

**DETERMINANTS OF UNINTENDED PREGNANCY: A COMPARATIVE STUDY OF
CENTRAL AND COAST REGIONS OF KENYA**

BY

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DECLARATION

I hereby declare that this research project is my original work and to the best of my knowledge has not been presented for a degree in any other university.

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This research project has been submitted for examination with our approval as University Supervisors:

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DEDICATION

To my father, Michael Kung'u, who despite the challenges life has to offer, ensured my academic success. He taught me the value of hard work, discipline and endurance. His love for education is unequalled and his encouragement and support during my entire education is relentless. These values motivate me to be a better person each day.

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ABSTRACT

This study sought to establish the demographic, socioeconomic and cultural determinants of unintended pregnancy among women aged 15-24 in Central and Coast regions of Kenya and to examine the unmet need for family planning on unintended pregnancy among the study population in the two regions. The study used the 2008/9 Kenya Demographic and Health Survey dataset. Both study regions had 315 surveyed women aged 15-24 who's most recent pregnancy ended up in a live birth.

Bivariate analysis was used to establish the association between the independent variables and the dependent variable while the multivariate analyses were used to establish the predictors of unintended pregnancies in the two regions. Results showed that current marital status and number of living children were predictors of unintended pregnancy in Central region while current marital status and unmet need for family planning were predictors of unintended pregnancy in Coast region.

The findings showed that unmet need for family planning was the main factor responsible for the high level of unintended pregnancy in both regions. The findings recommend increase in access to FP, thereby reducing unmet need for contraception as well as necessitate the need for urgent sexual and health education programs that will ensure more females stay in school longer, gain insightful reproductive health knowledge and consequently minimize unintended pregnancy. These programs and policies will help in spacing of children among the study population who are still exposed to longer reproductive risks and for the few who want to limit children. The family planning and sexual and health education programs should mostly target young women, unmarried ones and those with two or more living children in both regions. Further research is needed to explore the connection between unintended pregnancy and unmet need for family planning therefore shedding more light on the relationship between unmet need and unintended pregnancy.

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LIST OF ACRONYMS AND ABBREVIATIONS

SSA	–	Sub-Saharan Africa
IPPF	–	International Planned Parenthood Federation
KDHS	–	Kenya Demographic Health Survey
FP	–	Family Planning
CSA	–	Centre for the Study of Adolescence
KDHS	–	Kenya Demographic Health Survey
KNBS	–	Kenya National Bureau of Statistics
SPSS	–	Statistical Package for Social Scientists
SLT	–	Social Learning Theory
HBM	–	Health Belief Model
TPB	–	Theory of Planned Behavior
CPR	–	Contraceptive Prevalence Rate

CHAPTER ONE: INTRODUCTION

1.1 Study background

In 2008, an estimated 208 million pregnancies occurred worldwide. Of these pregnancies, nearly 185 million (90%) occurred in developing world and 86 million (41%) were unintended. Of these (unintended pregnancies), 33 million (39%) ended in unplanned births, 41 million (48%) ended in abortion and 11 million (13%) in miscarriage, (Singh et al., 2010). An estimated 2.2 million unintended pregnancies occur annually among adolescent females living in SSA, (IPPF, 2010) where more than 50% of women give birth before age 20, (Bankole and Malarcher, 2010) with the gravest consequences for those who are poorest, least educated, and living in rural and isolated areas, (Singh et al., 2009). In 42 SSA countries studied, 44% of the estimated 42 million unintended pregnancies were among fecund women under age 25, (Hubacher et al., 2008).

Overall, the proportion of unintended births in Kenya changed substantially between 1993 and 2008/09 (from 51% to 43%). The 2008/09 KDHS estimated that 43 percent of births that occurred five years preceding the survey were unintended (26% mistimed and 17% unwanted), and these estimates showed a marginal decline from those observed during the 2003 KDHS that recorded unintended births at 45 percent. The proportion of births that were reported as mistimed consistently stayed higher than unwanted births across all surveys among the women aged 15-24. These unintended births contribute significantly to unwanted population growth, which consequently compromises provision of adequate social services. Therefore, elimination of unintended births is important not only to reduce fertility and the rate of unwanted population growth, but also to enhance the wellbeing of women and their families, (Bongaarts, 1997).

Pregnancy is unintended when it is either mistimed (that is, they occurred earlier than desired) or unwanted (that is, they occurred when no children, or no more children were desired) at the time of conception, (Santelli, et al., 2003). Unintended pregnancy can lead to one of three outcomes: i) a spontaneous abortion or miscarriage; ii) an induced abortion (safely or unsafely); iii) a live birth, considered here to be an unplanned birth. Consequently, this study only measures the intendedness of pregnancies that were carried to term, that is, considered to be unplanned births (i.e. unwanted or mistimed); women are not asked about their intentions for a pregnancy that was terminated or ended in a miscarriage.

Unintended pregnancy is an important public health concern in both developing and developed worlds. It affects the social, economic and health outcomes for mothers and their children. According to Santelli et al., 2003 women who have an unintended pregnancy are more likely to delay antenatal care or have fewer visits, maternal morbidity and mortality as well as have fewer educational and development opportunities. Unintended children are more likely to have low birth weight, premature birth, infant morbidity and mortality, poor mental wellbeing, poor utilization of antenatal and postnatal care, less breastfeeding, acute respiratory infection and diarrhoea, less likely to receive vaccinations, lower nutritional status, and limited education and economic prospects. Key among these adverse outcomes is unsafe abortions, especially in countries where they have not been legalized. In Kenya, they cause high maternal mortality currently estimated at 488 per 100,000 live births, (KNBS and ICF Macro, 2010). Over 300,000 abortions occur in Kenya annually causing about 2,600 maternal deaths yearly, (Hussain, 2012).

The level of unintended pregnancy can be used as an indicator of the state of women's reproductive health and of the degree of autonomy women have in determining whether and when to bear children (Eggleston, 1999). The high level of unintended pregnancy and childbirth among women stem largely from barriers in accessing and using contraception, nonuse or incorrect use of contraceptives and/or noticeable contraceptives failure and lack of adequate information about pregnancy prevention, (Bankole and Malarcher, 2010). They also occur even among women who use contraception because of poor or incorrect use of methods, use of ineffective methods, or gaps between method discontinuation and subsequent use or gaps between stable relationships (Frost and Darroch, 2004). One study found that women aged 15-24 in developing world account for one-third of unmet need for contraception, (Ross & Winfrey, 2002).

Previous studies have focused on establishing the determinants of unintended pregnancy in Kenya and other countries have found various significant determinants. For instance, in Egypt, a prospective study revealed that the majority of women never used contraception, and unintended pregnancy was more prevalent in this category compared to those who had ever used, (Shaheen et al., 2007). Similarly, a study in Peru showed that 35% of unintended pregnancies were predominantly attributed to a failure of traditional contraceptive methods while 26% due to nonuse of any method, (Mensch et al., 1997). In Nairobi, Kenya, a study showed that women

whose last pregnancy was unintended were more likely to be using a modern method of contraception, compared to their peers whose last pregnancy was intended, especially among the wealthier groups. For some women, unintended pregnancy was a consequence of strong opposition by their partners to FP while others reported they started using contraceptives following their unintended pregnancy, but discontinued after experiencing side effects, (Fotso et al., 2014). A comparative study in Central Kenya revealed that unintended pregnancy was statistically associated with maternal age, wealth index, marital status, number of living children and preceding birth interval, (Kaaria, 2012; Wanjiru 2013) while in the Coastal region; years of schooling, religion, current marital status, age at first sex and current use of modern contraceptives had a significant relationship with unintended pregnancy, (Jumbe, 2014).

Results from published study in Nairobi, Kenya by Ikamari et al., 2013 among women aged 15-49 years found that young and unmarried women aged 15–19 showed elevated risk than older and married women to experience unintended pregnancy. Similar findings have been reported in other studies such as in Harare (Mbizvo et al., 1997), in Nepal, (Adhikari, et.al. 2009), in Iran (Abbasi-Shivazi et al., 2004) and in Nigeria (Okonofua et al., 1999). The findings showed that women from medium and rich households were less likely to experience unintended pregnancy compared to women from poor households and that the determinants of unintended pregnancy differed between women in each type of settlement. Increase in parity lowered the risks. However, this contradicted a study in Ecuador and in Sudan that showed increase in parity heightened the likelihood of unintendedness, (Eggleston, 1999; Abdalla S.M. et al., 2014). In Malawi, the study showed no significant association between unintended pregnancy and education which had similar findings from studies conducted in Kenya, Japan and Nepal. However, there was a significant association between unintended pregnancy and education in United States and Sudan on the correlates of unintended pregnancy, (Finer and Zolna, 2011; Abdalla S.M. et al., 2014).

Although the above studies have been conducted to establish the determinants of unintended pregnancy in Kenya and other countries, these explanations have not been fully tested at regional levels in Kenya. This study thus sought to test these determinants and find out if they are consistent with findings elsewhere. Some of those studies anchored their explanations for high unintended pregnancy on social-cultural factors- (Ikamari et al., 2013); others (Shaheen et al.,

2007; Mensch et al., 1997) attributed unintended pregnancies to a failure of contraceptive methods and others anchored on socio-economic factors (Finer and Zolna, 2011). This study thus focused on addressing a gap on the determinants and also to examine the unmet need for family planning on unintended pregnancy.

1.2 Problem statement

Singh and Darroch (2012) estimate that, on average, 79 percent of unintended pregnancies occur because of an unmet need for effective methods. The reasons why a woman is not using contraception when she does not want to become pregnant, i.e. why she has an unmet need, vary considerably and remain poorly understood (e.g. Sedgh et al 2007). Research on unintended pregnancy in Africa continues to expand though much of it has addressed trends, risk factors, determinants, magnitude, distribution, and socioeconomic, emotional health and other implications of unintended pregnancy, (Mbizvo et al., 1997; Adetunji, 1998; Okonofua et al., 1999; Marston & Cleland, 2003; Magadi 2003, 2006; Sedgh et al., 2006; Shaheen et al., 2007; Izugbara et al., 2011; Ikamari et al., 2013). Still there is paucity of empirical research on causes of early pregnancies in African countries.

Programs that have attempted to reduce unintended pregnancies have shown no evidence of success. For example, in Kenya, *AMUA initiative* (Mumah et al., 2014); cluster randomized trial (CRT) conducted in Tanzania to evaluate the *MEMA kwa Vijana* intervention, (Doyle et al., 2010); *Stepping Stone* intervention in South Africa, (Jewkes et al., 2008) and Regai Dzive Shiri project in Zimbabwe, (Cowan, et al., 2013) all showed no effect on intervention on unintended pregnancy among young women since introduction. To get a full picture of the problem, unintended pregnancies should be viewed within the broader socioeconomic and socio-cultural environment in which the women live and operate, (Were, 2007).

There is very little published literature that focuses on the determinants of unintended pregnancy in developing countries, particularly in Kenya. The existing literature in Kenya have addressed mainly the correlates magnitude, prevalence, consequences and repeatability, (Magadi 2003; Were 2007; Murage 2011; Obare, 2012; Kaaria, 2012; Wanjiru 2013; Ikamari et al., 2013). Though there are a very few studies about determinants of unintended pregnancy in Kenya, this type of research which examines the unmet need for FP on unintended pregnancy among women

aged 15-24 in Central and Coast regions of Kenya has not yet been undertaken. This study therefore seeks to explore the determinants of unintended pregnancies among 15-24 year old women in Coast and Central regions of Kenya while examining the unmet need for FP on unintended pregnancy.

1.3 Research question

Arising from the problem statement above, the study addressed and answered the following questions:

- i. What are the determinants of unintended pregnancy among women aged 15-24 in Central and Coast regions of Kenya?
- ii. What is the effect of unmet need for FP on unintended pregnancy among women aged 15-24 in Central and Coast regions of Kenya?

1.4 Objectives of the study

The overall objective of the study was to establish the determinants of unintended pregnancy and examine the unmet need for FP on unintended pregnancy among Central and Coast women aged 15-24.

The specific objectives of the study were:

- i. To establish the demographic, socioeconomic and cultural determinants of unintended pregnancy among women aged 15-24 in the two regions.
- ii. To examine the unmet need for FP on unintended pregnancy among women aged 15-24 in the two regions.

1.5 Justification of the study

The determinants of unintended pregnancy among young women aged 15-24 in Central and Coast regions of Kenya has not been fully explored and clearly understood. This study will reveal some of the selected demographic, socioeconomic and cultural determinants that contribute to unintended pregnancy and examine the unmet need for FP on unintended pregnancy among young women aged 15-24 in these regions.

From the programs point of view, the findings intend to provide knowledge, policy and program recommendations that will direct demographers, researchers, programmers, policy makers, health service providers and government to formulate effective sustainable programs to help avert unintended pregnancy and minimize the risks of pregnancy-related complications such as abortion, maternal and infant morbidity and mortality will be decreased, and the overall health of the family can be improved with appropriate birth spacing and family size in these regions.

1.6 Scope and Limitations of the Study

This study used secondary data from 2008-09 KDHS, a nationally representative probability sample survey. It focused on 315 sampled women aged 15-24 who's most recent pregnancy ended up in live birth in Central and in Coast regions of Kenya. However, this study had several limitations. Due to the sparse data in Central region, some of the selected variables –marital age, education level and religion – could not be tested. This is because they produced very large standard of errors with abnormal values hence excluded in the entire multivariate analysis for Central region. Adding them would have made analysis hard.

KDHS has used the conventional definition of unintended pregnancy which is based on only one question, so the findings of this study may not adequately capture some important qualitative criteria of an unintended pregnancy such as method failure, the pregnancy was due to pressure of husband or other family members, the partners were not determined to have a child before pregnancy etc. However, there may be some other factors that may influence pregnancy intention. Therefore, there is need for a qualitative approach to capture the women's ambivalence about pregnancy or degrees of intention that may vary throughout the gestation period, especially in their diverse social, economic and cultural environments. The findings of the study may not provide the whole determinants of the unintended pregnancies.

Despite the errors associated with range of misreporting and recall problems. KDHS data has been found to be fairly accurate by most researchers, (Nahar and Min, 2008; Gyimah, 2003).

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviewed the literature from previous studies conducted elsewhere that have been undertaken to explain the determinants of unintended pregnancy. It addressed the theoretical perspectives within which unintended pregnancy is understood, especially along the demographic, socio-economic, cultural, access to health information and services factors that determine unintended pregnancy. It also provided the conceptual and operational frameworks that guided the study and finally the study hypotheses.

2.2 Theoretical perspectives on unintended pregnancy

Researchers have employed a number of theoretical frameworks in their attempts to explain the unintended pregnancy. Unintended pregnancy can be best understood within theoretical perspectives such as the social learning (cognitive) theory; health belief model; theory of planned behavior or reasoned action among others that have been widely applied by several scholars.

2.2.1. Social Learning (Cognitive) Theory

The Social Learning Theory (SLT) posits that behavior is the result of “reciprocal determinism”—the continuing interaction between a person, the behavior of that person, and the environment within which the behavior is performed. The constant interaction between these factors is such that a change in one has implications for the others. Behavior can result from the characteristics of a person or an environment, and it can be used to change that person or environment as well. Behavior is viewed not in isolation, but rather as the outcome of the dynamic interaction of personal and environmental variables.

The two most important variables that SLT takes into account are self-efficacy and modeling. Self-efficacy, or the confidence in one’s ability to successfully perform a specific type of action, is considered by Bandura (the “father” of Social Learning Theory) to be the single most important aspect of the sense of self that determines one’s effort to change behavior. That people learn not only from their own experience, but from the actions and reactions of others as well, is defined as imitation or modeling, a basic premise of Social Learning Theory. Other important variables include knowledge, skill, problem-solving, expectations, self-control, emotional

coping, perception of the environment, attitudes, beliefs, intent, and motivation. The term “personal variable” refers to an objective notion of all the factors that can affect an individual’s behavior that are physically internal to that individual. “Environmental variables” include both social and physical. Social environment includes reinforcement, family members, friends and colleagues. Physical environment is the size of a room, the ambient temperature or the availability of certain foods—in short, all the factors that can affect a person’s behavior that are physically external to that person, (Bandura, 1997). In this research, it is hypothesized that personal characteristics such as age, education, occupation and environmental characteristics such as spouse, autonomy, and religion affect their contraceptive using behavior which affect unintended pregnancy.

2.2.2 Health Belief Model

The Health belief model (HBM) is a psychological model that was first developed in the 1950s by social psychologists Hochbaum, Rosenstock and Kegels working in the U.S. Public Health Services. The HBM attempts to explain and predict health behaviors and it affirms that readiness for action stems from an individual’s estimate of the threat of illness or, as applied to a pregnancy prevention intervention, pregnancy and sexually transmitted diseases.

The HBM has four constructs representing the perceived threat and net benefits: *perceived susceptibility*; *perceived severity*; *perceived benefits* and *perceived barriers*. These concepts were proposed as accounting for people's "readiness to act". Rosenstock and others in 1988 have added two more concepts: cues to action and self efficacy. Cues to action, would activate that readiness and stimulate overt behavior and self efficacy helps the HBM better fit the challenges of changing habitual unhealthy behaviors. The HBM proposes that individuals consciously consider and weigh all the different variables in deciding the actions they will pursue. A kind of “cost-benefit analysis” is thought to occur in which an individual weighs opposing or conflicting options. The cost side consists of susceptibility and severity factors, while the perceived benefits of taking action and the ability to overcome perceived barriers to action make up the benefit side.

In applying this theoretical framework to a pregnancy prevention intervention, HBM is based on the understanding that a person will take a health related action (i.e. use of FP) if that person feels that a negative health condition (i.e. Unintended pregnancy) can be avoided. And has a positive expectation that by taking a recommended action, he/she will avoid a negative health

condition (i.e. using FP will be effective at preventing Unintended pregnancy) and believes that he/she can successfully take a recommended health action (i.e. he/she can use FP comfortably and with confidence).

2.2.3 Theory of Planned Behavior/ Reasoned Action

The theory of reasoned action (TRA) is developed by Ajzen and Fishbein in 1980. This theory was related to voluntary behavior. Later on behavior appeared not to be 100 percent voluntary and under control, this resulted in the addition of perceived behavioral control. With this addition the theory was called the theory of planned behavior (TPB), (Ajzen, 1991). The theory of planned behavior is a theory which predicts deliberate behavior, because behavior can be deliberative and planned (Ajzan & Fishbein, 1980).

TRA suggests that a person's behavior is determined by his/her intention to perform the behavior. Intention is the cognitive representation of a person's readiness to perform a given behavior, and it is considered to be the immediate antecedent of behavior. This intention is determined by three factors: their attitude towards the specific behavior, their subjective norms and their perceived behavioral control. For example, people's intention, perception, social pressure and belief are the factors affecting the contraceptive use. It is also associated with availability and accessibility of FP information and services that can change knowledge, attitude and behavior of the people.

As applied to an unintended pregnancy prevention intervention, factors from this theoretical framework that should be emphasized include attitudes (e.g., whether females view having a child early in life as a positive or negative event), perceived norms (e.g., what females believe their family and friends think they should do regarding delaying sexual activity and pursuing further education), and perceived personal control(e.g., whether females feel they have the negotiation skills to delay having sexual intercourse). Other factors to emphasize in educational, counseling, and media interventions include perception of consequences, perception of barriers to taking protective action, and perceived support from other people who matter to the females, such as his/her partner. Threat appraisal, in the form of personal vulnerability to pregnancy or decision-making skills, should also be stressed in the intervention.

TRA began to take hold in social science; however, this theory was not adequate and had several limitations (Godin & Kok, 1996). The limitations include; people who have little or feel they have little power over their behaviors and attitudes; factors such as personality and demographic variables are not taken into consideration; there is much ambiguity regarding how to define perceived behavioral control and this creates measurement problems; assumption is made that perceived behavioral control predicts actual behavioral control. This may not always be the case. TpB only works when some aspect of the behavior is not under volitional control. The longer the time interval between behavioral intent and behavior, the less likely the behavior will occur and lastly the theory is based on the assumption that human beings are rational and make systematic decisions based on available information. Unconscious motives are not considered.

In general, according to this model, the more positive the attitude and the subjective norms are (towards cessation), and the greater the perceived control is, the stronger the individual's intention will be to prevent unintended pregnancy.

2.3. Research studies explaining unintended pregnancy

2.3.1. Demographic factors

a) Maternal Age

Studies have established that age due to physical development has great effect on woman sexual behavior. Women's age is significantly associated with unintended pregnancy. Studies showed that young women (15-19) are at elevated risks to unintended pregnancy than older women, (Mbizvo et al., 1997; Ikamari et al., 2013). Studies in Nigeria and in Iran concurred in their findings where in Iran, younger women reported a much lower rate of unintended pregnancies compared to older women, while in Nigeria, the study showed that higher the age of women, it is more likely that they report their pregnancy as unintended, (Okonofua et al., 1999; Abbasi-Shavazi, et al., 2004). In Nepal, unwanted births generally increase with mothers' age; rising from a low of 1 percent among mothers below 20 years of age to a high of 71 percent among mothers aged 40-44, (Adhikari, et.al. 2009).

Ikamari et al., 2013 noted that the unmet need for contraceptive reduced with the increase in age of women, a reason why young and unmarried women are highly susceptible to the unintended pregnancy. On the other hand, in Japan, age of women was not significantly associated with

pregnancy intention (Goto, et al., 2002). One possible reason could be the mothers who are too young may not yet be ready to bear the child and the mothers who are too old may not want more additional child.

The propensity of a woman to have unintended pregnancy increases with age. This is partly due to susceptibility to longer exposure to reproduction and coital frequency. In KDHS 2008-09, the proportion of women who begin childbearing before age 20 increases with age. That is, age 15, 16, 17, 18 and 19 was 2.1%, 9.4%, 16.5%, 26.2% and 36.2%, respectively.

b) Marital Status

The status of a woman, married or unmarried is a key primary indicator in establishing the pregnancy intention. Marriage reflects the regular exposure of women to the risk of pregnancy and is therefore important for the understanding of fertility. This factor gives an indicator to the age at which a woman got married. Populations in which age at first marriage is low tend to have early childbearing and subsequently give birth to more children, leading to high fertility rates which increased unintended pregnancy (Goto, et al., 2002).

In a study of Kuwait, women who had married before they were 18 years of old wanted about one child more than women who had married at age 21 or older (Shah, et al., 1998). Similarly, study conducted in Shanghai, China showed that strong relationship between the desired timing of the first birth and wife's age at marriage. For example, 23% of wives who married before age 24 wished to postpone conception for more than one year, compared with 2% of wives who married at age 30 or older (Che & Cleland, 2004). Sexually active unmarried women tend to think that they are "safe" from pregnancy as they have never been exposed to any, (Ikamari et al., 2013).

Coast region has a lower median age at first marriage (below 20) compared to Central region, that is, women in Coast enter into marriage earlier than women in Central. Married women had a lower unmet need for contraceptives compared to the sexually active unmarried women, (KNBS and ICF Macro, 2010).

c) **Number of living children**

Studies have shown that women are less conscious and take minimal safety measures against unintended pregnancy prior to having any live birth. Soon after experiencing an unintended pregnancy it leads to uptake of contraception, (Fotso et al., 2014). In addition, women whose last pregnancy was unintended were more likely to be using a modern method of contraception, compared to their peers whose last pregnancy was intended, especially among the wealthier group. Among poor women, unintended pregnancy was not associated with subsequent use of contraception.

High parity and unintended pregnancy were clearly linked. The more children a woman already had, the more likely she was to report that her current/last pregnancy was unintended. For example, in Nepal, unwanted birth is increased as birth order is increased. Similar findings have been observed in Iran. The proportion of unintended pregnancy has increased as increase the order of pregnancy (13.5% for first order of pregnancy to 58% for forth and higher order of pregnancy) (Abbasi-Shavazi, et al., 2004).

Kenyan women are adopting FP at lower parities (i.e., when they have fewer children) than in the past. Among younger women (age 15-19), 10 percent used contraception before having any children and 3 percent started using contraception when they had one child. Similarly (age 20-24), 22 percent used contraception before having any children and 25 percent started using contraception when they had one child.

A study finding in Ecuador indicated that the likelihood of unintendedness increases with a woman's number of children. Further, the study showed that women with unwanted pregnancies had had an average of 3.7 previous births; while women with planned pregnancies had had 1.7 previous births, (Eggleston, 1999). Similarly, the study conducted in Harare showed that women at parity five presented more often with an unplanned pregnancy compare to other parity (Mbizvo, et al., 1997).

2.3.2. Socioeconomic factors

a) Education level

Maternal education may be an indicator of socioeconomic status. A strong correlation between women's education and reduced childbearing consistently emerges from studies throughout the developing world, (Martin and Juarez 1995). The level of unintended pregnancy reduces with increase in educational level. Yearly, unintended pregnancy contributes to as many as 10,000 girls to drop out of school in Kenya, (CSA 2008). Mboup and Saha (1998) found that in many SSA countries, women with no schooling have about two to three children more than women with secondary or higher education. According to Gupta and Mahy (2003), young women with no education are over three times as likely to have started childbearing by age 19 than those who have secondary and higher education (32% versus 10%). Results from their study also reinforced other previous findings that improving girl's education is a key instrument for raising ages at first birth, but suggest that increases in schooling at lower levels alone bear only somewhat on the prospects for fertility decline among women, a concept that Finer and Zolna, (2011) found in their studies.

Educated women are more likely to desire smaller families and have a stronger motivation to practice contraceptive. They are also better informed about available contraceptive options and sources and likely to use contraceptive effectively. Therefore, educated women are much more likely to have planned pregnancies (Bongaarts, 1997). Women with no formal education or who had not completed primary school were more likely to have had an unwanted pregnancy than women with a primary schooling (Eggleston, 1999). On the other hand, some studies have shown that there is positive relationship or no significant association between mother's education and unintended pregnancies. For example, in Nigeria, women with a university education reported three times more likely to experience unintended pregnancy compared to those with no education (Okonofua, et al., 1999). Similarly, in Japan, Malawi, Kenya and Nepal there was no significant association between the experience of unintended pregnancy and women's education (Goto, et al., 2002; Adhikari et al. 2009; Ikamari et al., 2013; Palamuleni 2014). One possible explanation is that better educated women have a stronger motivation than other women to space their children or to delay the onset of a first birth.

Expanding access to formal education is generally seen as a crucial intervention for preventing early childbearing among women. Policy and decision-makers often implicitly assume a causal flow from girl's education to lower pregnancy rate. Empirical results indicate that girls' education level has significant influence on the probability of early birth, with non-schooling adolescents and those with primary school level education being more vulnerable. Among the variables used as proxies for access to sex education, availability of church forums that educate young women about sex and family life issues reduce probability of unintended pregnancy (Were, 2007). Contraceptive use increases dramatically with increasing level of education. 60% of married women with at least some secondary education use a contraceptive method compared with 40% of women with incomplete primary education and only 14% of those who never attended school. The more educated the woman the higher the tendency to use the contraceptives though this is not always the case. Since having the knowledge of contraceptives does not directly translate to its use.

b) Place of residence

Regional variation exists in regard to unintended pregnancy due to different socio-cultural pattern and practices. Equally, urban and rural distinction was considered important because of differences in access to health facilities, cultural beliefs, living situations and opportunities.

Research studies have suggested that rural women are more likely than urban women to experience unintended pregnancy. For example, the study conducted in Peru showed that the proportion of having unintended pregnancy was 32% in rural area compared to only 13% in the capital city (Mensch, et al., 1997). Similarly, a study conducted in Kenya showed that the proportion of having unintended pregnancy was 17% in urban area relative to 16% in the rural area. Further, young motherhood is slightly more common in urban areas than in rural areas. Contraceptive use has been more prevalent in urban areas than rural areas hence the reason why unintended pregnancy has been high in rural than in urban areas, (Oduor, 2010).

However, there are some contradictions findings in the study conducted in Ecuador. It showed that residence in rural and non metropolitan urban areas independently lowered the likelihood of both unwanted and mistimed pregnancy compared to two largest cities of the country (Eggleston, 1999). This could be as a result of heavy migration from rural to urban areas that might have

overburdened FP services in urban area. In addition, rural women's ideal family sizes tend to shift downward when they move to large cities, where living space is more limited and the cost of living is higher. Another reason could be the stronger motivation for smaller family norm of educated and employed women who are residing in urban areas.

c) Wealth Quintile

Studies have showed that there is a link between wealth status and unintended pregnancy at household. Some findings showed that women from medium and rich households were less likely to experience unintended pregnancy compared to women from poor households, (Ikamari et al., 2013; Palamuleni. 2014). Women from poorer households are more likely to have begun childbearing (24 percent) than are women from wealthier households (16 percent), (KNBS and ICF Macro, 2010).

2.3.3. Socio-cultural factors

a) Religion

Coast region has diverse religious groups including Christians (Catholics and Protestants) and Muslims, traditionalists, among others. Muslim is the dominant religion particular in Malindi, Mombasa and Lamu. Central region is mainly dominated by Christians. Religion, just like culture, can shape key demographics of a population. It is well documented how different religious denominations react towards the use of modern contraception, entry into sex, marriage and abortion which then affect unintended pregnancy. In a Muslim community, virginity until marriage is emphasized but the high level of unintended pregnancy in Coast region clearly indicates early sexual debut and high unmet need for contraception, (Hofert and Hayes, 1997).

Some studies have found that the relationship between religious affiliation and reproductive health behavior. Phillips and other (1989) showed in Bangladesh that Hindus are more likely to use sterilization than Muslim. The study in Greater Freetown, Sierra Leone has found the higher contraceptive prevalence rate among women affiliated with Catholics or another Christian religion than among those affiliated Islam (Amin, et al., 1992). Restriction about women activities also plays great role on contraceptive use and fertility planning. Islam restricts

women's activities in ways that other religions do not (Caldwell, 1986). In contrast, Bhende and other (1991) in India showed that low contraceptive practice among Hindu than Muslim. The other study found that all non-catholic religious groups had slightly higher rates of contraceptive prevalence compared with Catholics in Kinshasa, Zaire (Shapiro, et al., 1994). Muslim women have the highest proportion of childbearing compared to other religions, (Oduor, 2010).

Every religion has their own norm, value and belief about contraception and reproductive health issues including contraception. It can be concluded that religion may have influence on methods selection which has more or less affect on unintended pregnancy but it is difficult to generalize as a common phenomenon. Religion values acts like a moral guide to people. Sermons influence the woman's attitude, values and decisions and are prohibitive of any sexual misconduct, (Odimegwa, 2005). According to a study by Gregory (2014), he noted that religion tend to unite friends with similar religiosity that enforce social ties and contribute to youths making positive choices amid negative peer influence. It has been shown that "religion in the home is a major factor in the social acquisition of youth religions values", including values about pregnancy, (Gregory, 2014).

2.3.4. Access to health information /services

2.3.4.1. Access to Mass Media

Mass media have an important effect on reproductive behavior. Throughout the world, media has influenced on knowledge, attitude and behavior regarding the use of contraception, hence an important role to reduce unintended pregnancy. The Study in Ilorin, Nigeria, noted that the mass media such as radio, television and newspaper were the greatest single role in providing knowledge on family planning to women and increasing current use of contraception (Oni & McCarthy, 1990). Jato and other (1999) also reported that the more types of media those women were exposed to, the more likely they were likely to practice contraception.

The use of mass media for education on various health issues has been considered in many studies to influence delayed child bearing among women. Information access is essential for increasing people's knowledge and awareness of what is taking place around them, which may eventually affect their perceptions and behavior, (Jumbe, 2014).

According to Adhikari et al., 2009, it is hypothesized that women in the vulnerable group (illiterate, living in the rural area, working on agricultural sector), who have a less autonomy in the family, who are not exposed to mass media lead to low knowledge of FP and low utilization of the health services which in turn lead to higher unintended pregnancy. Further, they noted that the increase in exposure to mass media decreases the level of unintended pregnancy, that is, the higher the number of FP method heard, the lower the percentage of women reporting the current pregnancy as an unintended. In their study, it showed that those who were exposed to radio are 40% less likely to have unintended pregnancy compared to those who were not exposed. Therefore, media exposure gives wider range of knowledge that lead women to adopt contraception methods and sensitizes couple about the family norms so that they have low parity and which can reduce unintended pregnancy (Westoff & Rodriguez, 1995; Odimegwu, 1999).

2.3.5. Unmet need for Contraception

In Kenya, it is estimated that 2 in 5 are unintended pregnancies among women. The high level of unintended pregnancies can be attributed to comparatively high levels of unmet need for contraception has not declined during the past decade -it is estimated that about 1 in every 4 women who want to space or stop childbearing in the next two years is not using any contraception in Kenya, (KNBS and ICF Macro, 2010). Overall, 26 percent of married women and 7 percent of currently unmarried women interviewed in 2008/09 KDHS had an unmet need for FP. Meeting the unmet need for contraception also has implications for demographic trends as unintended pregnancies contribute significantly to higher fertility rates and population growth. This means that correct and consistent use of effective contraceptives can avert unintended pregnancies, (Singh et al., 2010).

Studies have shown the significant association between unintended pregnancy and contraception. A study in Egypt revealed that the majority of women never used contraception, and unintended pregnancy was more prevalent in this category compared to those who had ever used, (Shaheen et al., 2007). Similarly, a study in Peru showed that 35% of unintended pregnancies were predominantly attributed to a failure of traditional contraceptive methods while 26% due to nonuse of any method, (Mensch et al., 1997). Other studies include (Ross & Winfrey, 2002; Adhikari et al., 2009; Ikamari et al., 2013).

The national modern Contraceptive Prevalence Rate (CPR) is estimated at 39 percent. Central Province continues to have highest CPR at 67 percent among married women while Coast Province has the lowest CPR at 34 percent after North Eastern Province at 4 percent. From this rate, it can logically be assumed that women who carry an unintended pregnancy to term, as a result of an unmet need for FP, suffer unnecessary and preventable death and disability, (Biddlecom, 2008). This unmet need for effective contraception, together with incorrect and inconsistent use among modern method users and the desire for large families, may explain regional variations in levels of unintended pregnancy, (Singh et al., 2010).

In summary from the above literature, unintended pregnancy has been explained by several demographic, socio-economic, cultural and access to health information /services factors operating at various levels. The literature reviewed indicated that the researchers had established the determinants of unintended pregnancy falling under either of the mentioned categorical factors. Education was established to be significant in some studies (Finer and Zolna, 2011) while it was not in others (Goto, et al., 2002; Adhikari et al. 2009; Ikamari et al., 2013; Palamuleni 2014). Similarly, area of residence was significant in some studies (Mensch, et al., 1997) while it was not for others (Eggleston, 1999). Marital status, wealth quintile, religion, access to mass media and unmet need for contraception were found to be significant determinants of unintended pregnancy in all the literature reviewed.

2.4. Conceptual framework

The conceptual framework used for this study was borrowed from a similar related study that was conducted in Nepal by Adhikari et al., 2009. For this study, the concept is derived from several studies of the past that have shown the relationship among various causal factors and unintended pregnancy

According to Adhikari and colleagues, the framework consists of four domains of independent variables and one domain of intervening variables. Independent variables are socio-economic characteristics, socio-cultural factors, demographic characteristic and access to health information/services. Similarly the domain of intervening variables is knowledge and practice of FP methods.

Socio-economic domain includes women's education, women's occupation, and place of residence. Socio-cultural factor comprises of spousal communication, religion and women's autonomy. Women's autonomy was measured by two variables: one was decision taken for own health care and another was decision taken on how to spend their own earned money. Age of women, ideal number of children, parity and age at first marriage are comprised as demographic characteristics. Access to health information/services comprises of mass media (listen to the radio, watching television), FP field workers' visit and distance to (travel time) nearest FP sources. Similarly, knowledge and ever practice of FP services comprise as knowledge and ever use of family planning methods. The conceptual framework is shown in *figure 1*.

According to the literature reviewed, social-economic, social-cultural and demographic factors may be conceptualized as factors that determine unintended pregnancy in the study regions. Below are a conceptual framework and an operational framework adapted for this study. Although the framework is adapted from the Adhikari et al. (2009), some of the variables as operationalized by the researcher are not similar to how they operationalized them. The categorization of the variables was majorly informed by the studied literature.

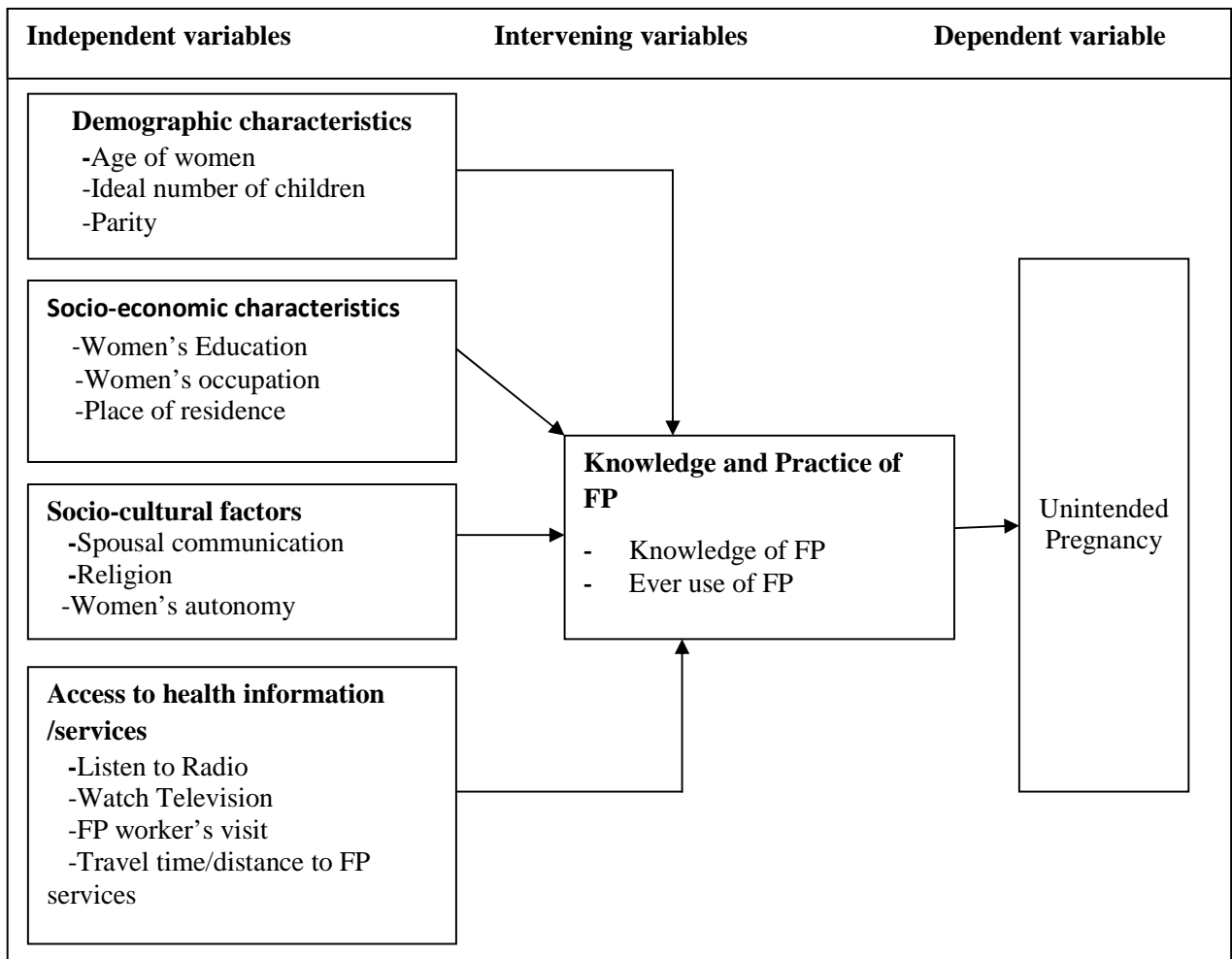


Figure 1: Conceptual framework for researching unintended pregnancy

Adopted from Adhikari et al. (2009).

2.5. Operational framework

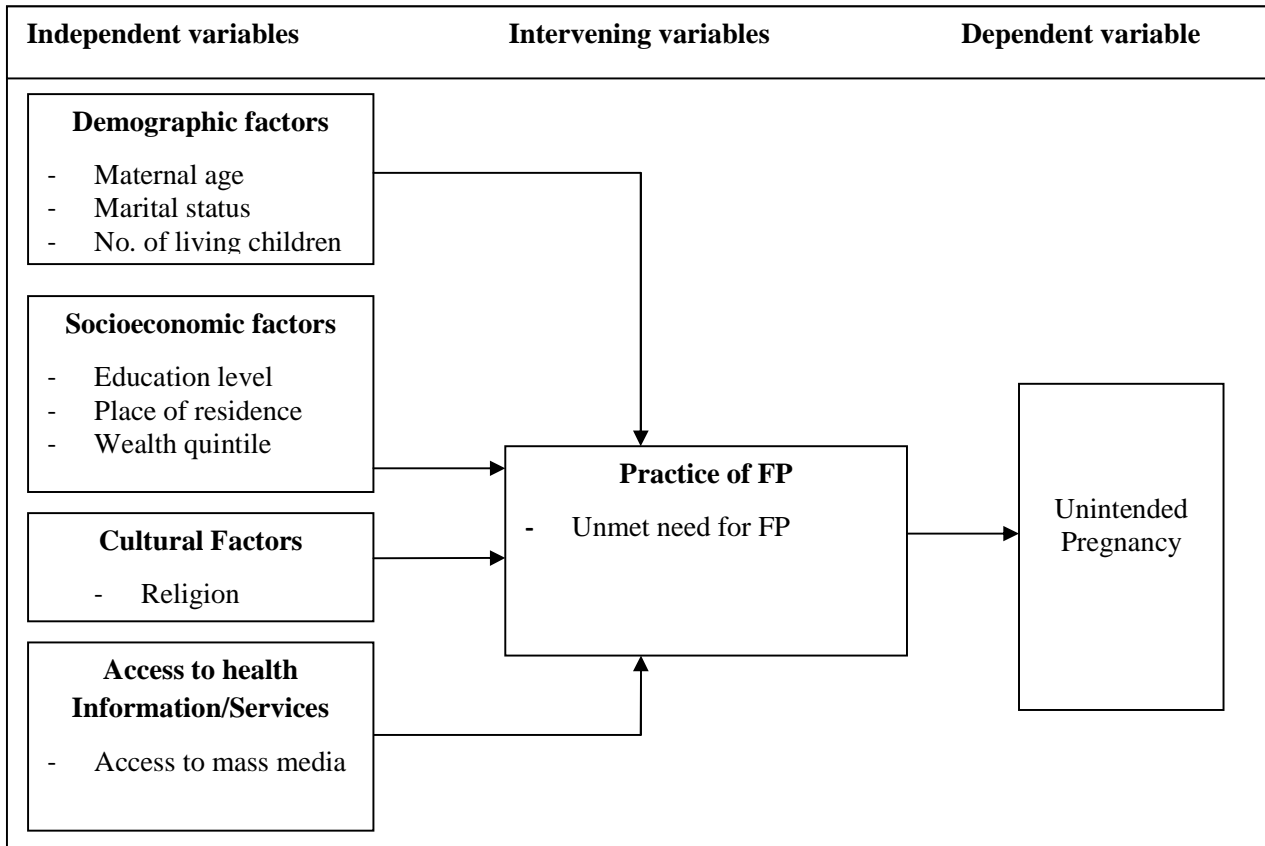


Figure 2: Operational framework for the study of determinants of unintended pregnancy

Adopted from Adhikari et al. (2009).

2.6. Operational hypotheses

I hypothesized that younger and unmarried women residing in rural areas and those with no education were more likely to experience unintended pregnancy. I also hypothesized that women with higher number of living children, women of Muslim faith, those with no access to mass media and have unmet need for FP were likely to experience unintended pregnancy

CHAPTER THREE: DATA AND METHODS

3.1. Introduction

This chapter presented the data and methods used for the analysis of the study as well as the description and measurement of the independent and dependent variables used in the study. The sources of data are described first then methods of data analysis and thereafter the description of variables and their measurements.

3.2. Source of Data

This study utilized secondary data drawn from the 2008-09 Kenya Demographic and Health Surveys (KDHS), a nationally representative sample survey of 8,444 women age 15-49 and 3,465 men aged 15 to 54 selected from 400 sample points (clusters) throughout Kenya, (KNBS and ICF Macro. 2010). The KDHS is mainly designed to provide data to monitor the population and health situation in Kenya.

This study aimed to deal with the most recent pregnancy that ended up in a live birth at the time of survey. The unit of analysis was an individual woman aged between 15 and 24. Out of 8,444 interviewed women, 838 (9.9%) had their most recent pregnancy ending up in a live birth, that is, Central (351) and Coast (487) regions of Kenya. Among these women, 246 and 277 respondents from Central and Coast regions respectively were excluded from the analysis due to missing data on intention status for their most recent pregnancy. Therefore, the total study population of this study was 315. This study used data from the woman questionnaire which contained questions on variables that the researcher wanted to investigate. Only women whose most recent pregnancy ended up in a live birth were selected for this study to minimize underreporting unintended pregnancies. It may reduce recall error because it is related to recent situation and not pregnancy history.

3.3. Methods of Data Analysis

The study used descriptive and multivariate methods of data analysis. Simple percentages were used to describe the distribution of study women by their selected background characteristics. Bivariate analysis was used to establish association between the dependent and each of the independent variables. Since the outcome variable was dichotomous, binary logistic regression

was used to establish the net effect of independent variables and intervening variables on unintended pregnancy among women aged 15-24 in Coast and Central regions, while controlling for the other variables in the model.

Logistic regression applies Maximum Likelihood Estimation after transforming the dependent variable into a logit variable (the natural log of the odds of the dependent occurring or not). In this way, logistic regression estimates the odds of a certain event occurring. The results are presented as risk ratios, which represent the relative likelihood of exposure to the variable of interest. The risk ratio of the reference group or category is one (1.00). An odds ratio of greater than 1.00 indicates increased likelihood of experiencing unintended pregnancy while an odds ratio of less than 1.00 indicates a lower likelihood of experiencing unintended pregnancy. In the study, independent variables are considered significant if their effects on unintended pregnancy are statistically significant at the 95 percent level of significance. All statistical calculations were performed using Statistical Package for Social Scientists (SPSS version 20).

Three models were used in the analysis. The first model contains the individual factors such as demographic characteristics, socio-economic factors and unintended pregnancy. The second model has institutional or societal factors like cultural factors were added. In the third model, intervening variables were added and the effect of intervening variables and independent variables on unintended pregnancy observed. This modeling concept was borrowed from a similar study done in Nepal by Adhikari et al. 2009.

3.4. Variable Description and Measurement

The dependent variable is pregnancy intention, measured as a binary variable and coded as intended pregnancy, if the pregnancy occurred at a time when the woman wanted it, and unintended pregnancy, if the pregnancy occurred at a time when the woman would have wanted it later or did not want it at all.

In the KDHS woman's questionnaire, pregnancy intention is measured by respondent's answer to the following question: "*When you got pregnant with (NAME), did you want to get pregnant at that time, did you want to wait until later, or did you not want to have any (more) children at all?*"

There were three options to allow the response. these options were: *wanted then (planned)*, *wanted to wait later (mistimed)* and *did not want at all (unwanted)*.

Those respondents who mentioned their most recent pregnancy as either mistimed or unwanted were merged and considered as unintended pregnancy and else (planned) was treated as intended pregnancy. Thus, this variable was categorized into two categories: unintended and intended.

The independent variables of the study are as described in the table below;

Table 3.1 Variables and their measurements

VARIABLE	MEASUREMENT	
Dependent Variable		
Pregnancy intention	1 =Intended	2 =Unintended
Demographic variables		
Maternal Age	1 = 15-19	2 = 20-24
Marital Status	1 = Never Married	2 = Ever Married
Number of living children	1 = 1	2= 2+
Socioeconomic variables		
Educational Level	1 = No Education	2 = Educated
Type of place of residence	1 = Urban	2 = Rural
Wealth Index	1 = Poor	2 = Rich
Access to FP services through Mass Media	1 = No	2 = Yes
Cultural variable		
Religion	1 = Non-Christian/Non-Muslim 2 = Christian/Muslim	
Intervening variable		
Unmet need for FP	1 = No	2 = Yes

CHAPTER FOUR: DETERMINANTS OF UNINTENDED PREGNANCY IN CENTRAL AND COAST REGIONS OF KENYA

4.1. Introduction

This chapter discusses results of the study showing how selected demographic, socioeconomic and cultural variables explain the determinant of unintended pregnancy in the study regions. This chapter is divided into three sections. The first section explains the background characteristics of the study population. The second section focused on the bivariate results of analysis. The last section, explains the binary logistic analysis results.

4.2. Background characteristics of the study population

Table 4.1.below presents the summary characteristics of the study sample for the two study regions. The results showed that in Central region, 55 percent of surveyed women reported their most recent pregnancy as unintended, meaning they occurred at a time when the woman would have preferred to have it later or did not want to have it at all. 45 percent reported their most recent pregnancy as intended, meaning it occurred at a time when the woman wanted it. 89 percent of these women were above age 20 with only 11 percent having between age 15 and 19 years. Similarly, 80 percent were currently married with only 20 percent never married. 69% had one living child at the time of the survey relative to a third (31 percent) that had two or more living children at the time of the survey. 99 percent of women had formal education with only 1 percent having no education at all. Majority (74 percent) live in rural areas while 26 percent live in urban areas. Distribution by wealth quintile showed that 89 percent were rich while 11 percent were poor. Ninety-nine percent were professing Christians while only 1 percent was Non-Christians. The majority (60 percent) of women had no access to mass media relative to 4 percent that had access. Eighty-six percent of these women had no unmet need for FP as compared to fourteen percent who had unmet need for FP.

In Coast region, 40 percent of surveyed women reported their most recent pregnancy as unintended, meaning they occurred at a time when the woman would have preferred to have it later or did not want to have it at all. 60 percent reported their most recent pregnancy as intended, meaning it occurred at a time when the woman wanted it. The majority (74 percent) of these women were above age 20 while 26 percent were aged 15-19. 89 percent of women were ever

married with 11 percent never married. Slightly over half (53 percent) of women had two or more living children at the time of survey relative to 47 percent who had one living child. 72 percent had education with 28 percent reporting no education at all. 57 percent of women live in rural areas with 43 percent live in urban areas. Wealth was distributed almost in equal proportion where 55 percent were rich while 45 percent were poor. Similarly, religion affiliation was distributed almost in equal proportions, where 47 percent were professing Muslims while 53 were Non-Muslims. Sixty-four percent of the women had no access to mass media while 36 percent had access to mass media. 71 percent had no unmet need for FP relative to 29 percent who had unmet need for FP.

Table 4.1 Percent distribution of women by background characteristics in Central and Coast Regions

Characteristics	Central		Coast	
	Number	Percent	Number	Percent
Pregnancy Intention				
Intended	47	44.8	126	60.0
Unintended	58	55.2	84	40.0
Maternal Age				
15-19	12	11.4	55	26.2
20-24	93	88.6	155	73.8
Current Marital Status				
Never Married	21	20.0	23	11.0
Ever Married	84	80.0	187	89.0
No. of Living Children	72	68.6	99	47.1
1 Living Child	33	31.4	111	52.9
2+ Living Children				
Educational Level				
No Education	1	1.0	59	28.1
Educated	104	99.0	151	71.9
Place of Residence				
Urban	27	25.7	91	43.3
Rural	78	74.3	119	56.7
Wealth Quintile				
Poor	12	11.4	94	44.8
Rich	93	88.6	116	55.2
Religion				
Non-Christian/Non-Muslim	1	1.0	111	52.9
Christian /Muslim	104	99.0	99	47.1
Access to Mass Media				
No	63	60.0	134	63.8
Yes	42	40.0	76	36.2
Unmet need for FP				
No	90	85.7	150	71.4
Yes	15	14.3	60	28.6
Total (n)	105	100.0	210	100.0

Source: Analysis 2008/09 KDHS

4.3. Results from the Bivariate Analysis

Table 4.2 Association between pregnancy intention and selected background characteristics in Central and Coast Regions, Kenya.

Background Variables	Central				Coast			
	Intended	Unintended	Total (n)	X ²	Intended	Unintended	Total (n)	X ²
Maternal Age								
15-19	0.0%	100.0%	12	10.979***	54.5%	45.5%	55	0.924
20-24	50.5%	49.5%	93		61.9%	38.1%	155	
Current Marital Status								
Never Married	9.5%	90.5%	21	13.183***	17.4%	82.6%	23	19.538***
Ever Married	53.6%	46.4%	84		65.2%	34.8%	187	
No. of Living Children								
1 Living Child	76.6%	50.0%	72	2.542	54.5%	45.5%	99	2.322
2+ Living Children	33.3%	66.7%	33		64.9%	35.1%	111	
Educational Level								
No Education	100.0%	0.0%	1	1.246	67.8%	32.2%	59	2.078
Educated	44.2%	55.8%	104		57.0%	43.0%	151	
Place of Residence								
Urban	51.9%	48.1%	27	0.739	59.3%	40.7%	91	0.029
Rural	42.3%	57.7%	78		60.5%	39.5%	119	
Wealth Quintile								
Poor	33.3%	66.7%	12	0.716	60.6%	39.4%	94	0.029
Rich	46.2%	53.8%	93		59.5%	40.5%	116	
Religion								
Non-Christian/Non-Muslim	0.0%	100.0%	1	0.818	62.2%	37.8%	111	0.459
Christian/Muslim	45.2%	54.8%	104		57.6%	42.4%	99	
Access to Mass Media								
No	46.0%	54.0%	63	0.103	64.9%	35.1%	134	3.743**
Yes	42.9%	57.1%	42		51.3%	48.7%	76	
Unmet need for FP								
No	47.8%	52.2%	90	2.317	64.7%	35.3%	150	4.764**
Yes	26.7%	73.3%	15		48.3%	51.7%	60	

** P <0.05; ***P <0.01

Source: Analysis 2008/09 KDHS

From above table 4.2, it can be observed that in Central region, among all the considered variables, it is only maternal age ($P < .01$) and current marital status ($P < .01$) that were significantly associated with unintended pregnancy. The results show that the younger (15-19) women had a higher (100%) likelihood of experiencing unintended pregnancy relative to older women (50%). These results are consistent with the empirical findings, (Mbizvo et al., 1997; Ikamari et al. 2013). One reason could be that the young women are susceptible to longer exposure to reproduction and unsafe coital frequency as well as they could be facing discrimination and unsupportive environment especially in the access and uptake of contraceptives services. The results also show that the unmarried women had a higher (91%) likelihood of experiencing unintended pregnancy relative to the currently married (46%). This finding concurs with the literature. This could be due to notion that the sexually active unmarried women tend to think that they are “safe” from pregnancy as they have never been exposed to any, (Ikamari et al., 2013) hence subjecting them to high risks of unintended pregnancy.

In Coast region, marital status ($P < .01$), access to mass media ($P < .05$) and the unmet need for FP ($P < .05$) were significantly associated with unintended pregnancy. The unmarried women reported a higher (83%) rate of experiencing unintended pregnancy compared to the ever married (35%). Studies have shown that the sexually active unmarried women in Coast initiate early sexual intercourse and are less likely to use contraceptives, a factor that can contribute to these results, (Ikamari and Towett, 2007). Coast women who had access to mass media had a slightly higher (57%) rate of experiencing unintended pregnancy relative to those with no access (54%). These results conform to past studies that found a significant association between access to mass media and unintended pregnancy. However, the result conflicts in association, where women with access to mass media were associated with a higher rate of unintended pregnancy. This results might be so since a good number of women are illiterate, in rural areas, married and lacking access to health information through mass media hence they might possess misconception leading to discontinuation and decreased use of contraception and consequently, increases the level of unintended pregnancy. Important to note is that most of these women profess Muslim, whose faith advocate for non-use of FP, hence unmet need for contraception. Coast women with unmet need had a higher (52%) likelihood of experiencing unintended pregnancy. It is only current marital status that manifested an association with unintended pregnancy in both Central and Coast regions.

In Central it is only maternal age and marital status that showed a significant association with unintended pregnancy while in Coast region marital status, access to mass media, religion and unmet need for FP showed a significant association with unintended pregnancy.

4.4. Results of Multivariate Analysis

This section presents the effects of demographic, socio-economic and cultural determinants on unintended pregnancy. Since the dependent variable is dichotomous, a binary logistic regression model was used to establish the net effect of each of the independent and intervening variable on the dependent variable, while controlling for the other variables in the model. Three models were used in the analysis. The first model contained the individual factors such as demographic characteristics, socio-economic factors, access to health information/services and unintended pregnancy. In the second model, socio-cultural factors were added. In the third model, intervening variable was also added and the effect of intervening variable and independent variables on unintended pregnancy was observed. This modeling concept was borrowed from a similar study done in Nepal by Adhikari et al. 2009.

Table 4.3 The effects of predictors on unintended pregnancy in Central region

	Model I			Model III		
	B	S.E.	OR	B	S.E.	OR
Current Marital Status						
Never Married (Ref)						
Ever married	-2.734	0.799	0.065***	-2.774	0.802	0.062***
No. of Living Children						
1 Living Child (Ref)						
2+ Living Children	1.222	0.479	3.395***	0.991	0.507	2.694**
Place of Residence						
Urban (Ref)						
Rural	0.078	0.497	1.081	0.066	0.505	1.069
Wealth Quintile						
Poor (Ref)						
Rich	-0.568	0.734	0.567	-0.659	0.740	0.517
Access to Mass Media						
No (Ref)						
Yes	0.334	0.465	1.396	0.390	0.503	1.477
Unmet need						
No (Ref)						
Yes				0.912	0.690	2.490
Constant	2.457	1.082	11.667**	2.511	1.092	12.312**
-2 log Likelihood	121.466			119.633		

** P <.05; ***P <.01

Source: Analysis 2008/09 KDHS

Table 4.4 The effects of predictors on unintended pregnancy in Coast region

	Model I			Model II			Model III		
	B	S.E.	OR	B	S.E.	OR	B	S.E.	OR
Maternal Age 15-19 (Ref) 20-24	-0.165	0.371	0.848	-0.110	0.377	0.895	0.081	0.393	1.085
Current Marital Status Never Married (Ref) Ever married	-2.102	0.602	0.122***	-2.157	0.607	0.116***	-2.410	0.615	0.090***
No. of Living Children 1 Living Child (Ref) 2+ Living Children	0.142	0.355	1.152	0.162	0.356	1.176	0.037	0.367	1.037
Educational Level No Education (Ref) Educated	0.321	0.374	1.378	0.312	0.373	1.366	0.371	0.383	1.450
Place of Residence Urban (Ref) Rural	0.108	0.433	1.114	0.117	0.435	1.124	0.080	0.446	1.083
Wealth Quintile Poor (Ref) Rich	-0.271	0.458	0.763	-0.276	0.459	0.759	-0.174	0.473	0.840
Access to Mass Media No (Ref) Yes	0.507	0.343	1.660	0.510	0.344	1.666	0.399	0.353	1.491
Religion Non-Muslim(Ref) Muslim				0.283	0.307	1.327	0.245	0.314	1.278
Unmet need No (Ref) Yes							0.998	0.342	2.714***
Constant	1.196	0.801	3.307	1.061	0.813	2.889	0.884	0.826	2.419
-2 log Likelihood	259.629			258.777			250.135		

** P <0.05; ***P <0.01

Source: Analysis 2008/09 KDHS

In the first model (table 4.3), only individual factors were included and only current marital status and number of living children were found to be significant. The results showed that currently married women had 0.065 times less likely to experience unintended pregnancy compared with the never married women. This finding was consistent with hypothesis, theoretical and empirical explanations. Similar results were found in Nairobi (Ikamari et al., 2013) & in Ecuador (Eggleston, 1999). The number of living children was found to be significant. Women with 2 or more living children were 3.395 more likely to experience unintended pregnancy relative to those with one living child. This finding concurred with that conducted in Ecuador and in Sudan, (Eggleston, 1999; Abdalla S.M. et al., 2014). However, a study by Ikamari and colleagues in 2013 noted that increase in number of living children lowered the risks. Most women are educated with a rich wealth background, factors associated with higher likelihood for stronger motivation to practice contraceptive and desire for less family size. This is reflected in their number of living children, where most (69%) have one child. This could have resulted in increased exposure to the risks of having unintended pregnancy.

In the second model (table 4.3), cultural factors were added but due to the sparse data in Central region, religion variable showed immeasurable value with large standard of errors and as a result it was excluded from the entire analysis. This is the reason why the second model was excluded.

The third model (table 4.3), intervening variable was also added and the effect of intervening variable and independent variables on unintended pregnancy was observed. Even after inclusion of unmet need for FP, current marital status and number of living children retained their significance. The results showed that currently married women had 0.062 times less likely to experience unintended pregnancy compared with the never married women. Women with 2 or more living children were 2.694 more likely to experience unintended pregnancy relative to those with one living child. The odds ratios decreased with the inclusion of unmet need suggesting its intervening effect on unintended pregnancy.

The first model (table 4.4.), contained the individual factors and current marital status was found to be significant. Women who are currently married were 0.122 less likely to experience unintended pregnancy compared with the never married women. This finding was consistent with the hypothesis and empirical explanations, where the unmarried have a high unmet need for contraception compared to the married.

In the second model (table 4.4.), even after inclusion of cultural factor (religion), current marital status retained its significance. The married had 0.116 times less likely to experience unintended pregnancy relative the unmarried. Important to note is that the odds ratio decreased. This showed the importance of religion in influencing unintended pregnancy as noted by Gregory (2014).

The third model (table 4.4.), contained the final results where intervening variable was also added. Even after inclusion of unmet need for FP, current marital status retained its significant. The odds ratio decreased further with the inclusion of unmet need suggesting its significant effect on unintended pregnancy. Furthermore, intervening variable was significant. Women who had unmet need for FP were 2.714 more likely to experience unintended pregnancy relative to those with no unmet need for FP. This results supports findings from Peru, Egypt and in developing world, (Mensch et al., 1997; Ross & Winfrey, 2002; Shaheen et al., 2007).

In both regions, it is only current marital status that showed significant effect on unintended pregnancy. It is however important to note that unmet need was the main factor that influenced unintended pregnancy in both regions.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

5.1. Introduction

This chapter discusses the summary of the research findings, conclusions and recommendations for policy and further research. The recommendations are based on the research findings.

5.2. Summary

This study set out to establish the determinants of unintended pregnancy while examining the unmet need for FP on unintended pregnancy in Central and Coast regions of Kenya. Selected demographic, socioeconomic cultural and access to health information/services factors were examined to establish their influence on unintended pregnancy in the study regions. The study utilized the 2008/09 KDHS and a sample of 315 fecund women aged 15-24 was studied. Pregnancy intention was the outcome variable, defined as either intended or unintended. Bivariate analysis results indicate that current marital status and maternal age each had a significant association with unintended pregnancy in Central region while in Coast region, current marital status, access to mass media and unmet need for FP each had a significant association with unintended pregnancy. In the multivariate analysis, current marital status had a significant relationship with unintended pregnancy for both regions. In Central, number of living children had a significant effect on unintended pregnancy while in Coast region the unmet need for FP had a positive and statistical significant effect on unintended pregnancy. Central region posed sample size limitation which affected the interpretation of the outcome variable especially for marital age, education and religion variables that had large standard of errors hence excluded in the analysis.

5.3. Conclusion

This study was able to achieve its objectives. Several selected factors such as demographic, access to health information/services and unmet need for FP were responsible for unintended pregnancy in study regions. None of the socioeconomic and cultural factors modeled in the multivariate analysis was found to be significant variable in determining unintended pregnancy. Many studies including present study showed that unintended pregnancy is common among study population. One of the key important factors responsible for unintended pregnancy was unmet need for FP. Women with unmet need had higher likelihood of experiencing unintended

pregnancy relative to those with no unmet need for FP. Additionally, maternal age, current marital status, number of living children and access to mass media were found to increase the level of unintended pregnancy.

In conclusion, evidently, unmet need for FP seems to be the main factor responsible for the high level of unintended pregnancy in both study regions. Unmet need is evenly split between women who want to wait two or more years before having their next child (spacers) and those who want no more children (limiters) but are not using a contraceptive method. Pregnant women are considered to have an unmet need for spacing or limiting their children if their pregnancy was mistimed or unwanted. This finding confirms the speculations by Singh et al. 2009, that this unmet need for effective contraception, together with incorrect and inconsistent use among modern method users and the desire for large families, may explain regional variations in levels of unintended pregnancy meaning that correct and consistent use of effective contraceptives can avert unintended pregnancies, (Singh et al., 2010).

5.4. Recommendations

5.4.1. Recommendations for Further Research

Future researchers should further explore the connection between unintended pregnancy and unmet need for FP considering the fact that it has emerged to be the most significant factor responsible for the high level of unintended pregnancy. It is from this study that further insights can be found to increase our understanding of this relationship and what can be done to improve the situation. Considering the significance that unmet need has on young population, future researchers should consider shedding more light on the relationship between unmet need and the older population at different socio-economic and cultural settings. Key important sentiments have been missed in this study due to its quantitative approach. Future researchers should consider exploring the qualitative approach or a combination of quantitative and qualitative approach to capture the women's emotions about pregnancy that may vary throughout the gestation period, especially in their diverse social, economic and cultural settings. This might elucidate crucial information on the partner's role on unmet need and its implication on unintended pregnancy. Finally, both unwanted and mistimed pregnancies need to be examined differently as they differ with respect to their determinants and outcomes (D'Angelo DV et al., 2004).

5.4.2. Recommendations for policy

From the findings, unintended pregnancy can be reduced by increasing access to FP for all women in need, thereby reducing unmet need for contraception. Thus a combined policy strategy that invests in both reducing unmet need and improves the effectiveness of contraceptive technologies and their consistent use is essential for reducing unintended pregnancy.

The evidence also necessitate the need for urgent sexual and health education programs, that are curriculum-based– for in-school setting since most of study population are in school and out-of school setting for the exceptional few. This will ensure more females stay in school longer, gain insightful reproductive health knowledge and information and consequently minimize unintended pregnancy. Dispensing condoms to academic institutions is not sufficient; there is need of improved strategies to provide such information especially on FP services. There is need for programs that entail contraceptive counseling, service provision and a supportive environment for the study population. These programs and policies will help in spacing of children among the study population who are still exposed to longer reproductive risks and for the few who want to limit children.

The available evidence suggests that the increased likelihood of adverse outcomes associated with the infants and children born of unintended pregnancies may require substantial expenditures by the government, couple and family. Further understanding of these consequences and their costs would greatly benefit government investments in infant and child support and would further strengthen advocacy to support investments in reducing unintended pregnancy. These policies and programs will contribute to lowering the levels of unintended pregnancy in these regions. Women who are young, unmarried and those with two or more children will be the biggest beneficiaries to these programs.

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