dummy variable with 1 representing those who had current sexual relationships at the time of the survey and zero otherwise;

AWARENESS2 was the score of importance of awareness of the seven major birth control methods actually used by the respondents. These were 1) dual protection with the male wearing condom, 2) rhythm or calendar method, 3) withdrawal before ejaculation, 4) illegal abortion, 5) female pill, 6) injectable medicine and 7) emergency contraception. The scoring index was based on the zero to five Likert-type scale of awareness with 5 presenting the highest value of importance and zero representing complete lack of awareness;

EDU was the number of years of formal educational attainment of the respondent;

NCHILD was the number of children produced by the respondent;

STUDENT was a dummy variable with 1 representing respondents who were students at the time of the study and zero otherwise; and  $V_1$  was the equation error term.

The second-stage awareness of birth control methods model is described in Equation (2).

$$\text{AWARENESS1} = C_0 + C_1\text{AGE} + C_2\text{EDU} + V_2 \quad (2)$$

where AWARENESS1 was the average level of importance of awareness of the identified 18 birth control methods except the traditional abstinence method (used by 12 respondents). The scoring index was based on the zero to five Likert-type scale of awareness with 5 presenting the highest value of importance and zero representing complete lack of awareness;

AGE is the age of the woman respondents; and  $V_2$  is the equation error term.

The above two equations (Equation (1) and Equation (2)) were connected by estimating a correlation ( $\rho$ ) between their error terms,  $V_1$  and  $V_2$ . The two equations were jointly estimated using the SAMPSSEL command based on the Time Series Processor (TSP) software [46].

## 4. Results

### 4.1. Socio-Economic Characteristics of Survey Respondents

**Table 1** provides a summary of the socio-economic characteristics of the respondents who participated in the survey. About 45.8% of respondents were single, 35% were married, 5.8% had been divorced, 3.3% were widows, 9.2% were found to be in informal unions and 0.8% had separated from the partner. The study area is dominated by Christians. About 46.7% of the respondents were in the 15 - 25 years of age range while 34.2% were in the 26 - 37 years of age category. Another important socio-economic characteristic was the level of education attained. Almost half of the respondents had completed junior high school or its equivalent, 11.9% had completed some level of senior high school education but could not complete senior high school while 6.8% of the respondents had graduated from the senior high school and 5.1% had completed undergraduate university educational programmes. About 42.5% of the respondents were self-employed 19.2% were students, 8.3% were government sector employees, 14.2% were employed in the private sector while 1.7% were artisans.

**Table 2** reports average figures of selected socio-economic characteristics of respondents. The mean age for the whole group was approximately 28 years implying a youthful population. The average household size was approximately five. The number of male children born per woman was 0.8 while female children was 0.7 indicating slightly greater number of males to females born. The average total monthly personal income of respondents was about 700 Ghana Cedis (GHC). The average household income was GHC 1650. On average, 2.94 Ghana Cedis were worth one United States dollar in 2014.

### 4.2. Overview of Awareness of Birth Control Methods

The study identified 18 specific methods of birth control as follows: 1) Male condom, 2) Illegal abortion, 3) Female condom, 4) Injectable medicine, 5) Rhythm or calendar method, 6) Female pill, 7) Legal abortion, 8) Withdrawal before ejaculation, 9) Implant, 10) Emergency contraception pill, 11) Female sterilization, 12) Traditional herbs,

**Table 1.** Percentage of the 120 study participants based on their summary of socio-economic characteristics.

Item/group	Percentage (%)
<b>Age group</b>	
15 - 20	19.9
21 - 25	26.6
26 - 30	15.0
31 - 35	18.4
36 - 40	9.1
41 - 45	6.7
46 - 49	4.2
<b>Marital status</b>	
Single	45.8
Married	35.0
Informal unions	9.2
Divorced	5.8
Widowed	3.3
Separated	0.8
<b>Educational level</b>	
No formal education	4.2
Primary school	7.6
Junior high school	49.2
Some senior high school	11.9
Completed senior high school	6.8
Technical college/school	1.7
Diploma	4.2
Higher National Diploma	5.9
Bachelor degree	5.1
Other certificate	3.4
<b>Occupation</b>	
Self-employed/own business	42.0
Others such as student	19.3
Private sector employee	14.3
Unemployed	13.4
Government sector employee	8.4
Artisan	1.7
Farmer	0.8

**Table 2.** Summary of socio-economic characteristics of survey respondents based on averages.

Item	Mean	Standard deviation
Age (years)	28.3	9.3
Total personal income of respondents per month, Ghana Cedis (GHC)	700.0	8.3
Total household income of respondents per month (GHC)	1650.0	8.0
Number of people in the household	5.0	3.0
Number of children	1.5	1.9
Number of male children including living and those dead	0.8	1.2
Number of female children including living and those dead	0.7	1.0

13) Intra-uterine device (IUD), 14) Foaming tablet, 15) Men taking drugs to prevent pregnancy, 16) Male sterilization, 17) Breastfeeding method and 18) Traditional Ghanaian birth control method based on planned abstinence of the woman from her partner/spouse, for a few months and up to one year or more, after delivery of a baby.

**Table 3** presents the average score of awareness of each of the 18 identified birth control methods based on a Likert-scale scoring index from 0.0 to 5.0, with 0.0 indicating total lack of awareness of the birth control method and 5.0 the maximum level of awareness of the method. The seven most familiar methods of birth control were 1) male condom, 2) illegal abortion, 3) female condom, 4) injectable medicine, 5) rhythm or calendar method,

**Table 3.** Ranking of the level of awareness of birth control methods by respondents.

No.	Method	No.	Average score of importance	Standard deviation of score	Coefficient of variation
1.	Male condom	120	4.85	0.806	0.166
2.	Illegal abortion	120	4.77	0.837	0.175
3.	Female condom	120	4.58	1.275	0.278
4.	Injectable medicine	120	4.46	1.334	0.299
5.	Rhythm or calendar	120	4.43	1.493	0.337
6.	Female pill	120	4.30	1.510	0.351
7.	Legal abortion	120	4.22	1.711	0.405
8.	Withdrawal before ejaculation	120	3.94	1.972	0.501
9.	Implant	120	3.86	1.984	0.514
10.	Emergency contraception pill	120	3.76	2.080	0.554
11.	Female sterilization	120	3.40	2.243	0.660
12.	Traditional herbs	120	3.17	2.349	0.741
13.	IUD/coil/diaphragm	120	3.01	2.310	0.767
14.	Foaming tablet	120	2.75	2.359	0.858
15.	Men taking drugs to prevent pregnancy	120	2.52	2.394	0.950
16.	Male sterilization	120	2.08	2.407	1.157
17.	Breastfeeding method	120	2.07	2.354	1.137
18.	Traditional birth control based on planned abstinence from husband	120	0.18	0.907	5.039

*Notes:* The scoring is based on 5 denoting that item is very high level of awareness, 4 represented high level of awareness, 3 indicated moderate level of awareness, 2 represented low level of awareness, 1 represented very low level of awareness and 0 represented total lack of awareness of the particular birth control method. The coefficient of variation is the standard deviation divided by the mean score.

6) female pill and 7) legal abortion. All these seven methods were ranked above 4.0 in terms of the awareness intensity index, in the high awareness range.

The next six most familiar methods, in the moderate to high awareness range from 3.0 to 4.0, were 8) withdrawal before ejaculation method, 9) implant, 10) emergency contraception pill, 11) female sterilization, 12) traditional herbs and 13) IUD. The birth control methods considered to be lowly important in terms of level of awareness were 14) foaming tablet, 15) men taking drugs to prevent pregnancy, 16) male sterilization, 17) breastfeeding method, and 18) traditional birth control involving planned abstinence of the woman from her husband, which was known by only 12 women (10% of the sample).

### 4.3. Sources of Awareness and Information about Birth Control Methods

**Table 4** summarises the declared major sources of awareness of the five birth control methods which are long-acting and involve bodily-invasive procedures. Hospitals and clinics were the most important sources of information for implants, IUD and female sterilisation while peers and friends were the most important sources for both illegal and legal abortions. Television advertisements, sex education in schools and radio were considered moderately important sources of information for several birth control methods. The major sources of awareness for the hormonal methods are reported in **Table 5**. Peers and friends were the most important source of information for emergency contraceptive pill, traditional herbs and men taking hormonal medicine to prevent pregnancy. However, hospitals and clinics were also important sources of information, being the most important for injectable medicine and the second most important for the female pill and emergency contraceptive pill. Television advertisements were the most important source of information for the female pill reflecting the publicity campaigns of government agencies. Radio was an important source for men taking hormonal medicine. Sex education in schools was an important source of information for traditional herbs and men taking hormonal medicine.



**Table 4.** Respondents' declared major sources of awareness or information on the five birth control methods which are long-acting and involve bodily-invasive procedures using frequency analysis.

Birth control method	First most important source of information	Second most important source of information	Third most important source of information
Implants	Hospitals and clinics (64.6%)	Peers and friends (24.2%)	Television advertisements (19.2%)
IUD	Hospitals and clinics (57.5%)	Television advertisements (26.4%)	Peers and friends (23.0%)
Female sterilisation	Hospitals and clinics (48.8%)	Peers and friends (23.8%)	Sex education in schools (17.9%)
Illegal abortion	Peers and friends (61.8%)	Sex education in schools (15.3%)	Radio (11.7%)
Legal abortion	Peers and friends (44.3%)	Hospitals and clinics (25.2%)	Special television programmes (15.0%)

Note: The figures in parentheses are the proportions of respondents using that information source.

**Table 5.** Respondents' declared major sources of awareness or information on the five identified hormonal methods with medium term impact using frequency analysis.

Birth control method	First most important source of information	Second most important source of information	Third most important source of information
Injectable medicine	Hospitals and clinics (60.5%)	Television advertisements (36.8%)	Peers and friends (21.1%)
Female pill	Television advertisements (55.3%)	Hospitals and clinics (48.2%)	Peers and friends (34.2%)
Emergency contraceptive pill	Peers and friends (36.5%)	Hospitals and clinics (35.5%)	Television advertisements (32.3%)
Traditional herbs	Peers and friends (54.2%)	Parents, carers and older relatives (20.9%)	Sex education in schools (9.8%)
Men taking hormonal and related medicine to prevent pregnancy.	Peers and friends (70.2%)	Radio (21.0%)	Sex education in schools (7.5%)

Note: The figures in parentheses are the proportions of respondents using that information source.

As reported in **Table 6**, for the identified barriers and natural methods, the key sources of information were television advertisements, hospitals and clinics, peers and friends, and sex education in schools. Of particular importance is the role of television advertisements in being the most popular sources of information for both the male and female condoms. Another important result from **Table 6** is the relative low importance attached to hospitals and clinics as a source of information for the traditional method of planned abstinence.

#### 4.4. Overview of the Use of Birth Control Methods by Respondents

Forty out of the 120 respondents indicated that they had never used any of the 18 birth control methods *that involved sexual intercourse with a partner* (see **Table 3**). The other 80 respondents had used one or more of the 18 birth control methods either in the past or during the time of the survey involving sex with a partner. Out of the 80 respondents who had ever used a birth control method, 32 (40%) were using a birth control method for the first time during the previous 12 months preceding the survey that involved sex with a partner. Four more women were using a birth control method at the time of the survey but were not involved in sex with a partner as they were taking preventive action to avoid pregnancy in the case of a future sexual intercourse encounter. Thus 84 people or 70% of the 120 respondents had ever used one or more of the 18 birth control methods.

**Table 7** reports on the popularity of specific birth control methods in terms of actual use by respondents over two periods of time: within the 12 months preceding the survey and more than 12 months preceding the survey. The most popular birth control method that was currently used (within 12 months before the survey) was the rhythm or calendar method with 42.5% of birth control users applying this method. The next most popular methods in terms of current use were withdrawal before ejaculation (41.2%), dual protection with the use of male condom (21.7%) and injectable method (8.5%). In terms of past use of birth control methods (more than 12 months before preceding the survey), dual protection with the use of male condom (30.5%) was the most popular method followed by illegal abortion (18.5%), female pill (17.1%), withdrawal before ejaculation (11.1%) and rhythm or calendar method (10.8%). The least popular methods of birth control methods used by respondents were female sterilisation, men taking hormonal and related medicine to prevent pregnancy and male sterilisation all of which recorded zero percent usage in current or past time periods.

**Table 6.** Respondents' declared major sources of awareness or information on the seven identified barrier or natural methods of birth control methods using frequency analysis.

Birth control method	First most important source of information	Second most important source of information	Third most important source of information
Male condom	Television advertisements (71.4%)	Radio (48.2%)	Peers and friends (43.8%)
Female condom	Television advertisements (47.3%)	Hospitals and clinics (42.9%)	Peers and friends (31.2%)
Breastfeeding	Hospitals and clinics (55.0%)	Sex education in schools (18.3%)	Television advertisements (15.0%)
Foaming tablets	Hospitals and clinics (38.5%)	Peers and friends (31.8%)	Television advertisements (22.5%)
Rhythm	Peers and friends (51.3%)	Sex education in schools (30.7%)	Hospitals and clinics (23.2%)
Withdrawal before ejaculation	Peers and friends (69.6%)	Sex education in schools (18.5%)	Hospitals and clinics (7.7%)
Traditional method based on the planned abstinence with the woman staying away from partner for a period of time	Peers and friends (53.7%)	Parents, carers and older relatives (35.9%)	Hospitals and clinics (18.0%)

Note: The figures in parentheses are the proportions of respondents using that information source.

**Table 7.** Popularity of specific birth control methods over various time periods based on *the proportions of users of birth control methods* using a particular method and involving only the 84 respondents who had ever used a birth control method.

No.	Birth control method	Current use that is within 12 months preceding the survey (%)	Used in the past meaning more than one year preceding the survey (%)
1.	Rhythm or calendar method	42.5	10.8
2.	Withdrawal before ejaculation	41.3	11.1
3.	Dual protection with use of male condom	21.7	30.5
4.	Injectable method	9.5	8.5
5.	Female pill	7.2	17.1
6.	Emergency contraception pill	7.2	6.0
7.	Lactational amenorrhea method/ breastfeeding method	7.2	4.8
8.	Female condom	4.8	2.4
9.	Implant	4.8	0.0
10.	IUD/coil/diaphragm	2.4	0.0
11.	Illegal abortion	1.2	18.1
12.	Foaming tablet	1.2	4.8
13.	Traditional herbs	1.2	2.4
14.	Legal abortion	1.2	0.0
15.	Traditional birth control based on planned abstinence from husband	0.0	2.4
16.	Female sterilisation	0.0	0.0
17.	Men taking hormonal and related medicine to prevent pregnancy	0.0	0.0
18.	Male sterilisation	0.0	0.0

#### 4.5. Attributes Influencing Choice of Specific Birth Control Methods

As reported in the literature review, the choice of a birth control method, similar to other consumer products, is influenced greatly by the attributes embodied in the birth control method in line with the Lancaster demand theory. The survey elicited information from the 84 current and past users of various birth control methods on the key attributes that influenced their decision to choose and use specific methods. The attributes elicited included affordability and price, availability of product locally, low travel costs to pharmacy or clinic, access to adequate information about product, ease of inserting item into body, comfort in having item inside body, reliability in preventing pregnancy, safety in terms of minimal side effects, acceptance by male partner or spouse, peer influence and confidentiality and no embarrassment to either male or female partner in using the product.

As indicated in **Table 7**, only seven birth control methods were popularly used by the respondents. These are 1) dual protection with the male wearing condom, 2) rhythm or calendar method, 3) withdrawal before ejaculation, 4) illegal abortion, 5) female pill, 6) injectable medicine and 7) emergency contraception. The importance of the attributes in the choice of the use of these seven birth control methods is summarised in **Tables 8-14** respectively. It is clear that access to adequate information about the product was considered the most important attribute for the choice of the specific birth control method for all seven methods except for illegal abortion and emergency contraception pill (refer to **Tables 8-14**). For the latter two methods, their known reliability in ending pregnancy, was considered the most important attribute followed by the adequate information about the product attribute. Overall, for all the seven methods, safety in terms of minimal side effects and the ease of inserting into the body were considered the next two important attributes. The attribute, acceptance by the male partner or

**Table 8.** Average numerical ranking of the importance of attributes in the choice of the *dual protection with male wearing condoms*.

No.	Attribute	No.	Average score of importance	Standard deviation of score	Coefficient of variation
1	Access to adequate information about product	47	4.85	0.625	0.129
2	Low travel costs to pharmacy or clinic	47	4.79	0.778	0.162
3	Acceptance by male partner or spouse	48	4.75	0.863	0.182
4	Ease of inserting item into body	42	4.74	0.828	0.175
5	Reliability in preventing pregnancy	49	4.71	0.707	0.150
6	Availability of product locally	47	4.70	0.998	0.212
7	Confidentiality and no embarrassment	44	4.66	1.099	0.236
8	Safety in terms of minimal side effects	48	4.54	1.254	0.276
9	Comfort in having item inside body	43	4.33	1.410	0.326
10	Affordability and price	47	3.30	1.876	0.568

Notes: A score of 5 indicates “very high level of importance”, 4 is “high level of importance”, 3 is “moderately important”, 2 is “low level of importance” and 1 “very low level of importance”.

**Table 9.** Average numerical ranking of the importance of attributes in the choice of the *rhythm or calendar method*.

No.	Attribute	No.	Average score of importance	Standard deviation of score	Coefficient of variation
1	Access to adequate information about product	40	4.95	0.221	0.045
2	Confidentiality and no embarrassment	41	4.90	0.490	0.100
3	Safety in terms of minimal side effects	44	4.73	1.020	0.216
4	Acceptance by male partner or spouse	42	4.43	1.417	0.320
5	Reliability in preventing pregnancy	45	4.36	1.246	0.286
6	Affordability and price	39	3.97	1.724	0.434

Notes: A score of 5 indicates “very high level of importance”, 4 is “high level of importance”, 3 is “moderately important”, 2 is “low level of importance” and 1 “very low level of importance”.

**Table 10.** Average numerical ranking of the importance of attributes in the choice of *withdrawal method*.

No.	Attribute	No.	Average score of importance	Standard deviation of score	Coefficient of variation
1	Access to adequate information about product	24	5.00	0.000	0.000
2	Safety in terms of minimal side effects	33	4.85	0.712	0.147
3	Confidentiality and no embarrassment	32	4.84	0.723	0.149
4	Acceptance by male partner or spouse	33	4.82	0.727	0.151
5	Reliability in preventing pregnancy	32	4.66	0.827	0.177
6	Affordability and price	29	3.72	1.869	0.502

Notes: A score of 5 indicates “very high level of importance”, 4 is “high level of importance”, 3 is “moderately important”, 2 is “low level of importance” and 1 “very low level of importance”.

**Table 11.** Average numerical ranking of the importance of attributes in the choice of *illegal abortion*.

No.	Attribute	No.	Average score of importance	Standard deviation of score	Coefficient of variation
1	Reliability in ending pregnancy	18	4.61	1.145	0.248
2	Access to adequate information about product	18	4.39	1.335	0.304
3	Confidentiality and no embarrassment	18	4.00	1.715	0.429
4	Acceptance by male partner or spouse	18	3.89	1.844	0.474
5	Safety in terms of minimal side effects	18	3.83	1.757	0.459
6	Availability of product locally	18	3.56	1.688	0.474
7	Comfort in having item inside body	17	2.53	1.940	0.767
8	Low travel costs to pharmacy or clinic or hospital	17	2.47	1.940	0.785
9	Ease of inserting item into body	15	2.13	1.807	0.848
10	Affordability and price	18	1.89	1.711	0.905

Note: A score of 5 indicates “very high level of importance”, 4 is “high level of importance”, 3 is “moderately important”, 2 is “low level of importance” and 1 “very low level of importance”.

**Table 12.** Average numerical ranking of the importance of attributes in the choice of *female pill*.

No.	Attribute	No.	Average score of importance	Standard deviation of score	Coefficient of variation
1	Access to adequate information about product	17	4.94	0.243	0.049
2	Reliability in preventing pregnancy	20	4.75	0.786	0.165
3	Ease of inserting item into body	13	4.69	1.109	0.236
4	Low travel costs to pharmacy or clinic	18	4.67	0.840	0.180
5	Availability of product locally	18	4.61	0.778	0.169
6	Comfort in having item inside body	14	4.57	1.158	0.253
7	Confidentiality and no embarrassment	16	4.19	1.601	0.382
8	Safety in terms of minimal side effects	18	3.72	1.406	0.378
9	Affordability and price	18	3.56	1.886	0.530
10	Acceptance by male partner or spouse	17	3.00	1.904	0.635

Notes: A score of 5 indicates “very high level of importance”, 4 is “high level of importance”, 3 is “moderately important”, 2 is “low level of importance” and 1 “very low level of importance”.

**Table 13.** Average numerical ranking of the importance of attributes in the choice of *injectable medicine*.

No.	Attribute	No.	Average score of importance	Standard deviation of score	Coefficient of variation
1	Access to adequate information about product	16	4.69	0.793	0.169
2	Availability of product locally	16	4.69	1.014	0.216
3	Reliability in preventing pregnancy	16	4.69	1.014	0.216
4	Low travel costs to pharmacy or clinic	16	4.56	1.094	0.240
5	Confidentiality and no embarrassment	17	4.53	0.943	0.208
6	Ease of inserting item into body	15	4.40	1.183	0.269
7	Safety in terms of minimal side effects	16	4.19	1.424	0.340
8	Acceptance by male partner or spouse	16	4.19	1.601	0.382
9	Comfort in having item inside body	15	3.93	1.710	0.435
10	Affordability and price	15	3.33	1.839	0.552

Note: A score of 5 indicates “very high level of importance”, 4 is “high level of importance”, 3 is “moderately important”, 2 is “low level of importance” and 1 “very low level of importance”.

**Table 14.** Average numerical ranking of the importance of attributes in the choice of *emergency contraception*.

No.	Attribute	No.	Average score of importance	Standard deviation of score	Coefficient of variation
1	Reliability in preventing pregnancy	13	5.00	0.000	0.000
2	Access to adequate information about product	13	4.92	0.277	0.056
3	Ease of inserting item into body	11	4.64	0.924	0.199
4	Low travel costs to pharmacy or clinic	12	4.50	1.243	0.276
5	Availability of product locally	13	4.46	1.198	0.269
6	Affordability and price	12	4.42	1.379	0.312
7	Confidentiality and no embarrassment	12	4.33	1.073	0.248
8	Safety in terms of minimal side effects	12	4.25	1.422	0.335
9	Comfort in having item inside body	12	4.17	1.528	0.366
10	Acceptance by male partner or spouse	13	3.77	1.691	0.449

Notes: A score of 5 indicates “very high level of importance”, 4 is “high level of importance”, 3 is “moderately important”, 2 is “low level of importance” and 1 “very low level of importance”.

spouse, was ranked highly but was not the most important attribute for any of the seven birth control methods. This attribute was also ranked the lowest for the female pill and emergency contraception pill. This result suggested that power relationship between the woman and her male partner or spouse was not the most important factor influencing the choice of contraceptives by the woman. For all seven birth control methods, the relatively moderate ranking assigned to affordability and price attribute reflected the subsidisation of contraceptives which made them relatively affordable to the population.

#### 4.6. Results of the Regression Analysis of Awareness and Use of Birth Control Methods

**Table 15** provides the results of the generalised Tobit regression model analysis of the factors influencing the awareness of and use of birth control methods by the respondents. The results from the component Tobit regression model showed that specific awareness of the birth control methods, being in a current sexual relationship with a partner and the number of children that a woman had significantly and positively influenced the likelihood of her using birth control methods. Students were significantly less likely to use birth control methods than non-students due to the desire for abstinence from sex in order to complete their studies as indicated by several students during the interviewing process.

**Table 15.** Results of the Generalised Tobit regression analysis of woman's use or non-use of birth control methods. (a) The dependent variable of the first part of the model is EVERUSEBCM and it was estimated using the probit model; (b) The dependent variable of the second part of the model is AWARENESS1 and this was estimated by maximum likelihood procedure.

(a)

Explanatory variable	Parameter estimate (B)	Student t value	Probability level of significance
CONSTANT	-4.934	-10.544	0.000*
AWARENESS2	1.001	9.817	0.000*
CSEXRELA	0.305	9.813	0.000*
NCHILD	0.174	9.816	0.000*
EDU	0.050	1.153	0.249
STUDENT	-0.095	-9.601	0.000*

(b)

Explanatory variable	Parameter estimate (B)	Student t value	Probability level of significance
CONSTANT	3.861	18.265	0.000*
AGE	0.011	342.601	0.000*
EDU	0.001	0.032	0.974
SIGMA	0.904	9.818	0.000*

Notes: The sample size available for the analysis was 110 due to missing values for some variables. \*Parameter was statistically significant at the 5% confidence level used for the study.

The general awareness of birth control methods regression analysis indicated that increasing age of the woman led to increased general awareness of birth control methods as shown by another study [47]. However, our finding, in contrast to the previous study, indicated that the level of educational attainment of the woman *per se* did not significantly influence the level of general awareness of birth control methods. The results of our study dealing with actual use of birth control methods are corroborated by Casterline *et al.* (2001), who in their study on obstacles to contraceptive use in Pakistan, established that lack of knowledge and awareness was one of the major obstacles to contraceptive usage. They asserted that as more people increased their knowledge on birth control they were likely to use birth control methods. The findings of Rustagi *et al.* (2010) also supported the positive relationship between use of birth control methods and awareness [48]. On the other hand, a positive relationship between current marriage status and use of birth control methods is shown in another study [49]. This result is in contrast to the results of our study which rather showed a positive relationship between the number of children that a woman had and use of birth control methods instead of her marriage status.

## 5. Conclusions

The study reported in this paper was a highly-confidential survey undertaken to assess the awareness of and factors influencing the use of birth control methods among 120 women aged between 15 and 49 years, in their reproductive lifespan. The results of the analysis indicated that all the 120 women respondents were aware of at least one birth control method. Altogether, 18 birth control methods were identified. Increasing age was the main factor responsible for the general level of awareness of birth control methods. Use of birth control methods was significantly and positively related to the level of awareness of birth control methods, being in a current sexual relationship, and the number of children that the woman had.

Students were less likely to use birth control methods than non-students suggesting recognition of temporary abstinence from sex as alternative birth control method. However, the relatively low awareness of birth control methods exhibited by relatively younger women suggested the need of government and non-governmental organisations to establish and/or expand programmes related to sex education and family planning for younger women through outreach programmes in churches, schools and community-operated social centres and institutions such as the local government offices. Community sensitization programmes should be persistently undertaken to clear misconceptions on birth control methods especially on the female condom. The low level of awareness of the traditional Ghanaian method of abstinence from husband/partner for several months after delivery of baby by women should be tackled through the provision of more information on this method by hospi-

tals and clinics to pregnant and nursing mothers and those who attend pre-natal counselling sessions at urban and peri-urban health centres. Finally, future studies on the use of contraceptives in Ghana need to analyse in more detail the influence of career choices made by women on the use of contraceptives as undertaken elsewhere in the world [50].

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