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**COMMUNICATION AND CONTRACEPTIVE  
BEHAVIOUR AMONG ADOLESCENTS IN KENYA**

**By**

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**A project submitted in partial fulfilment of the requirements for the  
degree of Master of Arts in population studies.**



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**DECLARATION**

This Project is my original work and has not been presented for a degree in any other university.

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## **ABSTRACT**

This study analysed the direction and strength of association between exposure to family planning messages in the mass media and interpersonal channels on the one hand, and knowledge of modern family planning methods, approval of contraceptive use, intention to use contraceptives in future, and ever-use of contraception on the other. The study used the 1998 Kenya Demographic and Health Survey data and was limited to females aged 15-19 years old. Logistic regression was the major statistical method used.

Analyses demonstrate a strong statistical association between adolescents' reports of having heard or seen family planning messages on the radio, in print and on television, and their knowledge of modern contraceptive methods even after controlling for selected background factors. For instance, adolescents who reported exposure to both radio and print messages are 4.2 times more likely than those with no mass media exposure to report knowledge of five or more contraceptive methods. Results further indicate that mass media messages are significantly associated with adolescents' attitudes to contraceptive use. Adolescents who were exposed to all the three mass media sources analysed (radio, print and television), for example, are almost three times as likely as those with no exposure to report approving of contraceptive use. Generally, single sources have lower odds ratios compared with different combinations of sources at *knowledge* and *approval* stages. This suggests that media sources reinforce each other at these stages.

However, at the level of *contraceptive intention*, there is no evidence that media sources reinforce each other: single sources have odds ratios similar to those of different media mix - ranging from 1.4 to 1.7. Analyses further demonstrate that there is no significant association between mass media messages and ever-use of contraception

among these adolescents.

A look at effect of mass media sources on contraceptive knowledge, contraceptive approval, intention to use contraceptive in future and ever use of contraception leads to the conclusion that effects of mass media communication become progressively weaker as the individual moves towards higher stages of the process of behaviour change. Mass media communication has the largest odds ratio at knowledge level and slightly smaller odds at the level of approval. Moving on to the second highest contraceptive status - intention to contracept in future - the variable has odd» ratios that are much smaller than those of the preceding contraceptive statuses; and, finally, it becomes insignificant at the last stage of the behaviour change process - that is, contraceptive use. All in all, direct effects of mass media exposure seem to be greatest in spreading knowledge and altering attitudes and lowest in clinching decisions to use contraceptives among these adolescents.

In contrast, exposure to family planning messages through interpersonal networks is consistently associated with the four indicators of contraceptive behaviour analysed. Indeed adolescents who reported having been exposed to family planning messages from friends, neighbours or relatives are more than twice as likely as those with no such exposure to know at least five modern contraceptive methods, to approve of contraceptive use, to have intentions to use contraceptive in future, and to have ever used a contraceptive method.

**DEDICATION**

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## TABLE OF CONTENTS

<b>DECLARATION</b> .....	<b>II</b>
<b>ABSTRACT</b> .....	<b>III</b>
<b>DEDICATION</b> .....	<b>V</b>
<b>ACKNOWLEDGEMENT</b> .....	<b>VI</b>
<b>CHAPTER ONE: INTRODUCTION</b> .....	<b>1</b>
<b>1.1 GENERAL INTRODUCTION</b> .....	<b>1</b>
<b>1.2 PROBLEM STATEMENT</b> .....	<b>2</b>
<b>1.3: OBJECTIVES</b> .....	<b>3</b>
<b>1.4: JUSTIFICATION OF THE STUDY</b> .....	<b>4</b>
<b>CHAPTER TWO: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK</b> .....	<b>6</b>
<b>2.0: GENERAL INTRODUCTION</b> .....	<b>6</b>
<b>2.2: ADOLESCENT FERTILITY: THE SCOPE OF THE PROBLEM</b> . . .	<b>6</b>
<b>2. 3: THE NATURE OF ADOLESCENCE</b> .....	<b>8</b>
<b>2. 4: DETERMINANTS OF ADOLESCENT SEXUAL AND CONTRACEPTIVE BEHAVIOUR</b> .....	<b>11</b>
<b>2. 4.1: SOCIAL FORCES</b> .....	<b>13</b>
<b>2.4.2 ECONOMIC FACTORS</b> .....	<b>20</b>
<b>2.4.3 CULTURAL FACTORS</b> .....	<b>21</b>
<b>2 4.4 PERSONAL ATTRIBUTES</b> .....	<b>25</b>

<b>3.3 VARIABLES: DEFINITION AND OPERATIONALISATION</b> .....	<b>51</b>
<b>3.3.1 THE DEPENDENT VARIABLES</b> .....	<b>51</b>
<b>3.3.2 INDEPENDENT VARIABLES</b> .....	<b>52</b>
<b>3.3.3 CONTROL VARIABLES</b> .....	<b>53</b>
<b>3.3.4 SUMMARY OF OPERATIONAL DEFINITION OF VARIABLES.</b>	<b>55</b>
<b>3.4 ANALYTICAL METHODS</b> .....	<b>56</b>
<b>CHAPTER FOUR: FINDINGS</b> .....	<b>59</b>
<b>4.1 INTRODUCTION</b> .....	<b>59</b>
<b>4.2. PRELIMINARY ANALYSES</b> .....	<b>59</b>
<b>4.2.1 KNOWLEDGE OF MODERN CONTRACEPTIVE METHODS</b> . . .	<b>60</b>
<b>4.2.2 APPROVAL OF CONTRACEPTION</b> .....	<b>62</b>
<b>4.2.3. INTENTION TO USE CONTRACEPTIVES AMONG NON-USERS</b>	<b>63</b>
<b>4.2.4 CONTRACEPTIVE PRACTICE</b> .....	<b>65</b>
<b>4.2.5 EFFECT OF COMMUNICATION ON CONTRACEPTIVE BEHAVIOUR</b> .....	<b>66</b>
<b>4.2.6 CONTRACEPTIVE KNOWLEDGE AND CONTRACEPTIVE USE</b>	<b>69</b>
<b>4.2.7 SUMMARY OF BIVARIATE RESULTS</b> .....	<b>70</b>
<b>4.3 MULTIVARIATE RESULTS</b> .....	<b>70</b>
<b>4-3.1 CORRELATES OF CONTRACEPTIVE KNOWLEDGE</b> .....	<b>71</b>
<b>4-3.2 CORRELATES OF APPROVAL OF CONTRACEPTION</b> .....	<b>74</b>
<b>4.3.3 CORRELATES OF INTENTION TO USE CONTRACEPTIVES IN</b>	

<b>3.3 VARIABLES: DEFINITION AND OPERATIONALISATION</b> .....	<b>51</b>
<b>3.3.1 THE DEPENDENT VARIABLES</b> .....	<b>51</b>
<b>3.3.2 INDEPENDENT VARIABLES</b> .....	<b>52</b>
<b>3.3.3 CONTROL VARIABLES</b> .....	<b>53</b>
<b>3.3.4 SUMMARY OF OPERATIONAL DEFINITION OF VARIABLES.</b>	<b>55</b>
<b>3.4 ANALYTICAL METHODS</b> .....	<b>56</b>
<b>CHAPTER FOUR: FINDINGS</b> .....	<b>59</b>
<b>4.1 INTRODUCTION</b> .....	<b>59</b>
<b>4.2. PRELIMINARY ANALYSES</b> .....	<b>59</b>
<b>4.2.1 KNOWLEDGE OF MODERN CONTRACEPTIVE METHODS</b> . . .	<b>60</b>
<b>4.2.2 APPROVAL OF CONTRACEPTION</b> .....	<b>62</b>
<b>4.2.3. INTENTION TO USE CONTRACEPTIVES AMONG NON-USERS</b>	<b>63</b>
<b>4.2.4 CONTRACEPTIVE PRACTICE</b> .....	<b>65</b>
<b>4.2.5 EFFECT OF COMMUNICATION ON CONTRACEPTIVE BEHAVIOUR</b> .....	<b>66</b>
<b>4.2.6 CONTRACEPTIVE KNOWLEDGE AND CONTRACEPTIVE USE</b>	<b>69</b>
<b>4.2.7 SUMMARY OF BIVARIATE RESULTS</b> .....	<b>70</b>
<b>4.3 MULTIVARIATE RESULTS</b> .....	<b>70</b>
<b>4-3.1 CORRELATES OF CONTRACEPTIVE KNOWLEDGE</b> .....	<b>71</b>
<b>4-3.2 CORRELATES OF APPROVAL OF CONTRACEPTION</b> .....	<b>74</b>
<b>4.3.3 CORRELATES OF INTENTION TO USE CONTRACEPTIVES IN</b>	

<b>FUTURE</b> .....	<b>76</b>
<b>4.3.4 CORRELATES OF CONTRACEPTIVE USE</b> .....	<b>78</b>
<b>4.5 DISCUSSION</b> .....	<b>82</b>
<b>CHAPTER FIVE: SUMMARY, CONCLUSIONS AND</b>	
<b>RECOMMENDATIONS</b> .....	<b>95</b>
<b>5.1 SUMMARY</b> .....	<b>95</b>
<b>5.2 CONCLUSIONS</b> .....	<b>96</b>
<b>5.3 RECOMMENDATIONS</b> .....	<b>97</b>
<b>5.3.1 POLICY RECOMMENDATIONS</b> .....	<b>97</b>
<b>5.3.2 RECOMMENDATIONS FOR FUTURE RESEARCH</b> .....	<b>98</b>
<b>BIBLIOGRAPHY</b> .....	<b>100</b>

1.1ST OF TABLES

TABLE 3.1 VARIABLES AND THEIR MEASUREMENT.....55

TABLE 4.1. PERCENTAGE OF WOMEN AGE 15-19 WHO KNEW AT LEAST THE MODERN CONTRACEPTIVE METHODS AND PERCENTAGE WHO APPROVED OF CONTRACEPTION IN BACKGROUND CHARACTERISTICS.....63

TABLE 4.2 PERCENTAGE OF WOMEN AGE 15-19 WHO INCLUDED IN STUDY. CONTRACEPTIVES IN BACKGROUND CHARACTERISTICS.....64

TABLE 4.3. PERCENTAGE OF WOMEN AGE 15-19 WHO HAD EVER USED A CONTRACEPTIVE METHOD BY BACKGROUND CHARACTERISTICS.....66

TABLE 4.5 PERCENT DISTRIBUTION OF WOMEN WHO KNEW FIVE CONTRACEPTIVE METHODS, APPROVED OF (OR REJECTED) INFLUENTIAL SOURCE OF CONTRACEPTION, AND HAD EVER USED CONTRACEPTIVES BY EXPOSURE TO FAMILY PLANNING COMMUNICATION.....68

TABLE 4.7. ODDS RATIOS FROM LOGISTIC REGRESSION ANALYSIS SHOWING THE LIKELIHOOD OF APPROVING CONTRACEPTION.....74

TABLE 4.8. ODDS RATIOS FROM LOGISTIC REGRESSION ANALYSIS SHOWING THE LIKELIHOOD OF BEING A NON-CONTRACEPTION INTENDING TO USE CONTRACEPTION IN FUTURE.....77

TABLE 4.9 ODDS RATIOS FROM LOGISTIC REGRESSION ANALYSES SHOWING THE LIKELIHOOD OF HAVING EVER USED A CONTRACEPTIVE METHOD.....79

TABLE 4.11 ODDS RATIOS FROM LOGISTIC REGRESSION ANALYSES SHOWING THE LIKELIHOOD OF HAVING EVER USED A CONTRACEPTIVE METHOD.....80

## ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
CBS	Central Bureau of Statistics
IP	Family planning
GoK	Government of Kenya
HIV	Human Immune Virus
KDHS	Kenya Demographic and Health Survey
Mi	Micro-International
NASSFP	National Sample Survey and Evaluation Programme
NCPD	National Council for Population and Development
USAID	United States Agency for International Development

## CIIAPTI-K ONE: INTRODUCTION

### I.1 (General Introduction

Kenya put in place a programme to regulate fertility way back in 1967 and its current level of contraceptive use of 39 percent among currently married women is exceeded only by South Africa, Botswana and Zimbabwe in sub-Saharan Africa. Its Total fertility rate has also been falling and now stands at 4.7 children per woman (NCI'1). CBS. and MI. 1998). During the first phase of implementation of family planning programme, the locus of activities was the married woman but current thinking singles out the youth (adolescents) as a group that too needs special attention (GoK. 19X4; CjoK. 2000). The motivation for this change of approach is the realization of the numerous medical, demographic, social and economic consequences of adolescent reproductive behaviour. An understanding of correlates of adolescent sexual behaviour, therefore, is of immense application not only in fertility regulation but also in disease prevention - both of which enhance the well being of the individual and the community.

The IEC component of family planning programmes has a central role to play in contraceptive adoption. Data show great variations in exposure to communication in mass media and interpersonal networks among adolescents in Kenya (NCPD CBS. and MI. 1998): The main concern of this study is to establish whether such variations are correlated with contraceptive behaviour that is knowledge of contraceptive methods, approval of fertility regulation, intention to use contraceptives in future, and actual practice of contraception.

## J.2 Problem Statement

Adolescent childbearing is associated with adverse physical, psychological, social and economic consequences (Mcnsch. et a).. 1»>9X). Biological immaturity of teenage mothers is responsible for the higher rates of abnormal childbirth and maternal morbidity and mortality compared with older age groups. Adolescent mothers are also more likely than older ones to experience stress, suicide attempts and low self-esteem. ITeir children, too. arc more likely tluin those born to mothers aged over twenty years to have low birth weight and die at infancy (Jorgensen. 1993). Early parenting is associated with relatively low lifetime earnings as the teenage mother may drop out of school and consequently settle for low paying and less skilled occupation. In developing countries in general and Kenya in particular, high adolescent fertility is u significant contributor to the high total fertility and ppopulation growth rates. All the problems highlighted above affect not only the individual hot also the entire community by putting a strain on its resources.

Although Kenya's fertility has been falling in reccnt past, adolescent fertility has instead stabilized. Studies show that Kenya's fertility transition is attributable to increases in contraceptive adoption (sec for example Omwanda. 19%) and so. by implication, high and stable adolescent fertility is attributable to lack of effective controccptive use. Indeed the evidence shows that adolescents arc poor contraccptors, I his may be a result of several kctors including lack of knowledge of. and acccss to. contraceptive technology, adolescent n^k takmg and experimentation tendencies, individual variables like lack of sclf-etTicacy Jml ^'lf-coniidenc. economic hardships, and socio-cullural environment of the adolescent (Gage. 1998; Gardner. 1993; Kiragu and Zabin. 1995).

Numerous studies carried out in developing countries indicate a strong correlation

family communication and contraceptive adoption (Maitani, 1997; Jato, et al., 1999; Omwanda, 1999; Rogers, et al., 1999; Valente, et al., 1994; Jato, et al., 1999) for the entire female population - but very little has been done with a view to understanding if the association exists at all among the adolescents in particular, and if so, whether it is equally strong. Adolescents are a unique group. They are affected by different factors and have different motivations and behaviours, all of which call for an analysis that is guided by theories of adolescent behaviour. There is wide acknowledgement in the literature that communication changes sexual behaviour (Piotrowski, et al., 1997) and so any attempts to understand adolescent contraception and childbearing will be incomplete if communication is not given adequate attention.

There is need to determine the level of family planning communication exposure for various segments of the adolescents, which is crucial in determining appropriate IPC interventions. Equally important is the need to analyse the association between family planning communication and behaviour change among adolescents with a view to understanding if media channels have cumulative effect on behaviour. And finally, this study hopes to find out if knowledge of contraceptive methods is correlated with actual contraceptive use among adolescents. These are the key concerns of this study.

### 1.3: Objectives

U.1: Central objective: The general objective of this study is to assess the relationship between communication and contraceptive behaviour among adolescents (that is, knowledge of contraceptive methods, approval of fertility regulation, intention to use contraceptives and over-use of any contraceptive method).

### 1.3.2: Specific objectives:

- I. To establish the relationship between family planning communication and knowledge of contraceptive methods;
- II. To establish the relationship between family planning communication and approval of contraceptive use;
- III. To establish the relationship between family planning communication and intention to use contraceptives in future;
- IV. To establish the relationship between family planning communication and ever-use of contraception.
- V. To assess the relationship between knowledge of contraceptive methods and actual contraceptive use among adolescents

### 1.4' Justification of the study

Adolescent fertility is considered a major problem in Kenya for various reasons. Studies carried out in developed and developing countries indicate that adolescent childbearing and parenting are associated with adverse physical socio-economic, and psychological consequences. In developing countries in particular, high adolescent fertility is a major demographic problem: it contributes to high overall fertility and population growth rates in the\* countries because adolescents comprise a significant proportion of the reproductive-age women. Moreover, the number of the adolescents is swelling because of the youthful population structure of these countries, which inevitably translates into larger absolute figures of adolescent mother\* even where the rate of childbearing is declining.

Any endeavour to sustain the fertility transition taking place in Kenya today should

put emphasis on adolescent reproductive behaviour. It has been argued that "a country's fertility trajectory is mapped by reproductive attitudes and choices of its youth" (Omwanda, 1996: 238). and since abstinence is not a realistic option to some adolescents (Lullon, et al., 2000). knowledge of adolescents, contraceptive behaviour is of critical importance in the field of reproductive health. Reproductive behaviour - indeed all human behaviours - can be modified by exposure to information, education and communication through mass media and interpersonal networks. So crucial is communication in family planning that "often, an unmet need for family planning can be traced to an unmet need for communication" (Piotrow, et al., 1997:24). Family planning communication not only informs and motivates, it also serves to educate, to legitimize, and to reinforce and reassure (Saunders, 1971). More importantly, communication is a highly manipulable variable and thus gives it a central place in the designing of interventions.

This study aims at securing knowledge on the strength and direction of the relationship between information, education and communication on the one hand and contraceptive knowledge, approval of contraception, intention to use contraceptive in future, and ever use of a contraceptive method among adolescents on the other. Such a study is important because it can be an aid to formulating well-focused FIC intervention strategies. Finally, this study aims at expanding the current body of knowledge particularly in the field of adolescent reproductive behaviour.

## CHAPTER TWO: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

### 2.1: General Introduction

This chapter focuses on the phenomenon of adolescent reproductive behaviour and the role of communication in shaping behavioural outcomes. Out of necessity, therefore, the following review touches on a broad spectrum of disciplines including sociology and psychology. The section reviews literature on the scope of the problem of adolescent fertility\* the nature of adolescence as a unique stage in human development, determinants of adolescent sexual activity and contraceptive behaviour, and effects of communication on contraceptive behaviour. Finally, a conceptual framework and hypotheses are presented.

### 2.2: Adolescent Fertility: The Scope of the Problem

Adolescent sexual behaviour is an area of special interest to both medical and social scientists because its consequences are many and varied. On the medical front, problems associated with adolescent reproduction can be put into two broad categories namely, risks to the mother and risks to the child. Adolescent childbearing has been linked with anaemia, toxemia, relatively high incidents of childbirth complications and maternal mortality (Jorgensen. 1976; Lowe. 1976; Mensch et al.. 1998; NCPD. CBS and MI. 1998). Ravenholl (1976) points out that an adolescent childbirth affects the lives of three generations the infant, its mother and its grandmother. Teenage mothers are more likely to drop out of school than teenagers who are not mothers hence they are more likely to settle for less skilled and poorly paying occupations (Jorgensen. 1993). Adolescent mothers are likely to be faced with many psychological problems arising from rejection by the family

especially the father and brothers and the father of the child as well as from the conflicting roles as mother and student (Gorgen et al.. 1993)

Although it has been argued that the identified 'consequences' are not directly a consequence of pregnancy and parenting per se - for instance, higher infant and child mortality may be a result of lack of proper prenatal care - there is ample evidence to link teenage childbearing to the consequences. Studies indicate that problems such as premature labour, toxemia, anaemia and maternal deaths are linked to biological immaturity of especially the youngest mothers (Jorgensen. 1991). Research is yet to determine the relative impact of pre-existing conditions but in all likelihood, adolescent childbearing and parenting place additional limitations and burdens upon the current well-being and future life chances of adolescent parents and their offspring beyond what they might have otherwise experienced.

The rate of childbearing has declined in the last few decades, but substantial numbers of females still give birth in their teenage years (Mensch, 1998). In the late 1980s majority of adolescent mothers in America, Canada and Britain were single when they gave birth. Data from sub-Saharan Africa for about the same period showed that in 10 out of 11 countries with DHS data, at least one in every five teenagers had one or more births or was currently pregnant with first child (DIIS IRD/Macro, 1992) The same source points out that many teenagers gave birth before marriage. In some countries like Kenya, a significant proportion subsequently got married while only a few in Liberia and Botswana did so. Analysis of DIIS data shows further that teenage births account for a substantial proportion of all births in most sub-Saharan countries. Except for Burundi.

1°go. births to teenage mothers accounted for over 15 % of total births with

the proportion reaching 20% in Uganda and Liberia.

Moreover, sexual experience is not restricted to married women: in Botswana, Ghana, Kenya and Liberia, majority of adolescents with some sexual experience were not married. The situation has not changed much. In Kenya, for example, although only 16 % of adolescent\* are married 43.6% of them are sexually active (NCPD, CBS and ML 1998). This has serious implications for adolescents especially in this era of HIV/AIDS.

Only one country (Burundi) with DHS data in sub-Saharan Africa had teenage births accounting for less than 10 percent of total births (DHS IRD/Macro International, 1992) In developing countries adolescent fertility has great implications for population growth because the youthful population structure ensures that the numbers of adolescents keep on growing which in turn ensures that adolescent fertility is a major contributor to the overall population growth rate even when the rate of adolescent childbearing is declining.

### 2.3: The Nature of Adolescence

In order to understand how communication affects adolescent's contraceptive behaviour it is important to understand how adolescents behave and why. Adolescence is a unique stage of development marking the crucial transition from childhood to adulthood not only biologically but also socially and psychologically.

At biological level, bodily changes begin to take place when the hypothalamus sends signals to the brain which signals the pituitary gland to release hormones called gonadotropins into the

bloodstream. These hormones stimulate increased production of oestrogen in girls and androgens in boys, which in turn stimulate physical changes such as growth of

facial Hair in boys and breasts in girls. The changes are usually so marked that the adolescent inevitably compares herself or himself with others and worries about his or her adequacy (Bloss, 1962). Hormonal changes also lead to sudden changes in mood among adolescents. At puberty teenagers begin to be viewed not as children and certainly not as adults, but it is their aspiration to advance into adulthood and gain independence. Profound psychological changes occur during adolescence the chief ones being sudden interest in the opposite sex and desire for affection and acceptance.

Many theories have been proposed to explain adolescent behaviour. Sigmund Freud, a psychosexual theorist, viewed adolescence as a stage characterised by a reawakening of sexual energies of earlier stages (the oral, anal, and phallic stages). Hormonal changes lead to emergence of irrational behaviours and the adolescent must learn the social skills necessary to initiate peer relationships essential for developing a fully functioning adult sexuality. Ann Freud argued that the course of maturation influences all behaviours. To her, adolescence cannot be emotionally painless. Ulls (1962) another theorist of the same school, posited that formation of the individual self at adolescence involved learning to sever emotional ties with parents. The individual recognises that gratification of emotional and sexual needs must be sought from outside the family.

Other theorists have taken into account the influence of social cultural environment in shaping adolescent sexuality. Learner and Spanier's (1980) sexual socialisation theory postulates that sexual roles are developed through the socialisation process which encourages and rewards some behaviours while discouraging and punishing others. Sex role development entails learning how to be psychologically

masculine or feminine. Sexual behaviour has also been regarded as one of the key ways through which adolescents begin to emotionally leave the family and move towards independence. Successful steps to this end heighten feelings of self-esteem and confidence.

A biosocial model by Smith (1989) blends biological and psychological influences in explaining sexual behaviour. The strength of his postulates lies in the recognition of social processes, which encourage or discourage sexual involvement, modify the form in which sexual behaviour is expressed, and define appropriate sexual partner. Physical changes signal sexual maturity and attractiveness, which may expose the individual to more social pressure to act in sexual ways as he/she may be rewarded through praise and popularity. On the other hand, parents may be wary of sexual maturation especially if it comes early.

All the theories above offer useful insights into the study of adolescents. Horrock (1962) gives five major points of reference from which to view adolescent growth and development, first, adolescence seems to be a time of seeking status, emancipation from childish submission to parental authority, and a struggle against relationships with adults when the adolescent is subordinated on the basis of inferiority in age, experience and skill. Second, adolescence tends to be a time when heterosexual relations are very important. Thirdly, it is also a time of physical growth and development, and fourthly, it is a time of intellectual expansion and development and academic experience. And finally, it is a time of development and of evaluation of values. The quest for controlling values around which the individual may integrate his/her life is accompanied by an increasing awareness of self, development of self-ideals, and acceptance of self in harmony with

those ideals. It is also a time of conflict between youthful idealism and reality.

In conclusion, it is important to view adolescents as products of their time, their culture, and their past and present psychological environment. Adolescence is the sum total of all the attempts at adjustment at the stage of puberty to the set of inner and outer conditions which confront the individual (Bloss, 1962).

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#### 2.4: Determinants of Adolescent Sexual and Contraceptive Behaviour

Studies in both developed and developing countries have consistently indicated that adolescents are poor contraceptors or non-contraceptors (Mensch, et al. 1998; Moore and Rosenthal, 1993). A study in Canada (cf Moore and Rosenthal, 1993) found that only 34 percent of high school students used contraception every time they had sex while 27 percent never did so. Data from developing countries show even lower levels of contraception. In Kenya, for example, among all women age 15-19 only eight percent of them were using contraception in 1998 (NCPD, CBS and MI, 1998).

It has been argued that for contraception to take place knowledge, information, motivation, personal and interpersonal skills, and a positive self-concept must be present (Gage, 1998; Jorgensen, 1993; Omwanda, 1996). These qualities are often absent in adolescents due to their lack of social, emotional and psychological maturity. Urborg (cf Moore and Rosenthal, 1993) identifies five major steps in contraception adoption. One: The individual must recognize that pregnancy (or disease) is a likely outcome of unprotected sex. Two: He/she must be motivated to do something about this. This step involves the belief that one needs to - and can - do something effective as well as the belief that the possible outcome is undesirable. Three: The individual must generate

possible solutions to the problem. Four: These solutions must be evaluated and one chosen. And live: the chosen solution must be implemented. These steps occur in the socio-cultural and psychological environment of the individual.

Empirical evidence indicates that effective contraception is less likely to occur when the individual desires a pregnancy; lacks cognitive development required in making complex decisions; has low educational and occupational aspirations, lacks accurate knowledge about human sexuality and facts relating to contraception; is unable or unwilling to plan for sexual encounters that may be sporadic and unexpected; and finally, if the male adolescent believes that contraception is the female's responsibility, and the female believes that it is the male's responsibility (Jorgensen. 1993). In addition, adolescent's obvious bias in risk perception, which results from cognitive distortion of reality due to their egocentrism and sometimes lack of knowledge (Irwin. 1993; Kiragu and Zabin. 1995; Mills. 1993) may be responsible for contraceptive non-use.

Adolescents are affected by biological, psychological as well as socio-economic and socio-cultural factors. As noted earlier, biological and psychological changes create new powerful emotions and conflicts in the individual but how he or she integrates all those feelings is determined by forces outside of the individual - the environment. Peter Bloss (1962) argued that reality resides in the mental representations of the environment, which contains meaningful objects, values and ideas with which the individual becomes familiar. These mental representations become the basis for judgement, motivation and conflict.

Biological forces influencing adolescents are, in all likelihood, universal and so  
0ns In adolescent sexual activity and contraceptive behaviour between different

groups of adolescents (say, between developing and developed countries, or rural and urban areas, or between different ethnic groups) can be explained more meaningfully through an analysis of the social, cultural, and economic environments of the adolescents. Similarly - variations within each group are explicable in terms of differences in personal traits'attributes including cognitive and affective factors.

#### 2.4.1: Social Forces.

##### I: The family

Parents have profound influence on their children. As the primary socialisers of their children, they influence their children's sexual attitudes, beliefs and behaviours in a variety of ways. With regard to adolescent sexual behaviour, it has been argued that parents influence adolescent sexual behaviour in four different ways. First, their attitudes towards adolescent sexuality may impact on adolescents' attitudes. Second, marital and reproductive characteristics of parents as well as apparent behaviour to the opposite sex may provide and support role models for adolescents. Third the religious environment of the home may affect adolescents' attitude to sex. and. finally, parents' educational and work experience may present opportunities for sexual experience when the parents are away from home (cf. Moore and Rosenthal. 1997)

Studies have linked mother's pregnancy experience as teenager to pregnancy experience of her own teenage daughter (Moore and Rosenthal. 1993). Elder sister's pregnancy experience may also influence an adolescent's sexual behaviour (Adebayo.

Moreover, single parent families have been associated with low age at sexual debut and Pregnancy incidents (Mensch, et al.. 1998). While these findings are explicable in terms of role modelling and lack of parental supervision, there is also direct pressure in favour of early initiation of sex and reproduction (see. for example.

Hulton et al 2000).

Adolescents' living arrangements (where they actually live and their status in their households) also have an effect on adolescents' sexual behaviour. Mcnsch et al (1998) argue that girls in single-parent or no-parent households may miss school due to huge domestic responsibilities, which in turn affect their behaviour. Besides, fostered girls may end up as unpaid labour. Similarly, congestion in housing characteristic of low social classes may have an independent effect on adolescent sexual activity by exposing them to sexual coercion or by encouraging them to experiment with sexual behaviour. Family instability (conflict between parents, violence, divorce/separation) may encourage an adolescent to seek a sexual relationship to compensate for the lack of parental love and attention: it also lowers her self-esteem and efficacy to refuse unwanted sex and acquire and use contraceptives.

#### 11:Peers

Peer pressure has often been cited as one of the most powerful factors affecting adolescent sexual decisions (Bandura, 1992; Moore and Rosenthal. 1993). Peers may be a source of information (although this information may not always be accurate), they may modify a teenager's sexual attitudes leading to early or late initiation of sexual activity and use or non-use of contraception. The role of the parents as sources of sex information becomes less important than that of peers at adolescent stage. A study by Moore and Rosenthal (1993) found that majority of young people would rather discuss their sexual concerns with their friends than with their parents which supports theories of adolescent behaviour (for example, Smith's 1989 biosocial model).

Norms held by a peer group are important determinants of group members'

behaviour. A model by Fisher and Fisher (cf. Fisher et al., 1992) offers useful insights into the mechanisms by which norms of a group affect group members.

To the extent that both general and behaviour-specific group norms are consistent with HIV prevention *normative social influence* processes within the group work to increase preventive behaviour. Under these circumstances, members of an individual's social network provide support for engaging in HIV prevention and may even engage in sanctions against members who are risky in their sexual practices. Further, when group norms are pro-prevention, members are apt to be exposed to *informational social influence* supporting HIV preventive behaviour... [On the other hand] if group norms are anti-prevention ... the reference group will not support HIV preventive behaviour in group members and even may engage in sanctions against individuals perceived as pro-prevention... [Group-level normative social influence will be directed towards thwarting prevention and promoting whatever alternatives exist...

(Fisher et al., 1992: 121 - emphasis in original)

#### 111: Schooling

The school has been associated with reproductive and contraceptive behaviour of adolescents. The school may be a source of information on sex through peer networks, aid from teachers and schoolbooks including family life education books. On the other hand, type of school may offer opportunity for sexual experience. A study in Kenya showed that girls in mixed schools and day schools were more likely to be more sexually active than girls from single stream and boarding schools (Adcbayo, 1994). The school environment may indirectly encourage sexual activity especially among female adolescents.

Current schooling status of the adolescent also has an influence in adolescents' contraceptive behaviour. Adolescents who are currently attending school are likely to have more motivation to avoid pregnancy compared with those who are not attending

since pregnancy may act as a barrier to attainment of educational goals. Moreover,

peer group norms among such adolescents are likely to be supportive of contraceptive use hence such adolescents are likely to have more knowledge of contraceptive technology and to use contraceptives compared with those not attending school.

Schooling removes adolescents from their homes, provides them with information that often contradicts parental instruction, and allows young people of both sexes to interact without family supervision (Caldwell et al., 1998). In developing countries, educational pursuits aimed at securing a place in the modern economy have lengthened adolescence for females by increasing age at marriage and childbirth from soon after puberty to twenty years and beyond. The longer the duration between puberty and marriage, the higher the likelihood of engaging in premarital sex.

Education affects adolescents' behaviour in various ways. Firstly, it changes norms concerning sex and sexual relations as noted by Rurkhart (1981).

Many teenagers look at their sexuality as a process of getting to know themselves and at sexual experience as one part of that process. The actual act of intercourse does not seem to be viewed as an act of rebellion anymore but rather as a normal part of life that comes either before marriage or with marriage depending on one's beliefs.

(Rurkhart, 1981: 41)

Education offers the youth with the opportunity to loosen parental control (Caldwell, et al., 1998) hence it may be associated with premarital sex among adolescents. On the other hand, education increases one's knowledge of means of controlling fertility largely as a result of access to many communication channels. These factors may increase the likelihood of contraceptive use among unmarried adolescents to delay childbearing.

Education may also increase one's self-efficacy in making decisions on sexual activity and reproduction. A more educated adolescent girl is more likely to have

confidence, to acquire contraceptives and, more importantly, to discuss contraception with her partners all of which are associated with contraceptive use. In addition, education gives the woman power in decision-making, which leads to effective contraceptive use. For example, a study by Jorgensen and colleagues (Jorgensen, 1993) found that adolescents who reported that they had more power and influence in their relationships with their boyfriends and were satisfied with quality of those relationships were more likely to report constant and effective contraceptive use than those who reported otherwise.

Moon and Rosenthal (1993) argue that clear educational goals and high academic achievement are related to lower rates of premarital sex for both boys and girls. The association is mediated by a number of factors. For instance, the high achieving student is likely to come from a well to do family, to place high value on achievement, to be more goal oriented, and able to plan for the future. The authors further argue that involvement in a sexual relationship distracts young girls from their studies and, conversely, involvement in studies makes teenage girls less interested in a sexual relationship - or less appealing to boys. A study by Gupta et al. (1999) in Brazil found that educational attainment was negatively associated with adolescent pregnancy net of all other factors.

Education is the main mechanism through which western ideals, norms and beliefs replace traditional ones in developing countries. In sub-Saharan Africa, the existence of traditional and modern ideals and practices side by side creates confusion and conflict (Gage, 1998). The rapid transition and the resulting confusion create added

adolescents who are themselves in a state of transition as they strive for a new status (Horrock, 1962). For instance, in sub-Saharan Africa where religious



proscription against premarital sex was traditionally not very strong - and where marriage for girls at puberty was universal - the challenge to postpone reproduction until completion of schooling is rather difficult (Caldwell et al., 1998).

In association with urbanisation and widespread availability of information through global news media, education is also responsible for the emergence of youth culture - defined as more or less standardised ways of thinking that characterise a large number of youths (Moore and Rosenthal, 1993). Youth culture may, therefore, be responsible for the variations in sexual and contraceptive behaviour between rural and urban adolescents in developing countries.

#### IV: Access to Services

Logistic issues may affect adolescent contraceptive behaviour. Since to some adolescents abstinence is not a realistic option (Ilulton et al., 2000), failure of adolescents to acquire contraceptives when they want to use them may be a major predictor of adolescent pregnancy. Lema (1991) notes that in Kenya bias on the part of service providers may impede contraceptive use among adolescents: family planning services are limited to adult women who have children and are married. Where services are available for adolescents, barriers such as location, high costs, inconvenient hours and fear of meeting parents and friends discourage adolescents from seeking contraception. Ilulton et al. (2000) agree with similar findings in their Ugandan Study.

#### V: Mass Media

Adolescents today are exposed to a wide range of sexual behaviours on television, movies and videos. Of importance is the fact that the sex act in the mass media is explicit (and

usually takes place between unmarried partners) hence teenagers know what sex is and how it is enacted at increasingly earlier ages (Moore and Rosenthal, 1993). This eroticism on its own may increase the adolescent's desire to experiment with sexual behaviours.

The models presented in most films do not encourage the female adolescent to be assertive since female models are passive victims: they do not get out of their problems through their own efforts but by attracting the man with their looks or sex (Moore and Rosenthal, 1993). In addition, mass media rarely portrays planning for sex or the consequences of sex, and the idea of contraception is simply ignored. Peggy et al (1989) points out that media messages are overwhelmingly exploitative, provocative, permissive and unsafe. On the other hand, mass media may make people aspire high status and goods whose acquisition may entail postponement of reproduction and fertility regulation (Freedman, 1979)

#### VI: Rural-Urban Residence

There are various avenues through which place of residence may influence an adolescent's contraceptive behaviour, including access to mass media channels, socio-economic endowment of their parents, and parental supervision. Urban residence may be associated with higher levels of exposure to mass media (see, for example, NCPD, CRS and MICS for Kenyan data), which implies that urban adolescents are likely to have more knowledge about contraception, and are likely to hold norms that favour delay of entry into parenthood.

On the other hand, the sexual behaviours portrayed on the television and the print channel may encourage initiation of sexual activity (Moore and Rosenthal, 1993), but this may be cancelled out by housing constraints and consequent lack of privacy

in urban areas (Kiragu. 1991). In addition, urban areas are associated with higher socio-economic endowment, which is associated with contraceptive use. Again since urban residence is associated with low TI-R in Kenya (NCPD, CBS and MI. 1998). adolescents in urban areas are more likely to be inclined to use contraception in future. These adolescents are also more likely than their rural counterparts to have higher rates of sexual activity because they may date working class men who presumably have their own dwelling units (who may also facilitate contraception) (Kiragu. 1991).

#### 2.4.2 Economic Factor\*

Adolescent sexual and reproductive behaviours have been linked to the economic environment of an individual. Girls from poor economic background may, out of necessity, engage in intercourse in exchange for money to pay for school fees, lunch and transportation. Radhakrishna and others (1997) argue that families give girls' education less emphasis than boys' forcing girls to finance their own education using sex to this end becomes the only viable option since the environment does not offer alternatives.

- Such girls' partners are usually older and richer men (Gorgon et al. 1993) and this reduces the adolescent girls' power in the relationship. Thus the adolescent girl does not contribute significantly - if at all - in contraceptive decision making. The adolescent girl may refuse to be assertive for fear of losing her benefactor - and potential husband (Gorgon et al. 1993) while the very age difference may act as a powerful contributory factor in reducing the adolescent girl's assertiveness. It should be noted here, however, that an adolescent girl's first sexual partner typically is a peer: the shift to older men comes later (Gorgon et al. 1998).

When the socio-economic environment does not offer sufficient opportunities for advancement and fulfilment for women, adolescent girls may turn to sex to achieve this end. A study in Burkina Faso by Gorgon et al. (1993) found that need for self-esteem made adolescent girls seek relationships most exclusively with older wealthy men because such relationships increased the girls' status within their peer groups. Conversely, high socio-economic status increases motivation to use contraceptives. Kiragu (1991) argues that to females in high socio-economic status, a premarital pregnancy can bring a great family scandal as well as ruin a potentially bright future. Moreover, such adolescents may have funds and access to private family planning providers, they are likely to date men from similar backgrounds with knowledge, skills and funds necessary to procure contraceptives, and their own parents and sisters might also be more predisposed to use contraceptives.

#### 2.4.3 Cultural Factors

Cultural norms and expectations differ by ethnic grouping hence in the analysis of variations in reproductive behaviour, ethnicity is considered a powerful explanatory variable. As an example, in Brazil and Guatemala virginity is highly valued while among the Masai of Tanzania a virgin bride is an embarrassment to the family (Radhakrishna et al., 1997). Culture determines when sexual activity and reproduction should start, and who should marry (cf. Omwanda, 1996). Equally important is that cultural norms in gender roles and power relations, and normative sexual behaviour (Gage, 1998; Womah, 1989).

where early marriage is the norm, girls are married off soon after

puberty and the young brides, are not likely to use contraception because they are under pressure from the society to give birth to prove their fullness as women (Mensch et al., 1998). Since early marriage may be the society's strategy to perpetuate its high fertility norm, the adolescent bride may not engage in contraception even after proving her fecundity through birth of the first child. In such cultural settings, the girls' husbands are chosen for them by parents and relatives (Mensch et al., 1998), which may further erode their self-effectiveness in making decisions on reproduction. (For a thorough review of theories explaining why societies may support high fertility, see Omwanda, 1996).

Culturally based gender roles can contribute further to female adolescents' powerlessness to make reproductive decisions and to their vulnerability to negative consequences of unprotected sex. In many cultures of the world sex is viewed in terms of men's needs and women are supposed to be passive and submissive during the sexual encounter, hence it is only the man who can bring up issues of safe sex (Gage, 1998). Male and female children are usually socialised into their respective gender norms and expectations with regard to sexual behaviour at an early age. A study by Liggston et al. (1999) in Jamaica found that 12-year-olds had clear understanding of gender norms: boys perceived strong social pressure to be sexually active and girls were considered morally especially if they became pregnant.

A study by Hulton et al. (2000) in Uganda found that girls perceived themselves

\* having no power in the relationship to negotiate safe sex or to refuse unwanted sex.

also at risk of rape and blamed themselves when it occurred because they were

Noting a man to have sex, which is natural. This clear power asymmetry in

girls' relationships with their male partners is responsible for female



adolescents' reliance on "contraceptive vigilance" of their male partners Worth (1989) further adds that in such cultures "Suggesting condoms (means) that a woman is ... 'available' for sex (which) violates traditional normative behavior... A woman who suggests condom use [consequently] loses her sexual desirability and social status" (Worth. 1989: 203).

Similarly, the culturally based need for a man to prove his virility may encourage unsafe sex because it does not encourage taking responsibilities for one's actions. A study of adolescents in Uganda found that majority of male adolescents considered abstinence as neither normal nor possible: they also made it clear that pregnancy is primarily the responsibility of women ( Hulton et al.. 2000).

Another factor associated with adolescent sexual behaviour is sexual coercion. In their analysis of 10,000 secondary school girls in Kenya, Mensch et al. (1998) found that of the one third that had ever had sex, 40 percent of them were forced or coerced to have sex. Sexual coercion may be motivated by males' desire to assert power over women, as in ritualised gang rape in Brazil and Columbia (cf. Gage, 1998). In South Africa, too, rape is motivated by males' desire to intimidate girls from attending school thereby denying them access to assets that may be a threat to gender relations (cf. Gage. 1998)

Perceptions of efficacy and appropriateness of modern contraception has an effect on adolescent contraceptive behaviour as doubt, myths and misconceptions predict contraceptive non-use. Studies in Kenya and Uganda found that some adolescents thought condoms were laced with AIDS virus and had holes, which presumably rendered them ineffective (Hulton et al.. 2000; cf. Mensch et al.. 1998). Moreover, condoms have been associated with promiscuity in some communities hence insistence on condom use may

be interpreted as admission by the man that he has a sexually transmissible disease or as suspicion that the girl is a commercial sex worker or is involved in other sexual relations with other men (Bandura. 1992).

In a country like Kenya where ethnic groupings fall roughly within specific geographic locations, it is probable that socio-economic endowment of the regions impact on adolescents contraceptive behaviour by limiting access to contraceptive knowledge in the mass media as well as availability of contraceptives.

religion

Most religions propagate values of restraint hence religious adolescents - regardless of religious denomination - are least likely to experience early sexual initiation (Moore and Rosenthal, 1993). Besides acquisition of religious values, a religious adolescent is likely to associate with other religious youth hence the peer group works to reinforce the values. Strict religious proscription may explain the great variations in the rate of unmarried adolescent pregnancies in Asia and Africa.

Religious instruction prohibiting premarital sex may not be helpful to an adolescent who has already initiated sex: it might well serve to push him further away from religious values and into more premarital sex. Jorgensen (1993) further argues that religious adolescents who become sexually active are less likely to use contraception because to employ contraception in a premeditated manner would be admitting to themselves and their partners that they are planning something wrong within the context of their religious value system.

Although all major religious denominations in Kenya teach against premarital sex and although some of them are against the whole idea of contraceptive use, the Catholic church has been the most vocal - its leaders are on record for burning condoms in public (Mulindi, 2004). Such strong religious disapproval of premarital sex and contraceptive use may translate into late age at sexual debut but low level of contraceptive use among sexually active adolescents.

#### 2.4.4 Personal attributes

Personal attributes affect reproductive behaviour. It should be noted here.

however, that they usually work in association with all the other factors discussed above.

## I Knowledge of contraception and reproduction

Effective contraception is less likely to occur when the individual lacks knowledge about human sexuality and facts relating to contraception (Jorgensen, 1993). Although demographic and health survey data show consistently high levels of knowledge of contraceptive methods among adolescents in developing countries, such knowledge is not enough motivation to engage in contraception - it is only a necessary precondition.

A study in Mauritius indicated that young unmarried women did not consider themselves at risk of pregnancy or STDs because they engaged in "dry sex" which, though viewed as different from sexual intercourse, involved rubbing the male and female sexual organs and some penetration (cf. Ciage, 1998). Yet more revealing evidence that some decisions by adolescents appear to derive from insufficient knowledge is offered by a study of Kenyan adolescents by Kiragu and Zabin (1995). The researchers found that 60% of adolescents believed that they could not get pregnant if they had sex only once, and majority of them did not know whether menstruation indicated a woman's potential to become pregnant. They also found that many adolescents believed they could avoid pregnancy by such measures as washing their genitals after sex, having sex standing, and "pumping up and down" after intercourse.

Lack of accurate knowledge on reproductive biology may contribute significantly to contraceptive non-use since it undermines motivation. Moreover, even when the individual has enough motivation to contracept, effective use of contraceptives may still be hindered if used if the individual has misconceptions about the efficacy and health effects of contraceptive methods. In Burkina Faso, Gorgen et al. (1993) found that

Adolescents were reluctant to use contraceptives because they feared use might cause infertility- They also suspected that pills might produce damaging side effects.

## 2, Risk Assessment

Adolescents exhibit unique behaviour characterised with (among other traits) risk taking tendencies (Gardner, 1993; Irwin, 1993; Kiragu and Zabin, 1995). Such behaviour may be caused by lack of knowledge as discussed in the foregoing section: young people with limited knowledge may engage in sexual activity without fully understanding the immediate or long consequences of their actions (Irwin, 1993). Risk behaviour such as contraceptive non-use may also be caused by adolescent's obvious bias in their perception of risk, which stems from cognitive distortions of reality and a sense of invulnerability (Kiragu and Zabin, 1995).

## 3, Marital Status

Age at marriage has been increasing over the last few decades, but a substantial proportion of girls still marry in their teens. Among the newly married, the motivation to engage in contraception may be suppressed by the society's pressure on the young wife to give birth and prove her fecundity (Mensch et al., 1998). Furthermore, those who marry early are likely to come from societies with high fertility norms hence the married adolescent may not engage in contraception even after the realisation of a birth. They are likely to be people of low educational aspirations and achievement, hence they may have low levels of reproductive and contraceptive knowledge. They are also likely to come from low socio-economic background and so they may lack the necessary finances to procure contraceptive services.

Analysis of demographic and health survey data in sub-Saharan Africa indicate that married adolescents are less likely to use contraception than unmarried adolescents (DHS IRD/Macro Int.. 1992). In the early 1990s in Nigeria, for example. 11 per cent of sexually active unmarried adolescents and only one percent of married sexually active ones were using contraception. Married adolescents use contraception more to space births than to delay entry into motherhood. On the other hand, unmarried sexually active adolescents are likely to be attending school and so they are more highly motivated to delay childbearing in order to attain educational goals (Caldwell, et al., 1998). Their higher educational attainment relative to the married is likely to ensure they have more knowledge on reproduction and contraception.

#### 4. Age

Adolescence is a transitory stage of development whereby the individual acquires adult characteristic roles including reproductive roles. As girls progress through the teens more and more of them initiate sexual activity and reproduction Kenyan data showed that in 1998 the proportion of girls who were mothers or pregnant with first child increases from only 3.3 percent among those aged 15 years to 44.9 percent among the nineteen year-olds (NCPD.CBS. MI. 1998).

A study by Kiragu (1991) among Kenyan adolescents found that an increase of one year was associated with 45 and 21 percent rise in sexual activity among females and Males respectively. However the study found no significant association between age and contraceptive use.

Figure 1: Conceptual Framework for Adolescent Decision Making

The factors discussed above have been synthesized into a conceptual framework by

Gage (1998). The framework postulates that the decision to engage in sexual activity or to use contraception can be predicated on (1) a consideration of costs and benefits of engaging or not engaging in a particular behaviour: (2) risk assessment with regard to pregnancy or infection; (3) norms perceived to be held by significant others including peer groups and parents: (4) willingness of the individual to conform to the wishes of significant others: and (5) self-efficacy in making decisions such as acquiring and using contraceptives (e.g. condoms) and convincing male partners to use condoms. Decision-making is a complex interaction of individual, social, family, and peer factors, which act in conjunction with socio-cultural and economic factors such as living conditions and job opportunities for women.

An adolescent's decision to engage or not to engage in sexual activity is based on a rational analysis of the consequences of such behaviour. The costs can range from sanctions by one's peer group members (Lianduru, 1992; Fisher et al., 1992) to decline in one's life chances and even death through AIDS infection. However, decisions are not driven solely by fear of negative consequences because "in many instances, adolescents in developing countries may have positive motivation" to engage in sexual activity (Gage, 1998: 158). For instance, economic problems and female adolescents desire to get - and keep - a marriage partner, and socio-cultural pressure to initiate sex and childbearing may encourage sexual activity among female adolescents (Caldwell et al., 1998; Gage, 1998; Hulton et al., 2000).

Society's pressure on very young unmarried adolescents in communities where childbearing is the norm creates a situation in which the social and economic risks of not having children outweigh the physical risks (cf. Gage, 1998).

Risk assessment also affects adolescents' sexual decisions. Numerous studies have consistently indicated that adolescents take more risks than do children and adults (Ciragu and Zabin. 1995; Irwin. 1993). This observation is explicable in terms of adolescents' lack of knowledge of the consequences of their behaviour as well as adolescents' egocentrism that results into the so-called adolescent infallibility. Millstein (1993) notes that

Adolescent egocentrism is responsible for a personal "fable" - the belief that one is special and in some way immune to the natural laws that pertain to others. The belief in this personal fable is thought to result to adolescents' tendency to view themselves as invulnerable to harm, this tendency becoming less evident as the adolescent matures cognitively.

(Millstein. 1993: 55)

Poor perception of risk could lead to poor decision-making about sexual activity and contraceptive non-use (Gage. 1998). Brick et al. (1989) points out that "One of the greatest deterrents to the practice of safe sex is the mindset "It can't happen to me" Conversely, perceptions of risk of becoming pregnant may serve as a deterrent to sexual risk taking

Norms perceived to be held by significant others especially parents and peers have an important effect on adolescents' sexual and reproductive decisions by use of sanctions or by altering an individual's assessment of risks involved in sexual activity.

While conceding the fact that social and cultural forces bear heavily on adolescent sexual and reproductive decision-making, the framework also recognises the contribution of an individual's enterprise - willingness to conform to the wishes of significant others (Ko, 1998). Closely connected with this is individual's self-efficacy to acquire and use

contraceptives and to convince male partners to adhere to safe sex. Self-efficacy has a significant influence on adolescent's sexual and reproductive behaviour.

People's beliefs about their capabilities affect what they choose to do, how much effort they mobilise, how long they will persevere in the face of difficulties, and whether they engage in self-debilitating or self-encouraging thought patterns. When lacking a sense of self-efficacy, individuals do not manage situations effectively even though they know what to do and possess the requisite skills.

(Bandura, 1992:90)

The framework outlined above is highly appropriate for the analysis of correlates of adolescent sexual and reproductive behaviour. However, it does not shed light on the intricate process of behaviour acquisition and modification among adolescents, which forms the basis of this study.

## 2.6 Explaining Behaviour Change: the Case of Adolescent Sexual and Contraceptive Behaviour

It has been pointed out elsewhere in this review that sexuality has a central place in adolescents' lives as it shapes their motivations and behaviour. Several theories that have been proposed to explain adolescent behaviour include sexual socialisation and social cognitive theories.

### 2.6.1 The Sexual Socialisation Model

Letner and Spaniels sexual socialisation model posits that the task of the adolescent is to integrate the physical, social and emotional aspects with other developmental domains.

According to these theorists

Sexual socialisation is the process of becoming sexual, of taking on a gender

identity, learning sex roles, understanding sexual behavior, and generally acquiring knowledge, skills and dispositions that allow a person to function sexually in a given culture.

(Lerner and Spanier. 1980:289)

A critical point to note in this model is the postulate that sex role development occurs largely via the socialisation process that encourages and rewards some behaviour while discouraging and punishing others.

## 2.6.2 Social Cognitive theory

Social cognitive (learning) theory lays emphasis on inter-individual differences and intra-individual continuities. Individual attributes affect the process of acquiring behaviour as they modify his susceptibility to social influence that is exerted through reinforcement or modelling procedures (Bandura and Walters. 1963).

People acquire new behaviour through observation of others - that is modelling. The social environment provides role models, including parents, peers and the mass media models. Observation of such models may lead to acquisition of new behaviour (modelling effect), elicit previously learned similar responses, or may strengthen or weaken inhibitory responses (Bandura and Walters. 1963) Changes in behaviour are brought about by differential social reinforcement, which involves rewards of socially appropriate behaviour and non-reward of alternative responses.

According to social cognitive theory, human functioning is explicable in terms of 'tridirectional reciprocal causation' in which behaviour, environmental influences and personal attributes, in the form of cognitive, affective and biological factors all operate as interactive determinants of each other (Bandura. 1992: 94) The theory is based on the

postulate that behaviour change is a function of individual enterprise as well as forces in the social environment.

In the realm of cognition, the theory posits that people have to exercise influence over themselves as well as over others if they are to manage their sexual actions. There are various avenues through which self-regulation operates to impact on individual's behaviour, including internal standards, affective reactions to one's conduct, self-motivation and other forms of cognitive guidance (Bandura, 1992). Bandura further argues that self-directed change is achieved when individuals understand the consequences of their choices, learn the skills necessary to effectively modify them, and believe in their capabilities to exercise control. According to this theory, personal change occurs within a network of social influences, which may aid or undermine efforts at personal change. Thus people:

[Adopt certain standards of behaviour for themselves and regulate their behaviour anticipatorily through self-evaluative consequences. Social norms convey standards of conduct. Adoption of personal standards creates a self-regulatory system that operates partly through internalised self-sanctions. People behave in ways that give them self-satisfaction and they refrain from behaving in ways that violate their standards because it will bring self-censor. Anticipatory self-sanctions thus keep conduct in line with internal standards.

(Bandura, 1992:108)

## 2-7 (Communication and Contraceptive Behaviour: Review of Theory and Research

Numerous theories have been proposed to explain communication impact on behaviour

Bandura's (1977) social cognitive (learning) theory postulated that the audience members

identify with attractive characters in the mass media who demonstrate behaviour, engage

in a process that facilitates mental rehearsal and modelling of new behaviour. The behaviour of

the media also offers vicarious reinforcement to motivate audience members'

adoption of the behaviour. Another cognitive theory called theory of reasoned (cf. Piotrow, ct. a)- 1^97) specifics adoption of behaviour as a function of intent that is determined by a person's attitude (beliefs and expected values) towards performing the behaviour and by perceived social norms.

Social process theories particularly social influence, social comparison, and convergence theories specify that one's perception and behaviour are influenced by the perception and behaviour of groups to which one belongs and by members of one's personal networks. People rely on opinion of others, especially when a situation is highly uncertain or ambiguous and no objective evidence is readily available. Social influence can have vicarious influence on audience by depicting in television and radio programmes the process of change and eventual conversion of behaviour (cf. Piotrow. et. al.. 1997).

Rogers' (1973) diffusion of innovations model attempts to describe the process by which an innovation (e.g. an idea, knowledge, object etc. practice perceived to be new) is communicated via certain channels over time to members of a social system. According to the model, innovation has got five basic characteristics. (1) Relative advantage - that is. the degree to which an innovation is perceived as better than the idea it precedes. The greater the advantage, the faster is its adoption. (2) Compatibility: This is the degree of consistency the innovation with existing values, past experiences, and needs of a receiver. The degree of compatibility determines the rate of adoption of the innovation. Thus in the field of family planning, acceptance of family planning methods may require prior acceptance of family norm. (3) Complexity: This is the degree to which the innovation is perceived difficult to understand and use. (4) Trialability: This is the degree to which an innovation is tested or experimented with on a limited basis, the higher the possibility of testing.

higher the rate of adoption. This characteristic may explain the difference in the rates of adoption for the condom and vasectomy among men. And finally (5) Observability: This is the degree to which the results of an innovation are visible to other people. Innovations that have readily noticeable results diffuse faster than those that do not.

There is no more debate as to whether communication changes behaviour (L'iotrow and so the question of interest is: How does this happen?

Family planning ICC is a conscious effort by a government to modify reproductive behaviour of its population with a view to reducing the pace and tempo of childbearing. The aim of all ILC interventions is to change values and behaviours deeply rooted in biological nature and supported by social sanctions (Saunders, 1971). According to Saunders, family planning communication aims to change knowledge in the expectation of changing behaviour. It also educates by teaching people skills, building habits and teaching new habits of belief and behaviour. Further, it motivates by changing perceptions of wants or needs b) establishing a connection between family planning practice and gratification of existing needs. In other words, it establishes contraception as a low level existential need (Omwanda, 1996) By altering norms and values family Planning communication legitimises contraception by creating a climate in which talk about sex and contraception is considered acceptable and proper rather than shameful and unacceptable (Saunders, 1971).

Two theories have been proposed to explain the possible mechanisms through which mass communication impacts on behaviour: agenda-setting theory and cultivation theory. Agenda setting theory posits that by singling out some topics for emphasis and prominence, mass media increases the saliency and importance of such topics in their

Increased discussion, which leads to more discussion of the topic through interpersonal channels. This increased discussion enables the initial message to diffuse throughout the audience. Romer and Homick (1992:143) argue that "Although formal channels for distributing messages are critical for message exposure, continued discussion through informal social networks can increase the chances of messages reaching the entire audience".

Cultivation theory proposed posits that repeated intense exposure to deviant definitions of 'reality' in the mass media leads to perception of that reality as normal. The result is social legitimation of the reality depicted in the mass media, which can change behaviour a phenomenon sometimes called the "legitimising effect' of mass media.

Thus, by frequently exposing members of the audience to messages on family-planning the taboo nature of the topic is mitigated and family planning topic is moved toward\* the non-taboo pole in the taboo non-taboo continuum (Roger;, 1973) thus establishing a new norm. This shift creates a climate in which talk about family planning is considered normal rather than embarrassing and socially unacceptable (Saunders, 1971) Increased discussion of the topic within interpersonal networks not only increases knowledge of contraception but also creates motivation to contracept by establishing family planning as beneficial to the adopter. Consistent with this view is the posulate that family planning communication establishes family planning contraception as a low level existential need (Omwanda. 1996).

To increase the persuasive power of mass media family planning messages, an entertainment approach is widely used. A critical analysis of successful radio and television operas with a family planning theme reveals that they have strong education and entertainment components Entertainment is offered by a captivating story line or plot

audience, which leads to more discussion of the topic through interpersonal channels. This increased discussion enables the initial message to diffuse throughout the audience. Romer and Hornick (1992:143) argue that "Although formal channels for distributing messages are critical for message exposure, continued discussion through informal social networks can increase the chances of messages reaching the entire audience".

Cultivation theory' proposed posits that repeated intense exposure to deviant definitions of 'reality' in the mass media leads to perception of that reality as normal. The result is social legitimation of the reality depicted in the mass media, which can change behaviour a phenomenon sometimes called the 'legitimising effect' of mass media.

Thus, by frequently exposing members of the audience to messages on family planning the taboo nature of the topic is mitigated and family planning topic is moved towards the non-taboo pole in the taboo non-taboo continuum (Rogers, 1973) thus establishing a new norm. This shift creates a climate in which talk about family planning is considered normal rather than embarrassing and socially unacceptable (Saunders, 1971). Increased discussion of the topic within interpersonal networks not only increases knowledge of contraception but also creates motivation to contracept by establishing family planning as beneficial to the adopter. Consistent with this view is the postulate that family planning communication establishes family planning contraception as a low level existential need (Omwanza, 19%).

To increase the persuasive power of mass media family planning messages, an entertainment approach is widely used. A critical analysis of successful radio and television operas with a family planning theme reveals that they have strong education and entertainment components. Entertainment is offered by a captivating story line or plot

^ stylistic backups that help to hold the attention and interest of the audience while education is imparted through conversation and characterisation. Two sets of characters are distinguishable: those who resist family planning and those who readily adopt family planning. Characters in the first set go on to have numerous children and are ultimately "punished" with financial, social and psychological problems. On the other hand, the second set bears merely one or two children and are "rewarded" with socio-economic success and happiness. Another notable characteristic of such strategies is a call for action: catchy slogans (e.g. Wise Man, Let's Change with the Times, Wake Up, It's Your Right, A Stitch in Time) are widely used as titles for drama series. (For brief descriptions of some radio/television family planning ILC materials, see for example Jato et al., 1999\*); Piotrowski et al., 1997; Rogers et al., 1999; Valente et al., 1994; Vugliani et al., 2000).

A study of effects of radio promotion of family planning in the Gambia by Valente and colleagues (1994) found that programme exposure was associated with increase in knowledge of contraceptive methods (from 3.8 to 5.2), an increase in positive attitudes and actual use of modern contraceptive methods. A similar study by Rogers et al. (1999) in Tanzania found that exposure to a family planning promotion radio soap opera *Twende rw H'akati* (Swahili for 'let's change With the Times') had strong behavioural effects on family planning adoption, increased listeners self-efficacy regarding family planning adoption, and influenced listeners to talk with their spouses and peers about contraception.

Another study in Tanzania by Jato and others (1999) focusing on the impact of family planning promotion on contraceptive behaviour of women found that the more types of media that women are exposed to, the more likely they are to practice family planning. Those exposed to media family planning messages were 11 times as likely as

Women not exposed to any media to be using modern contraceptives. Notable of their findings is that even women who had only one media source of family planning messages were twice as likely as women who recalled no media messages to be using contraception.

Consistent with agenda setting theory, the study found that more of the women exposed to mass media family planning messages were likely to have discussed family planning with their spouses compared with those not exposed. The study concluded that multimedia sources of information reinforce one another and that "Complementary messages may create an environment where the practice of contraception is perceived as a social norm" (Jato et al., 1999:1).

The fertility transition taking pace in Kenya is attributed to contraceptive adoption. And the force behind widespread contraceptive use is communication through the mass media and interpersonal channels (Omvvanda. 1996). Consistent with findings from other studies, the researcher noted above found that women who were exposed to mass media messages about family planning were more likely than those not exposed to have more knowledge of contraception and to be using a modern family planning method.

As noted earlier, behaviour change is a process. A theoretical framework termed Steps to Behaviour Change (SBC) has been formulated by Population Communication Services to aid in the analysis of the process of behaviour change (Piotrow et al., 1997). The specifies five steps or stages through which individuals move in the process of changing behaviour.

The first step is *knowledge*, which involves recall of family planning messages. "Comprehension of the concept of family planning, and knowledge of family planning methods and/or sources of supply. *Approval*, which is the second step, involves favourable

in addition to family planning messages, discussion of family planning with personal networks (family, friends), perception of family, friends, and community norms as being supportive of family planning, and individual acceptability/approval of family planning. The third step is *intention*. At this stage, the individual recognises that family planning can meet a personal need, she intends to consult a provider, and intends to practice contraception some time in future. The next step is *practice*, which involves going to a provider of information/supplies, choosing a method and commencement and continuation of use. The final stage, *advocacy* involves experiencing and acknowledging personal benefits of family planning, advocating the practice to others and supporting programmes in the community.

The framework postulates that progress from one step to the next increases the probability of changing behaviour hence the intervening steps are positively related with intended behaviour. Such conceptualisation is validated by many studies, (Indeed any study that links, say, knowledge and practice can be considered as deriving its theoretical premises from the STIC framework). For instance, an evaluation of the *Jiggasha* family planning campaign in Bangladesh found that women who rated high on each of the five steps measured (knowledge of modern methods, attitudes, discussion with other women, discussion of family size or contraception with spouse, and husbands' approval) were more likely to be using a modern method than those who rated low (cf. Piotrowski et al. 1997).

Family planning communication in the interpersonal channels has a significant influence on behaviour. There are various causal mechanisms including increasing knowledge and changing norms. In Kenya for example, women who discussed family planning with friends and relatives were more likely to be using a family planning method than women who did not do so (Omwanda. 1996). Analysis of D11S data from sub-Saharan Africa has

showed that countries with high levels of contraceptive use have correspondingly high proportions of respondents reporting engaging in spousal communication (Magadi. 2000). So crucial is partner communication that it has been argued that in Kenya contraceptive non-use is more a function of lack of partner communication than of male resistance (cf. Magadi. 2000).

## 2.8 Communication and Contraceptive Behaviour Among Adolescents

There is a dearth of research on communication effects on contraceptive behaviour among adolescents in Kenya. However, there is ample evidence to show that although adolescents are affected more than adults by socio-cultural, socio-economic and demographic factors - for example lack of knowledge and social maturity to acquire and negotiate contraceptive use they, too, do respond to appropriate communication. A television campaign aimed at changing sexual attitudes and behaviour in Australia showed that educational strategies might be successful in changing behaviour. Post campaign surveys showed increases in percent of young people reporting they had used condoms, carried condoms and insisted on condom use (cf. Moore and Rosenthal. 1993)

Similarly, a study by DiClemente (1992) showed that adolescents who communicated with their partners about AIDS and condoms were more likely to use condoms than those who did not. Parent-teen communication is also correlated with effective contraception (Jorgensen. 1993) but this finding is not supported by studies in Kenya since parents are the least significant source of contraceptive knowledge (Mugambi, Nduiui and Kiai. 19%). For instance a recent survey covering the whole country \* \* \* only 0.1 and 1.3 percent of female adolescents had ever discussed

contraception with their fathers and mothers respectively (NCPD, CBS and MI, 1998). In other words, the association is diminished by the fact that only a negligible proportion received family planning information from their parents.

It has also been noted that adolescent-parent communication is replete with wanting about sexual activity (Moore and Rosenthal, 1993), which does not help much in facilitating acquisition of contraceptive knowledge and methods. Citing the Mathanc Youth Sports Association, whose members hold counselling sessions and spread AIDS awareness through football matches, Williams *et al* (1998) argue that the youth exhibit the greatest behavioural change when they themselves are involved in peer counselling.

Since peer group norms affect adolescent behaviour (Diago, 1998; Fisher et al., 1992; Bandura, 1992), and since human beings acquire and modify behaviour through communicating with others (Rogers, 1973), then it follows that interpersonal communication has a strong effect on adolescent contraceptive behaviour.

The uniqueness of adolescence stems from biological changes brought about by a sudden increase in sex hormones. Physical growth and development as well as increase in sex drive are some of the major results of hormonal changes. Biological changes operating at individual level have a significant effect on behaviour: for instance, age at menarche is associated with sexual activity (Kiragu, 1991). Biological or individual factors, however, operate within a network of social influences, which may encourage or discourage various forms of sexual expression. The most powerful sources of social influence are peer group norms, because of their proximity, immediacy and prevalence

(Fisher, 1992). Norms of the larger social group have less effect on behaviour because of their less weight and can be disregarded altogether if they are at odds with those of



the peer group (Bandura, 1992). Thus adolescent contraceptive behaviour is determined by individual factors as well as factors in the social environment.

Adolescents' sexual and contraceptive decisions are based on five factors. (1) Cost-benefit analysis with respect to engaging or not engaging in certain behaviour; (2) risk assessment with respect to getting pregnant or contracting a sexually transmitted disease; (3) norms perceived to be held by significant others especially peers, parents and partners; (4) willingness of the adolescent to conform to the wishes of significant others; and finally (5) self-efficacy in making decisions such as whether to have sex, procure and use contraceptives, and convince male partners to use a condom (Gage, 1998).

Adolescents' values and norms are derived from those of the larger community. It has been argued that

Cultural attitudes toward adolescent sexual activity may... have a direct impact on sexual and reproductive decisions in this age group by defining the normative context of childbearing, by governing the level of kin and social support for adolescent mothers and their children, and by shaping the perceived economic and social consequences of unsanctioned childbearing

(Cf. Gage, 1998: 156)

Where societies are undergoing rapid transformations as is the case in Africa, there is a juxtaposition of traditional and modern values, which creates in the adolescents - who themselves are in a transitory state - conflicts in definition of their rights and inabilities and confusion about their sex roles and gender expectation (Caldwell et al).

Gage, 1998; Ilorrock, 1962) Family planning communication creates a bias against early childbearing by changing norms and values of the larger community and since adolescent values are derived from those of the larger community.

their attitudes are modified accordingly. By altering norms it makes adolescent marriage and reproduction as well as premarital childbearing less and less tolerable and individuals are socialised to view these activities as unacceptable. To use Gagnon and Simons' concepts (Moore and Rosenthal, 1993), family planning communication gives adolescents a 'script' for sexual development.

Family planning communication also alters adolescents' sexual and contraceptive behaviour directly not only by imparting knowledge and teaching skills but also by linking the practice of family planning with gratification of personal needs such as improving one's life chances through educational pursuits. It should be emphasised here that although family messages are disseminated to the whole population, they are understood and interpreted differently. In all likelihood, adolescents interpret the concept of family planning as a strategy to avoid pregnancy rather than a means for achieving some predetermined fertility goals since fertility intentions of adolescents are at best tentative (Kiragu, 1991).

Finally, family planning communication creates the impression that "Everyone is doing it" - that is, contracepting (Rogers, 1973) and this has a significant effect on adolescents' norms and behaviour. It makes adolescents start to view contraceptive non-use as unusual and unacceptable.

Thus, by "setting the agenda" for interpersonal communication networks, which leads to acquisition of knowledge and skills and alteration of norms and practices, and by cultivating new norms and modifying old ones, family planning communication ultimately impacts on adolescent contraceptive behaviour. For the two processes necessarily leading to changes in adolescents' cost-benefit analysis, risk assessment, norms perceived and by significant others, willingness of the adolescent to conform to such norms, and

self-efficacy in acquisition and use of family planning methods. Again it should be emphasised here that contraception is a highly taboo topic at the onset of adolescence. Mass media and interpersonal channels contribute to change the taboo nature of the topic and consequently increase the rate of spread of contraceptive knowledge and practice as adolescents grow older.

## 2.9 Summary, Conceptual Framework and Conceptual Model

### 2.6.1 Summary

Adolescent contraceptive behaviour is affected by two sources of influences: factors in the individual and factors in the environment. Individual factors include cognitive traits such as knowledge of contraception and skills that go into its acquisition and use, affective factors and other internal forces that affect perception and action (Handura, 1992). Thus correlates of adolescent contraceptive behaviour such as age, marital status, level of education and socioeconomic status operate at individual level.

Factors in the environment include proximal social influences emanating from the immediate social environment of the adolescent such as parents, peers and partners as well as from distal social influences including the school, religious institutions, youth culture and traditional norms and practices. Forces in the social environment determine the extent to which individual factors (say changes in hormonal levels) affect sexual and contraceptive behaviour.

Both individual and social influences, however, impact on adolescent contraceptive behaviour

via the process of communication. In other words, communication is the vehicle

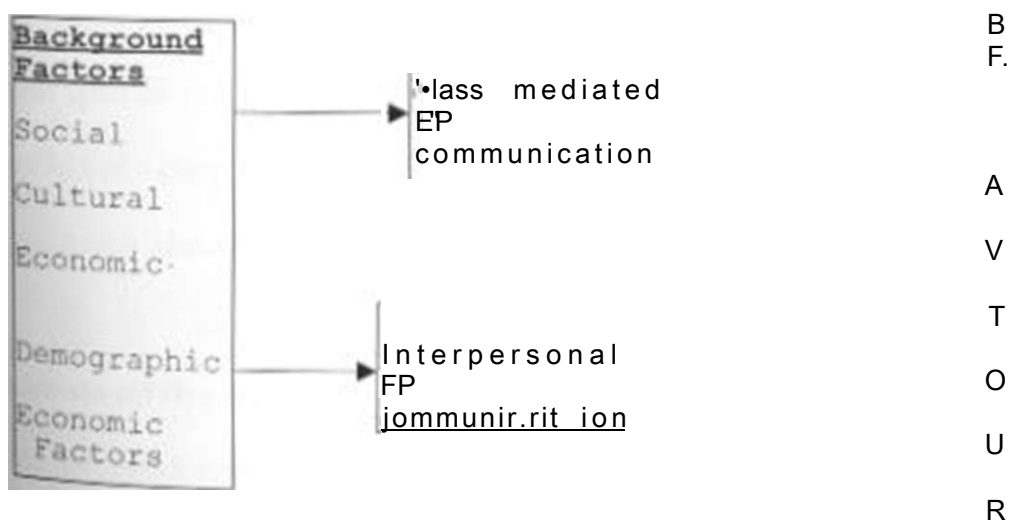
by which all the factors noted above affect adolescent contraceptive behaviour.

## 2.9.2 Conceptual Framework

Omwanda (1996) proposes an interactive framework that incorporates culture in the communication process and behaviour change. Communication is theorized to be affected by culture, social structure and personal attributes. Cultural values, norms and traditions determine the nature of interpersonal communication as well as mass mediated communication. The strength of this framework lies in its recognition of the primacy of social forces in shaping individuals' behaviour while at the same time recognising the place of choice in behaviour change.

One major modification carried out to make the framework suitable for the current study is exclusion of components of motivation due to data limitations. Measures of a woman's motivation to engage in contraceptive behaviour such as past fertility experience do not apply to adolescents since majority of them are both unmarried and sexually inexperienced.

figure 1 A non-recursive conceptual framework for communication and contraceptive behaviour among adolescents



Source: Omwanda 19% (modified)

Communication exposure impacts on adolescent reproductive behaviour via the five main components of adolescent decision-making. As noted earlier, family planning communication means transmission of innovation (Rogers, 1973). that is. knowledge, education, motivation, legitimation and reassurance (Saunders, 1971). Thus as adolescents are exposed to FP communication, changes occur in their risk perception, cost-benefit analysis, perception of norms held by significant others, willingness to conform to such norms, and self-efficacy. Acquisition of facts on reproduction, for instance, can improve one's assessment of risk of becoming pregnant; it can also make the individual aware of the many health, economic, and psychic costs of early childbearing.

Further communication changes norms so that family planning topic is moved from the taboo to the non-taboo poles of the taboo-non-taboo continuum (Rogers, 1973) which encourages more interpersonal communication hence more knowledge and higher likelihood of adopting the target behaviour. In general, communication affects motivation to change behaviour. Whether the individual will engage in the behaviour promoted, therefore, depends largely on the extent to which the components noted above have been altered or expressed upon by communication. Finally, these predictors of adolescent decision-making are a product of a complex interplay of all the factors - economic, social, psychological, etc that make each adolescent a unique individual.

### 3.3 Conceptual Hypotheses

From

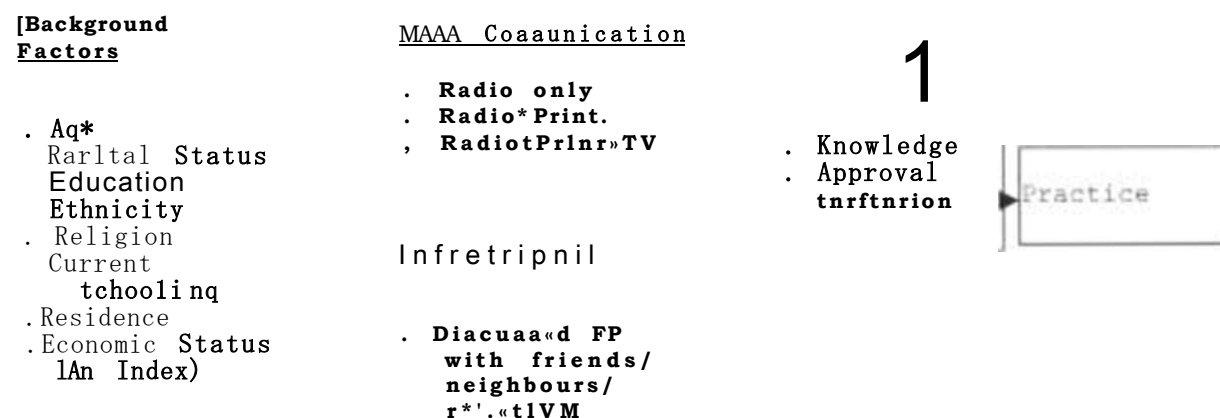
the framework above, the following three conceptual hypotheses are proposed.

1. Contraceptive behaviour of adolescents varies with family planning communication, all factors constant.
2. The effects of background factors on contraceptive behaviour are mitigated by the intensity of family planning communication.

### 2.9.4 Operational Framework

From the conceptual framework described above, an operational framework can be constructed as follows.

Figure 2. An operational framework for the analysis of communication effects on adolescent contraceptive behaviour.



### 2.9.5 Operational Hypotheses

As was argued in the preceding section that family planning communication furnishes individuals with knowledge of contraception (Jato et al. 1999, Omwanda, 1996; Rogers.

Rogers et al., 1999). and 'cultivates' new norms hence influencing attitudes towards contraception (Piotrow, et al., 1997; Saunders, 1971). It establishes contraception as a low

human need hence creating motivation to engage in fertility regulation (Omwanda,

jq96). It also increases knowledge in die hope of changing overt behaviour (Saunders. |971). which is consistent with the postulate held by Steps to Behaviour Change model - that is. intervening stages have cumulative effect on behaviour (Piotrow, ct al.. 1997).

Thus, the following operational hypotheses are proposed:

- There is a significant positive association between knowledge of modern family planning methods and exposure to family planning communication other factors constant.
2. There is significant positive association between approval of contraception and exposure to family planning communication other factors constant.
3. There is a significant positive association between intention to use contraceptives in future and exposure to family planning communication other factors constant.
4. There is a significant positive association between ever-use of contraception and exposure to family planning communication other factors constant.
5. There is a statistically significant positive association between knowledge of family planning methods and contraceptive use other factors constant.

## CHAPTER 111REE: DATA AND ANALYTICAL METHODS OF THE STI'DY

### 2.1 Introduction

plus chapter presents the data and analytical methods used in this study. It is divided into three broad sections. The first section addresses issues relating to data source, data quality, the study area and the study population while the second section presents the variables (dependent, independent and control variables) used in the study. Finally, section three presents analytical methods.

### 3.2 Data: source, sample design, study area and study population

3.2.2 Data source: This study used secondary data generated by The 1998 Kenya Demographic and Health Survey (KDHS), which was the third such survey carried out in Kenya The 1998 KDHS was a nationally representative survey of 7881 women age 15-49 and 3407 men age 15-54. The survey was conducted by the National Council for Population and Development (NCPD) and Central Bureau of Statistics (CBS) in collaboration with other institutions including Macro International Inc. of Calverton, Maryland (I SA). US Agency for International Development (IUSAID/Nairobi) and the British government's Department for International Development (DFID/UK).

#### The Study Area

Kenya covers an area of 582.000 square kilometres and borders Tanzania in the south, Uganda in the west, Sudan in the northwest, Ethiopia in the north, and Somali in the east, ^country lies entirely within the equatorial zone.

### 3.2.4 The Sample Design

The 1998 KDHS covered the entire country with the exception of seven sparsely populated northern districts, which together comprise less than 4 percent of the country's population. A two-stage, stratified sampling approach was used, the first stage involved selecting sampling points or 'clusters' while the second stage involved selecting households within sampled points from a list compiled during a KDHS household listing exercise. The sample points were selected from a national master sample the sampling frame called the National Sample Survey and Evaluation Programme (NASS1-P-3) maintained by the Central Bureau of Statistics (CBS).

A total of 444 rural and 92 urban sampling points were drawn. Six of these clusters (comprising 1 percent) were not surveyed due to inaccessibility. In order to produce reliable estimates of certain variables at district level, 15 districts were over-sampled. These were: Bungoma, Kakamega, Kericho, Kilifi, Kisumu, Machakos, Meru, Murang'a, Nakuru, Nandi, Nyandarua, Siaya, South Nyanza, Taita Taveta, and Uasin Umba. Also Nairobi and Mombasa were over-sampled. As a result of this over-sampling, the 1998 KDHS is not self-weighting: rather weights are needed to produce national estimates.

#### The Study Population

The study population is 1,851 women age 15-19 who were interviewed in the survey.

### 3.3 Variables: Definition and Operationalisation

#### 3.3.1 The Dependent variables

Contraceptive behaviour has been conceptualised as a cumulative state (Omwanda, 1997; Piotrowski et al., 1997). In this study, contraceptive behaviour means knowledge of modern family planning methods, approval of contraceptive use, intention to use contraceptives in future, and ever use of any contraceptive method.

##### 1. Knowledge of Contraception

One indicator of contraceptive knowledge that has been used extensively in the study of contraceptive behaviour is knowledge of modern family planning methods. This study also used this indicator. Since knowledge of any family planning methods is almost universal, and since only 10 percent of the respondents did not know of a modern family planning method, a different variable was computed to facilitate more meaningful analysis.

Computation involved combining all the modern family planning methods covered in the DHS namely the pill, injectables, diaphragm/foam/jelly, condom, female sterilisation, male sterilisation and implants. The average number of methods known was found to be about 4 hence the variable was further recoded into knowledge of four or fewer methods and knowledge of more than four methods with values 0 and 1 respectively.

##### II. Approval of Contraceptive Use

In this study, approval of contraception means acceptance of the idea of regulating

childbearing. The variable had two categories: disapproval and approval with values 0

1 respectively.

### 111. Contraceptive Intention

Contraceptive intention means willingness to use a contraceptive method any time in future among those not currently using any. Those who reported not intending to use a method in future were coded 0 and those who reported intending to use any were coded 1.

### IV. Contraceptive Practice

Adolescent sexual activity is not only sporadic but also characterised with long spells of no activity (NCPD, CBS and MI, 1998; Moore and Rosenthal, 1993). Indeed, the data used in this study shows that only 19.4 percent of adolescents were sexually active (defined as engaging in sexual activity in the preceding four weeks) at the time of the survey. This poses a serious limitation in the analysis of contraceptive use: as the cases are too few to allow rigorous analysis.

For this reason, analysis of contraceptive practice was based on *ever use of* *reception*. Respondents who had never had sexual intercourse and those who did not know any method were excluded because they were not at "risk" of having used contraceptives: including them in the analysis would have biased results to the extent of making them meaningless.

#### 3.3.2 Independent variables

1' Mass communication: A scale of mass media exposure comprising of Radio, Television,

Print was constructed to facilitate analysis of association between mass communication exposure and contraceptive behaviour. It will be recalled that this study aims at analysing

^ Cumulative effect of communication channels rather than effects of individual channels,

^fc decision is based on communication theory *that communication channels have*

*cumulative effect on behaviour* This is an application of the concept of dose response used in epidemiological research (Jato. et al.. 1999; Piourow, et al.. 1997). The final scale, which is ordinal, is as follows: 0 No Media, 1 Print only, 2 Radio only, 3 Radio and Print, and 4 Radio, Print and television.

This kind of scaling inevitably leads to loss of cases because respondents who were exposed to family planning messages on the television only, radio and television, and print and television are not captured by the scale, fhc scale was, however, used in this study for two reasons. One, only 5 percent of cases is lost in the process of scaling. Two, an alternative scale which met uni-dimensionality requirement without loss of cases was constructed and the resultant variable had the following categories: no media source, one medium, two media, and three media sources (note that the media sources are unspecified); however, this scale was found to have less explanatory power than the former one.

II. Interpersonal Communication: The question asked to generate information on interpersonal communication was *In the last six months have you discussed the practice of family planning with your friends, neighbours or relatives?* This generated Yes-No responses and the variable (V630H) had value 1 for those who answered yes and 0 otherwise.

#### Control Variables

following control variables were used in this study: 1. Education; 2 Age; 3 Ethnicity; Urban residence; 5 Marital status; 6 Socio-economic status; 7 Religion; 8 Current

school attending status.

In order to reduce errors introduced by age in single years, age (V012) was recoded into two categories namely 'Early adolescence' (age 15-17) and 'Late adolescence' (age 18-19). Educational attainment was measured in terms of levels rather than years of schooling. Value 0 stood for no/incomplete primary education, 1 for complete primary education, 2 for secondary level and above. Current school attendance meant whether the respondent was in or out of school at the time of the interview. Value 1 stood for those at school while 0 stood for those out of schooling.

Type of place of residence meant living in an urban area (coded 1) or a rural area (coded 2). Marital status meant whether the respondent was married at the time of the survey. Those who reported their marital status as currently not married were given code 0 while the currently married were given value 1.

Ethnicity in this study was taken as membership in the following ethnic groups: 1 Kalenjin, 2 Kamba, 3 Kikuyu, 4 Kisii, 5 Luhya, 6 Luo, 7 Mru/Embu, 8 Mijikenda Swahili, and 9 Other, while religion denoted membership in the following religious groups: Catholic, Protestant/other Christian, Muslim/others - with values 1, 2, and 3 respectively.

Scaling the socio-economic status involved several steps, first, nine socio-economic indicators were selected (and dichotomised whenever necessary). These are household ownership of radio (V120), television (V121), refrigerator (V122), bicycle (V123), motorcycle (V124) and private car (V125), as well as living in a house that has electricity (V119), piped water (V113R recoded from V113 "Source of drinking water"), and a cement floor (V127R recoded from V127 "main floor material").

The second step involved carrying out a logistic analysis with each of the variables and noting its significance. Six variables were found to be significantly associated with contraceptive knowledge (at  $p < 0.01$ ): Radio, Television, Private car, Cement floor, electricity, and Piped water. Next, another variable was computed by combining all the variables above and the resultant variable had six categories namely: None of the Socio-

#### JJ.4 Summary of operational definition of variables

##### JaW 3.1 Variables and their measurement

	Variable	Value	Remarks
V30IR	Knowledge of nuxlcm FP method	0- No 1- Yes	Dependent variable
V613R	Approval of contraception	0- No 1- Yes	Dependent variable
V362R	Intention to contracept	0- No 1- Yes	Dependent variable
V302R	Ever use of contraception	0- No 1- Yes	Dependent variable
V3S4R	Scale of Media exposure	0- No media 1- Print only 2- Radio only 3- Radio*Print 4- Radio+Print+TV.	Explanatory Variable
V630H	Discussed FP with friends, etc	0- No; 1- Yes	Explanatory Variable
V502R	Current marital status	0- No married 1- currently married	Control variable
VI49K	Level of education	0- No education 1- Primary Incomplete 2- Primary complete 3- Secondary Plus	Control variable
V148	Current school attendance	n- Out of school 1- In school	Control variable
V012	Age	1 Early Adolescence 2 Late adolescence	Control variable
V130r	Religion	1- Catholic 2- Protestant 3- Muslim/others	Control variable
VIJIR	Ethnicity	1- Kalenjin 2- Kamba 3- Kikuyu 4- Kisii 5- Luhya 6- Luo 7- Meru/Fambu 8- Mijikenda/ Swahili	Control variable

V025	Type of place of residence	9-Taveta others 1-Rural 2- Urban	Control variable
V100E	Socio-economic status	1-Low 2-Medium	Control variable

economic Status (SES) indicators; One SES indicator; Two SES indicators ... Five SES indicators. Finally, the variable was recoded in order to combine categories 0 and 1 into one category and categories 3, 4, and 5 into another category. The resultant variable (100SEC) had three categories namely 'low', 'medium' and 'high socio-economic status'

### 3.4 Analytical Methods

This section presents statistical methods that were employed in the current study.

#### 3.4.1 Cross-tabulation.

Cross-tabulation with chi test was used at bivariate level of analysis to test for association between communication exposure and control variables (education, age, marital status, religion, place of residence, current school attendance, economic status, and ethnicity) as well as between communication exposure and contraceptive behaviour.

#### 3.4.2 Logistic Regression: Logistic regression is used to analyse dichotomous data, that

where the dependent variable takes value either 0 or 1. Such data is generated by No responses. Odds ratio generated permit direct observation of the relative probability of each independent variable in predicting the likelihood of contraceptive behaviour, compared with the reference category. Besides, logistic regression has the advantage of allowing inclusion of statistical control, which is not possible with chi-

square test.

The general equation is of the form

$$y = \frac{e^{J^* + \sum B_i X_i}}{1 + e^{J^* + \sum B_i X_i}}$$

To make the distribution linear, a logit transformation is carried out thus:

$$g(x) = \ln \left( \frac{y}{1-y} \right) = B_0 + \sum B_i X_i$$

logistic regression uses the concept of maximum likelihood and results are analysed using the iteration method. A negative value of  $B_i$  means the independent variable reduces the likelihood of making the observation. Odds ratio, the probability of having the observation to not having it is then computed by exponentiating the  $B_i$ .

In this study, logistic regression was used since the dependent variable contraceptive behaviour is dichotomous. More specifically, the method was used to test the association between mass communication and interpersonal communication on the one hand, and contraceptive knowledge, approval of contraception, intention to use contraceptives in future, and contraceptive use on the other hand controlling for background factors. A reference category was specified and findings interpreted in relation to that category.

Five multivariate logistic regression models were constructed and tested. Model 1 was used to test the effects of exposure to family planning communication on knowledge of contraceptive methods while Model 2 was used to test the effects of exposure on approval of contraceptive use. Model 3 tested the effects of exposure to family planning communication on intention to use contraceptive in future while model 4 tested the association between communication and ever-use of contraception, and model 5 tested association between knowledge of contraceptive methods and actual contraceptive

## CHAPTER FOUR: FINDINGS

### 4.1 Introduction

This chapter presents results of bivariate and multivariate analyses. Univariate analyses involved carrying out frequency distributions while bivariate analyses involved cross-tabulations and chi-square tests. Logistic regression was carried out at multivariate level of analysis.

### 4.2. Preliminary Analyses

Frequencies and descriptive statistics were carried out to assess the nature of distribution of cases in each variable (both dependent and independent) in order to facilitate recoding of variables, which would in turn facilitate meaningful bivariate and multivariate analysis. Specifically, recoding was undertaken to take care of categories with too few cases as well as to dichotomise the dependent variables. However not all variables allowed recoding.

The following is a summary of the more important characteristics of survey respondents. Majority of respondents (90%) knew a modern family planning method while only 9.6% could not name any method. Approval of contraception was also high (74.3%) but a substantial proportion (12%) was undecided. Similarly, majority of respondents not currently using a method (62.4%) showed positive intentions to use contraceptives in future. A significant proportion, however, was undecided or did not intend to contracept. Among respondents who had some sexual experience and knew a contraceptive method, 66.2 percent had never used any method

Further, 39.8% of respondents had received family planning messages on the radio in the preceding six months and 26.8% reported reading such messages in newspapers or magazines, while 13.2% cited the television as one of their sources of family planning message. About one half had no access to mass media source of family planning messages while 27.6%, 13.8 percent, and 8.1% had access to one, two, and all the three media sources respectively. Moreover, 10.5 percent of the respondents had discussed family planning with their friends, neighbours or relatives.

It may be recalled that this study has its theoretical basis on the postulate that social, economic, and demographic factors affect adolescent contraceptive behaviour via the process of communication, which implies that background variables are associated with contraceptive behaviour. Thus, cross-tabulation and chi-square tests were used to test for association between background factors and the dependent variables of this study. The same analytical method was carried out to test the hypothesised association between exposure to family planning communication in the mass media and interpersonal networks on the one hand and contraceptive behaviour (that is, knowledge of contraceptive methods, approval of contraception, intention to use contraceptives and contraceptive use) on the other hand.

## 2.1 Knowledge of Modern Contraceptive Methods

Table 4.1 shows percentage of women age 15-19 who knew at least five modern contraceptive methods and percentage who approved of contraception by background characteristics. There is a significant association between education and knowledge of contraceptive methods. The proportion of women with no/incomplete primary

education who knew at least five methods is only 31.3 percent, but the proportion is markedly higher among women who had completed primary education (57.%) and those with at least some secondary education (65.6%).

Contraceptive knowledge varies also with age. Only 31.3 percent of the younger adolescents (age 17 and below) reported knowledge of five or more methods while as many as 61.1 percent of the older ones reported such knowledge. Moreover, type of place of residence is associated significantly with contraceptive knowledge. More of urban adolescents and fewer of rural ones could name five or more contraceptive methods (53.1 and 42.0% respectively).

There is also a significant association between current schooling status and knowledge of contraception. More than half of adolescents not currently attending school (57.7%) had high knowledge of contraception (that is, knew at least five modern methods), but the proportion falls to 33.1 percent among those currently attending school. There is no significant association between membership in religious groups and contraceptive knowledge. On the other hand, ethnicity is associated with knowledge of contraception. The proportion of respondents reporting high knowledge of contraception ranges from as low as 34.7 percent among the Mbaru/Embu to as high as 51.3 percent among the Luo.

Cross-tabulation results further indicate that significantly more of the married adolescents and fewer of the unmarried ones (60.2 and 40.5% respectively) had a high score on knowledge of contraception. And finally, there is a statistically significant association between socio-economic status and contraceptive knowledge. While only 39.5 percent of respondents of very low socio-economic status scored high on knowledge of

family planning methods, the proportion increases to 48.2 percent among those of medium background and peaks at 53.5 percent among those from high socio-economic Status.

#### 4.2.2 Approval of Contraception

Education is associated not only with knowledge of contraception but also with approval of contraceptive use. The proportion of adolescent who approved of contraception increases from 69.6 percent among those with no/some primary education to 80.4 percent among those with complete primary education and reaches 81.4 percent among those with at least some secondary education.

Age is also significantly associated with approval of contraception with 70 percent of the younger adolescents reporting approval of contraceptive use compared with 79.3 percent of the older adolescents. Although type of place of residence is not significantly associated with contraceptive approval, cross-tabulation results show that proportionately more of rural adolescents (75%) approved of contraception compared with urban adolescents (70.8%).

Current schooling has an effect on approval of contraceptive use. A larger proportion of respondents not currently attending school approved of contraception compared with those currently attending school (76.4 and 72.2 percent respectively). It can also be seen that fewer of the unmarried adolescents approved of contraceptive use compared with the married ones (73.3 and 79.7 percent respectively). Results further indicate that ethnicity is significantly associated with attitude towards contraception. The proportion reporting approval of contraception is lowest among the Kamba (63.5%) and among the Luhya (83.3%). Religion is also associated with contraceptive use.

While 76.1 of Protestants/others Christians reported approval of contraception, slightly fewer reported such intentions among the Catholics. The proportion declines further to only 62 percent among the Muslims/other religions.

Table 4.1. Percentage of women age 15-19 who knew at least five modern contraceptive methods and approved of contraception by background characteristics

Characteristic	Know Modern Method %	No of Cases	Approve Contraception	No of Cases
<b>Education</b> - No some primary	31.3	1081	69.6	1087
-Primary complete	57.0	349	80.4	352
-Secondary	63.6	410	81.4	413
<b>Age</b> -Early adolescence	31.3	1067	70.7	1075
-Late adolescence	61.1	772	79.3	775
<b>Residence</b> -Urban	53.1	307	70.8	312
-Rural	42.0	1532	75.0	1540
<b>Current schooling</b>				
-Not in school	57.7	918	76.4	916
-In school	33.1	927	72.2	932
<b>Marital status</b> -Not married	40.5	1555	73.3	1566
-Married	62.0	285	79.7	286
<b>Religion</b> -Catholic	41.0	515	73.4	518
-Protestant other Christian	15.3	1189	76.1	1197
-Muslim others	41.5	135	62.0	137
<b>Ethnicity</b> -Kalenjin	38.5	312	73.9	341
-Kamha	44.3	211	63.5	211
-Kikuyui	45.0	229	75.3	231
-Kisii	35.8	187	73.9	188
-Luhya	48.0	281	83.3	282
-Luo	51.3	230	79.2	231
-Meru/other	34.7	118	74.8	119
-Mijikanda/swahili	50.3	143	68.1	144
-Taveta/others	43.4	129	69.7	132
<b>Economic status</b> -Low	39.5		73.1	1173
-Medium	48.2		75.4	285
-High	53.5		76.9	211
<b>Total</b>	47.8	1852	74.3	1852

\* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001. n.s. not significant

#### Intention to Use Contraceptives Among Non-users

TABLE 4.2 shows percent distribution of non-contracepting respondents intending to use contraceptives in future by background characteristics. It can be seen that intention to use

contraceptives varies with educational level. While only 57.1 percent of the respondents with no, some primary education reported intention to contracept, the proportion rises to about 80 percent in higher educational levels.

Table 4.2 Percentage of women age 15-19 who intended to use contraceptives by background characteristic?

Characteristic	Intention to contracept %	No. of cases	
Education	•No/incomplete primary	57.1	1036
	•Primary complete	79.9	309
	•Secondary	80.1	379
Age	-Early adolescence	70.3	1041
	•Late adolescence	79.6	683
Residence	-Urban	75.0	275
	•Rural	70.6	1149
Current schooling	-Not in school	78.2	852
	-In school	70.4	898
Marital status	•Not married	73.2	1485
	•Married	80.4	239
Religion	•Catholic	73.1	477
	-Protestant other Christian	76.1	1115
	-Muslim/others	61.2	132
Ethnicity	-Kalenjin	68.9	296
	•Rumba	62.8	191
	•Kikuyu	75.5	210
	•Kisii	77.6	176
	•Luhya	81.6	264
	-Luo	82.4	212
	•Muru'Kumu	83.5	106
	•Mijikenda Swahili	69.9	140
	•Taveia'othman	63.9	129
Socio-economic status	-Low	74.5	1103
	-Medium	74.7	260
	•High	73.3	361
		62.4	1727

(Mean at p<0.05; \*\* p<0.001; n.s. not significant)

First, age is significantly associated with contraceptive intention: 70.3 percent of the younger adolescents and 79.6 percent of the older ones reported positive intention. There is a statistically significant association between marital status and intention to use contraceptives in future: a bigger proportion of married adolescents (80.4%) reported

such intentions relative to unmarried ones (73.2%).

Contraceptive intention varies also with ethnicity. While only 62.8 percent of the respondents from the Kamba ethnic group reported intention to use contraceptives in future, the proportion reporting such intentions increases to over 80 percent among the Juhya, Luo and Mru/Umbu communities. Religion, too, is associated with contraceptive intention with over 70 percent of all Christians in general and 61.2 percent of respondents from other denominations reporting positive contraceptive intentions.

Although slightly more of rural adolescents (75.0%) relative to urban ones (70.6%) intended to use a family planning method in future, the difference is not statistically significant. The same is true for socio-economic status.

#### 4.2.4 Contraceptive Practice

Table 4.3 shows percentage of women age 15-19 who had ever used a contraceptive method by background characteristics. It can be seen that younger adolescents are less likely to have used a contraceptive method compared with older ones (27.8% and 37.2% respectively). In addition, there is a significant relationship between level of education and contraceptive practice. Among respondents with no/some primary education, 27.0 percent reported ever use of contraception compared with 40.9 percent of those with complete primary education and 40.7 percent for those with some secondary education.

Similarly, ethnicity is strongly associated with contraceptive use. The proportion of respondents reporting ever use of contraception is lowest among the Miji Kanda / Kahili (14.3%) and highest among the Kamba (50%). The relationship between religion and contraceptive use is also statistically significant. Muslims/other religions has the palest proportion reporting ever use of any contraceptive method (15.2%), while the

Catholics and Protestants/other Christians have more than twice as big proportions reporting ever using contraception (34.1 and 36.1% respectively). Socio-economic status, type of place of residence, marital status, and current school attendance are not significantly associated with contraceptive use.

Table 4.3. Percentage of women age 15-19 who had ever used a contraceptive method by background characteristics

Characteristic	Ever used a method	No. of cases
Education	27.0 ***	463
•Primary complete	40.0	186
•Secondary *	47.1	140
Age	27.8 **	281
•15-19	37.2	508
Residence	37.4 n.s	163
•Urban	32.9	626
•Rural	33.4 ns	611
Current schooling	35.2	176
•Not in school	33.5 n.s	504
•In school	34.4	285
Marital status	34.1	211
•Not married	36.1 ***	512
•Married	15.2	66
Religion		
•Christian		
-Catholic		
-Protestant/Other		
•Muslim others		
Ethnicity		
-Kalenjin	28.4	134
•Kaniba	50.0	68
-Kikuyu	42.2 ***	90
-Kisii	47.0	61
•Luhya	33.3	126
•Luo	25.0	152
•Meru/T. mbu	42.9	66
-Mijikenda/Swahili	14.3	56
-Invicta others	34.8	46
Socio-economic status		
•Low	31.3	515
•Medium	42.1	129
•High	42.1	145
	<i>m</i>	789

\*\*\* Significant at p<0.001; \*\* Significant at p<0.01; \* Significant at p<0.05; n.s. not significant

#### Effect of Communication on Contraceptive Behaviour

(Chi-square tabulation was carried out as the first step in the analysis of association between

exposure to family planning communication and contraceptive behaviour. Exposure to family planning communication in the mass media and interpersonal channels was cross-tabulated with each dependent variable of the study and the results are presented in table 4.4 below.

It can be seen that the two study variables are significantly associated with contraceptive behaviour. The proportion of respondents with no family planning communication exposure in the mass media who reported knowledge of at least five modern methods is only 31.2 percent. The proportion increases as sources of family planning messages increase: among the respondents with the radio as the only source, the proportion reporting high knowledge stands at 46.6 percent while among those with radio and print media it increases further to 71.2 percent. Addition of the television, however, increases the proportion by a mere 0.4 percent.

Similarly, more of adolescents who discussed family planning with friends, neighbours or relatives reported high knowledge of contraception compared with those who did not (40.5 and 71.6% respectively). Thus family planning communication in the personal networks is significantly associated with contraceptive knowledge.

Exposure to family planning communication is also associated with approval of contraception. It can be seen that while only 67.2 percent of respondents with no mass media exposure approved of contraception, 82 percent of those exposed to radio only had positive attitudes towards contraception. Addition of print media, however, decreases the proportion to 79.9 percent while access to all the three media raises it to 86.7 percent.

Interpersonal communication is also associated with contraceptive approval: 90 percent of respondents who discussed family planning with their friends.

neighbours or relatives approved of contraceptive use compared with slightly over 70 percent among those who did not engage in such discussions.

Increase in the number of mass media family planning communication channels consistently increases the proportion of respondents intending to use contraception. The proportion is 56 percent among those with no media exposure, 67 among those with radio only, 70.7 percent among those with radio and print media, and 72.9 percent among those who recalled family planning messages on radio, print and television. As expected, respondents who were exposed to family planning communication in the interpersonal channels are significantly more likely to have intentions to use contraceptive in future than those lacking such exposure.

Table 4.4 Percent distribution of women who knew five contraceptive methods, approved of contraception, intended to use contraceptive, and had ever used contraceptives by exposure to family planning communication.

Exposure variable	% Knowledge	No. of Cases	% Approval	No. of Intention	% Intention	No. of ever used	% Use	No. Of cases
Med 1.1 -No media	31.2	929	67.2	934	69.4	898	27.3	359
•Prim only	45.3	148	77.9	149	67.9	140	37.0	46
-Radio only	46.6	339	82.7	342	76.9	306	40.0*	175
•Radio' Print	71.2*	184	79.9*	184	84.7*	164	41.8	79
-Radio 'Print-I V	71.6	148	86.7	150	79.5	133	33.3	81
Intentional exposure								
•No	40.5	1645	72.5	1658	72.8*	1578	29.9*	652
•Yes	71.6	104	89.7	194	89.6	146	52.6	137
	43.7	1852	74.6	1852		1727	43.8	779

Significant at p<0.001

There is a statistically significant association between exposure to family planning communication and contraceptive use. Of 1645 (sexually experienced) respondents with no exposure to mass media, 27.3 percent reported using a contraceptive method while 40 percent of those exposed to radio messages only reported engaging in such practice.

Addition of the print media increases the proportion to 41.8 percent but adding the television decreases the proportion to 33.3 percent. Again proportionately more of respondents who had discussed family planning with friends, neighbours and relatives had used a method compared with those who reported no such exposure (52.6 % and 29.9 % respectively)

#### 4.2.6 Contraceptive Knowledge and Contraceptive Use

It may be recalled that a major concern of this study is to find out if knowledge of contraception is associated with contraceptive use among adolescents. This has both theoretical and policy implications. At theoretical level, analysis of effects of contraceptive knowledge on contraceptive practice can validate or refute the postulate held by Steps to Behaviour Change framework that the higher the knowledge of contraception the higher the likelihood of contraceptive use (Piotrow, et al., 1997). At policy level such an analysis can justify campaigns aimed at increasing knowledge of contraception among the youth.

Knowledge of modern contraceptive methods was cross-tabulated with contraceptive use. As expected, the association between the two variables is statistically significant at 99% confidence level. Among respondents with low knowledge of contraceptive methods, only 25.1 percent had ever used a family planning method compared with 40.6 percent among those who could name at least five contraceptive methods.

#### 4.2.7 Summary of bivariatt- Results

Two sets of bivariate analysis were carried out. The first set involved testing for association between background factors and dependent variables while the second set tested for association between study variables and dependent variables. Since no statistical controls could be introduced at this level of analysis, the associations are only tentative.

All the study variables were found to be significantly associated with the four dependent variables of this study. And finally, results show that knowledge of contraception is significantly associated with contraceptive use.

#### 4.3 Multivariate Results

To determine the impact of exposure to family planning communication on contraceptive behaviour while controlling for selected socio-economic, cultural, and demographic factors, five multivariate logistic regression models were constructed and tested. It may be recalled that this study is concerned with finding out the direction and strength of associations between communication exposure and contraceptive knowledge, approval of contraceptive use, intention to use contraceptives in future, and actual contraceptive practice as well as between knowledge of contraceptive methods and ever-use of contraception.

Thus, statistical analysis involved running two models a 'semi-model' to test the relative importance of each of all background factors in predicting each dependent variable (compared with the reference category) and a full model that included exposure to family planning communication. Only background variables significant at  $p < 0.05$  were

included in the full model.

#### 4.3.1 Correlates of Contraceptive Knowledge

Two logistic regression models were constructed to facilitate analysis of correlates of knowledge of contraception and the results are presented in table 4.5 below. Model 1 contains only socio-economic, cultural and demographic factors that had significant effect on contraceptive knowledge, while model 2 the full model contains the same variable\* as well as communication exposure factors

Thus, without adjusting for exposure to family planning communication, age, education, current schooling religion, ethnicity and current marital status have significant effect on knowledge of modern contraceptive methods. Women with complete primary education are twice as likely as those with no/some primary education to know at least five modern contraceptive methods, while those with at least some secondary education are four times as likely to know the same number of methods

Current schooling status has a strong effect on contraceptive knowledge. Being in school reduces the likelihood of knowing five or more contraceptive methods by 44 percent relative to being out of school. As expected, age is significantly associated with

contraceptive knowledge: adolescents aged eighteen and above are twice as likely as those aged

seventeen and below to know at least five contraceptive methods. Adolescents who profess Christian faith are significantly more likely to have high knowledge of modern contraception than do those of Muslim/other religions / no religion.

Also belonging to Luhya and Luo communities increases the odds for knowing contraceptive methods by about 60 percent, while belonging to the Miji Kenda / Swahili

increases the likelihood by 94 percent relative to belonging to the Kalenjin community. Since region was not included in the model, some of the differences could be a result of regional effects.

As expected, family planning communication has strong and significant association with contraceptive knowledge (Table 4.5 model 2). Adolescents with print as the only source of family planning messages are 61 percent more likely than those with no

Table 4.5 Odds ratios from logistic regression analysis showing the likelihood of knowing at least five contraceptive methods.

Characteristic	Model 1			Model 2		
	B	SE	Odds Ratio	B	SE	Odds Ratio
<b>Mass media exposure</b>						
(None)						
Print only	0.4787	0.2001	1.6139*			
Radio only	0.1571	0.1449	1.4292*			
Radio and Print	1.4252	0.1992	4.1586***			
Radio + Print + TV	1.2221	0.2174	3.3944***			
<b>Interpersonal exposure (None)</b>						
Yes			2.1635***	0.7717	0.1989	
<b>Education (No prior incomplete)</b>						
Primary complete	0.7780	0.1396	2.1770***	0.5748	0.1494	1.7768***
Secondary +	1.4520	0.1432	4.2712***	0.1938	0.1501	3.2997***
<b>Age (Early adolescence)</b>						
Late adolescence	0.7412	0.1185	2.0985*	0.6415	0.1263	1.8994*
<b>Marital Status (Not married)</b>						
Married	0.4366	0.1619	1.5474*	0.3421	0.1713	1.4097*
<b>(Unreal schooling (Out of school))</b>						
In school	-0.5777	0.12%	0.5612*	-0.6600	0.1371	0.5168***
<b>(Muslim vs others)</b>						
Catholic	0.5759	0.2618	1.7788*	0.7034	0.2830	2.0207*
Other Christians	0.6317	0.2462	1.8809*	0.7805	0.2674	2.1825**
<b>Ethnicity (Kalenjin)</b>						
Kamha	0.3230	0.2032	1.5812	0.3076	0.2123	1.3601
Kikuyu	-0.0504	0.1988	0.9508	-0.0468	0.2109	0.9543
Kisii	-0.080	0.2154	0.9627	0.0846	0.2244	1.0883

Luhyla	0.4690	0.1861	1.5983*	0.5053	0.1965	1.6575'
l.uo	0.5266	0.1974	1.6932"	-0.4930	0.2066	1.6372*
McruCmbu	-0.3343	0.2485	0.755K	0.25X6	0.25H9	.0.7721
Mijikenda/Swahili	0.6661)	0.2566	1.9461"	0.6666	0.2770	1.9476*
Tavcuoihers	0.2105	0.2423	1.2343	0.1911	0.2572	1.2106

•Significant ui p-JLQi. VjlJIOI. \*\*\*p--0.0«l. n-1852 Kflrrencr filrl-,<>fic-i an: m p.m»mh«g≤ \_

media exposure to know five contraceptive methods while those with radio are 43 percent as likely as those with no exposure to report such level of contraceptive knowledge. Access to both print and radio is associated with 4.2 higher likelihood of contraceptive knowledge but addition of the television shows no evidence of increasing the odds for knowing contraceptive methods.

Exposure to family planning information through interpersonal channels is significantly associated with contraceptive knowledge. Adolescents who discussed family planning with friends, relatives and neighbours are 2.2 times as likely as those who did not engage in such discussion to know at least five modern contraceptive methods.

Inclusion of communication exposure variables reduces the effects of marital status ethnicity, age and education, and increases those of religion and current school attendance. This suggests that these variables affect adolescent contraceptive behaviour through communication. Thus, knowledge of modern contraception is mainly a function of exposure to family planning communication, although background factors such as level of education, religion, current school attendance, marital status, age and ethnicity too have independent effects. Of the media factors analysed, a combination of radio and print was the largest log odds for contraceptive knowledge.

### 4.3.2 Correlates of Approval of Contraception

Model 1 below (table 4.0) presents socio-economic cultural and demographic factors that have significant effect on approval of contraception without adjusting for communication exposure factors

Adolescents with complete primary education are 1.7 times as likely as those with no incomplete primary education to approve of contraceptive\* use. While those with at least some secondary education are 1.8 times as likely as those with no education to have such attitudes. Male adolescence is associated with 34 percent higher likelihood of approving contraception while being a Catholic or a Protestant/other Christian relative to being a Muslim / other religion. No religion is associated with more than 70 percent higher

Table 4.6. Odds ratios from logistic regression analysis showing the likelihood of approving contraception.

Independent Variable	Model 1 - Full		Model 2 - Full		Odds Ratio	
	B	SE	B	SE		
<b>Media Exposure (None)</b>						
Print only	0.4480	0.2181			1.5652*	
Radio only	0.1840	0.1601			1.9819***	
Radio and Print	0.3448	0.2075			1.4117	
Radio or Print or TV	1.0117	0.2676			2.7502***	
<b>Religious exposure (None)</b>						
No			1.0241	0.2716	2.7847***	
<b>Education (No'pcy incomplete)</b>						
Primary complete	0.5152	0.1601	1.6739**	0.4782	0.1663	1.6131**
Secondary	0.6054	0.1602	1.8320***	0.4662	0.1650	1.5939**
<b>Age</b>						
Early adolescence						
Late adolescence	0.2911	0.1328	1.3322*	0.2463	0.1241	1.2793*
<b>Place of residence (Rural)</b>						
Urban	-0.5076	0.1727	0.6020**	-0.4152	0.1676	0.6602*
<b>Religion</b>						
Muslim other*						
Catholic	0.5314	0.2601	1.7012*	0.4063	0.2708	1.5012
Other Christian*	0.6050	0.2439	1.5312*	0.5269	0.2557	1.6937*

F.ethnicity (Kalenjin)							
	Kamha	-0.4469	0.1984	0.6396*	-0.4663	0.2036	0.6273*
	Kikuyu	-0.0024	0.2077	0.9976	-0.1211	0.8860	0.2154
	KISII		0.0717	0.2157	1.0743	0.0857	0.2212
1.0897	Luhya		0.6581	0.2109	1.9311**	0.6163	0.2180
1.8521**	Luo	0.3513	0.2139	1.4210	0.3343	0.2184	1.3970
	Merulimbu	-0.0019	0.2546	0.781	0.0638	0.2626	1.0654
	Mijikanda/Swahili	0.0846	0.2645	1.0883	-0.0117	0.2765	0.9884
	Various others	-0.0755	0.2455	0.9273	-0.3063	0.2548	0.7360

likelihood of approving contraceptive use. Similarly, belonging to the Kamba ethnic group is associated with 36 percent less likelihood of approving contraception while belonging to the Luhya community increases the odds by 93 percent relative to belonging to the Kalenjin community. Other ethnic groups are not significantly different from the Kalenjin. And finally, residing in an urban area reduces the probability of approving contraceptive use by 40 percent.

Adjusting for family planning communication exposure attenuates the effects of all except one background variable ethnicity suggesting that the variables affect adolescent contraceptive behaviour partly through communication exposure. Indeed, communication exposure factors have the largest odds ratios for contraceptive approval. For instance, adolescents who were exposed to radio family planning messages are 98 percent more likely than those exposed to no media to approve of contraception while those exposed to print media are 57 percent as likely to approve of contraception. Although a combination of radio and print is not associated with contraceptive approval at the 95 percent confidence level, adolescents exposed to the three media sources of family planning information are 2.8 times as likely as those not exposed to any mass media family planning messages to approve of contraceptive use.

It seems that discussion of family planning in the interpersonal channels has the

greatest effect on approval of the practice of contraception. Adolescents who discussed family planning with friends, relatives and neighbours are 2.8 times as likely as those who did not engage in such discussion to approve of contraception.

#### 4J.3 Correlates of Intention to Use Contraceptives in Future

Table 4.7 below presents the odds ratios for being a non-user intending to use contraceptives in future. Without including communication exposure factors, six control variables were found to be significant in explaining contraceptive intention at 95 percent confidence level: education, current school attendance, marital status, age, religion and ethnicity.

As expected, exposure to family planning messages has a significant positive effect on contraceptive intention. Compared with respondents with no exposure to mass media family planning messages, those exposed to print messages are 72 percent more likely to report intending to use contraceptive in future, while exposure to both radio and print messages is associated with 6.1 percent higher odds for intention to contracept. And, finally, exposure through all the three media sources, however, is associated with 73 percent higher probability to report positive contraceptive intention relative to having no mass media exposure.

Exposure to family planning messages in the interpersonal channels has the highest odds ratio for intention to use contraceptives in future. Adolescent who discussed family planning with their immediate social networks are 2.7 times as likely as those who did not to report positive contraceptive intentions.

Inclusion of family planning exposure factors (model 2) attenuates the effects of

education, age, current schooling and marital status, and increases those of ethnicity and religion. For instance, having at least some secondary education is associated with 1.6 odds for intending to contracept down from 2.1 (relative to no/incomplete primary education). Similarly, being aged over 17 years is associated with 44 percent higher likelihood for being a non-contraceptor who intends to contracept (down from 54%). Results further suggest that adolescents who are currently attending school are significantly less likely than those not attending school to have intentions to use contraceptives in future. The effects of religion is enhanced, hence Catholics and Protestants are almost twice as likely as Muslim/other religion/no religion to have positive contraceptive intentions. And, finally, compared with the Kalenjin ethnic group, belonging to the Kikuyu and Luo/other ethnic groups reduces the likelihood of being a non-contraceptor intending to contracept (log odds 0.7 and 0.5 respectively) while belonging to the Kisii, Luhya, Luo and Mru/Embu ethnic groups significantly increases the odds for contraceptive intention.

Table 4.7 Odds ratios from logistic regression analysis showing the likelihood of being a non-contraceptor intending to use contraceptive in future

	Model 1			Model 2- full model		
Exposure	OR	SE	95% CI	OR	SE	95% CI
Mass media exposure (NCKK)						
Print only				0.5398	0.2067	1.7157*
Radio only				0.3670	0.1511	1.4434*
Radio and Print				0.4920	0.2010	1.6355*
Radio + Print + TV				0.5477	0.2264	1.7293*
Mass media exposure (None)				0.9974	0.2562	2.7113***
Yes						
Education (No/Incomplete)						
Primary complete	0.4721	0.1529	1.6034**	0.3474	0.1600	1.4154*
Secondary +	0.7226	0.1500	2.059X***	0.4800	0.1548	1.6160"
(Early adolescence)						
Late adolescence	0.4336	0.1262	1.5428***	0.3617	0.1317	1.4358"

<b>Current schooling (out of school)</b>							
	In school	-0.4148	0.1317	0.6604**	-0.3645	0.1352	0.6946**
<b>Marital Status (not married)</b>							
	Married	0.3742	0.1890	1.4539*	0.3671	0.1971	1.4436
<b>Religion</b>							
	Muslim (other)	0.5499	0.2319	1.7324*	0.6835	0.2633	1.9808**
	Catholic	0.5317	0.2354	1.7019*	0.6907	0.2472	1.9952**
	Protestant other Christians						
<b>Ethnicity (Kalenjin)</b>							
	Kamba	-0.0041	0.1970	0.9959	0.0278	0.1997	0.9726
	Kikuyu	-0.2493	0.1932	0.7794	-0.4029	0.2012	0.6684*
	Kisii	0.4841	0.2072	1.6232*	0.4942	0.2104	1.6393*
	Luhya	0.6855	0.1814	1.9848***	0.6424		0.1946
<b>Ethnicity (Others)</b>							
	Luo	0.6543	0.2040	1.9239**	0.6207	0.2070	1.8602**
	Meru/Embu	0.8310	0.2664	2.2056***	0.8297	0.2726	2.2927**
	Mipkenda Swahili	-0.1345	0.2449	0.8741	-0.2054	0.2578	0.8143
	Other	-0.3763	0.2292	0.6864	-0.6021	0.2399	0.5477*

\*significant at  $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$   $n = 1727$  (sample currently using a contraceptive method)  
Reference categories are in parentheses

Thus, intention to use contraceptives among currently non-contracepting adolescents is determined largely by exposure to family planning information as well as by age, education level, ethnicity, religion and current school attending status.

#### 4.3.4 Correlates of Contraceptive Use

Of the background variables analysed (model 1, table 4.8), two were found to have strong and significant effect on contraceptive use. These are education and ethnicity. However, religion, marital status and age were also included in the full model since their association with contraceptive use has been documented in other studies.

Adjusting for family planning communication renders the effects of age and marital status insignificant and decreases those of education. Relative to adolescent with

no/incomplete primary education, those with at least some secondary education are 85 percent as likely as to have ever used a contraceptive method. Inclusion of communication exposure factors increases the effect of religion; hence, Protestants / other Christians are almost three times as likely as Muslims / other religions / no religions to have ever used a family planning method. Belonging to the Kamba and Kisii is associated with 2.2 times higher likelihood of having ever used a contraceptive method relative to belonging to the Kalenjin community .

Results show that adolescents who discussed contraception with their friends, neighbours or relatives are significantly more likely than those who did not to have ever used a contraceptive method (odds ratio of 2.2:  $p < 0.001$ ) but exposure to family planning communication in the mass media is not significantly associated with contraceptive use. Thus, there is no evidence of direct effect of mass media family planning communication on contraceptive use among these adolescents.

Table 4.8 Odds ratios from logistic regression analyses showing the likelihood of having ever used a contraceptive method.

Variable	Model 1			Model 2- full model		
	B	S.E.	Odds ratio*	B	S.E.	odds ratios
<b>MIM media exposure</b>						
(None)						
Print only	0.2791	0.15	1.3219			
Radio only	0.3631	0.2132	1.4382			
Radio and Print	0.819	0.2866	1.4651			
Radio * Print * TV	-0.1564	0.3010	0.8552			
<b>Interpersonal exposure (None)</b>						
Yes				0.7917	0.2176	2.2071*
<b>Education (No/primary incomplete)</b>						
Primary complete	0.4804	0.1940	1.6167*	0.3745	0.2098	1.4543
Secondary	0.6891	0.2298	1.9919*	0.6156	0.2398	1.8508*
<b>Age (Early adolescence)</b>						
Late adolescence	0.2956	0.1802	1.3439	0.2700	0.1880	1.3099
<b>Marital status: (not married)</b>						
Married	0.2196	0.1850	1.2456	0.1023	0.1883	1.1077

Religion	(Muslim/other Christians)						
Catholic		0.5819	0.4609	17X94	0.8933	0.5406	2.4432
Protestant other Christians		0.7400	0.4442		2.0960	1.0587	0.5240
2.8827*							
Ethnicity	(Kalenjin)						
Kamba		0.9229	0.3190	2.5165**	0.9682	0.3148	2.6332"
Kikuyu		0.4818	0.3042	1.6189		0.4417	0.3148
5553							
Kisii		0.7431	0.3324	2.1025*		0.7781	0.3479
1773							
Luhya		0.2027	0.2788	1.2247		0.0599	0.2934
>617							
Luo		-0.1X18	0.2771	0.8338	-0.216X	0.2895	0.8051
Mchiroki/mbu		0.6-113	0.3443	1.8990		0.6586	0.3537
>322							
Mijikanda/Swahili		.0,4753	0.5112	0.6217	-0.6756	0.5883	0.5088
laveta others		0.4434	0,3846	1.5579		0.2473	0.4285
>X06							

Significant at p<0.05; \*\*p<0.01. \*\*\*p<0.001. n=789 ever had sex and know a contraceptive method. Reference categories are in parentheses

A final regression analysis was carried out to test for association between knowledge of contraceptive methods and actual practice of contraception. The same control variables that were used in model 2 above were also used in this analysis and knowledge of contraceptive methods was entered as the explanatory variable. The results are presented in table 4.9 below. As expected, knowledge of contraceptive methods has a significant effect on contraceptive use.

Adolescents who could name at least five modern contraceptive methods are 79 percent more likely than those who could not do so to have ever used contraception. With

Table 4.9 Odds ratios from logistic regression analyses showing the likelihood of having ever used a contraceptive method.

Characteristic	Model 1			Model 2 - full model		
	S.F.	Odds Ratio		S.C.	Odds Ratio	
Knowledge of methods (<4)				0.5837	0.1697	1.7926***
>4						
Religion (No proxy incomplete)						
Primary complete	0.4X04	0.1940	1.6167*	0.3892	0.1941	1.4758*
Secondary	0.6891	0.2298	1.9919**	0.664t	0.2170	1.9431**

ARC	(Early adolescence)						
Married	(Not married)	0.2956	0.1802	1.3439	0.2306	0.1788	1.2593
	Married	0.2196	0.1850	1.2456	0.1807	0.1781	1.1981
Religion	Muslim	0.5819	0.4609	1.7894	0.5151	0.4622	1.6718
	Protestant and other Christians	0.7400	0.4442	2.0960	0.6816	0.4428	0.9771
Ethnicity	(Kalenjin)						
	Kamba	0.9229	0.3190	2.5165**	0.8974	0.3196	2.4533**
	Kikuyu	0.4813	0.3042	1.6189	0.5425	0.2974	1.7203
	Kisii	1.7431	0.1324	2.1025*	0.7434	0.3335	2.1030
	Luhya	0.2027	1.2788	1.2247	0.2062	0.2772	1.2289
	Luo	0.1818	0.2771	0.8333	0.1802	0.2762	0.8351
	Mambari	0.6413	0.3443	1.8990	0.7988	0.3452	2.2230*
	Mijikenda/Swahili	0.4753	0.5112	0.6217	0.5271	0.5084	0.5903
	Other*	0.4434	0.3846	1.5579	0.4938	0.3869	1.6385

\*significant at  $p < 0.05$ ; \*\* $p < 0.01$ ; — $p < 0.001$  n = 7X9 ever had sex and know a contraceptive method

knowledge of contraception as the explanatory variable, religion is rendered insignificant but education and ethnicity retain their significance

#### 4.5 Discussion

This study has analysed the association between exposure to family planning communication in both the mass media and interpersonal channels and contraceptive behaviour, that is. knowledge of contraceptive methods, approval of contraception, intention to use contraceptives in future, and ever use of contraception among adolescent females aged 15-19 years. A person's characteristics such as age and education affect her contraceptive behaviour, but since their impact has been largely studied in other research they are used as controls in the current study.

Univariate results show that knowledge of modern methods among Kenyan adolescents is high (90%) and so is approval of contraception (74%). On the other hand, intention to use contraceptives in future is a little lower (62%) and ever-use of contraception is much lower (14.6%). Radio is the most widespread source of family planning messages (reaching 40 percent of adolescent population) followed by newspapers and magazines (27%) and television (13%). Half of the women had no mass media exposure while 8 percent had access to all the three sources. Also worth noting is the finding that as many as 90 percent had no exposure to family planning information through interpersonal channels.

Cross-tabulation results show that knowledge of contraception is significantly associated with exposure to family planning messages in the mass media. For instance, while only 31 percent of adolescents with no mass media exposure could name at least one modern contraceptive method, the proportion reporting knowledge of the same number of methods is 72 percent among adolescents exposed to all mass media sources -

that is. radio, print and television. The same is true for interpersonal channels: only 41 percent of respondents who did not discuss family planning with friends, relatives or neighbours had a high score on contraceptive knowledge compared with 72 percent among those who had engaged in such discussions

Multiple regression analysis confirms that mass media family planning messages have a strong association with contraceptive knowledge. Generally, communication has cumulative effect on contraceptive knowledge. While adolescents exposed to only print family planning messages are 1.6 times as likely as those not exposed to any media messages to know at least five contraceptive methods, the odds ratio for those exposed to both print and radio family planning messages is 4.2. Addition of the television shows no evidence of further increasing the probability of knowing contraceptive methods

Numerous studies have documented similar findings. For example, a study by Omwanda (1999) using Kenya DHS data for ever married women of reproductive age found that exposure to radio lowered the odds for not knowing a method by 64 percent while addition of print lowered the odds by 95 percent. The researcher also found that access to radio, print and television combined has a smaller odds ratio compared with access to radio and print combined - a finding that is confirmed by the current study.

A study by Jato and Others (1999) found that in Tanzania 91 percent of all women of reproductive age who were exposed to mass media family planning messages could name a contraceptive method compared with only 61 percent among those with no exposure. Again they too found no evidence that addition of television increases the odds for knowing contraceptive methods. The association between mass media family planning

communication and contraceptive knowledge has also been demonstrated in studies using

experimental design. (See. for example. Rogers, et al., 1999; Valente et al. 1994).

The current study has further found that discussion of family planning with one's friends / relatives / neighbours is also significantly associated with knowledge of contraception (odds ratios 2.2:  $p < 0.001$ ). This is after controlling for background factors such as education, age, marital status, current schooling, religion and ethnicity all of which were found to be strongly associated with contraceptive knowledge.

Approval of contraception was analysed to shed light on factors associated with adolescents' attitudes towards fertility regulation. There is wide acknowledgement in the literature that for effective contraception to take place the individual must have positive attitudes towards family planning that is, perceive contraception as a basic human need (Iwanda, 1996). Family planning communication not only increases knowledge of contraception but also changes attitudes. It aims at creating the impression that "it's everybody's doing it" hence it establishes family planning as a necessary and socially acceptable practice, and ultimately legitimises contraception (Piotrowski, et al. 1997; Saunders, 1971)

In addition, mass media sets the agenda for topics of discussion; it generates interpersonal communication (Valente et al. 1994), which in turn leads to changes in behaviour (Frazer and Restrepo-Fstrand, 1998). For this reason, increased interpersonal communication and subsequent behaviour change has been considered an indirect effect of media exposure (Valente, et al., 1994) but the current study deviates from this view because interpersonal communication about family planning among adolescents is not triggered by factors other than mass media family planning messages - for example, class textbooks and teachers.

Both bivariate and multivariate analyses support the hypothesis that family planning communication has a significant effect on contraceptive attitudes. While only 67 percent of adolescents with no exposure to mass media family planning messages reported approval of contraceptive use, the proportion is 83 percent among those exposed to radio messages and as high as 87 percent among those exposed to radio, print and television messages. Similarly, interpersonal communication is strongly associated with contraceptive approval: almost 90 percent of adolescent who discussed family planning with their friends, relatives or neighbours approved of contraception compared with slightly over 70 percent among those who did not engage in such discussion.

Multivariate analyses support these findings. For instance, relative to having no mass media exposure, access to radio messages is associated with an odds ratio of 2.0 while access to all the channels (radio, print and television) has odds ratio of 2.8. Although access to both radio and print is associated with very low and insignificant odds ratio, the fact that access to the three mass media sources is associated with significantly larger odds ratio compared with individual channels offers some evidence (albeit not very strong) to support the postulate that mass media communication channels have cumulative effects on behaviour.

A number of previous researches have documented similar findings. For example, Alente and colleagues' (1994) analysis of radio promotion of family planning in the Gambia found that women who heard radio family planning messages scored significantly higher on their attitude scale. A rigorous study by Rogers and others (1999) in Tanzania used an experimental design and multiple measures of effects found that exposure to mass media family planning messages had a strong effect on approval of contraception.

Consistent with the assertion that interpersonal networks have a strong influence on people's beliefs and behaviours due to their immediacy, proximity and prevalence (Bandura, 1992), this study found that discussion of family planning with one's immediate social networks is a strong predictor of approval of contraception. Indeed of the variables analysed, interpersonal communication has the largest odds ratios for contraceptive approval. Adolescents who discussed family planning with friends, neighbours or relatives are three times as likely as those who did not do so to approve of contraceptive use.

Results further indicate that contraceptive approval is significantly associated with education, age, religion, ethnicity and type of place of residence. Complete primary education and some secondary education are each associated with 1.6 times higher likelihood of approving contraceptive use relative to no/some primary education, while older adolescents are 30 percent more likely than younger ones to have such attitudes. In addition, being a Protestant/other Christian is associated with 69 percent higher likelihood relative to being a Muslim/other religions/no religion, while belonging to the Kamha and Kisu communities is associated with higher likelihood relative to belonging to the Kaleniin community.

The finding that age and education have independent effects on contraceptive approval is explicable in terms of age/education-related variations in exposure to family planning information from sources other than those captured by the survey questionnaire (class textbooks), cognitive maturity that enables one to see the debilitating effects of uncontrolled childbearing on one's life chances, and changes in one's perception of the norms and values of the wider community concerning fertility regulation. In other words,

as adolescents grow older and acquire more education they tend to perceive the norms of their communities as being supportive of contraception and this changes their own attitudes

Approval of contraception varies with ethnicity probably because of variations in cultural norms, beliefs and values concerning fertility regulation across different ethnic groups. Some of the variations could also be a consequence of regional effects, unlike Protestants / other Christians, Catholics are not significantly different from Muslims / other religion / no religion: This finding supports the thesis that strong religious disapproval of contraception affects adolescents' attitudes towards contraception.

Contrary to expectation, rural adolescents are more likely than urban ones to approve of contraceptive use. One probable reason could be that since urban adolescents initiate sex later than rural ones in Kenya (NCPD, CBS and MI, 1998), then the urban sample had a significantly bigger proportion of sexually inexperienced adolescents compared with the rural sample. Therefore, it follows that since sexually inexperienced adolescents are less likely than sexually experienced ones to give contraceptive issues serious thought, then urban adolescents in general can be expected to lack clear cut attitudes towards contraceptive use. There is some evidence that urban residence may indeed be associated with more disapproval of contraception. A study by Magadi and others (2001) found that urban residence is associated with non-intention to use contraceptives in future.

A higher-level indicator of contraceptive behaviour analysed in this study is *intention to use contraceptives among non-users*, an appropriate indicator of future contraceptive demand and fertility change. Statistical analyses were undertaken to find out

if the variable is associated with exposure to family planning communication and selected background factors - which is critical in any endeavour aimed at increasing demand for contraception among adolescents in future. For although the Steps to Behaviour Change (SBC) framework specifies other stages beyond *Intention* (i.e. Practice and Advocacy), to majority of adolescents intention to use contraceptive in future is their last step since they are not at risk of using contraceptives at present owing to their sexual inactivity.

Both bivariate and multivariate analyses suggest that exposure to family planning communication has a strong and significant effect on intention to use contraceptives among non-users. While only 56 percent of adolescents with mass media exposure reported positive contraceptive intentions, the proportion is 67 percent for those with radio and 73 percent for those with access to all the three mass media sources. Further, significantly more of adolescents exposed to interpersonal family planning communication reported intention to contracept (82%) compared with those not exposed to such communication (61%).

Even after controlling for selected socio-economic, demographic and cultural factors, exposure to family planning messages in the mass media and interpersonal channels is strongly associated with contraceptive intentions. Worth noting is the finding that individual sources as well as different media mix have similar odds - ranging between 1.4 and 1.7. Clearly, there is no indication that intensity of exposure (as measured by number of sources) is associated with contraceptive intentions. It appears that multiple media sources are duplicative rather than complementary and reinforcing: Print media, for example, has more or less the same odds ratio as radio, print and television combined.

Past research has showed that mass media family planning communication is

significantly associated with future contraceptive intentions. For example, in his analysis of ever-married Kenyan women Omwanda (1996) found that exposure to family planning messages in the three sources (radio, print and television) lowered the odds for being a never-user not intending to contracept by 47 percent. Further, Wcstolt and Rodriguez (1995) found a strong association between exposure to family planning messages and a declared intention to use contraceptive in future even after taking into account the confounding effects of socio-economic and demographic factors.

While the above studies used DHS data for married women, an evaluation of a mass media campaign in Philippines aimed at increasing awareness of problems related to teenage pregnancy and the benefits of responsible parenthood offers strong evidence that mass media can change adolescent contraceptive intentions. Post-campaign survey showed that as many as 60 percent of the youth reported that they would use services in future if need arose (Fraser and Rector-Fstrada, 1998).

The current study has also found that interpersonal family planning communication is strongly associated with intention to use contraceptive in future: Indeed the variable has the largest odds ratio (standing at 2.7). Although there is a dearth of research on effects of interpersonal communication on contraceptive intentions, one study using a data set similar to the one used in the current study found that among women who had never used a contraceptive method, those who had discussed family planning with friends and relative were 87 percent more likely than those who had not done so to report intending to use a contraceptive method in future (Omwanda, 1996).

Education, age and being a Christian increase the odds for being a non-user who intends to use contraceptives in future. Intention to contracept also varies with ethnicity;

thus, belonging to the Kisii, Luhya, Luo and Meru/Hmbu ethnic groups increases the likelihood for being a non-contraceptor who intends to contracept while belonging to the Kikuyu and Maasai / other ethnic groups has a reducing effect relative to belonging to the Kalenjin tribe.

Contrary to expectation, adolescents who are currently attending school are less likely to report positive contraceptive intentions compared with those who are out of school. One probable explanation could be that since school-going adolescents have less contact with the rest of the society (compared with those who are out of school), such adolescents are likely to have misconceptions about the wider community's norms and values pertaining to contraceptive use. In other words, they may think that contraceptive use is socially unacceptable. Another reason could be their low level of contraceptive knowledge (see table 4.5).

Or perhaps this finding confirms the fear expressed by Omwanda (1996:226) that "Given the conservatism of Christian denominations in Kenya with regard to reproductive life and their *extensive influence in the country's educational system*, it may be expected that Kenya's youth face strong contradictions over reproductive norms from religious sources" (emphasis not in original). To the extent that this statement is valid, then adolescents who are currently attending school should be less likely to report positive contraceptive intentions.

The last indicator of contraceptive behaviour analysed was contraceptive use. It generally represents completeness of behaviour change (Omwanda, 1996) although some scholars recognise advocacy as the ultimate stage (Piotrowski et al., 1997). Cross tabulation results show that ever use of contraception is significantly associated with mass media

exposure: 27 percent of adolescents with no mass media exposure reported having ever used contraception, while 37 percent and 42 percent, and 33 percent among those exposed to print only, radio only, and radio, print, and television combined respectively. Worth noting is the finding that inclusion of television decreases rather than increase the proportion reporting ever use of contraception while the combination of radio and print has the largest proportion. In addition, more than half of adolescents who had discussed contraception with the friends and relatives reported having ever used a contraceptive method but the proportion is only 30 percent among those not exposed to interpersonal family planning information.

Multivariate results show that although mass media family planning communication is associated with knowledge of contraception, approval of contraceptive use and intention to use contraceptive in future, it is not significantly associated with ever use of contraception. Besides, the direction of association goes contrary to expectation: Exposure to the three sources is negatively associated with ever-use of contraception (although the association is not statistically significant). This finding contradicts previous researches that have generally demonstrated that mass media exposure is significantly and positively associated with contraceptive practice (see, for example, Jato, et al., 1999; Omwanda, 1996; Rogers et al., 1996; Valente et al., 1994; Westoff and Rodriguez, 1995).

It should, however, be emphasized that these studies were based on samples of either currently married or ever-married women while this study is based on adolescents - majority of whom are unmarried and sexually inexperienced. Given that adolescents are much less exposed to family planning communication compared with (all) ever-married or currently married women, it may be expected that the level of intensity of exposure is not

enough to create motivation to contracept. Thus, it can be argued that the findings of current study do not necessarily suggest that mass media has no direct effect on adolescent contraceptive use; probably low level of exposure does not help in clinching decisions to contracept among adolescents. In other words, mass media communication is not significantly associated with ever use of contraception probably because it was low in intensity.

A look at effect of mass media sources on contraceptive knowledge, contraceptive approval, intention to use contraceptive in future and ever use of contraception leads to the conclusion that effects of mass media communication become progressively weaker as the individual progresses towards higher stages of the process of behaviour change. Mass media communication has the largest odds ratio at knowledge level, (reaching 4.2 among those exposed to both print and radio messages) and slightly smaller odds at the level of approval (odds ratios of 2.7). Moving on to the second highest contraceptive status - intention to contracept in future - we see that the variable has odds ratios that are much smaller than those of the preceding contraceptive statuses (and even those of interpersonal exposure, religion and ethnicity). And, finally, it becomes significant at the last stage of the behaviour change process - that is, contraceptive use. All in all, direct effects of mass media exposure seem to be greatest in spreading knowledge and altering attitudes and lowest in clinching decisions to use contracepting these adolescents.

On the other hand, exposure to interpersonal communication is consistently related with odds ratios of more than 2.2 at all the levels of contraceptive behaviour used in the current study - a finding that probably underscores the importance of

immediate social networks in influencing adolescents' contraceptive behaviour. In fact, even at the level of contraceptive use, only effects of religion and ethnicity surpass the effect of interpersonal communication.

Although the data used in this study do not allow us to make causal inferences, we may speculate that friends and relatives offer the requisite social support in contraceptive adoption. It is also likely that friends and relatives not only encourage these adolescents to contracept but also assist in acquisition of contraceptives - a plausible assertion considering that one of the reasons why adolescents' good contraceptive intentions fail is lack of access to family planning methods, which is a serious problem in Kenya (Uma, 1991; Omwanda, 1996)

The crucial role of interpersonal communication in changing contraceptive behaviour has been demonstrated in many researches. For instance, a study by DiClemente found that adolescents who discussed AIDS and condoms with their partners were more likely to use condoms than those who did not. Similarly, an evaluation of a radio family planning campaign in Tanzania showed that the campaign stimulated spousal communication, which in turn impacted positively on contraceptive use (Rogers, et al., ).

Moreover, Omwanda (1996) found that ever-married women who had discussed contraception with friends and relatives were 79 percent more likely to be using contraception than those who had not. Lasee and Becker (1997) also found that in Kenya husband-wife communication is highly associated with current contraceptive use (odds ratio of 4.2).

The current study also found that knowledge of contraception is significantly

associated with ever-use of contraception. Specifically the odds for adolescents who could name at least five contraceptive methods was 60 percent higher relative to those who could not do so. This finding confirms the argument advanced by Steps to Behaviour Change theory that intervening steps (knowledge, approval and intention) have significant positive effect on contraceptive use (Piotrow. et al.. 1997),

And finally, education, religion and ethnicity were found to be significantly associated with ever-use of contraception. Adolescents with at least some secondary education are 80 percent more likely than those with no/incomplete primary education to report having ever used a contraceptive method. The odds are 2.9 times higher for Protestants / other Christians but Catholics are not significantly different from Muslims / no religion / others. This suggests that Protestants are the most liberal. (Religion, however, is not significantly associated with ever-use of contraception when *knowledge of contraceptive methods* rather than *family planning communication* is used in the model). Contraceptive use also varies with ethnicity • with odds being over 2 times as high among the Kamba and Kisii as among the Kalenjin.

All in all. bivariate and multivariate results confirm the hypotheses proposed in chapter two: that family planning communication is significantly associated with knowledge of contraceptive methods, approval of contraception, intention to contracept in future, and ever-use of contraception even after controlling for social, economic and demographic factors. Of the control variables used in this study, education, religion and ethnicity have been found to be most strongly associated with adolescent contraceptive behaviour.

## CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Summary

The current study analysed the strength and direction of association between mass media and interpersonal exposure to family planning messages, and adolescent contraceptive behaviour - where contraceptive behaviour has been conceptualised as a continuum beginning with knowledge about fertility regulation and ending with use of contraceptives. At theoretical level, the study is premised on the view that people change behaviour as a result of acquisition and modification of ideas through communication with others (Rogers, 1973). The study used the 1998 Kenya Demographic and Health Survey data and was limited to females aged 15-19 years only. Analyses were carried out at two stages: bivariate and multivariate.

The level of exposure to family planning information among Kenyan adolescents is low. As many as half of them are not exposed to any of the three mass media sources analysed in this study, while the radio - which is the most widespread source - reaches only 40 percent of the total adolescent population. Equally notable is the finding that only 8 percent reported exposure to all the three sources. In fact, a look at the levels of exposure for all age groups show that adolescents are the least exposed (NCPD, CBS and MI, 1998). Further, only a few teenagers (10 %) discussed family planning issues with their friends, relatives and neighbours.

Although adolescents are certainly exposed to family planning information from other sources (e.g. textbooks and teachers), their low level of exposure in the mass media and interpersonal channels should be a source of concern since these channels are known

to have a significant and strong effect on contraceptive behaviour (Piotrow. et al.. 1997).

The analyses have demonstrated the presence of a strong statistical association between adolescents' reports of having heard family planning messages on radio, in print (newspapers and magazines) and on television, and knowledge of modern family planning methods, approval of contraceptive use and intention to use contraceptives in future. Mass media exposure is not significantly associated with contraceptive practice; its effect is most prominent at the lowest contraceptive status, that is. contraceptive knowledge level and becomes progressively weaker as one moves to higher contraceptive statuses. On the other hand, the association between exposure to family planning information through interpersonal channels is uniformly strong and significant at all the levels of contraceptive behaviour analysed. It has also been established that knowledge of contraceptive methods is significantly associated with contraceptive practice. These associations persist even after controlling for social, economic and demographic factors.

## **5.2 Conclusions**

This study has established empirically that there exists a significant association between exposure to family planning communication and contraceptive behaviour among adolescents in Kenya. The findings lead to the following conclusions. Firstly, the effect of mass media is strongest at knowledge level (the first step in the process of behaviour change), moderately strong at the level of contraceptive approval, weak at the level of intention, and overly absent at the level of contraceptive use. This suggests that mass media sources are highly important in creating awareness and altering attitudes.

Secondly, exposure to family planning communication in the interpersonal channels

is strongly associated with adolescents' knowledge of contraceptive methods, approval of fertility regulation, intention to use contraceptive in future and ever-use of contraception. A point worth stressing is that adolescent who reported discussing family planning with their friends, neighbours and relatives are consistently more than twice as likely as those who did not engage in such discussions to exhibit any of the measure of contraceptive behaviour analysed.

Thirdly, some background factors are particularly strongly associated with adolescent contraceptive behaviour: education, age, religion and ethnicity. And, finally, it should be noted that whenever marital status, place of residence and current schooling status have been found to be significantly associated with any indicator of contraceptive behaviour (at multivariate level of analysis), the direction of association is such that adolescents who are currently attending school, not married and come from urban areas are *less likely* to report any of the behaviour compared with their other counterparts.

### **5.3 Recommendations**

#### **5.3.1 Policy Recommendations**

Bearing in mind that "a country's fertility trajectory is mapped by reproductive attitudes and choices of its youth" (Omwanda, 1993: 238), and that adolescent childbearing is associated with numerous social, medical and psychological problems (Jorgensen, 1993; Moore and Rosenthal, 1993), then it is clear that adolescent contraceptive behaviour has not been given the seriousness it deserves. The following recommendations are therefore proposed.

Concerted efforts should be made to increase the level of exposure to family



planning messages among adolescents through campaigns that are tailored specially for adolescents. Such campaigns should also *consciously* try to stimulate interpersonal communication about contraception so that adolescents will talk more and more about the problems related to teenage pregnancy and the benefits of planned childbearing. If such campaigns are to be effective, there is need for audience segmentation. Specifically, resolute efforts need to be made to reach adolescents who are young, unmarried and currently attending school since these segments are the least likely to report exposure to family planning information as well as to exhibit appropriate contraceptive behaviour.

It is also recommended that school-based dissemination of family planning information in the context of family life education should be revamped. Since knowledge and skills without access to services are worthless (Randura, 1992), family planning services should be made widely available and accessible to adolescents.

### **5.3.2 Recommendations for Future Research**

While the association between the explanatory variables and the dependent variables has been established empirically in this study, it is impossible to make causal inferences because cross-sectional data were used in this study. Knowledge of contraception, for example might have been acquired before six months prior to the survey yet the survey captured exposure only in the last six months. Similarly, a person might have discussed family planning because she already knows, approves of, and even uses, contraception.

It is, therefore, recommended that future research use a "before and after" experimental design. Such a study would not only build confidence in the direction of causality but it would also be able to shed more light on effects of mass media 011

contraceptive use ... find out if indeed mass media has no direct effect on use of family planning methods among adolescents. Moreover, a comprehensive investigation of the pathways of determinants of contraceptive behaviour may be necessary to better understand the role of mass media in contraceptive behaviour.

Given that interpersonal communication plays an important role in changing adolescent contraceptive behaviour, there is need to investigate the content, intensity, and accuracy of such communication using qualitative methods in order to find out how this source can be improved. Equally important is the need to find out which segment of adolescent population are not likely to discuss contraception with their immediate social networks. Since lack of easy access to contraceptives can be a serious barrier to contraceptive use among adolescents, future research should investigate if the role of immediate social networks goes beyond motivating adolescents to contracept to actually assisting them in acquiring contraceptives

## BIBLIOGRAPHY

Adebayo, A.O. 1990.

"Socio-economic and Environmental Determinant of Adolescent Sexuality and Intervention in the City of Nairobi. (MA Thesis at PSRI- University of Nairobi).

Bandura, Albert and Richard H. Walters. 1963.

*Social Learning and Personality Development* New York: Holt, Rinehart and Winston.

Bandura, Albert 1977.

*Social Learning Theory*. Englewood Cliffs, N.J: Prentice Hall.

Bandura, Albert 1992.

"A Social Cognitive Approach to the Exercise of Control Over AIDS Infection".  
*In Adolescents and AIDS A Generation in Jeopardy* by DiClemente ed.  
California: Sage

Bloss, Peter. 1962.

*On Adolescence A Psychoanalytic Interpretation*. New York: Free Press.

Brick, Peggy, Catherine Chalton, Hillary Kunins and Steve Brown. 1989

*Teaching Safer Sex*: New Jersey: Center for Family Life Education- Planned Parenthood of Bergen County, Inc.

Burkhardt, K Watterson. 1981.

*Growing into Love. Teenagers Talk Candidly About Sex in the 1980s*. New York  
GP. Putnam's Sons.

Caldwell, John C. Pot Caldwell. Bruce KXaldwell and Indrani Picris. 1998.

"The Construction of Adolescence in a Changing World: Implications for Sexuality Reproduction and Marriage". *Studies In Family Planning*. 29(2): 137-153.

DHS. Macro Inc.. 1992.

*Adolescent Women in Sub-Saharan Africa A Chartbook on Marriage and Childbearing*. DNS/IRD/Macro International Inc. Columbia.

DiClemente, Ralph J. 1992.

"Psychosocial Determinants of Condom Use Among Adolescents" *In Adolescents and AIDS I Generation in Jeopardy* by DiClemente ed. California: Sage.

F. Gillespie, Elizabeth. Jean Jackson and Karen Hardee. 1999.

"Sexual Attitudes and Behaviour Among Young Adolescents in Jamaica". *International Family Planning Perspectives*. 26(2) 1999: 79-83.

Fisher. Jeffrey D.. Stephen J.M.. William A Fisher. 1992.

"Impact of Perceived Social Norms on Adolescents' AIDS Risk Behavior and Prevention" in *Adolescent and AIDS* DiClemente Ralph J. (ed) 1992 Sage Publications.

Fraser. Colin and Restrepo-Fstrada. 1998.

*Communicating for Development: Human Change for Survival*. London: I B Tauris.

Ireedman. Ronald. 1979.

"Theories of fertility Decline: A Reappraisal". *Social Forces*. 58 (1) 1-17.

Gage. Anastasia. 1998.

"Sexual Activity and Contraceptive- use: The component of Decision-making process. *Studies in / until) Planning*.29. 2: 154-166.

Crakure, C. 1992.

"Diversified Socioeconomic and Health related problems lacing the Adolescent in Nairobi". Paper presented at the first Inter-African Conference on Adolescent Health in Sub-Saharan Africa, 24<sup>h</sup>-27<sup>h</sup> March 1992: Nairobi,

Gardner, William. 1993.

"A Life span Rational Choice Theoiy ol Risk laking." In *Adolescent Risk Inking* by Nancy J. Bell and Robert W. Bell (eds.) 1993. California: Sage Publications.

Gathiti. 7.W 1997.

"Family Planning Communication and Contraceptive use in Kenya". (M.A Thesis; PSRI).

Gorgen. Rcgina. Birga Maierand 11 J Diesfield. 1993.

"Problems Related to Schoolgirl Pregnancies in Burkina I aso". *Studies in Family Planning*. 24 (5) 283-294.

Gorgen. Rcgina. Mohamed Yansane. Michael Marx and Dominique Millimounou. 1998

"Sexual Behaviour and Attitudes Among Unmarried Urban Youth in New Guinea. *International Family Planning Perspectives* 24(2): 65-71

Government of Kenya. 1984.

Sessional Paper Number 4 of 1984: Population Policy for Sustainable Development. Nairobi.

-- 2000. Sessional Paper Number 1 of 2000: Population Policy for Sustainable Development. Nairobi.

Gupta, Neeru and Iuri da Costal.cite | >99.

"Adolescent Fertility Behaviour: Trends and Determinants in North-eastern Brazil. *International Family Planning Perspectives*. 23(3): 125-130.

Horrock, John E. 1962.

*The Psychology of Adolescence*. Boston: Houghton Mifflin Company.

Hulton. I A.. Rachel Cullen and Simons W. Khalokho. 2000".

"Perceptions of the Risks of Sexual Activity Among Uganda Adolescents."  
*Studies in Family Planning*. 31 (1) 35-46.

Irwin Charles K. Jr. 1993.

"Adolescent and Risk Talking". In *Adolescent Risk Talking* by Mary J. Bell and Robert W. Bell (cd) California: Sage .

Jato. Miriam N.. Callista Sunbakalia. Joan MTarasevich. David N. Amusun. Clement K B Kihingaand Fdilh Ngirwamungu.1999.

"The impact of multi-media Family Planning Promotion on Contraceptive Behaviour of Women in I an/ania". *International Family Planning Perspectives* 25.2:60-67

Jorgensen, Stephen. 1993.

'Adolescent Pregnancy And Parenting' in Gullotta. P.T.Adams G R. and Montcmayor R (eds) *Adolescent Sexuality*. California: Sage Publications.

Kincaid. D. luiwrence, Alice Payne Murrith. I iza Nickerson. Sandra C. BufFington, Marcos P. (.astro and Bcrnadcte M Castro 1996.

"Impact of a Mass Media Vasectomy Promotion Campaign in Brazil".

Kiragu, Karungari and Laurie S Zabin. 1995.

"Contraceptive use Among High School Students in Kenya". *International Family Planning Perspective*. 26,4:103-113.

kiragu. karungari. 1991.

"Factors Associated with Sexual and Contraceptive Behaviour Among School Adolescents in Kenya". The 1989 Nakuru District Adolescent Fertility Survey. Final Report: The Johns Hopkins University School of Hygiene and Public Health.

Lasee, Ashraf and Stan Becker. 1997.

"Husband-wife Communication About Family Planning and Contraceptive Use in Kenya". *International Family Planning Perspectives* 23: 15- 20&33.1997.

Lcma.V.M. 1990.

"The Determinants of Sexuality Among Adolescent Schoolgirls in Kenya". *East Africa Medical Journal* 67(3) 1990: 191-200

I.crnrc. R.M. and G.B. Spanier. 1980.

*Adolescent Development A Lifespan Perspective*. New York: McGraw Hill.

Lowe. Charles. 1976.

"Implications of adolescent Pregnancy" In Donald Boguc 1976. *Adolescent Fertility: The Proceedings of an International Conference at Community and Family Study Center: University of Chicago*.

Magadi. Monica. 2000.

"Involving Men in Family Planning in Africa: Lessons for Kenyan's Family Planning Programme" in J.O. Oucho, A.B.C. Ocholla-Ayavo. E.I.O. Ajiemba and L.O. Odhiambo.

Mahmood. Naushin. and Karin Ringhcin. 1997.

"Knowledge, Approval and Communication About Family Planning as Correlates of Desired Fertility Among Spouses in Pakistan". *International Family Planning Perspectives*. 23: 122-129&145.

Mcnsh.B.S., J. Bruce. ME. Greene. 1998. /

*The Uncharted Passage: Girls' Adolescence in Developing World*. New York: Population council.

Miller, Brent C\, Cynthia R. Christopherson and Pamela K King. 1993.

"Sexual Behaviour in Adolescence", in *Sexualit) in Adolescence*. Eds. Ciullotta. Thomas P.. Gerald R Adams and Raymond Montemayor. Newbury Park: Sage

Millstein. Susan G. 1993.

"Perceptual. Anributional and Affective Process in Perceptions of Vulnerability through the Life-span" in *.Adolescent Risk Talking* by Nancy J. Bell and Robert W. Bell. California Sage Publications .

Moore. Susan and Doreen Rosenthal. 1993.'

*Sexuality in Adolescence*. London: Routledge.

Mugambi. Koomc 2000.

"Health Communication And AIDS Prevention Among Female Adolescents: A Case Study Of The KCC Village. Nairobi" (Unpublished).

Muganda-Ogando, Rosemaric. 1998.

"Coping with AIDS in Kenya: Do We Care Enough?" *Wajihu: A Journal of Social and Religious Concerns* 113.4:14-15.

Mulindi. Sobbic A.Z. 2000. •

"Delayed Response to HIV/AIDS Epidemic in Kenya: Socio-economic Consequences". Paper presented on the second conference of Population Association of Kenya on 23<sup>rd</sup> to 26<sup>th</sup> January 2000 at Mbagathi, Nairobi.

National Council For Population and Development, Central Bureau of Statistics, Macro International Inc., 1998.

*Kenya Demographic and Health Survey 1998* (Nairobi, NCPL).

Nduati, Ruth and Wambui Kiai 1996.

*Communicating with Adolescents on HIV/AIDS in East and Southern Africa*. Nairobi Regal Press.

Omwonda, Lewis Odhiambo. 1996. ^

"Communication, culture and Reproduction: Analysis of Contraceptive Adoption in Kenya" (PhD Thesis: PSRI).

Peggy. Brick. Catherine Chilton, Hillary Kunis and Steve Brown. 1989.

*Teaching Safer Sex* Center for Family Life Education Planned Parenthood of Bergen County, Inc. New Jersey.

Piotrow. P. Tilson, D. Lawrence Kincaid, Jose. (i. Rimon II. and Ward Rinehart. 1997.

*Health Communication: lessons From Family Planning and Reproductive Health* Westport, CT: Praeger.

Radhakrishna. Aruna, Robert Gringold and Forrest C. Greenfield. 1997

*Identifying the Intersection Adolescent Unwanted Pregnancy, HIV/AIDS and Unsafe Abortion* Carrboro: IPAS.

Ravcnholt, Reimert. 1976.

"Demographic Implications of Adolescent Pregnancy". In Boguc, D.J. ed. *The*

Proceedings of an International Conference at Community and Family Study Center. University of Chicago.

Rogers. Lverett M. 1973.

*Communication Strategies for Family Planning*. New York: Macmillan.

Rogers. Everett. M, Peter W. Vaugham, Ramadhan M.A Swalehe.Nagcsh Rao, Peer Svenkerud. and Suruchi Sood-1999.

"Effects of an Entertainment-education Radio Soap Opera on family Planning Behaviour in Tanzania *Studies in Family Planning* 30,3:193-211.

Romcr. Daniel and Robert C. Hornik. 1992.

"Using Mass Media for Prevention of HIV/AIDS Infection Among Adolescents "  
In DiClemente, Ralph (ed). 1992 *Adolescent\* and AIDS*. California: Sage.

Ruttncbrg, Naomi and Susan C. Walkins. 1997,

"The Bu/v outside the Clinics: Conversation and Contraception in Nyanza Province. Kenya; *Studies in Family Planning*.28. 4: 290-307,

Saunders, Lylc. 1971.

"Communication Issues" In Final Report: International Workshop on Communication in Family Planning Programmes Held in Tehran. Iran; 6-18 June 1970. Chapel Mill. North Carolina: California Population Center.

Singh. Susheela. Dcirdre Wulf, Rcena Samara and Yvelte P. Cuca. 2000.

"Gender Differences in the Timing of first Intercourse: Data from 14 Countries.  
*International Family Planning Perspectives*. 26(2): 21-28&43

Smith. F.. 1989.

"A Biosocial Model of Adolescent Sexual Behaviour", in G.R Adams. R.

Montcmayor and T P. Gullotta (eds) *Biology of Adolescent Behaviour and Development* Newbury Park: Sage

Valenic. Thomas W., Young Mi Kim, Cheryl Lettcnmaier William Glass, and Yankubu Dibba. 1994.

"Radio Promotion of Family Planning on die Gambia" *International Family Wanning Perspective*. 20,3:19-100.

Vaughan. Peter W . Allcync Rejis and Hdwin St. Catherine. 2000.

"Effects of an Education- Entertainment Radio Soap Opera on Family Planning and HIV Prevention in St. Lucia" *International Family Planning Perspectives*,

WestolT. Charles F, and German Rodriguez. 1995.

"The Mass Media and Family Planning in Kenya". *International Family Planning Perspectives*. 21:26-31&36, 1995.

William. Glen. Lucy Ngang'a. and John Ngugi. 1998.

"Youth-led responses to HIV/AIDS in Kenya" *Wajibu A Journal of Social and Religious Concerns*. 13,4:2-5.

Worth. Dooley. 1989.

"Sexual Decision Making and AIDS: Why Condom Promotion Among Vulnerable Women is Likely to fail " *Studies in Family Planning*. 20.6:297-307.