University of the Witwatersrand

Faculty of Health Sciences

School of Public Health

INTENTION TO USE CONTRACEPTION AND SUBSEQUENT CONTRACEPTIVE BEHAVIOR

Maurice Mutisya Joseph

Student Number: 0611835H

A Research Report submitted to the School of Public Health, Faculty of Health Sciences; University of Witwatersrand in partial fulfillment of the requirements for the Degree of Master of Science in the Field of Population Based Field Epidemiology for the 2007 academic year.

Johannesburg, 2007

Declaration

I, Maurice Mutisya Joseph declare that this research report is my own work. It is being submitted for the degree of Master of Science in the Field of Population Based Field Epidemiology in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or Examination at this or any other University.

15 Day of November 07

Dedication

To my dearest

Mum,

Regina,

&

John my son

Abstract

Context: Estimating demand for contraception from married women only may misrepresent unmet need for family planning; given that unmarried women, who are often young, are equally if not more exposed to unwanted pregnancy and have good reasons to practice contraception. Past studies mainly focused on married women, which limits the ability to estimate demand among all women; specifically it is unclear if intention to use contraception among married women predicts use among all women.

Methods: The study site is a rural, marginalized district in northern Ghana, where contraceptive use is low based on the complex interplay of culture, preferences and contraceptive availability. The district is a site under demographic surveillance since 1993. Using data collected longitudinally from 1995 to 2003, this study examines if intention to use contraception among all women can be used to predict their actual use. The study also describes the main contraceptive methods used and reasons for non-use in the district. A panel survey was introduced to monitor changes in fertility and contraceptive use following the introduction of a community health and family planning intervention project. Data from the 2001 and 2003 panel survey were used for the analysis. The sample consisted of 2827 non-users of contraception in the baseline year (2001). Logistic regression analysis was used to calculate the adjusted effect of contraceptive intention on future use.

Results: About two thirds (65%) of the respondents were in a marital union while 23% had never been married. Among all women, those who expressed the need to use contraception were more than twice as likely to have used contraception when compared with those without such intentions (OR 2.04; CI: 1.47; 2.82). Among the married women, those with intention to use contraception were close to two times as likely to have used contraception compared to those without (OR 1.88; CI: 1.31; 2.72). The main family planning methods

used were injectables (55%) followed by prolonged abstinence (22%) and the pill (10%). More than half of the women not using a method reported not being at risk as the main reason for non-use. Results for all women and for married women alone demonstrate that, in this setting, intention can be used to predict future use.

Conclusion: Stated contraceptive intention is a significant determinant and measure of future family planning needs when the needs of unmarried women as well as married women are considered. Unmarried women and not only married women should therefore be a focus in family planning studies for their intentions count in determining who is in need of contraception and the nature and scale of that need.

Acknowledgement

First, I am deeply indebted to the Almighty God for keeping me alive and giving me the strength and wisdom to carry on.

Secondly, I am grateful to INDEPTH NETWORK, Ghana and other donors for granting me financial assistance to achieve my dream. Your great support has pushed me a notch higher, without which if it was not for it I might not have achieved.

In particular, I am immensely grateful to my supervisors: Professor Steve Tollman, Dr. Patricia Akweongo and Dr. Cornelius Debpuur for their dedication, and painstakingly supervising my work.

Much appreciation goes to the Director of Navrongo Health Research Center (NHRC) Dr. Abraham Hodgson for allowing me to use the Center's data towards developing my research report. I cannot forget the much support accorded me by the NHRC staff especially Martin Adjuik and Ernest Kanyomse and others during my residency. What I can only say to you all is "Thanks, you made me feel at home!"

I am much beholden to the Director of African Population and Health Research Center (APHRC) Dr. Alex Ezeh for granting me time off to pursue my studies and his trust in me. In addition, my appreciation goes to the entire APHRC staff especially Dr. Eliya Zulu for their prayers, moral and material support.

I am grateful to my Academic coordinator Dr. Khin Tint and my lecturers at Wits University, SPH for being of such a great support. You embedded great knowledge in me by bringing a different world that I never knew ever existed. Kudos to you all!

Finally, I am humbled of my family, friends, and classmates for their prayers, moral and financial support and their encouragement. You were there at all times; your encouraging words gave me the strength and determination to move on. Thank you once more!

Table of Contents

List of Figures

List of Tables

List of abbreviations

CHFP	Community Health and Family Planning Project
DHS	Demographic and Health Surveys
DSS	Demographic Surveillance system
HRS 2	Household Registration System 2
ICPD	International Conference on Population and Development
KND	Kassena-Nankana District
MDG	Millennium Development Goal
MoH	Ministry of Health
NDSS	Navrongo Demographic Surveillance System
NHRC	Navrongo Health Research Center
OR	Odds Ratio
SSA	Sub Saharan Africa
TFR	Total Fertility Rate
VAST	Vitamin A Supplementation Trial

CHAPTER 1

1.0. Introduction

This chapter gives a brief over view of the study, a statement of the problem and objectives of the study. It also provides an in-depth review of the literature on contraceptive intention and subsequent use. Key findings from related publications in the literature on what influences contraception use, and gaps in understanding, are discussed extensively.

1.1. Background

High fertility rate has been one of the biggest problems and challenges in Sub Saharan Africa (SSA). Most countries in the region are experiencing annual population growth above the replacement level; that is above 2.1% per annum. It is hypothesized that if this growth continues the population of SSA will be doubling after every 36 years[1]. High fertility is associated with many consequences; constraints to social amenities like schools, health facilities and economic development, which leads to poor health and high illiteracy. Poor health and high illiteracy results in poverty, poor health of the mother and child and increased gender inequalities[1].

In order to reduce high fertility, most governments in SSA have tried to promote family planning programs. Towards the end of 20th century, therefore, most SSA countries had experienced a decline in fertility rate. Kenya is a case in point where total fertility rate decreased from eight births per woman in 1979 to 4.8 births in 1998 and contraception in the same period rose from 7% to 27% in 1998[1]. Thereafter fertility rate stagnated. There is thus sufficient empirical evidence that fertility and contraception are correlated[1,2]. However, SSA is still experiencing high fertility compared to Asia and Latin America despite the fact that contraceptive knowledge is high[2,3,4]. The question that then arises is what determines contraceptive use? Many studies have attempted to answer this question and of late, there are

many known determinants of contraception: Spousal communication, unmet needs, socio economic status (education, occupation) and fertility intentions, among others[3,5,6,7,8]. However, the effect of these determinants varies from one region to another and even within regions. For example, spousal communication may be a strong predictor of contraception in one setting but may fail to be significant in another[9].

A shift of focus in the literature from contraceptive prevalence and supply to unmet needs (demand), has also been witnessed over the last four decades[10]. The Growing numbers of married women whose fertility intention was either to limit or space child bearing but who were not using any method to achieve such intention fueled this. Many efforts since then have been made to understand unmet need and its influence on contraceptive use. In addition, efforts at understanding the variation between contraceptive use and fertility intention have formed the basis of studies on unmet need[10]. Despite the many studies on unmet need, there is no one unique definition of unmet need. Rather there exists several definitions of unmet need and, depending on which definition is adopted, different results are arrived at. It was earlier thought that unmet need could be used to estimate the demand for contraception[10]. However, without a single, common definition of unmet need, it is difficult to estimate this demand for contraception.

1.2. Statement of the problem

Contraceptive demand is a reflection of the desires or expectations of women in need of contraception and encompasses actual use and potential/latent need to use contraception. The gap between current contraceptive prevalence and demand remains unfilled[10]. While the literature on contraceptive prevalence and unmet need is extensive, rather little is known on how to estimate directly contraceptive demand. The study of unmet need was initially thought to fill this gap but this is not the case. There is therefore a need to have a direct measure of

contraceptive demand. To do this, researchers have argued that one needs to understand how *intention* to use contraception influences future use[11]. To achieve this, recent studies in the Demographic and Health Survey (DHS) ask women of reproductive age whether they intend to practice contraception in the near future or within the next twelve months from the date of interview[12]. DHS studies are surveys carried out in the developing nations. They are conducted at household level and are nationally representative. They are generally conducted after every five years as part of meeting their main objective of making available data that is nationally representative and comparable at the household level over time.

However, some evidence from the few studies carried out on intention to use contraception and actual behavior exists. Such studies have had flaws like large loss to follow up or were based on cross sectional surveys that were meant to address different issues. They also had long inter-survey periods diluting the reliability of stated contraceptive intentions. These earlier studies also considered only married women. The problem then is "do all women of reproductive age (regardless of marital status) who express the intention to use contraception end up doing so?"[11,13] This study focuses on contraceptive intention and future behavior among all women. It also seeks to understand the different contraceptive methods used and reasons related to non-use.

1.3. Justification

In studying intention to use contraception, one can estimate unmet need as well as estimate the demand for contraception since intention to use and unmet need are known to overlap[11,13]. In this study unmet need refers to fecund married women or women in consensual union who are of reproductive age (usually 15-49 years), who express the need either to stop (limit) or postpone childbearing for at least two years (spacing) and who are not using any method (either traditional or modern) of contraception to prevent

pregnancy[16]. However in this study unmet need will include unmarried women of reproductive age. While, demand for contraception is made up of those people who are actually using a method and those with unmet needs. Thus unmet need is a major component in calculating contraceptive demand. The overlap between contraceptive intention and unmet need is determined by how unmet need is defined. Based on the above DHS definition of unmet need it has been established that in most of the SSA countries, 90% of married women who intend to practice contraception have unmet need but only two thirds of married women with unmet need for contraception intend to actually use a method[4,13]. This discrepancy is explained by who is included in the definition of unmet need; in most cases only married women are included in the definition. However, intention to use contraception is an individual's own statement and its overlap with "unmet need" can be thought of as an aggregate concept for measuring latent demand for contraception. Despite this, low use of contraception among married women with unmet need poses risk for unwanted pregnancies, increased fertility, and social and health-related consequences for the mother and child. These consequences are more pronounced in SSA where low contraceptive prevalence is coupled with high fertility and increasing demand for fewer children. Thus, it is necessary to understand the relationship between unmet needs, contraceptive intention and contraceptive use. To bridge this gap, and to understand how to fulfill unmet needs, it is salient to have empirical evidence of how contraceptive intention influences future contraceptive use. Thus, this relationship between contraceptive intention and unmet need is an important one, since it determines who family planning programmes needs to target.

Moreover, there are discrepancies in results from previous studies on intention to use contraception. Some studies show that intention is a strong predictor of contraception while

in other studies intention is not[12,13,14]. Furthermore, contraceptive use varies across cultural settings and therefore findings in one setting may not be generalizable to other settings[12,15].

One valuable but seldom used method to estimate contraceptive demand is through studying intentions and subsequent behavior[11,13]. Since expression of intention to use contraception is an individual's own statement, it could be thought of as the most reliable and direct measure of subsequent/future behavior[16]. The lack of longitudinal data with which to measure subsequent behavior following stated intentions may have contributed to there not being a direct measure for contraceptive demand. This is because most family planning studies use cross-sectional data, which cannot be used to answer how stated intentions influence future contraceptive use as they lack follow up of subjects,[12,17] while the few longitudinal studies used demonstrate weaknesses like high loss to follow and long inter survey periods. In this study, longitudinal data from panel surveys conducted annually from 1995 to 2003 are available. For this study, data from the 2001 and 2003 panel survey were used for the analysis.

1.4. Definition of Terms

"Non users" refers to women who were not using any method of contraception at the time of survey.

"Intention to use" This term is used to refer to the kind or type of intention expressed by a contraceptive non-user during the baseline year (2001) i.e. whether a non-user was expecting to adopt a method in the future or not.

"Subsequent behavior" in this context refers to the respondent's status of contraceptive use in 2003 following their expressed contraceptive intention in 2001.

"Parity" refers to children ever born by a woman. In this study, it only includes the number of surviving children of a woman.

1.5. Literature Review

Few studies on contraceptive intention and subsequent behavior have been carried out. The most recent include ones by Curtis & Westoff (1996), Ross & Heaton (1997), Magnani et al (1999) and Roy et al (2003). Most of these studies found that intention to practice contraceptive is a good predictor of future contraceptive use. Most concluded that married women who expressed their intention to use a method of contraception were more likely to do so in the future than their counterparts who did not express any intention[12,13,18]. The study by Curtis & Westoff, 1996 carried out in Morocco found that the overall/unadjusted effect of intention and subsequent use among those who intended to use contraception was seven times that of those with no intentions, with the adjusted ratio being 2.6 times.

A study in Central India showed that married women who expressed both fertility preferences and contraceptive intentions were more likely to use a method than married women who expressed only one intention or none at all[12]. Overall, those expressing an intention to practice contraception were more likely to use a method than those who had no contraceptive intention. Both studies concluded that intention to use contraception is a good predictor of future contraception. In the Moroccan study, characteristics (like education, parity and fertility intention) of those who were lost to follow up were different from those who remained in the study although contraceptive intention were the same in both groups. The differences in characteristics between those lost to follow up and those who stayed in the study are likely to have biased the results.

In the study in Central India, the inter survey period was long ranging from six to seven years reducing the reliability of stated intentions. The cultural setting and practices of India are quite different from existing practices in SSA. India has massive and coercive family planning policies and contraceptive prevalence is high. Moreover permanent methods like

sterilization are common[13,19]. In both of these studies, loss to follow up was evident with the study carried in Morocco being 28% and central India being 44%. This could have biased the results.

Using the same survey data from Morocco, a later analysis found that after controlling fully for the determinants of contraception, intention fails to be a predictor for contraceptive adoption[14]. The main factor introduced in the further study in Morocco was supply of contraception, which removed the earlier observed association between intention to use and subsequent use. The study concluded that, the earlier results were due to failure to fully control for factors that determine adoption of contraception[14]. The second Morocco study emphasizes the need and importance of carefully selecting variables as well as confounders in order to avoid misleading results. However, the conclusion of this later study- that women who intend to use a method are motivated to do so and will find other sources of supply even when the closest supply point is inadequate- implies that these women were more likely to stick to their stated intention despite the supply environment.

Intentions are dynamic and hence are bound to change over time. However, social psychologists support the fact that intentions are good predictors of subsequent behavior[13], while they are stable. Sheeran and Orbell (1999) express a similar opinion saying that stated intentions are likely to translate to actual use in the future; but it should not be concluded that all intentions translate to the intended behavior. This is because intentions are influenced by either personal attitudes or subjective cultural norms as in the Fishbein model of planned behavior, which has been widely applied[20,21]. Personal attitudes deal with the nature of perception toward the intended behavior by an individual. Individuals with positive attitude (approve use of family planning) towards their stated intentions, are more likely to implement

their stated intentions compared to those with negative attitudes (disapprove use of family planning)[21].

Nonetheless, there are other subjective influences like friend's and communities' approval of the perceived or intended behavior, coupled with environmental factors, that determine the implementation of the stated intentions[20,21]. This shows that personal intention interrelates with other factors that play a major role in determining whether stated intentions will be implemented or not. The next section will briefly discuss some of these factors.

One other important factor that stimulates adherence to stated intention is past behavior and experience[21,22]. Studies have shown that past contraceptive users are more likely to adopt than those without prior knowledge on use, with one study concluding that women with unmet need lacked prior knowledge of contraception[12,18]. This is because past users are knowledgeable about different types of contraception; know the advantages and disadvantages of contraceptive methods; and are likely to state firm intentions to which the probability of adhering is high. Other studies have supported this finding, indicating that method adoption is likely to ensue when intentions are held with greater conviction[21,23].

Recently, there is increasing evidence of the role of diffusion of values and ideas on contraception through social networking and interaction[24]. These studies show increase in contraceptive use among women who discuss contraception with their peers, husbands/partners or in their social groupings[5,24]. Furthermore, it is noted that the effect of social networking seems more pronounced in communities with high fertility rate, where it influences the need to adopt a method among the non-users[25]. The rationale is that positive social interaction serves as an encouragement and shows tolerance of the intended behavior in the community, which in turn builds confidence among those with intentions[5,26]. This is strengthened by the fact that individuals do not make decisions in isolation but through

interacting with one another[25]. The implication of this is a higher adherence rate to stated intention in that community if contraception is socially acceptable[5].

A similar pattern of the influence of social networking has been observed in the Kassena-Nankana district of northern Ghana. For instance, after the introduction of the Community Health and Family Planning Project (CHFP) in the Kassena-Nankana district in 1995, contraceptive use increased substantially from 4% initially to 12% in 2003[27]. This current rate is still low, however. Initially the proportion of women reporting use of contraceptives after the introduction of the CHFP was low because of denial of use[28]. This was a response to fears and anxieties among men who were apprehensive that this might promote promiscuity among their women, affect their decision-making and autonomy in addition to women abandoning their responsibility for childbearing[29].

Despite the apprehensions, the gap between current use, stated intentions of women and their motivation to control fertility was and is still wide. The investigators argue that this gap is due to women's lack of autonomy, and the multiple actors (husband, extended family and the community) involved in making contraceptive decisions[29]. It is with this difficulty in decision-making on contraceptive use that leads to clandestine contraceptive use among women[30]. High covert use is clearly depicted in the Kassena-Nankana district where reports of the woman's contraceptive use, obtained separately from husband and wife, differed significantly. For instance in 1995, 70% of men studied stated that their women were not using a method but only 19% of their partners denied use[28].

Nevertheless, accessibility of contraception is an important determinant of contraceptive use. Differences in contraceptive supply influence both contraceptive intention and use. This is because contraceptive intention involves decision-making that are influenced by the supply environment. Thus, individual women staying in areas of favorable contraceptive access are

likely to use a method than those in less favorable supply environments[14]. In spite of this, data for this study is from a panel survey meant to evaluate an experimental project where there was unequal distribution of family planning. The only other way to determine and control for the supply/accessibility effect is to look at the effects of each arm of treatment on contraceptive use and examine whether there are any differences in contraceptive adoption between the different experimental cells.

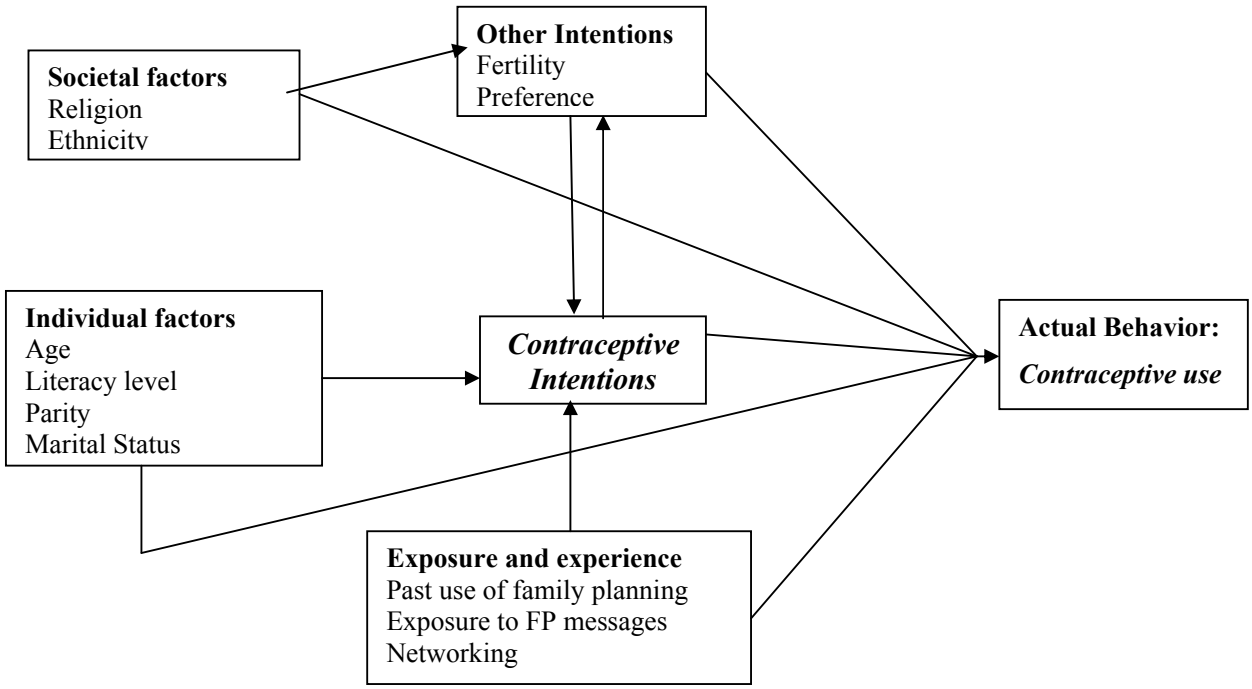
Contraception is also affected by other factors: such as demographic and socioeconomic characteristics of the target population. Women residing in rural areas have a low probability of using a method compared to those in urban places. This difference is usually explained by accessibility of family planning methods as well as disparities in socioeconomic status like education[6,12]. Differences in use are also noted between the young and the aged. The middle aged women who are mostly in their reproductive life want to space their births and are likely to use contraception to achieve this desire. Some older women have the need to limit their births while others have achieved their menopause. Hence the odds of use is mainly higher among the middle aged that the young and older women[14, 31]. It is also noted that contraceptive use increases with increased parity. This means that women with more children have a high likelihood of adopting a method. Moreover, educated women are well informed, are economically empowered and have a high decision making autonomy compared to their counterparts with little or no education. Hence, they have the highest probability of adopting a method and a desire for smaller families[32]. Similarly, women in the high socio economic group desire smaller families than those of low socioeconomic status, and hence have a high probability of adopting a method[33].

Moreover, contraceptive use is known to mediate between fertility intention and subsequent fertility behavior, which in turn influence contraceptive intention. Thus, such competing

intentions are important in this study in that change of fertility intention can be used to determine contraceptive intention and subsequent use. The family planning in SSA is not well developed and several hurdles that hinder contraceptive adoption have been observed over time. Approval and social support of contraception happen to be among these hurdles. Such influences like spousal approval and communication are evident in determining contraceptive use[5,34] and intentions are built around such influences.

In summary, contraceptive use is determined by several factors as discussed in the literature. Some of these factors have direct influence on contraceptive use. However, it may not be possible for one factor to entirely determine contraceptive use, but rather, these factors are interrelated. Also contraceptive intention is influenced by some of these other factors, like fertility preference, exposure to family planning messages and networking among women of reproductive age. This interrelationship is show in the below conceptual model.

Conceptual model of Intention to use contraception and subsequent use



1.6. Aim and objectives of the study

To determine how stated intention to use contraception correlates with subsequent contraceptive behavior among all women aged between 15 and 45 years in the Kassena-Nankana district of the Upper East region of Ghana, over the period 2001 to 2003.

1.6.1. Specific objectives

1. To examine the association between stated intention to use contraceptives and subsequent contraceptive behavior among all women aged between 15 and 45 years in the Kassena-Nankana district, Ghana over the period 2001 to 2003.
2. To describe the main contraceptive methods used among all women aged between 15 and 45 years in the Kassena-Nankana district, Ghana.
3. To identify and describe the main reasons for non-use of contraception among all women aged between 15 and 45 years in the Kassena-Nankana district, Ghana.

1.7. Gaps in previous studies

Most of the studies discussed above and others adhering to fertility intention focused on married women, since they are considered to be at high risk of falling pregnant[12,13,14,21]. In recent times, age at marriage has increased in developing countries[16]. This implies that there are increasing numbers of women who are young and sexually active but unmarried, and are thus often left out of these studies. In fact, data from DHS studies in SSA indicate age at sexual debut to be lower than age at first marriage and this is lower than other regions like North Africa where the age difference is not pronounced. In SSA, the median age at first intercourse is less than 17 years compared to North Africa and West India where it is at least 19 years. In SSA more than one third of such women at this age are sexually experienced[35,36].

Traditional values on premarital sex and childbearing have given way to modern lifestyle. These traditional values confined sex and responsibility for childbearing after marriage. Of late, these are taking place outside marriage life. The weakening of traditional values and attitudes have brought about change in adolescent sexuality in SSA predisposing young unmarried women to risks of unwanted pregnancies, school dropouts, and sexually transmitted diseases[35,36]. Moreover, the unweighted percentage of unmet need for contraception among young unmarried women ranges from 35% in Latin America to 40% in Africa[1]. With such high levels of unmet needs, it is expected that this group of young unmarried women would express a desire to adopt contraception.

Moreover, most of these women are yet to start their reproductive life; thus are more explicit in their contraceptive intentions than their fertility desires[10]. In 1994, delegates from various countries met in Cairo at the International Conference on Population and Development (ICPD), which mainly focused on populations, economic growth and sustainable development as well as women empowerment. This conference recognized the strides made by several countries in improving and expanding reproductive health care and reduction of birth rate. In its recommendations, it emphasized the importance of family planning being available to those with the need without discrimination[37]. Such single women are vulnerable and thus services should be extended to cover them [30].

Furthermore, women who separate from their husbands or get divorced/ widowed while in their reproductive age still remain sexually active and should not be excluded from studies. The effect of contraceptive intention on future behavior then may have been overestimated or underestimated previously by including only married women. In addition, the few longitudinal studies carried out have had some flaws like large loss to follow and were constructed out of cross sectional studies meant to answer different questions.

In conclusion, the question on whether contraceptive intentions can reasonably predict future use remains unclear. The existing evidence emanates primarily from studying married women; thus, a substantial portion of women who intend to use contraception is not captured by unmet needs derived from the previous studies. The relationship between intention to use contraception and actual contraceptive use among all women of reproductive age irrespective of marital status is unknown. Furthermore, the extent to which family planning programs are deemed successful in meeting existing contraceptive demand is a major means for evaluating these programmes.

This study focuses on all women to determine whether intention predicts use, in addition to describing the main contraceptive methods used and reasons for not using contraception. The study utilizes a panel survey, with a two-year interval to examine how stated intention to use contraception influence future use.

CHAPTER 2

2.0. Data and Methods

2.1. Introduction

This chapter introduces the panel survey which is the primary data for this study. It describes the study setting, discusses the study design and sampling strategy that were employed for the panel surveys and how the data were collected This chapter also reviews the analytical approaches that were used to answer the question on intention and subsequent behavior. It then provides a discussion of the scope and limitations of this study and ethical issues considered therein.

2.2. Study setting

This study used a sample of secondary data on contraception and fertility intentions collected between 1995 and 2003 by the Navrongo Health Research Center (NHRC) located in the Kassena-Nankana district (Map - Appendix 2). The Kassena-Nankana district (KND) can be found in the Upper East region of Ghana. The district is bordered to the north by Burkina Faso. According to the Ghana Statistical Service report 2004, despite the district being located next to the regional capital, it is one of the poorest in Ghana and it lacks major towns. The district of late has benefited much from improved mobile telecommunication and some regional interaction due to trans-Sahara trade.

The district, like other areas of Ghana, is subdivided into villages, which are headed by paramount chiefs. The chieftaincy is hereditary and only males can inherit the throne. The district is thus patriarchal where men are the dominant decision makers in the household and women therefore have limited autonomy in terms of decision-making[38] even in matters of direct concern to them. The district has two main tribes: the Kassena and Nankana, with dual

linguistic-Kassem and Nankam. The two ethnic groups are homogeneous in many ways including a common culture[39]. Dwelling is organized in terms of compounds. A compound is made up of several dwelling units, where extended families live (more than one nuclear family live in one compound) with a distinctive compound name mainly associated with the lineage of that family. Men marry to have children. Children in this district are viewed as both having an economic and security value. Having several children means they will help in farming and other economic activities besides taking care of the parents once they grow old. This pronatalist value placed on children has contributed to unending high fertility rate within the district[40].

The main economic activity of the district is subsistence farming. The district has one rainy season from May to August, which in most cases is unreliable. The rest of the year is dry with less farming activities. However, the district has a large irrigation dam with several dugouts used for dry season farming of rice and tomatoes and this is a major source of income for most households. The overall literacy rate is about 45% and women have the lowest literacy. Traditional religion remains dominant, though Christian and Muslim faiths are evident[27].

The district is a site of active research conducted by the NHRC. The Research Centre since 1993 maintains a Demographic Surveillance System (known as the NDSS) which monitors the impact of health interventions in the district[39]. A demographic surveillance system (DSS) engages in following all members of a geographically defined population over time. The NDSS maintains a comprehensive register of all residents of the district and each individual is assigned a unique and permanent identification number (ID). The NDSS collects mainly vital statistics (births, deaths and migration), besides other modules introduced from time to time: like education, vaccination and reproductive health. The household registration system

(HRS 2), a relational database built with Fox Pro support, is used for data entry and management of the NDSS data[39].

Contraceptive knowledge at the baseline year, 1993 was widespread ranging from 32% to 52%; however, contraceptive prevalence (level of use) was very low, about 4% [27]. Traditional methods like post partum abstinence were widely practiced, since social and cultural forces impeded use of modern contraception. Such forces like persistent need for larger families, fears that modern contraception could induce promiscuity among users, high infant and child mortality among others were evident[29,40]. The Ministry of Health offered family planning services prior to the establishment of CHFP (section 2.3.1) through community health nurses. These nurses were based in fixed health facilities and could perform other functions like immunization, antenatal and postnatal services. In most cases, the health facilities were accessible to pregnant and breastfeeding mothers resulting in poor access to these family planning services for the majority who were not pregnant or breastfeeding. Healthy women attending such clinics were/are termed as going to obtain family planning, which was/is negatively perceived within the community [38]. This social barrier to the use of health services is aggravated by gate keeping by men whereby women have to get permission from their husbands before they leave the compounds[34].

2.3. Study Design

The study design involved a series of cross sectional surveys (forming a panel survey), with respondents randomly drawn from the NDSS, that were conducted annually from 1995 to 2003. The study involved secondary analysis of a sample of the panel survey data for the same age and group of women. The sample data for this study is restricted to the years 2001 and 2003 of the panel survey data. A two-year time interval was chosen since the duration helps in the creation of an analytic framework for examining the relationship between

contraceptive intentions and subsequent use[5]. Moreover, two years is assumed according to DHS definition of unmet needs to be an average duration for spacing child bearing.

2.3.1. The Panel survey

In late 1995 the Navrongo Community Health and Family Planning Project (CHFP) was launched to address uncertainties regarding how to organize effective family planning services and community health in a rural, traditional African community[29]. The main hypothesis tested by the CHFP was "Can reproductive behavior of a rural African community change by introduction of family planning and community health services[40]?" The CHFP was an experimental project with two main arms of treatment. The normal Ministry of Health services referred to as the Bureaucratic dimension. This dimension involved offering services through fixed clinics at the community level. The second treatment arm was the '*Zurugelu*' that involved two parts: one: marshalling community leadership structures and organizations within the community through volunteerism and two deployment of community health nurse (CHN) into communities [27]. The district was divided into four areas called cells and each assigned a combination of services based on the treatment arms (Table 1).

In the "*Zurugelu*" dimension, clinics were upgraded, community health nurses and community volunteers were trained to provide not only family planning services and contraceptive methods like injectables, condoms and the pill but also offer other basic services like immunization and counseling. Community leadership was also involved in the management of the project and setting of priorities[27]. The trained CHN and volunteers were deployed either to fixed clinics (Static health facilities) or could move from door to door (doorstep outreach) offering services to the community depending on the experimental cell.

Table 1: Treatment cells and their respective treatment services- Navrongo CHFP

Treatment cell	Intervention given to each experimental cell
Cell 1	Village management of health committees, clinic operations & volunteers
Cell 2	Doorstep outreach and fixed community service points
Cell 3	Combined cell: Combination of cell 1 and cell 2 treatments
Cell 4	Comparison cell: Normal Ministry of Health services and upgrading clinics

A factorial quasi-experimental design was implemented in the allocation of treatment to each cell. This design is necessary since it helps in the allocation of a combination of interventions in a single study instead of having independent studies for each treatment arm. For routine monitoring and evaluation of the CHFP project, a panel survey was instituted. The next section discusses sampling strategy and data collection for the panel survey.

2.3.2. Panel survey: Sampling strategy

NDSS keeps a database containing information for all individuals surveyed within the district. The data is stored at both compound and individual level through unique compound and individual identification numbers[39]. Using this database, compounds were randomly selected followed by generation of a list for all women aged between 15 and 49 years residing in these compounds. At the start of the panel survey (1995), about 1900 compounds were selected and all women of reproductive age (15-49 years) in these compounds were interviewed about their reproductive knowledge, intentions, attitude and practice. The same compounds were revisited each year and the same women of age 15-49 years interviewed. Young women residing in these same compounds who reached the age of 15 years were added to the sample yearly; also new women residing in these compounds were interviewed. Women who were however older than 49 years and resided in these same compounds exited from the sample yearly. The panel surveys were conducted annually from 1995 to 2003.

2.3.3. Panel Survey: Data collection

The panel survey was modeled along the lines of the regular DHS studies. A model questionnaire similar to that used in the Ghana 1993 DHS was used. The questionnaire included respondent's background characteristics, reproduction, contraception, and fertility sections. Interviewers were trained on how to administer the questionnaire before the actual fieldwork. Sampled households were canvassed annually from 1995 up to 2003. During subsequent interviews, new women of reproductive age living in the sampled households were also interviewed. No attempts were made to locate women who moved, even if they moved within the study area, however. Despite this, women who moved from one sampled compound to another were interviewed in their new compounds and their information matched up through their NDSS identification number. The same questionnaire was used every year; however, some minor changes to include other modules of interest were introduced (e.g. Birth History and HIV Aids) in the questionnaire from time to time. Data on contraception was collected in every panel survey. Among the questions included in this section were current contraceptive use and contraceptive intentions. Contraceptive intention was only collected from women who were not practicing contraception at the time of interview.

2.4. Study Population and sample

The study population was women of reproductive age living in Kassena-Nankana District. The target population of this study was a cohort of women aged between 15 and 45 years of age in 2001. These women were eligible for inclusion in both 2001 and 2003 surveys. Inclusion was restricted to women aged l5 to 45 years in this study in order to minimize loss to follow up after women reached 49 years. Additional inclusion criteria for the sampled women were that they were:

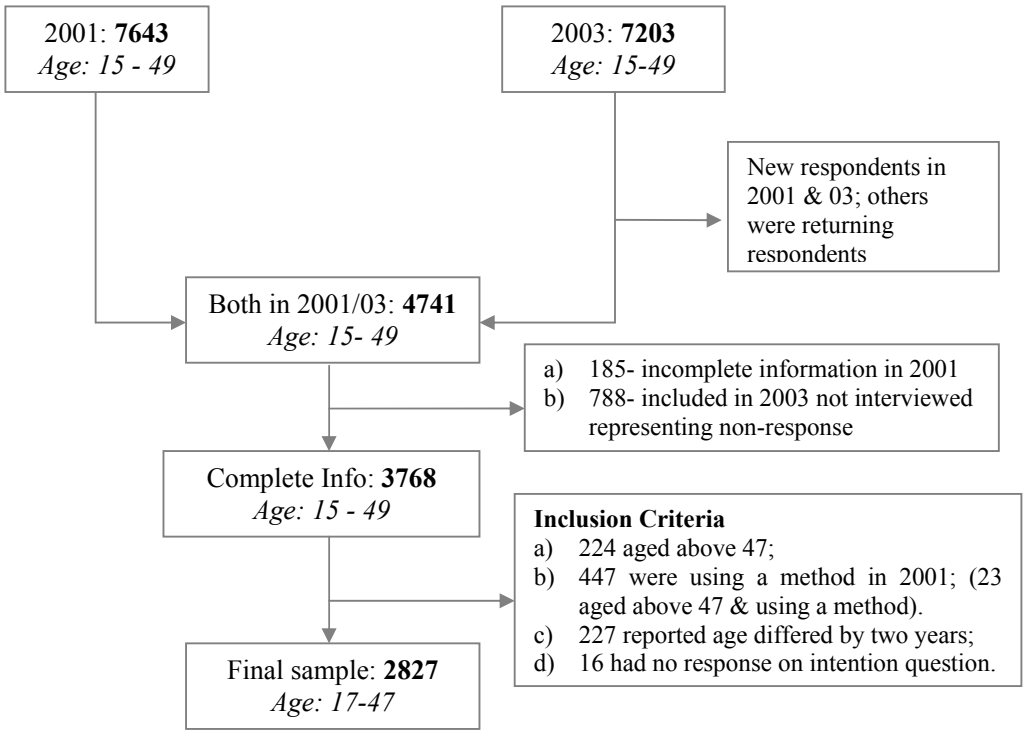
a) Not using any method of contraception during the year 2001 and

b) Had complete and consistent information that matched perfectly for both survey years.

2.4. 1. Data

In 2001 and 2003 panel surveys, 7643 and 7203 (including new respondents in 2003) respondents aged between 15 and 49 years were included respectively. However, only 4741 individuals were sampled in both surveys as shown in the flow chart below. From this number some respondents had incomplete information: for example, in 2003, 788 had incomplete information; this number was registered as non-response during this year. Thus, the response rate was 83.4% in 2003. Removing individuals aged above 47 years in 2003, and those using a method, from the 3768 individuals with complete information, leaves 3120 respondents remaining.

Flow chart 1: Selection of sample size for analysis



During data cleaning, 277 women whose reported age in both surveys differed by more than two years were excluded from the analysis. The question on intentions was asked to all contraceptive non-users and sixteen of them who had missing information on this question were excluded from the study. The final sample for analysis was 2827 contraceptive non-users aged between 17 and 47 years in 2003, with complete and consistent information.

Reasons for non-response in 2003 were established for the 788 (16.6%) individuals (Table 2). The main reason was due to not meeting the respondent (61%) for interview despite making three visits to her household; and 26% was due to migration out of the sampled compounds or out of the study area, this being the number truly lost to follow up.

Table 2: Reasons for non-response in 2003, Navrongo, Ghana

Reason	Percentage lost (N =788)
Died	1.52
Migrated (within/out of study area)	26.14
Not found at home over three visits	60.91
Too old	4.06
Other like divorced, wrong name & sex e.t.c	7.36

2.5. Data analysis

Data for this study was managed using the stable database environment of MS Access 2003. Initially, the data was stored in FOX pro; however it was exported to MS Access 2003 using Database Management System (DBMS/copy Version 8). Matching (linking) of the 2001 and 2003 data was done using this package. Matching was done at individual level using the unique and permanent identification number assigned to each individual within the NDSS. The matched data was then exported to STATA^{TM} software release 9.0 for analysis using STATA^{TM} Transfer 7.0 (Stata Corp., Texas). The STATA transfer software allowed easy and quick conversion of data from one file format to the desired format without losing any data. Data was coded and the variables labeled. Analysis was done at three levels. Level one

involved discrete statistical analysis. To test if there were differences between the Total population sample and the sample used for analysis, t-test and chi square tests were performed for continuous and categorical variables respectively. To establish the main contraceptive methods among the users, and reasons for non-use among the non-users of contraceptives, tabulation was done between the variables of interest (Objective 2 and 3). The demographic and socioeconomic characteristics of respondents were also tabulated in relation to contraceptive intention in order to permit analysis of any patterns in intention to use. In the univariate analysis (level 2), independent variables were cross-tabulated according to contraceptive use status in order to calculate unadjusted odds ratios.

The main outcome of interest in the multivariate analysis (level three) was current contraceptive use status, which was dichotomous (i.e. either using or not using a method). Logistic regression was employed in calculating the adjusted association between intention and subsequent contraceptive behavior. Forward and backward stepwise logistic regression was employed to select variables associated with adhering to stated intention. Stepwise regression technique helped in automatically selecting variables in a model that are significant at a given level of significance; in this analysis a 90%, level of significance was used. Logistics regression was suitable in this case since the relationship between contraceptive use and the independent variables is not necessarily linear. Moreover, contraceptive prevalence in the district is low; in such cases logistic regression permits estimating the odds of contraceptive use (or non-use) while controlling for all other independent variables. The results were then presented in a tabular form. The multivariate analysis was done for all women, and then for the married alone. This was in order to examine whether there are significant differences between married and all women regarding the impact of intention on future contraception; as well as to investigate factors affecting adherence to stated intentions.

2.6. Measurement of outcomes and Explanatory Variables

In 2003, all respondents (except those pregnant) at the time of visit were asked if they were using any method of contraception to prevent pregnancy. This question was used in ascertaining the outcomes of interest: contraceptive use status, contraceptive methods used and main reasons for non-use. Respondents who answered positively (Yes) were coded as "users" irrespective of the kind of contraceptive method they were using. Those not using were coded as "non-users". The users were asked to mention the method they were currently using while non-users were asked the main reason for not using any contraceptive method.

In this study, the main independent variable was intention to practice contraception, which was categorized as "Yes" and "No" even though the question on intentions attracted other responses like "Up to God" and "Don't know". These categories were combined with the "No" category. This categorization was motivated by a previous study on ambivalent fertility intention which used DHS data from 29 countries. The study found those with ambivalent intention to be more similar in characteristics to those wanting more children and thus more likely to state negative contraceptive intention[41]. Curtis and Westoff (1996), also categorized the undecided together with the "No" category in their study on intentions and subsequent use[12].

Other background characteristics making up the independent variables were derived from the 2001 panel survey. These independent variables were chosen based on their expected association with contraceptive intention and use, and then coded accordingly as shown below.

a) Age, in complete years was coded in 10-year intervals. It ranged from 17 to 47 years in 2003

b) Education- the district is characterized by low levels of female education. Hence, education was coded based on respondents' ability to read either in English or any Ghanaian language. Those who can read were "coded as literate. Otherwise they were coded as illiterate".

c) Marital status – respondents were asked about their current marital status. Those in union were code as "married", those never married as "never married", while the divorced, widowed and separated were put into a single category.

d) Parity- referred to number of living children. It was coded as up to three or above three.

e) Fertility preference – respondents were asked if they would like to have another child or not. Those stating they wanted another child were asked how long they would like to space their births. Those who wanted no more children were coded as having the need to "limit". Those wanting to space their births were coded as either having the need to "space for less than three years or more than three" years. The small number of respondents stating they wanted to space childbearing for one or two years motivated this. Those without a definite period of spacing were coded as "unsure how to space".

f) Place of residence was coded as either "rural" or "urban".

g) Religion- the dominant religious groups in the district are those professing traditional and Christian faith. Respondents were asked what religious group they belonged to and then coded accordingly.

h) Ethnic –the district comprises of two main ethnic groups: Kassem and Nankam, minority groups like Bulsa were put together as other category.

i) Woman's approval of family planning – all women were asked to state if they accept use of family planning to avoid pregnancy. The question only attracted "Yes" and "No" answers and thus respondents were coded as "approves" if she said "Yes" or "disapproves" if she said "No".

j) Just like woman's approval of contraceptive, questions on knowledge of contraceptive source, exposure to contraceptive message and discussion of contraception with partner (those in marital union) were coded in similar manner (i.e. Yes or No).

k) Prior use/ever use of contraception was categorized as "Yes" if a woman had ever used any family planning method before or "No" if she had never use any method.

l) Finally, each respondent was matched to her experimental cell. Women residing within the district capital, hereafter referred to as "central zone", did not form part of the experimental cells and were thus put in their own category. This is because this zone is located next to the district hospital, and has numerous drug stores and shops that sell contraceptives, making it unique in terms of accessibility compared to other experimental cells.

2.7. Ethical considerations

The study involved secondary analysis of the panel survey data of 2001 and 2003 collected by NHRC. Before the start of the interviews, verbal consent was sought from the respondents and only those who consented were interviewed. Both the University of Witwatersrand Committee for Research on Human Subjects and the Institutional Review Board of the Navrongo Health Research Centre approved this research protocol. In order to maintain confidentiality, the data released for the study did not bear the names of the respondents. Thus, the researcher was blind to the individual identity of the respondents during data analysis and the results are reported in the aggregate format.

CHAPTER 3

3.0. Results

3.1. Introduction

This chapter begins by comparing background characteristics of individuals included in both panel surveys (2001 & 2003) with the sample used for analysis. It also shows the main contraceptive methods used by different characteristics of the population. The chapter highlights the results of the univariate and multivariate analysis and draws inferences on whether or not intentions influence the future use of contraception. Finally, the chapter presents reasons related to women's non-use of contraceptive methods by selected background characteristics like age, fertility preference and marital status.

3.2. Background characteristics

Background characteristics for individuals included in both 2001 and 2003 panel surveys (total sample) were compared with characteristics of the final sample for analysis (Table 3). There was no difference in the mean age; that is the mean age for the whole sample was 30.4 while in the sample used for analysis was 30.5 years. There were also no observable significant differences in a number of other characteristics. The sample was representative in terms of marital status where in both samples about two in every three women were married with less than a quarter never married. Moreover, about two thirds of the women had less than three surviving children. Fertility preference of the sample did not differ significantly from that of the overall group. Most women wanted to space childbearing for more than three years (45%), with about a quarter intending to limit childbearing. In addition, about 5% of the women had no particular fertility preferences. The patriarchal nature of this community allows men to determine the number of children they wish to have. Hence, such women do not have clear control of their childbearing.

Table 3: Comparison of selected background information for all women aged 15 to 45 years in 2001, in Kassena-Nankana district, Ghana

Characteristics	Overall sample 2001/03 (4168)	Sample for analysis (2827)	P-value
Age			
15 – 24	1331 (31.93)	892 (31.55)	0.789
25 – 34	1208 (28.98)	807 (28.55)	
35 – 45	1629 (39.08)	1128 (39.90)	
Mean age	30.37	30.47	0.666 [Ψ]
Education			
Literate	1167 (28.00)	721 (25.50)	0.021
Illiterate	3001 (72.00)	2106 (74.50)	
Marital Status			
Never Married	957 (22.96)	647 (22.89)	0.854
Married	2707 (64.95)	1850 (65.44)	
Widowed/separated/Divorced	504 (12.09)	330 (11.67)	
Parity [¥]			
0- 3	2815 (67.54)	1885 (66.68)	0.452
4 +	1353 (32.46)	942 (33.32)	
Fertility preference			
Limit	822 (21.47)	568 (21.96)	0.974
Space < 3 years	1082 (28.27)	727 (28.11)	
Space > 3 years	1747 (45.64)	1173 (45.36)	
Unsure	177 (4.62)	118 (4.56)	
Place of residence			
Rural	3649 (87.55)	2566 (90.77)	<0.001
Urban	519 (12.45)	261 (9.23)	
Religion			
Traditional	1417 (34.00)	1028 (36.36)	0.051
Christian	2462 (59.07)	1632 (57.73)	
Muslim & others	289 (6.93)	167 (5.91)	
Ethnicity			
Kassem	2197 (52.71)	1403 (49.63)	0.012
Nankam	1663 (39.90)	1229 (43.47)	
Other	308 (7.39)	195 (6.90)	
Woman's approval for FP			0.033
Approves	3531 (85.13)	2344 (83.24)	
Disapproves	617 (14.87)	472 (16.76)	
Knows of a source of FP			0.004
No	1498 (35.96)	1138 (40.27)	
Yes	2668 (64.04)	1688 (59.73)	
Heard or seen FP message			
No	3012 (72.30)	2123 (75.12)	0.024
Yes	1154 (27.70)	703 (24.88)	
Exposure to FP messages			
No	3812 (67.52)	2105 (74.51)	0.001
Yes	1353 (32.48)	720 (25.49)	

[¥] *Parity is number of surviving children a woman has;* [Ψ] *Age treated as continuous: t-test to test if mean age is statistically different; FP – Family planning; < - less than; > greater than; Columns for each variable add up to 100%*

Nevertheless, some characteristics of the whole sample differed with those for the sample used for analysis. Ever-use of contraception differed between the two samples. This is

expected since the sample for analysis only included non-users. It is evident that past users of contraception are likely to use a method and the sample for non-users is likely to be made up of women who never used a method before. Characteristics also differed by place of residence. The sample for analysis consisted of more women residing in rural place (91%) as opposed to the overall sample (88%) which was statistically significant. In terms of women's approval of family planning, the sample differed significantly with the proportion of women who disapproved the use of contraception being 17% as compared to 15% in the overall group (P =0.03). This is expected since non-users may have a low opinion about use of contraception or could be faced by barriers like husbands disproval of use of family planning.

3.3. Determinants of contraception use: Univariate analysis

The unadjusted odds ratio suggests that women with contraceptive intentions are 2.59 times as likely to use contraceptives as those with no intention (Table 4). Furthermore, contraceptive use is determined by additional factors. Ever-use of contraceptive has a significant effect in predicting current or future use. Women with prior experience of contraception are 2.37 times as likely to adopt a method as their counterparts without such experience. Women aged 27 to 36 years have a higher likelihood (OR 3.04) of adopting a method than those aged 17 to 26 and 37 to 47. A similar trend is observed for parity where the odds of contraceptive use increases with increasing number of living children. Women with more than three living children are twice as likely to adopt a method as those with three children or less.

What is surprising however is that women exposed to contraceptive messages are only 17% as likely to use contraceptives as those not exposed to such messages, and this is not statistically significant. A woman's approval of contraceptive use can be used as a measure of

certainty in deciding whether to use or not to use. Women who disapproved of contraception were 56% less likely to adopt a method as those who approved use.

Table 4: Univariate analysis with, odds ratios of selected potential determinants of contraceptive use among all women aged 17-47 years, in Kassena-Nankana, rural Ghana in 2003

Variable	Odds Ratio	P- Value	95% CI
Age			
17 – 26	1		
27 – 36	3.04	0.001	2.19 ; 4.23
37 – 47	2.1	0.001	1.52 ; 2.91
Ever use of family planning			
No	1		
Yes	2.37	0.001	1.86 ; 3.00
Contraceptive intention			
No	1		
Yes	2.59	0.001	2.01 ; 3.33
Education			
Literate	1		
Illiterate	0.88	0.35	0.67 ; 1.15
Marital Status			
Married	1		
Never Married	0.15	0.001	0.09 ; 0.25
Widowed / Separated/ Divorced	0.58	0.005	0.39 ; 0.85
Place of residence			
Rural	1		
Urban	1.43	0.05	1.00 ; 2.04
Parity			
0 – 3	1		
4 +	1.99	0.001	1.57 ; 2.51
Religion			
Traditional	1		
Christian	1.36	0.018	1.05 ; 1.76
Muslim	1.88	0.008	1.18 ; 3.00
Ethnic			
Kassem	1		
Nankam	0.55	0.001	0.43 ; 0.70
Other	0.92	0.729	0.59 ; 1.44
Woman's approval of FP			
Approves	1		
Disapproves	0.44	0.001	0.30 ; 0.66
Spousal communication			
Yes	1		
No	0.4	0.001	0.31 ; 0.53
Exposure to FP messages			
No	1		
Yes	1.17	0.226	0.91 ; 1.52
Experimental cells *			
Cell 4	1		
Cell 1	2.37	0.001	1.54 ; 3.51
Cell 2	1.92	0.002	1.26 ; 2.91
Cell 3	2.57	0.001	1.86 ; 3.56
Central Zone	2.41	0.001	1.45 ; 4.00

* *Refer to page 17 for explanation*

Lack of spousal communication can also lead to disapproval, as the intentions of both spouses are not known to each other. Spousal communication in this study stands out as a

determinant of contraception. The unadjusted odds of adopting a method among women who did not discuss family planning with their spouses were 0.40. That is women who did not discuss family planning with their partners were 60% less likely to have used a method compared with women who had discussed family planning with their partners. In a similar manner, never married women were 85% less likely to have adopted a method than women who were married. Separated/divorced/widowed women were 42% less likely to use a method than married women were.

One startling result is that, women without any form of education (illiterate) were only 12% less likely to use contraception compared with the literate. This district is characterized by low levels of education among the women, which could contribute to this non-significant observation. Interventions in each treatment and experimental cell differed and this was likely to affect contraceptive intention and subsequent use. The unadjusted odds ratio shows that individuals residing in a cell where both volunteers and doorstep community nurses promoted family planning (combined cell, i.e. cell 3), were 2.57 times as likely to have used a method as women residing in the cell which received only normal ministry of health services (cell 4). The unadjusted odds of use between the combined cell (cell 3) and the central zone, (located within the district capital and without any intervention) differed little. That is those in combined cell, were 16% more likely to have used a method than those in the central zone.

3.4. Contraceptive intention and future use

Out of 1279 individuals with no intention to use contraception, only 7.4% ended up using contraception in contrast to 17.2% of those who had stated intention to use contraceptive in 2001 (Table 5). These results imply that those who state positive contraceptive intentions are significantly more likely to adhere to such contraceptive intentions than those who have no intentions at all.

Table 5: Proportion of all women who used a method in 2003 by stated contraceptive intention in 2001

Had the intention to use a method in 2001	Percentage used in 2003
Yes (51.75)	17.20
No (48.25)	7.43

$\chi^2 = 57.85$, *significant at* $p < 0.001$

The main explanatory variable, 'intention to use", was a good predictor of subsequent contraceptive use even after adjusting for factors like age, fertility preference, marital status, spousal communication, religion and ethnicity (Table 6). Among all women, those who had the intention to use contraception were more than twice (OR 2.04) likely to use a method than those with no such intention. Similarly among the married women, those with contraceptive intention were close to twice (1.88) as likely to have used a method as those without contraceptive intention. However, women who disapproved use of family planning were 8% and 15% more likely to use compared with women who approved, among all married and married women respectively. This apparent discrepancy (reflected in the non-significant difference) may be due to the secrecy of use among some women as fears and anxieties expressed by male spouses may make women openly disapprove of family planning yet are practicing or have intentions to practice. In both groups, women with more than three children had the highest probability of adhering to their contraceptive intention compared to those with three or less children. That is, the odds of contraceptive use increased by 93% and 108% among all women and married women respectively.

Women residing in cell 3, where both nurses and volunteers promoted and provided door step services including family planning were more likely to use a method compared with those in the comparison cell (cell 4), where only the usual MOH services were provided at fixed facilities. That is, the odd of use of these women was 1.6 times that of women in the comparison cell.

Table 6: Logistic regression model for contraceptive use among all women and married women alone aged 17-47 years in Kassena-Nankana district, rural Ghana in 2003

Variable	All Women (2404) OR (95% CI)	Married women (1536) OR (95% CI)
Age:		
17 – 26	1	1
27 – 36	1.24 (0.82 ; 1.90)	1.15 (0.74 ; 1.80)
37 – 47	0.95 (0.58 ; 1.57)	0.84 (0.50 ; 1.44)
Intention to use contraception		
No	1	1
Yes	2.04 ** (1.47 ; 2.82)	1.88 ** (1.31 ; 2.72)
Fertility Preference		
Limit	1	1
Space < 3 years	0.98 (0.65 ; 1.47)	1.05 (0.67 ; 1.65)
Space > 3 years	1.75 * (1.19 ; 2.58)	1.88 * (1.24 ; 2.88)
Unsure how to space	2.62 * (1.26 ; 5.47)	5.39 ** (2.28 ; 12.77)
Marital Status:		
Married	1	Na
Never married	0.12 (0.01 ; 1.28)	Na
Widowed/ Separated/Divorced	0.80 (0.83 ; 7.66)	Na
Literacy		
Illiterate	1	1
literate	1.36 (0.96 ; 1.93)	1.23 (0.84 ; 1.81)
Parity:		
0 – 3	1	1
4 +	1.93 ** (1.37 ; 2.70)	2.08 ** (1.44 ; 2.99)
Religion:		
Traditional	1	1
Christian	1.49 * (1.10 ; 2.02)	1.57 * (1.13 ; 2.18)
Muslim	1.78 (0.99 ; 3.21)	1.81 (0.94 ; 3.50)
Ethnic:		
Kassem	1	1
Nankam	0.62 * (0.43 ; 0.90)	0.56 * (0.37 ; 0.84)
Other	0.94 (0.58 ; 1.54)	0.87 (0.51 ; 1.49)
Experimental Cell*		
Cell 4	1	1
Cell 1	1.02 (0.58 ; 1.80)	1.01 (0.54 ; 1.89)
Cell 2	0.92 (0.52 ; 1.64)	0.92 (0.49 ; 1.73)
Cell 3	1.63 * (1.09 ; 2.44)	1.84 * (1.18 ; 2.89)
Central Zone	1.01 (0.40; 2.57)	1.18 (0.40 ; 3.43)
Spousal communication:		
No	1	1
Yes	1.45 * (1.05 ; 2.01)	1.54 * (1.10 ; 2.15)
Not in union	1.05 (0.11 ; 10.04)	Na
Prior use of a method:		
No	1	1
Yes	1.15 (0.85 ; 1.55)	1.01 (0.73 ; 1.40)
Place of residence:		
Rural	1	1
Urban	1.49 (0.74 ; 2.98)	1.56 (0.70 ; 3.46)
Woman's approval of FP:		
Approves	1	1
Disapproves	1.08 (0.68 ; 1.72)	1.15 (0.68 ; 1.95)
significant at: * p<0.05 ; ** p<0.001; r ~ Reference category; na ~ Not applicable		

** Refer to page 17 for description of interests in each cell*

Those residing in cell 2 (where only community nurses provided doorstep services) were 8% less likely to have used a method than those in the comparison cell; however, this apparent decline was not statistically significant.

Other determinants such as religion, fertility preference, ethnicity and spousal communication were also significant in determining actual use. For instance, between the two main ethnic groups, the Nankam were 38% less likely to use a contraceptive method than the Kassem for all women and 44% among married women. Women who discussed family planning with their partners ("spousal communication") were close to one and half times as likely to use a method as women who did not discuss family planning with their partners and this pattern is consistent in both groups.

3.5. Main contraceptive methods used

Women using a method in 2003 were asked to state the method they were currently using. Out of 2827 contraceptive non-users in 2001, only 331 (11.7%) were using a method in 2003; various contraceptive methods were mentioned as shown in Fig 3.5.1 below.

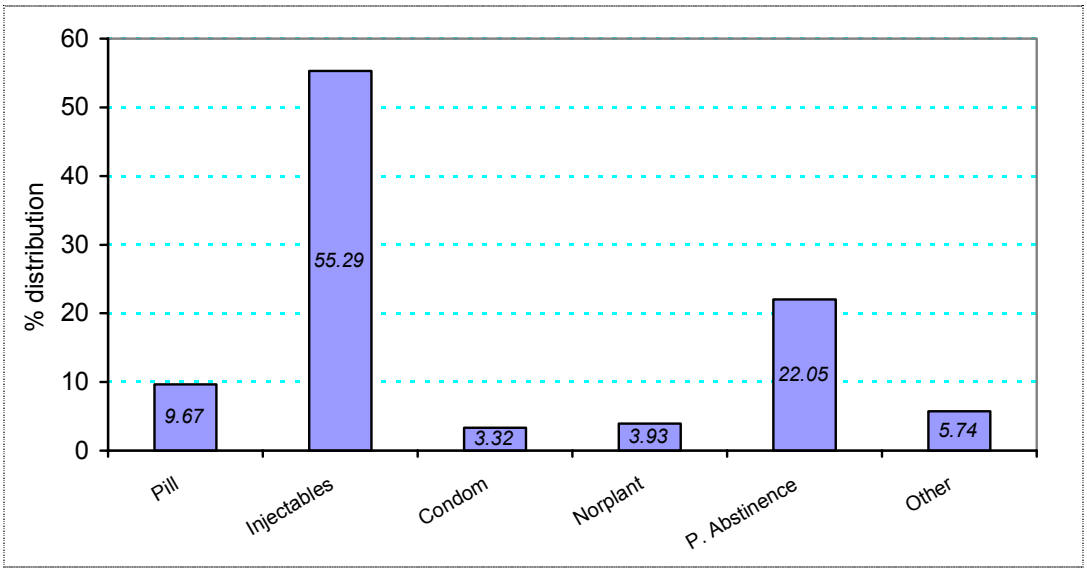


Fig 3.5.1: Percentage distribution of the main family planning methods used among all women in Kassena-Nankana district, rural Ghana in 2003 (n=331)

During this year, the most widely used methods were the injectables (55%) followed by prolonged abstinence (22%). A small proportion of women preferred the pill (10%); however condom and Norplant methods were rarely used.

Type of contraceptive method used among all women varied depending on marital status (Fig 3.5.2). Close to 85% of all contraceptive users in 2003 were married women, with only 5% of the never married practicing contraception. Among women who used the pill, 94% were married compared to 6% percent of unmarried women. Similarly, across the other contraceptive methods used, except the condom, more than three quarters of the women were in marital union. These differences in use by marital status were statistically significant. Condom use was as high as 73% among never married women but only 18% among married women.

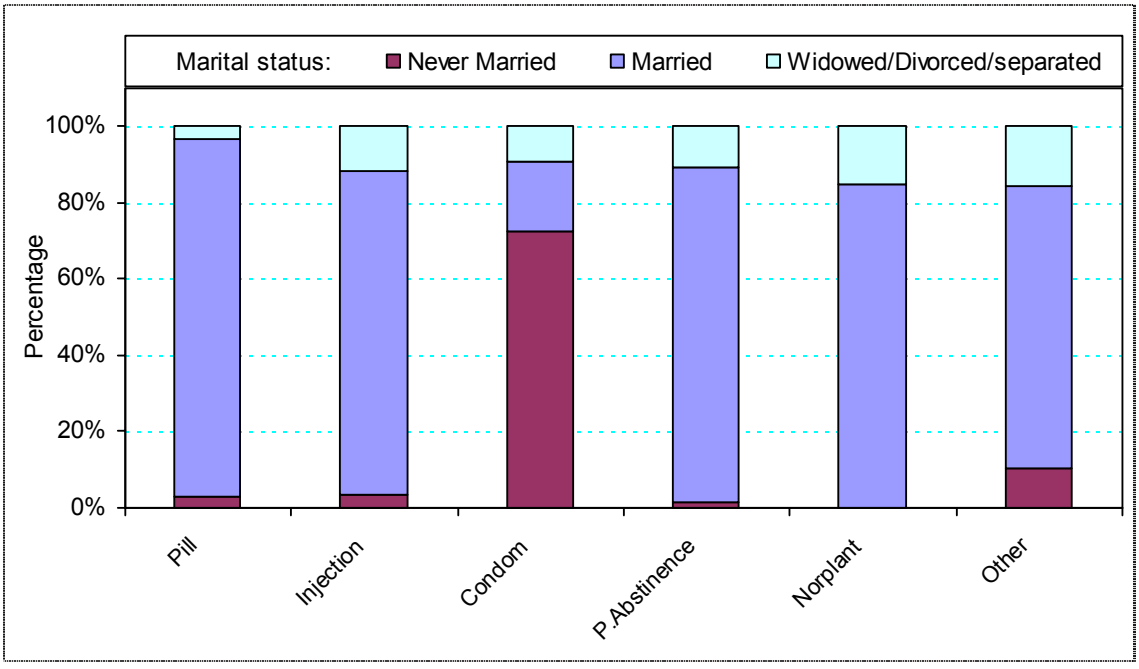


Fig 3.5.2: Distribution of family planning methods (%) by marital status among all women aged between 17 and 47 years in Kassena-Nankana, Ghana in 2003

Contraceptive methods use also differed by age (Fig 3.5.3). Condom was highly used by those aged 17 to 26 years; women aged 27 to 36 years preferred the pill, injectables and Norplant. Periodic or prolonged abstinence was common among women aged 35-47 years.

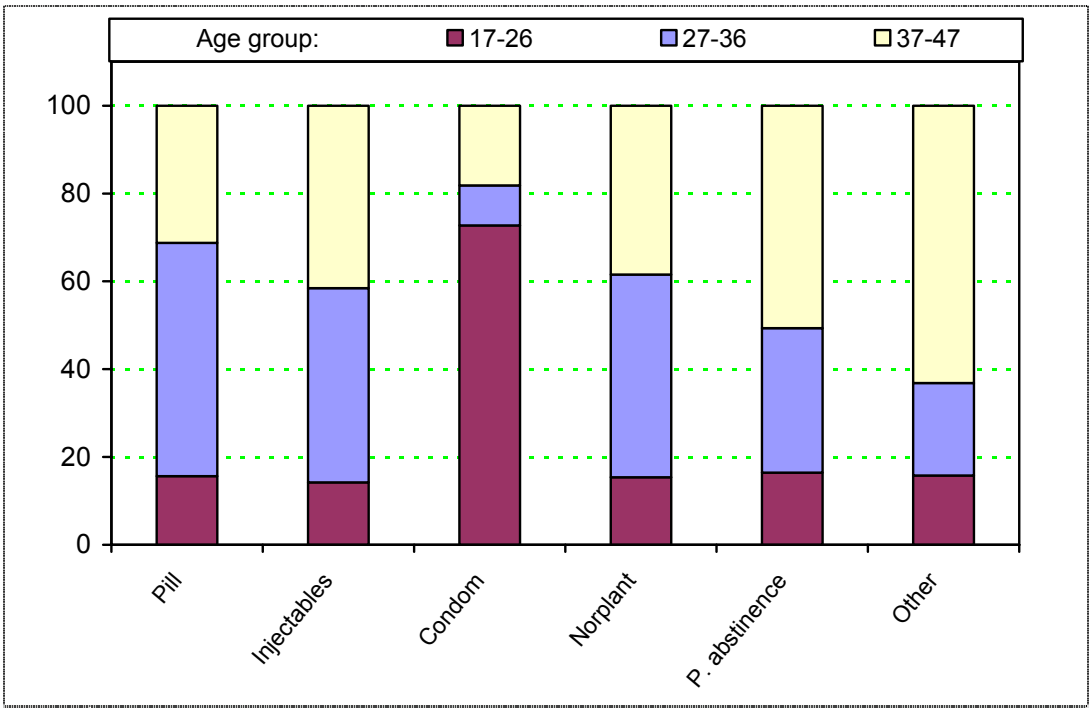


Fig 3.5.3: Distribution of family planning methods (%) by age group among all women aged between 17 and 47 years in Kassena-Nankana district, Ghana, 2003

3.6. Reasons for non-use of family planning method

In 2003, women not using any method of contraception were asked to state the main reason as to why they were not using any method. During this year, 2477 (87.6%) women were not using any method to prevent pregnancy. They gave several reasons for non-use of family planning (Fig 3.6.1). More than half (56%) of these women reported not being at risk of pregnancy as the main reason for non-use; with 17% not using contraception because they were breastfeeding at the time of the survey. Interestingly, a small percentage of women (7%) reported non-use due to "lack of contraceptive knowledge".

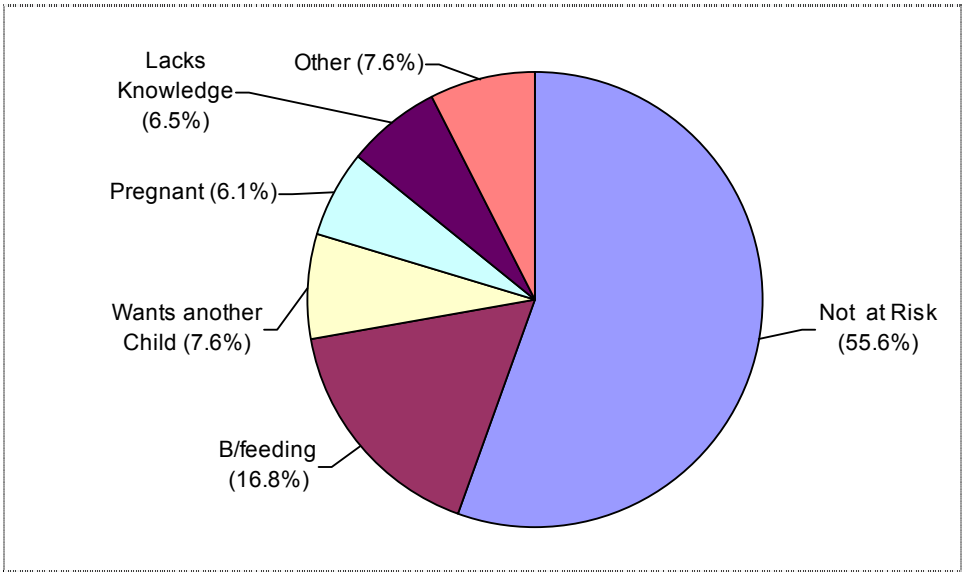


Fig 3.6.1: Reasons stated for non-use among all women aged 17-47 years and not using any method to prevent pregnancy in Kassena-Nankana district, Rural Ghana in 2003

Of women reporting themselves not at risk of pregnancy, nearly two-thirds (62%) had the intention to practice contraception (Table 7). More women with contraceptive intention reported non-use due to breastfeeding, compared to those without such intention. However, there was no significant difference between women with the 'need to have another child' and those who reported 'lack of contraceptive knowledge'.

Reasons for non-use also differed by background characteristics as shown in Table 7 below. Women in the age group 17 to 26 and 37 to 47 years failed to use a method since they thought they were not at risk of pregnancy. A large group of middle-aged women (27-36) was not practicing contraception since they were currently breastfeeding. Most of the never married and the divorced/widowed believed they were not at risk of getting pregnant as compared to the married, a difference that was statistically significant. However, the married tended to fail to use contraception because they were breastfeeding, had need for another child, or were pregnant. These differences in use based on demographic characteristics of the population are of programmatic importance.

Table 7: Percent distribution of women by reasons for non-use and selected background characteristics among all women aged 17 to 47 years in Navrongo, rural Ghana in 2003 (n=2477)

Background characteristics	Not at risk	Breast feeding	Needs another child	Pregnant	Lacks knowledge	Other
Intention						
No	62.33	12.05	6.90	4.60	6.66	7.45
Yes	42.88	21.63	8.22	7.65	6.25	7.73
Age						
17-26	65.26	11.94	4.46	5.43	7.48	5.43
27-36	33.98	30.10	11.92	9.24	6.56	8.20
37-47	62.13	11.67	7.16	4.50	5.53	9.01
Education						
Illiterate	50.19	19.92	8.87	6.97	6.42	7.62
Literate	70.94	7.66	3.75	3.59	6.56	7.50
Fertility Preference						
Limit	71.63	8.85	3.62	1.61	6.04	8.25
Space < 3 Years	43.27	22.32	14.07	5.35	6.42	8.56
Space > 3 Years	52.28	19.21	6.04	9.60	6.24	6.63
Unsure	76.92	7.69	0.96	2.88	10.58	0.96
Experimental Cell						
Cell1	47.49	21.24	12.98	7.67	1.77	8.85
Cell2	54.41	12.65	8.24	7.35	9.71	7.65
Cell3	55.57	17.42	6.04	5.92	6.40	8.65
Cell4	56.15	17.52	7.08	5.47	8.07	5.71
Central (4)	73.15	8.05	4.70	4.03	1.34	8.72
Parity						
0-3	54.42	17.49	8.60	6.18	6.42	6.89
3+	58.02	15.15	5.26	5.91	6.55	9.11
Marital Status						
Married	42.32	23.44	10.60	8.73	6.23	8.67
Never married	78.27	4.79	1.28	1.92	8.63	5.11
Divorced/separated/w	77.21	6.80	4.76	1.02	3.06	7.14

CHAPTER 4

4.0. Discussion

This study is situated in a rural setting of West Africa where contraceptive use is low based on the complex interplay of culture, personal and couple preferences and contraceptive availability. The proportion of women intending to use contraceptive is high, however, actual use remains low (12%). This implies that there are high levels of unmet need within the district. The main aim of this study was to determine if intention to use contraception predicts subsequent contraceptive behavior. Attempts were also made to determine the main methods prevailing and the reasons for non-use within this district. The findings of this study indicate that women with intention to use contraceptive are more likely to actually use. This is true for all women as well as for only married women.

Intention and subsequent behavior

This study sought to understand whether intention to use contraception could be used to predict future contraceptive behavior. Results for all women and for married women suggest that contraceptive intention is a good predictor of future use. Women who expressed the need for contraception were more likely to use a method than those who did not. This is because intention to practice contraception is an expression of the need to adopt a method at the right and convenient time. Developing intention is therefore a process and women who express the need must have thought about it. Moreover, contraceptive intention is an individual's own statement of their desire to use contraception[10]. The expectation, therefore, is that these women will end up using a contraceptive method.

Furthermore, in this study women who intended to use a method tended to be literate, and expressed the need to either limit or stop child bearing for at least three years. A combination of these factors then is likely to motivate women who intend to use a method to do so at the right time. Of importance is that among women who want to limit or space childbearing, the odds of use increases with the need for spacing. Increased demand for smaller families has led to increased intention to practice contraception and hence high demand for family planning. This has become a common trend in Africa since couples have changing fertility preferences with improvement in socio economic status, child survival, access to family planning and reduced cost of family planning. Women who want to space their births are more motivated to achieve this desire than women who want to limit their family size. Those who want to space are in most cases younger than those who want to limit their births; whereas and most older women have achieved their desired family size[31]. The increased need for spacing can also be explained by the observed trend in parity where the odds of using contraception nearly double as the number of surviving children exceed three.

Evidence shows that expression of fertility preference is associated with contraceptive use, especially in societies where high fertility rate is apparent[25]. Observed trends in this study are similar to these previously reported findings[23,42]. In fact, contraception is known to mediate between fertility intention and subsequent behavior[21]. That is, women with fertility intention are likely to express the need to adopt contraception and hence have a higher likelihood to practice contracepion[12]. Thus, intention to use contraception together with fertility preference can be used to model both the level of unmet need in a society and the demand for contraception. This then can be used to replace projection of demand for contraception from unmet need only, which is not a direct measure and mostly targets married women instead of all women.

The above findings are similar to results of studies done in Morocco and Central India[12,13]. These two studies used only married women; however, a comparison between all women and only married women in this study revealed a small difference between the two. The odds of use among all women are slightly higher than among married women. The confidence intervals (CI) overlap perfectly, with the CI for married women being contained in the CI for all women. This is an indication that the effect produced by all women can better explain the impact of intention on actual contraceptive use. Using married women only in such studies leaves out a group of women not in marital union who have the need for contraception at risk of unwanted pregnancies.

Longitudinal studies are often affected by attrition bias. Thus, the concern is whether these study results have some biases. Comparison made between those lost to follow up and those who remained in the study show some slight differences in age, marital status, parity, employment and past use of family planning. Despite the above, the respondents were comparable in a number of ways such as fertility intention, religion and ethnicity, place of residence and contraceptive intention.

Contraceptive intention distribution was similar among those lost to follow-up and those who remained in the study, reducing the chance of bias; overall, non-response was as low as 16%. In addition, in the multivariate analysis background characteristics were controlled for, which helped to mitigate the effect of observed differences in some of the characteristics. Hence, it is unlikely the results were due to bias or confounding. Nonetheless, intention-behavior studies are often influenced by the time interval. This study utilized a two-year interval in order to maintain the continuity, and stability, and hence the reliability of the stated contraceptive intention, increasing the validity of these results.

Consistency of contraceptive intention

While the results of this study show the importance of stated contraceptive intention in predicting future contraceptive use, they also indicate that women are likely to stick to their intention due to other factors. In this study, women who have more than three living children, discussed contraception with their partners, and were residing in intervention cell that received a combination of interventions were more likely to adhere to their stated contraceptive intention. These other factors, besides fertility preference, also determined the consistency of contraceptive intention.

Moreover, it is urged that social influences have a large effect on adherence to stated intention[22]. The findings on spousal communication for all women and only married women confirm this assertion. In comparing all women, the odds of use were higher for women who discussed family planning with their partners. Single women who are independent and have more autonomy are, however, expected to adopt contraception than married women who need approval from their husbands. In spite of this expectation, the difference in contraceptive use between the never married and the married was not significant. There could have been a misclassification of the unmarried women in that only women living with their partners were asked whether they discussed family planning with them. Thus, the assumption is made that the unmarried, though sexually active, do not discuss family planning with their sexual partners; this does not necessarily hold and to some extent could explain the observed lack of difference in the odds of use between the unmarried and those married women who did not discuss family planning with their partners. Several studies have also investigated the effect of spousal communication on contraceptive behavior and found a positive effect between spousal communication and actual use, which is consistent with the findings of this study[5,26].

Nevertheless, some of the findings of this study are not consistent with earlier work. More important is that past use was expected to determine actual contraceptive use as has been found in other behavioral studies. [5,12] However this was not so. In this study, less than half the current users had ever used a method before. This result tells us that despite past use being cumulative, continuity of use in this community is low. This suggests that women practice family planning for only a short period and then stop, with only a few resuming use after the break, suggesting a high discontinuation rate. However, the sample for this study could have been biased since the study utilized women who were not using a method in the baseline year. This is likely to be the group of women who had never used a method before and thus these results could change if all women at the baseline year are observed.

Age and marital status were not significant determinants for contraceptive use in the multivariate analysis. However, the odd of contraceptive use in the middle age category (27-36) was slightly higher than for those aged between 17-26 years. Older women are less likely to use a method since they are about to reach their menopause; while others claim they are at a lower risk of pregnancy because of the perception that they are unlikely to fall pregnant[8,21]. Women in the middle category mostly want to space their births and the chance of adopting family planning is high among this age group. Despite the fact that the findings are not significant, other studies have found the same trend. The differences in use of contraceptive method by age group can also be explained by a reduction of sexual activity among the aged than among older persons[43]. A study carried out in Congo also found that age was not a significant determinant of contraceptive use[44].

Never married women on the other hand were less likely to use contraceptives than the married though this difference was not significant. This possible increase in use is

associated with an increased risk of getting pregnant due to regular exposure to sex among the married. However, this may not be a major reason in the Kassena-Nankana district as about a third of women are in polygamous unions, and migration of men out of the district to look for better job opportunities elsewhere during the long dry season is high[40]. This reduces the risk of becoming pregnant among the married. This interpretation is strengthened by the fact that close to one half of married women reported "not at risk of pregnancy" as the main reason for not using contraception.

Family Planning methods

From the analysis of contraceptive methods, injectables, postpartum abstinence and the pill were the most common family planning methods. Despite the fact that use of modern contraceptive methods was high, a good proportion of the population was still practicing traditional methods like prolonged abstinence and withdrawal. Choice of family planning method has been researched extensively. The Kassena-Nankana district is patriarchal in nature, and is characterized by high levels of clandestine use. Cultural traditions impede women from adopting modern methods and men marry in order to have children.

Modern family planning methods

More than half of women using a contraceptive method preferred injectables than other modern methods of contraception like the pill and Norplant. Moreover, most of these women using this method were in marital unions. Several reasons can account for this. To start with, the reason for using the injectables is to conceal use from the spouse, since it has the greatest potential for secrecy. The Kassena-Nankana district is patriarchal and male dominance in taking decisions on reproduction, especially on the number of children they want to have is overriding[36]. Evidence shows that in such settings covert

contraceptive use is common[33]. Hence, if a woman wants to use a method then she will go for one which is shielded from her husband and extended family; the injectables serve this purpose. Similar results were arrived at in a qualitative research carried out in Mali[30].

Secondly, unlike the pill and other oral contraceptives that require remembering to take the pills at the same time daily, the use of the injectables eliminates this need. That is, effectiveness of the pill depends on regular and consistent use; thus, injectables reduce the risk of unintended pregnancy due to forgetfulness and inconsistent use. In addition, contraceptive method choice depends not only on its inherent characteristics but also on social influence from friends, relatives and even health care providers[25].

Since injectables are the dominant method available in this community, and women tend to share experiences, more women are expected to adopt the same method. Moreover, the CHFP was initiated when family planning knowledge and use were very low. Injectables were among the methods promoted at the start of the study, and thus more likely to emerge as a dominant method. Initial resistance to the use of family planning in these communities and the difficulties with which community health nurses had to persuade women or couples to use contraception, also led to individual women and couples opting for injectables, which was considered a secret method[29]. Thus, community health workers deployed to the community who served as educators on family planning could have had an influence on the choice of a method.

Traditional methods

Nevertheless, traditional family planning methods still account for a good proportion. Postpartum/ prolonged abstinence is evident here besides withdrawal and periodic abstinence. This could be a clear indication that modern family planning is at an early

stage or its uptake is slow. The persistent use of traditional methods is often fuelled by some cultural norms[45]. Polygyny in this community is common. Men leave or separate from their women once they give birth or during their menses to live with their other wives. Those in monogamous marriages abstain from sex. Taboos exist that restrain women from engaging in sexual intercourse while breastfeeding. This is a common belief and practice within the study community [45]. The impact of these unchanging beliefs and practices has somewhat restrained the uptake of modern methods.

On the other hand, most women in SSA practice contraception to space their births rather than to limit childbearing and this is evident in this study[1]. Women prefer a method that would not affect the return of fecundity since they still have future need for children. This is compounded by the fact that a prolonged birth interval may make men suspect that their women are practicing contraception. Myths still exist against use of modern methods on the return of menses, and women fear such side effects would affect their fecundity and marriage[46]. Consequently, women opt to use the traditional method instead, with the satisfaction that they will get pregnant whenever they or their spouses desire. Such women are likely to report mistimed pregnancies as wanted.

Reasons for not practicing contraception

It was vital to understand why some women were not using contraception. Interventions that took place in the district promoted use of family planning besides making methods available to those in need. The pattern of use of contraception in this study suggests that several factors are involved and the presence or absence of these factors explain non-use of contraception. Fertility preference is a good predictor for use of contraception yet many women who expressed a need to limit or space childbearing were not using any method to avoid pregnancy. Most of these women reported “not at risk” of becoming

pregnant as the main reason for non-use. The interpretation of being not at risk depends on the respondent and may combine both being pregnant and breastfeeding - which are other main reasons stated for non-use of contraceptives among women who were not using a method.

One third of the women were in a polygamous union and others were not living with their husbands at the time of interview. In addition, there is a high likelihood of women who were breastfeeding to report being not at risk of falling pregnant. Furthermore, nearly three in four women wanting to limit their births reported "not at risk of pregnancy" as the main reason for non-use. This is expected since such women are likely to be older, have achieved their desired family size, are approaching their menopause and may have reduced sexual activity[43]. The study sample also consisted of young some unmarried women who are yet to initiate sex. Thus it is expected of such women to have reported not at risk as the main reason for non-use.

Besides, not being at risk, breastfeeding was reported as an independent reason for not practicing contraception. Duration of breastfeeding is then important. Supplemented breastfeeding, according to demographic and health surveys study in Ghana, on average is 24 months. During this period of breastfeeding, women experience postpartum infecundity and may term themselves not at risk of falling pregnant or opting for postpartum abstinence. In this respect, traditional family planning methods like post partum abstinence could have been underestimated depending on a woman's understanding of use of a method to avoid pregnancy. If such women who were breastfeeding were to be classified as experiencing postpartum abstinence, then the most common family planning methods may be the traditional ones. However, there is a need

to establish the pattern of abstinence and resumption of intercourse after birth, which is subject to return of menses.

Interestingly, a small percentage of women failed to use a method for they "lacked knowledge of use". Knowledge is imperative if one has to adopt family planning. This is clearly seen in the different experimental cells. Women in the comparison cell, which received only the normal MoH services, were more likely to report lack of knowledge as the main reason for not using a method compared to women in the other experimental cells. Similarly, in the logistic regression model, exposure to family planning messages and knowledge of source for family planning were not significant. This is worrisome. Only a quarter of women reported being exposed to family planning messages and this low exposure is reflected in the percentage of women reporting non-use of family planning due to lack of knowledge.

Exposure to family planning messages is expected to have both direct and indirect effects on contraception. First, women gain more knowledge about family planning which changes their attitudes and perceptions, and secondly it prompts discussion of family planning among themselves and their partners[8]. Despite concerted efforts through use of community nurses and other awareness campaigns, lack of knowledge and low exposure continue to affect contraceptive use in the district and this has important policy implications when addressing family planning programmes.

Limitations of the study

Secret contraceptive use among women in the Kassena-Nankana district is common due to men's disapproval for fears of infidelity from their wives[29]. As a result, women often deny their contraceptive use and this may underestimate the effect of intention to use contraception. This effect may introduce some bias into the results of this study. However, if covert use influenced reporting of contraception it is assumed to have occurred randomly.

On the other hand, inter survey changes that took place were not considered in the study: change in level of education, fertility preferences and marital status between the two surveys were not taken into consideration in the analysis. Rather analysis was restricted to observed characteristics of interest in the baseline year, 2001. Such changes could have a direct effect on intention and contraceptive use and stand to be a source of bias. However, it is assumed that if such changes occurred, they occurred randomly across the study population and that they were equally distributed between those with or without contraceptive intention.

In addition, a woman's awareness of contraceptive methods in one round of interviewing may be informed by the previous questioning, and this is one of the disadvantages of panel surveys. Panel data may be inherently biased with time as respondents develop their interest in study questions; familiarity with survey questions can lead to deliberate answers.

Loss to follow up is also a disadvantage of this type of study design. If the lost to follow up group is quite different from those who remain in the study, then it introduces a version of non-response bias. In addition, the sampling unit of panel survey was a compound not an individual, and women who moved from sampled compound to a non-sampled compound were not followed, and this poses a big limitation to the study. Loss to follow up could have been minimized if a cohort of women was followed irrespective of residence as long as they were residing within the study area.

Family planning and millennium development goals

Maternal and child mortality are among the well spelt out millennium development goals (MDG)[1]. The two are of public health interest. Reduction of maternal mortality can be achieved through two main ways: provision of affordable and accessible maternal health services and family planning. The latter is highly effective in that accessible and affordable family planning services help to reduce the number of pregnancies that a woman can have, improving not only her health but also that of the child. Moreover, most maternal deaths occur to young women[37]. This is due to high rate of abortion among this group of women, as well as other pregnancy related complications, which also can lead to disabilities like infertility and fistula[36].

Understanding behavior is complex, but the needs of women who express their intention to use contraception should be viewed in the light of reducing maternal and child mortality, and increasing child survival, as well as reducing unwanted pregnancies and unsafe abortions and their complications. Meeting these needs is a step towards achieving the MDG's. However, the failure to recognize the importance of universal family planning as one of the MDG's, as in the Cairo 1994 conference on populations, economic growth and sustainable development as well as women's empowerment, is worrisome.

CHAPTER 5

5.0. Conclusion and Recommendations

5.1. Conclusion

The study established that those with contraceptive intention are likely to use contraception in the future. The odds of use were higher among women who had the intention to use than those without the intention to use. Effect of contraceptive intention on future use did not vary significantly for all women and married women. However the odds of use among all women ware slightly higher. Furthermore, women who wanted to space childbearing by more than three years were more likely to use than those wishing to limit childbearing. Therefore, if women say they intend to use contraception and have the desire to space or limit childbearing then family planning services should serve to satisfy this apparent/expressed need for contraception. If such contraceptive intentions have to be met, then empirically, "stated intention to use contraception" can be used to represent the latent demand for contraception. Moreover, unmarried women should be a focus in family planning studies for their intentions count in determining who is in need of contraception, and the nature and scale of that need.

5.2. Recommendations

Despite the several determinants of contraception, 'intention to use' should be a variable accounted for in the design and provision of family planning services - especially in areas where contraception is not widely and socially acceptable and available, or such activities are in a developmental stage. The most important reason is that women who intend to use contraceptives are motivated to do so due to reasons ranging from their own health, fertility preference and the health of their children. Thus programmes should target these women to help them achieve their reproductive goals and thereby reduce the level of unmet need. Furthermore, reasons for non-use differed among different groups of women. Programs

should therefore be more specific (that is target oriented) based on women's background characteristics.

Secondly, despite the various interventions put in place in the Navrongo field experience, there was little difference in contraceptive use between the different arms of treatment. Therefore, there is a need for further qualitative research to understand better the reasons constraining use of modern contraceptives. Moreover, qualitative study will aid in understanding what women mean when they say they are "not at risk" of falling pregnant.

However, since a small number of women reported 'lack of knowledge for contraception', there remains an urgent need to feed the community with information on family planning. Furthermore, a number of women were using traditional methods whose effectiveness is low. Programmes should therefore reach out to these women and offer advice as well as provide effective methods to avert unwanted pregnancies.

Additionally, there is a continuing need to involve men in family planning projects since they are key to family planning adoption by their spouses. In patriarchal communities, men marry to have children and their autonomy on the preferred number of children overrides that of their wives. Men too have negative attitudes toward contraception as shown in other studies. Such fears like infidelity and abandoning of childbearing if their wives practice contraception contribute towards this negative attitude. Thus, it is salient to involve men in family planning programs and activities not only to promote awareness and encourage participation but also to eliminate such fears.

REFERENCES

[1] Cleland J, Bernstein S, Ezeh A, Faundes A, Glasier A, Innis J. Family Planning: the unfinished agenda. Lancet 2006; 368: 1810-27.

[2] USAID. Perspectives on unmet needs for family planning in West Africa: Benin. Policy project briefing paper. Conference on repositioning family planning in West Africa; 2005 Feb 15-18; Accra, Ghana.

[3] Addai I. Ethnicity and contraceptive use in Sub Saharan Africa: The case of Ghana. Journal of Biosocial Science 1999; 31: 105-20.

[4] Bongaarts J, Elof J. Future trends in contraceptive prevalence and method mix in the developing world. Studies in Family Planning 2002; 33(1): 24-36.

[5] Bawah A. Spousal communication and family planning behavior in Navrongo: A longitudinal assessment. Studies in Family Planning 2002; 3(2): 185-94.

[6] Yaw O, Baffour KT. Effects of couples' characteristics on contraceptive use in sub Saharan Africa: the Ghanaian Example. Journal of Biosocial Science 1997; 29: 33-49.

[7] Castro T. Women's education and fertility: Results from 26 Demographic and Health Surveys. Studies in Family Planning 1995; 26(4): 187 – 202.

[8] Gupta N, Katende C, Bessinger R. Association of mass media exposure with family planning attitudes and practices in Uganda. Studies in Family Planning 2003; 34(1): 19-31.

[9] Bhatia S. Contraceptive intentions and subsequent behavior in rural Bangladesh. Studies in Family Planning 1982; 13(1): 24–31.

[10] Casterline JB, Sinding SW. Unmet need for family planning in developing countries and implications for population policy. Population and Development Review 2000;26(4): 691-23.

[11] Ross J, William LW. Contraceptive use, intention to use and unmet needs during extended postpartum period. International Family Planning Perspectives 2001; 27(1): 20-7.

[12] Curtis LC, Westoff CF. Intentions to use contraceptive and subsequent contraceptive behavior in Morocco. Studies in Family Planning 1996; 27(5): 239-50.

[13] Roy TK, Ram M, Nangia P, Saha U and Khan N. Can women's child bearing and contraceptive intentions predict contraceptive demand? Findings from a longitudinal study in central India. International Family Planning Perspectives 2003; 29(1): 25-31.

[14] Magnani R, David RH, Curtis SF, Leigh A. The impact of the family planning supply environment on contraceptive intentions in Morocco. Studies in Family Planning 1999; 30(2): 120–32.

[15] Bhatia SK, Talbot JM. Attitudinal and non-attitudinal determinants of contraception: A cross-culture study. Studies in Family Planning 1980; 11(2): 51-6.

[16] El-Zenaty F, Way A, Kishor S, Casterline B. Egypt indepth study on the reasons for non-use of family planning: Results of a panel survey Upper Egypt. Calverton, Maryland [USA]: National Population Council (Egypt) and Macro International Inc. 1999.

[17] Che Y, Cleland J. Contraceptive use before and after marriage in Shangahi. Studies in Family Planning 2003; 34(1): 44-52.

[18] Ross J, Heaton L. Intended contraceptive use among women without an unmet need. International Family Planning Perspectives 1997; 23(4): 148-54.

[19] Bairagi B. Effects of sex preference on contraceptive use, abortion, and fertility in Matlab, Bangladesh. International Family Planning Perspectives 2001; 27(3):137-43.

[20] Sheeran P, Orbell S. Implementation intentions and repeated behavior: augmenting the predictive validity of theory of planned behavior. European Journal of Social Psychology 1999; 29: 349-69.

[21] Williams L, Abma J, Piccinino LJ. The Correspondence between intention to avoid childbearing and subsequent fertility: A prospective analysis. Family Planning Perspectives 1999; 31(5): 220-27.

[22] Liska AE. A critical examination of the causal structure of the Fishbein/Ajzen attitude-behavior model. Social Psychology Quarterly 1984; 47(1): 61-74.

[23]Schoen R, Astone NM, Kim YJ, Nathanson CA, Fields JM. Do fertility intentions affect fertility behavior? Journal of Marriage and the Family 1999; 61(3): 790-99.

[24] Soldan AP. How family planning ideas are spread within social groups in rural Malawi. Studies in Family Planning 2004; 35(4): 275-90.

[25] Behrman JR, Kohler HP, Watkins SC. Social networks and changes in contraceptive use over time: Evidence from a longitudinal study in rural Kenya. Demography 2002; 39(4): 713-38.

[26] Ezeh A. The influence of spouses over each other's contraceptive attitudes in Ghana. Studies in Family Planning 1993; 24(3): 163–74.

[27] Debpuur C, Phillips JF, Jackson EF, Nazzar A, Ngom P, Binka FN. The impact of the Navrongo project on contraceptive knowledge and use, reproductive preferences, and fertility. Studies in Family Planning 2002; 33(2): 141–64.

[28] Phillips JF, Adazu K, Adjuik M, Nazzar A. Survey research on reproductive preferences and contraceptive use in traditional Africa: Are responses meaningful? Paper presented in the 125th annual meeting of American Public Health Association; 1997 November 9-13, Indianapolis.

[29] Bawah AA, Akweongo P, Simmons R, Phillips JF. Women's fears and men's anxieties: The impact of family planning on gender relations in northern Ghana. Studies in Family Planning 1999; 30(1): 54-66.

[30] Castle S, Mamadou KK, Ulin PR, Martin S. A Qualitative Study of clandestine use in urban Mali. Studies in Family Planning. 1999; 30(3): 231-48.

[31] Bledsoe C, Hill AG, Umberto P, Langerock P. Constructing natural fertility: The use of contraceptive technologies in rural Gambia. Population and Development Review 1994; 20(1): 81-113.

[32] Biddlecom A, Bolaji MF. Covert contraceptive use: prevalence, motivations and consequences. Studies in Family Planning 1998; 29(4): 360–72.

[33] Laskar MS, Mahbub MH, Yokoyama K, Inouse M, Harada N. Factors associated with contraceptive practices of married women in Bangladesh with respect to their employment status. The European Journal of Contraception and Reproductive Health Care 2006; 11(3): 220-27.

[34] Kar SB. Consistency between fertility and behavior: A conceptual model. Population Studies 1978; 32(1): 173-85.

[35] Vadnais D, Kols A, Abderrahim N. Women's lives and experiences: Changes in the past ten years. Calverton, Maryland: ORC Macro 2006.

[36] Bearinger LH, Sieving RE, Ferguson J, Sharma V. Global perspectives on the sexual and reproductive health of adolescents: Patterns, prevention, and potential. Lancet 2007; 369: 1220-31.

[37]UN. Report of the international conference on population and development; 1994 Sep 5-13; Cairo, Egypt. New York; United Nations; 1994.

[38] Ngom P, Debpuur C, Akweongo P, Adongo P, Binka FN. Gate-keeping and woman's health seeking behavior in Navrongo, Northern Ghana. African Journal of Reproductive Health 2003; 7(1): 17-26.

[39] Binka FN, Ngom P, Phillips JF, Adazu K, MacLeod BB. Assessing population dynamics in a rural African society: The Navrongo Demographic Surveillance System. Journal of Biosocial Science 1999; 31: 375- 91.

[40]Adongo PB, Phillips JF, Kajihara B, Fayorsey C, Debpuur C, Binka FN. Cultural factors constraining the introduction of family planning among the Kassena-Nankana of Northern Ghana. Social Science and Medicine 1997; 45(12): 1789 – 804.

[41] Becker S, Sutradhar S. Fertility intentions: Are the undecided more like those who want more or want no more children? Journal of Biosocial Science 2007; 39(01): 137 – 145.

[42] Islam MM, Bairagi R. Fertility intentions and subsequent fertility behavior in Matlab: Do fertility intentions matter? Journal of Biosocial Science 2003; 35(4): 615-19.

[43] Clements S, Madise N. Who is being served least by family planning providers? A study of modern contraceptive use in Ghana, Tanzania, and Zimbabwe. African Journal of Reproductive Health 2004; 8(2): 124-36.

[44] Kayembe PK, Fatuma AB, Mapatano MA, Mambu T. Prevalence and determinants of the use of modern contraceptive methods in Kinshasa, Democratic Republic of Congo. Contraception 2006; 74: 400-6.

[45] Phillips JF, Binka FN, Adjuik M, Nazzar A, Adazu K. The Determinants of contraceptive Innovations: A case-control study of family planning acceptance in a traditional African society. Population Council 1997; Working Paper No. 93.

[46] Castle S. Factors influencing young Malians to use hormonal contraceptives. Studies in Family Planning 2003; 34(3): 186-99.