EFFECTS OF HEALTH EDUCATION ON KNOWLEDGE AND USE OF EMERGENCY CONTRACEPTION AMONG STUDENTS OF PUBLIC SECONDARY SCHOOLS IN ILORIN, NIGERIA

Submitted By

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DEDICATION

This work is dedicated to God who has been my help all through this program and through my entire life. He has turned my trials into testimonies and He has made me to be fruitful in all my endeavors. Unto Him alone is all the glory. His goodness and His mercies were my shield all through this program and I appreciate Him for seeing me through in this research work. Though the journey was not easy but it was worth it.
DECLARATION

I, Dr. Oluwole Adeyemi Babatunde, hereby declare that this work was carried out by me under the supervision of Professor T. M. Akande and that this work has not been submitted in part or in full for any other examination.

______________________________  __________________________
DR Oluwole Adeyemi BABATUNDE           DATE
CERTIFICATION

I hereby certify that this project titled “EFFECTS OF HEALTH EDUCATION ON KNOWLEDGE AND USE OF EMERGENCY CONTRACEPTION AMONG STUDENTS OF PUBLIC SECONDARY SCHOOLS IN ILORIN, NIGERIA.” was carried out by Dr Oluwole Adeyemi BABATUNDE of the Department of Epidemiology and Community Health, University of Ilorin Teaching Hospital, Ilorin, under my supervision. It is being submitted in partial fulfillment for the award of fellowship in Public Health of the National Postgraduate Medical College of Nigeria.

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<table>
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<tr>
<th>Acronym</th>
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<tr>
<td>ARHF</td>
<td>Association for Reproductive and Family Health</td>
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<td>CIP</td>
<td>Consumer Information Processing</td>
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<td>EC</td>
<td>Emergency Contraception</td>
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<td>Health Education Intervention</td>
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<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<tr>
<td>IEC</td>
<td>Information, Education and Communication</td>
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<td>Intramuscular</td>
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<td>IUD</td>
<td>Intrauterine Device</td>
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<tr>
<td>IUCD</td>
<td>Intrauterine Contraceptive Device</td>
</tr>
<tr>
<td>NDHS</td>
<td>Nigeria Demographic and Health Survey</td>
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<tr>
<td>PCOS</td>
<td>Polycystic Ovary Syndrome</td>
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ABSTRACT

Globally, as many as twenty to fifty percent of adolescents have initiated sexual activity with age at first sexual intercourse ranging from fourteen to eighteen years, making the need for adolescent contraception obvious. Emergency contraception (EC) is the only form of contraception that can be used after sexual intercourse offering adolescents a second chance to prevent unintended pregnancy, because of sporadic and/or occasional sexual intercourses that adolescents engage in. The objective of this study was to assess the effect of health education intervention on the knowledge and use of emergency contraception among secondary school students. The study and control groups each consisted of students of three schools selected using multi stage sampling technique from two different Local Government Areas (LGAs).

This was a quasi-experimental study carried out in 3 stages: pre-intervention, intervention and post-intervention. The intervention stage focused on health education on emergency contraception and was carried out among in-school adolescents in Ilorin, Kwara State. The instrument used was a semi-structured questionnaire adapted from previous studies and using the health belief model construct of perceived susceptibility, severity, benefits and barriers to use. Multi-stage sampling technique was used to select 527 respondents at pre-intervention while analysis of the data was carried out using SPSS Version 21.0 The same respondents at the pre-intervention stage were also at the post-intervention stage. Chi-square test of significance and student’s t-test was used to compare nominal variables and two means respectively. Level of significance was set at p-value of less than 0.05
Mean knowledge score of EC at pre-intervention was 26.7 ± 14.4 and 27.4 ± 14.1 in study and control groups respectively. Students’ past usage of EC too was low among both groups (12.8% and 14.6% in study and control group). Health Education Intervention (HEI) led to statistically significant increase in mean knowledge score from 26.7 ± 14.4 to 46.7 ± 6.2 and increase in usage of EC from 12.8% to 19.7% among the study group. Such increases were not noted among control group (knowledge score from 27.4 ± 14.1 to 28.72 ± 12.2 and increase in usage of EC from 14.6% to 16.3% was noted among the control group). Among respondents that used EC, HEI led to statistically significant increased usage within correct time frame, from 14.3% to 92.4% post-intervention.

Factors that positively affected usage of EC were gender with more males having EC used among their sexual partners; parental marital status as those with divorced/separated parents used it more; father’s level of education as those whose fathers had up to secondary level of education used it more; and respondents knowledge as those with higher knowledge score had a higher level of EC usage. Key findings from the focus group discussion (FGD) connotes that there are misconceptions about what EC is as some still feel it is used to terminate pregnancies and also there are gross knowledge gap about its side effects and time frame for usage, which is a reflection of findings in the quantitative findings.

It can be concluded from this study that HEI about knowledge and use of EC is important in adolescent sexual education. It is therefore recommended that there is need for schools and governments at all levels to incorporate sexuality education with specific emphasis on EC among in-school adolescents.
CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND INFORMATION

Adolescents have special reproductive health needs, but these peculiar needs are often unmet in many cultures and countries. Adolescents constitute about twenty percent of the world’s population. Eighty – five percent of these adolescents live in the developing countries. Of these, about sixteen percent live in Africa. In Nigeria, adolescents constitute eighteen percent of the total population of one hundred and fifty-three million. Hence, issues that have to do with adolescent health should be given top priority.

Teenage sexual activity is increasing globally with a trend towards early onset. As many as twenty to fifty percent of adolescents have initiated sexual activity with age at first sexual intercourse ranging from fourteen to eighteen years. Specifically, studies in Benin and Port-Harcourt revealed that up to twenty percent of secondary school girls in Nigeria are sexually active.

Unintended pregnancy therefore poses a major challenge to the reproductive health of young adults. In a study in Ilorin, Nigeria, in 2003, five percent of all sexually active adolescent girls have been pregnant all of which were unintended. This led to an induced abortion rate of one hundred percent. Similarly, in the United States of America in the year 2000, adolescents had over eight hundred thousand pregnancies out of which eighty five percent were unintended.
As a result of increasing adolescent sexual activity and decreasing age at first sex, the use of contraceptives to prevent unintended pregnancies and unsafe abortions becomes very important. This is especially so because studies have shown that contraceptive use among adolescents in Nigeria and Kenya is very low. \textsuperscript{11, 15, 16} Studies from Western and Southern Nigeria have found rates of contraceptive use among sexually active adolescents of about thirty percent. \textsuperscript{15} This is considerably lower than the rates reported for developed countries. For example, contraceptive prevalence among sexually active Danish adolescents is ninety – three percent. \textsuperscript{17}

Among the various forms of contraception, emergency contraceptives are the only one that can be used after sexual intercourse, offering a second chance to prevent unintended pregnancy.\textsuperscript{11} Emergency contraception is a safe, effective and cheap way to prevent pregnancy. \textsuperscript{18-20} It involves methods of contraception used for preventing a pregnancy after an unplanned or unprotected sexual intercourse. \textsuperscript{15, 21}

The concept appears appropriate for adolescents and students who engage in sporadic and occasional sexual intercourse. This is especially important among those who find regular contraceptives intolerable or those who use them sparingly. \textsuperscript{15} Emergency contraceptives reduce the risk of pregnancy after unprotected sex, preventing approximately eighty to eighty – five percent of pregnancies that would otherwise occur. \textsuperscript{22, 23}
1.2 PROBLEM STATEMENT

About twenty percent of teenagers conceive during their first sexual exposure and fifty percent within the first six months. The younger the age at initiation of sexual intercourse, the greater the likelihood of pregnancy. Most pregnancies (eighty percent) in adolescent girls in Nigeria are unwanted, because the girls are usually unmarried and have no financial power to assume responsibilities for themselves. In a study by Abiodun et al in Ilorin, sixty–eight percent of respondents have had unwanted pregnancies. Also in the United States, eighty–five percent of adolescent pregnancies were reported to be unwanted.

Lack of wanted-ness of larger proportion of pregnancies among adolescents has led most of them to resort to termination of pregnancies. Aderibigbe in Ilorin found that one hundred percent of these unintended pregnancies among adolescents ended up being terminated. Similarly, Abiodun et al in Ilorin reported that sixty–four percent of respondents who had unintended pregnancy terminated it. Unsafe abortion is an important challenge associated with adolescents’ reproductive health in Nigeria.

Hospital – based studies have shown that in Nigeria, up to eighty percent of those with abortion – related complications are adolescents. Similarly, a community - based study of abortion prevalence found that one – third of the women who obtained an abortion were adolescents. Nigeria, with an estimated population of one hundred and fifty-three million and an annual growth rate of 3.2% according to the 2006 census faces the persisting challenge of high fertility, and high rates of unintended pregnancy, unsafe abortion, high maternal mortality and unmet need for
contraception.\textsuperscript{28,29} This is a major challenge to reproductive health in Nigeria despite different methods of contraception available.\textsuperscript{30} Induced abortion currently accounts for about eight thousand of the estimated fifty thousand maternal deaths that occur in Nigeria each year. It is thus one of the largest contributors to maternal mortality.\textsuperscript{31}

In Nigeria, unlike in some developed and developing countries where abortion is legal, most induced illegal abortions are usually done by ‘quacks’\textsuperscript{5}. The performance of abortion is illegal under Nigerian criminal law, unless the woman’s life is threatened by the pregnancy. As a result, induced abortions are usually obtained clandestinely, and are frequently unsafe. Unsafe abortion therefore, is often the end result of an unintended pregnancy, which in turn is often the result of lack of contraceptive use. This trend is most profoundly demonstrated among adolescents.\textsuperscript{6}

Demographic and health survey 2008 data indicate that only thirteen percent of sexually active Nigerian women currently practice effective contraception. This is in line with the finding in the Nigerian Health Review 2006 where it was reported that the proportion of women using effective contraception is only six percent.\textsuperscript{3,31} Non-use of contraception is worse among adolescents. Izugbara in southern part of Nigeria reported that eighty – four percent of males and ninety – two percent of female adolescents did not use any form of contraception at first sexual encounter.\textsuperscript{32} Also Sunmola et al in Niger State reported that sixty – five percent of their respondents did not use any family planning devise at sexual initiation.\textsuperscript{33} All these data explain why unwanted/unintended pregnancy is on the increase.
One of the major factors responsible for unintended pregnancies and unsafe abortion is lack of knowledge of the various methods of contraceptives available especially Emergency contraception which is important for adolescents because of the sporadic and occasional nature of sexual intercourse among them. \(^{15}\) Reports from Benin City, Ibadan, Lagos, Akwa Ibom and Enugu all suggest poor knowledge of Emergency contraception. \(^{34-37}\)

This low use is similar to the finding in Kenya where only forty–eight percent of respondents have heard of emergency contraception. \(^{38}\) This is also in line with the finding in New York, U.S.A. where teenagers generally have low level of awareness of Emergency contraception. \(^{39}\) In a related study in south west England, various misconceptions about Emergency contraception among teenagers were reported. These ranged from seeing it as abortifacient to seeing it as a poison. \(^{7}\)

The problem of lack of awareness and misconceptions about emergency contraception led to its low usage among adolescents. While twenty percent and thirty two percent usage were reported in Switzerland \(^{40}\) and Scotland \(^{41}\) respectively, two percent and three percent usage among teenagers were reported in Benin City, Nigeria \(^{11}\) and Nairobi, Kenya \(^{38}\) respectively.
1.3 JUSTIFICATION/RATIONALE FOR THE STUDY

The justification for secondary school adolescents is because they form an important high – risk group for unplanned pregnancy in Nigeria. Some of them reside in hostels where there is no parental supervision. As such they freely associate with one another, while a large percentage of them engage in premarital sex. More than twenty percent of secondary school girls in Nigeria are sexually active. This has led to unfavorable outcome of increased number of unintended pregnancies among teenage girls. This increased number of unintended pregnancies and subsequent illegal abortion with its sequelae has led to the death of between one hundred and fifty thousand to two hundred thousand women annually. Adolescents are particularly at risk.

Another reason why secondary school adolescents are the focus of this study is because studies in Nigeria have shown that sixteen percent of all maternal deaths were due to adolescent abortion. Apart from maternal deaths, adolescent pregnancy and abortion can also lead to school drop-out, stigmatization and secondary infertility. With the background information that adolescents constitute about twenty percent world population and eighteen percent of total Nigeria population respectively, issues that have to do with adolescent health must be given top priority. More so in two previous studies involving secondary school adolescents in Nigeria in Ilorin and Zaria, the abortion prevalence rate among pregnant in – school adolescents was one hundred percent in both instances.
The choice of Emergency Contraception (EC) being studied stem out of the fact that among the various forms of contraception, emergency contraception is the only one that can be used after sexual intercourse. 11 This offers a second chance to prevent pregnancy in situations of unprotected intercourse, under-protected intercourse (e.g. condom breakage) and missed oral contraceptive pills. 14 It is also important to note that about half of secondary school students who engage in sexual activity only have intercourse once in three months. 2

This makes emergency contraception the contraception of choice or a back-up to condom use for which they may not be experienced in its use. Also, in a related study adolescents expressed skepticism and unwillingness to use continuous methods of hormonal contraception. This makes EC more favored among this age group. 45,46 It should also be noted that abstention from sexual intercourse is as low as forty percent among secondary school students. Hence other options need be explored. 2 In addition EC also has high rate of effectiveness and safety. 29

The effectiveness of EC is proved by the fact that it has the capacity to prevent eighty – five percent of pregnancies that would otherwise occur in cases of unprotected sexual intercourse. 22, 23 Also, timely use of EC could prevent up to seventy percent of abortions. 22, 23, 47 A study on tolerability of EC in adolescents to prove its safety revealed that there was no serious adverse effect on the adolescents that used it. 48, 49 Only minor expected side effects like nausea, fatigue and vomiting occurred. The onset and mean duration of menstruation was comparable before and after its use.48-49
Another important rationale for EC is the fact that traditional, moral and religious beliefs of Nigerians make it difficult to accept legal abortion as an option. EC therefore remains one of the major potential solutions to the problem of unintended pregnancies. More so, it can be self administered without the need for a prescription. This makes it easy for the use of EC to overcome some of the barriers that limit access to effective contraception in Nigeria. Not to be forgotten, also, is its important use in the event of rape or sexual assault.

The rationale for the assessment of knowledge of EC is as a result of low level awareness of EC reported in some studies among in – school adolescents. Although some studies reported high level of awareness about EC among secondary students, there were deficiencies in their knowledge of specific details like the timing etc. For example, a study in Lagos reported that sixty – eight percent of respondents were aware of EC but only thirty – eight percent of the respondents who had reported knowing about EC knew the correct time frame.

Health Education was selected as the planned intervention because of the positive effect it has had on improvement of reproductive health knowledge and behavior in previous studies. In Enugu, for example, there was a reduction in risky sexual behavior following health education intervention given to secondary school students. Similarly, in Ilorin, after health education was given to secondary school students, abstention from sexual intercourse increased and the number of multiple partners reduced significantly. Also in a similar study in England, proportion of students who knew the correct time limit of EC was significantly higher after health education.
Secondary schools are good targets for the health education because most pupils first acquire information on sexual matters from school.  

1.4 OBJECTIVES

1.4.1. General Objective
To assess the effects of health education on knowledge and use of Emergency Contraception among students of public secondary schools in Ilorin, Nigeria.

1.4.2. Specific Objectives
1. To assess the student’s knowledge about emergency contraception.
2. To determine the level of use of emergency contraception among the students.
3. To identify factors responsible for the use of emergency contraception among the students.
4. To design and implement a Health Education Intervention on Emergency contraception.
5. To assess the changes in their level of knowledge and use of emergency contraception following the Health Education Intervention.

1.5 HYPOTHESIS OF THE STUDY

Ho: The null hypothesis of the study states that Health education intervention will not bring about a statistically significant change in the level of knowledge and use of emergency contraception among students in public secondary schools in Ilorin.
**Hₐ:** The alternate hypothesis is that the Health education intervention will bring about a statistically significant change in the level of knowledge and use of emergency contraception among students in public secondary schools in Ilorin.

### 1.6 SCOPE OF THE STUDY

The study focused on adolescents aged ten to nineteen years in public secondary schools.
CHAPTER TWO: LITERATURE REVIEW

2.1. ADOLESCENT SEXUALITY

Sexual activity is the outcome of normal physiologic changes occurring in adolescents. The World Health Organization (WHO) defines adolescent as a person in the age group of ten to nineteen years. Adolescence is characterized by rapid rate of physical growth and development with the attainment of secondary sexual characteristics occurring under the influence of sex hormones. ⁵

Teenage sexual activity is increasing globally with a trend towards early onset. ⁵ ⁴³ In Nigeria as many as fifty percent of adolescent have initiated sexual activity with the age at first sexual intercourse ranging from fourteen to eighteen years across various geographical zones. ² ⁴ ⁸ In Ibadan, Oladokun et al found that age at sexual initiation was fifteen years.⁵¹ In Ilorin, twenty eight percent of secondary school adolescents had initiated sexual intercourse ² while other studies reported sixty – three percent, fifty – five percent, thirty – five percent, thirty – two percent, fifty – two percent and twenty – five percent in Ilorin, South – East Nigeria, Ibadan, Niger, Ghana and Port-Harcourt respectively. ⁵ ³³ ⁵²–⁵⁵ Also in Scotland, a study among fourteen to fifteen year olds showed that thirty – two percent of girls and twenty – seven percent boys have had sexual intercourse. ⁴¹ Similarly it was also reported in Slovenia that fifty-three percent of in-school adolescents are sexually active. ⁵⁶

Various reasons have been reported for increasing premarital sex among adolescents. One reason is that adolescents have to delay marriage for the purpose of acquiring
formal education. Other reasons are to please boyfriend or girlfriend, to experiment with sex, to test fertility and to stop painful menstruation. In a study by Ameh et al in Zaria fifty four percent of respondents were of the opinion that adolescents indulge in premarital sex to please their boyfriend or girlfriend while thirty-seven percent, thirty percent and twenty percent felt it was to experiment with sex, test fertility and to stop painful menstruation respectively.

Some factors have been found to be associated with sexual activity among adolescents. In developing countries, factors such as early onset of menarche, changing values due to increasing urbanization, exposure to foreign cultures through migration, tourism and mass media, erosion of traditional norms and values, peer influence and lack of parental control have been implicated. Another important factor is the educational level of the students. Anochie et al in Port – Harcourt found that there was statistically significant difference between junior and senior secondary students who have initiated sexual activity; sexual activity being higher among senior secondary school students.

In Ibadan, other factors like sex, religion, father’s educational background, mother’s educational background, and level of class were all statistically and significantly associated with previous sexual exposure among secondary school students. In fact, male respondents were reported to be three times more likely than females to have had sexual experience while those whose mother had tertiary educational background were less likely to have had previous sexual experience.
The frequency of intercourse and number of sexual partners among sexually active adolescents is also an important issue. Aderibigbe et al in Ilorin \(^2\) reported that more than twenty percent of respondents have sexual intercourse only once in three months. In the same study, more than half of the sexually active respondents had two or four sexual partners since sexual initiation. Multiplicity of sexual partners was also reported in other studies in Kogi State, Rivers State and Oyo State. \(^5, 58, 59\)

2.2. TEENAGE PREGNANCY AND UNSAFE ABORTION.

Teenage pregnancy is a major public health and social problem the world over and its incidence is on the increase. \(^60, 61\) It is one of the most unfavorable and usually unplanned outcomes of adolescent sexual activity. \(^5\) In a study carried out in Enugu, eighty – nine percent of the respondents saw it as one of the common reproductive health problems of secondary school adolescents. The reason for teenage pregnancy varies from country to country and from region to region within the same country. Factors that are associated with teenage pregnancy include rapid urbanization, career aspiration, residence in a single parent home and poor family relationship. \(^33\)

In 2008 Nigerian Demographic and Health Review, number of births among adolescents aged fifteen to nineteen years was one hundred and eleven per thousand women, and Nigerian women average more than five births during their lifetime. \(^12, 33\) Studies have consistently indicated that large numbers of Nigerian women experience unintended pregnancies. According to a 1997 survey of South West Nigeria, at least twenty seven percent of women had ever been pregnant when they did not want to be. \(^62\) Similarly, in a survey conducted in south-west and northern Nigeria in the mid
1990s, twenty percent of women reported having experienced an unintended pregnancy. \(^6\) The 2008 Demographic and Health Survey found that of live births to women in the previous three years, fifteen percent were reported to be unplanned. \(^3\)

Teenage pregnancies are usually unintended or unplanned and this leads to high rate of desire to seek and procure abortions. \(^6\) In a study by Aderigbigbe in Ilorin, five percent of the sexually active adolescents in secondary schools have been pregnant at least once. \(^1\) In Zaria, Ameh et al reported that nine percent of sexually active secondary students have been pregnant one to four times before. \(^1\) These findings are similar to the finding in Thailand where Watcharaseranee et al reported the incidence of teenage pregnancy as nine percent. \(^6\) Both in Zaria and Ilorin, it is worthy of note that one hundred percent of the sexually active respondents that had teenage pregnancies resorted to induced abortion. \(^1, 12\) In Port-Harcourt, however, abortion rate among secondary school adolescents was reported to be twenty five percent. \(^5\)

The most common reason cited for wanting to terminate an unintended pregnancy was being unmarried at the time of the pregnancy. Other reason are; being too young, still in school and having problems with their partners. \(^28\) In a focus group discussion carried out in Benin City, the major reasons why adolescents seek termination of pregnancy were (in order of frequency): the need not to interfere with schooling; not being old enough to get married; fear of family members knowing; not planning to marry the partner; being jilted by a fiancé; following rape or incest; and not knowing the actual father. \(^6\) Less common reasons were the need to test fertility and in some cases, as a means of making financial demands on male partners. \(^6\)
The few teenage pregnancies that do not end in abortion constitute a health hazard both to the mother and foetus. The mother is at increased risk of pregnancy – induced hypertension, anaemia, obstructed labor and its sequela. They are also three times more likely to die as a result of the complications of delivery and pregnancy than those aged twenty to twenty four. The foetus is prone to be delivered preterm, small for gestation age and has an increased risk of perinatal death.

For the larger proportion of teenage pregnancies that end in induced abortion, it carries its own risk. Previous studies in Nigeria have shown that sixteen percent of all maternal deaths were due to adolescent abortion. Considering the high annual maternal deaths of about fifty thousand women in Nigeria, adolescent contribution through induced abortion is a major issue. It is also estimated that about twenty – five percent of women who have abortions in Nigeria experience serious complications.

2.3. CONTRACEPTION

Contraception refers to various methods of preventing pregnancy. There are traditional and modern methods of contraception. The traditional methods refer to withdrawal, rhythm and abstention from sexual intercourse. The effectiveness of the traditional method is low. The modern methods of contraception are further divided into permanent and non permanent methods. The permanent methods refer to vasectomy and female sterilization.

The non permanent methods can be further divided into barrier method, hormonal methods, and intrauterine devices. The barrier methods refer to the use of male
condoms, female condoms, and cervical caps/diaphragms. The hormonal methods refer to the use oral contraceptive pills, injectables, implants and emergency contraception.\textsuperscript{8, 30}

There are different levels of effectiveness for the various methods. The effectiveness of vasectomy, female sterilization, oral contraceptive pills and injectables is almost one hundred percent. That of the intrauterine contraceptive device is about ninety-seven to ninety-nine percent. However that of male condoms, female condoms and diaphragm is about ninety to ninety-eight percent\textsuperscript{30}

Some newer methods are being tried. An example is the vagina hormone ring which has been tried out extensively since 2001. It is approved in thirty-two countries, but only became available in the United Kingdom in 2009. Another example is the male pill. This is still at research level.\textsuperscript{30}

2.3.1 Methods of contraception and the merits and demerits of their use among adolescents

2.3.1.1. Abstinence
Abstinence is the most effective means of birth control. Abstinence education generally focuses on delaying the initiation of adolescent sexual activity until adulthood. Abstinence-based education and intervention is most effective when targeted toward younger adolescents before becoming sexually active. However, abstinence may be difficult for adolescents. About 26\% of adolescent couples trying to abstain from intercourse will become pregnant within 1 year. Teenage couples who
choose to abstain from sexual intercourse should be encouraged but they need to know about other contraceptive options BEFORE or IF they decide to have intercourse. 8,30, 70,71,72,73

2.3.1.2. Condoms

The male condom is a mechanical barrier method of contraception. Latex condoms significantly reduce the transmission of sexually transmitted diseases (STDs) and should therefore be used by all sexually active male adolescents regardless of whether an additional method of contraception is being used. Adolescents must understand that the use of a condom is not optional and that a new condom must be used each time they have sexual intercourse.

They must also be instructed in the correct use of a condom. Adolescents need to understand that no other contraception method provides the same protection from STDs. Male condoms have several other advantages. They allow for males to share in the responsibility for contraception, they are easily accessible and available, they can be obtained without prescription, they are inexpensive, and they can be legally purchased by minors (adolescents). 8,30, 70,71,72,73

The female condom is also a barrier method of contraception. Available data suggest it may be effective in the prevention of Sexually Transmitted Diseases (STDs). It is also as effective as the diaphragm in preventing pregnancy. Acceptability by the adolescent population is unknown, and may be influenced by the high cost, poor availability, and the difficulty in usage. 8,30, 70,71,72,73
2.3.1.3. Spermicides

Spermicides have a relatively high contraceptive failure rate when used alone and must be applied with each act of intercourse to be effective. If used consistently with male condoms, the birth control effectiveness approaches that of oral contraceptives. Spermicides consist of 2 agents: nonoxynol 9 and octoxynol 9, applied intravaginally through a variety of forms (gel, foam suppository, and film). The combination of spermicide and condoms is a very effective means of contraception for adolescents because it provides effective prevention of pregnancy and STDs, is available without a prescription, and is inexpensive. 8,30, 70,71,72,73

2.3.1.4. Oral Contraceptives

Oral contraceptives are reliable and effective for the prevention of pregnancy, are available by prescription, and are the most popular method of contraception among adolescents. Currently 3 forms of oral contraceptive pills are available: the fixed-dose combination (each tablet contains the same dose of estrogen and progestin), the phasic dose (the triphasic and biphasic packs containing varying doses of estrogen and progestin), and the mini-pill (progestin only). 8,30, 70,71,72,73

The newest generation of birth control pills have a low dose of estrogen (20 to 35 µm), and new forms of progestin. The standard 28-day pack of pills (21 days of hormone
and 7 days of placebo) continues to be widely and successfully used by adolescents and should be encouraged over the 21-day pack for promoting daily compliance.

The failure rate of oral contraceptives when used correctly is <1%. However, the failure rate among adolescents may be as high as 15% because of inconsistent use. One study suggests that adolescents miss an average of 3 pills per month. Adolescent compliance with oral contraceptive use may be enhanced by appropriate patient education and problem-solving techniques. This includes careful instruction regarding the use of oral contraceptives, anticipatory guidance about side effects and their management, a discussion of correct pill usage (including when the first pill should be taken during the menstrual cycle or what to do if a pill is missed), and frequent follow-up and monitoring. 8,30, 70,71,72,73

Oral contraceptives are best for adolescent females who desire regular menses and are organized and motivated to take a pill every day; additionally, a condom must be used in conjunction with oral contraceptives to give protection against STDs. Ideally, adolescents should receive a complete gynaecological examination by the paediatrician before taking oral contraceptives. In some circumstances (such as when a patient shows anxiety), the pelvic examination may be deferred and oral contraceptives prescribed if the patient is healthy, not pregnant, and has no contraindications to taking the pills. Therefore, oral contraceptives can be prescribed by the paediatrician and the adolescent can be referred for an examination and Papanicolaou smear within the next 3 months. 8,30, 70,71,72,73
The pill also has lots of health benefits for teens, such as regulation of menstrual periods, decreased menstrual cramps, treatment for acne, treatment for polycystic ovary syndrome (PCOS), lowered risk of anaemia, lowered risk for some cancers, protection against Pelvic Inflammatory Disease, and lowered risk of pregnancy outside of the uterus.\textsuperscript{8,30,70,71,72,73}

\textbf{2.3.1.5. Medroxyprogesterone Acetate (Depo-Provera)}

Medroxyprogesterone acetate is a long-acting progestin given every 12 weeks as a single 150-mg intramuscular (IM) dose. For adolescents, this contraceptive method has many benefits, including effective pregnancy prevention, convenience (requires no daily drug regimen, no need for planning before intercourse), lack of estrogen-related side effects, and protection against endometrial cancer and iron deficiency anemia. The major disadvantages of this contraceptive method for adolescents are menstrual cycle irregularities (present for nearly all patients originally), the need for IM administration, and the side effects (weight gain, headaches, bloating, depression, and mood changes). Medroxyprogesterone acetate is also associated with a delayed return to fertility and possibly a reversible osteopenia.\textsuperscript{8,30,70,71,72,73}

This contraceptive method may be safely recommended for adolescents who have chronic illnesses (Examples of such chronic illnesses are seizures and sickle cell disease), are lactating, or are at risk for complications with estrogen. Medroxyprogesterone acetate injection is the best type of contraception for adolescents who do not remember to take daily medication. Pediatricians need to be
sure to discuss the potential side effects and to ensure that the patient is not pregnant at the time of each injection. Condoms must be used in conjunction with medroxyprogesterone acetate for protection from STDs. 8,30, 70,71,72,73

2.3.1.6. Levonorgestrel Implants (Norplant System)

Levonorgestrel implants are a highly effective long-acting progestin contraceptive that provides pregnancy prevention for up to 5 years. It requires insertion and removal of subcutaneous Silastic capsules by a trained health care professional. For some adolescents levonorgestrel implants have proven to be a long-term effective method of contraception. This contraception may be indicated in adolescents who desire long-term spacing between births, want an extended length of protection, have a history of problems with oral contraceptives, or are already mothers. The major disadvantages for use in the adolescent population include high initial cost, the potential side effects (breakthrough bleeding, headaches), and the need to have an experienced health care professional remove the implant. 8,30, 70,71,72,73

Adolescents using sub dermal implants have experiences similar to adults, particularly when appropriate counselling is provided. They have the same concerns or problems but may be more likely to have the implants removed than would an adult. Condoms must be used in conjunction with levonorgestrel implants for protection from STDs. 8,30, 70,71,72,73
2.3.1.7. Intrauterine Devices (IUDs)

When used appropriately, IUDs are safe, effective methods of contraception. IUDs should be reserved for adolescent females who cannot use other contraceptive methods and whose sexual behaviour does not put them at risk for STDs. Some controversy exists as to whether IUDs are an appropriate method of contraception for adolescents. Condoms must be used in conjunction with IUDs for protection against STDs. On the whole, IUDs are especially well-suited for teenagers. “Adolescents may have difficulty with consistent oral contraceptive use, and are at a particularly high risk for unintended pregnancy with resultant negative consequences to their lives,” they conclude. “Thus, IUDs are appropriate for adolescents, as many would like to avoid pregnancy for five or more years to allow completion of educational or career goals.”

2.3.1.8. Diaphragm and Cervical Cap

The diaphragm and cervical cap are effective barrier methods of contraception that require use of spermicides and condoms. These contraceptive methods have limited usefulness in adolescents as they require a prescription, a visit with a health care professional for a fitting, and a motivated adolescent who is comfortable and skilled with insertion. Consistent, correct use is critical.
2.3.1.9. Rhythm and other Periodic Abstinence Methods

Rhythm and other methods of periodic abstinence require sophistication, awareness of fertility, motivation, and timing of intercourse. These may be too complicated for many adolescents. 8,30, 70,71,72,73

2.3.1.10. Withdrawal Method

Withdrawal, which involves the male partner's attempt to withdraw the penis before ejaculation, is still widely used by adolescents in sexual relationships. There is however high failure rate of withdrawal for pregnancy prevention. In addition, this method provides little or no protection against STDs. 8,30, 70,71,72,73

2.3.1.11. Emergency Contraceptive Pills (ECPs)

There are many prescribed methods of emergency post-coital contraception. The most commonly prescribed method consists of 2 doses of combined estrogen and progestin contraceptive pills taken within 72 hours of unprotected intercourse followed by 2 pills 12 hours later. For this method of ECPs, the dose depends on the oral contraceptive agent used. The US Food and Drug Administration has indicated that the use of ECPs is safe and effective. Nausea is a likely side effect that may be relieved by the use of antiemetics. The ECP has an efficacy of approximately 75% in the prevention of conception. It is contraindicated in adolescents who are unable to use
oral contraceptives and if more than 72 hours have transpired since intercourse. A pregnancy test should be done before administration of the pills and 3 weeks after administration to detect any treatment failures. 8,30, 70,71,72,73

2.4. EMERGENCY CONTRACEPTION

Emergency contraception (EC) refers to the use of estrogen and progestin – containing pills (combination emergency contraceptive pills) or levonorgestrel – only pills (progestin – only pills with dosage of 1.5mg start within 72 hours of unprotected sexual intercourse) that are taken after unprotected intercourse to prevent pregnancy. 11,45,74 EC have been available in form of oral pills also known as Yupze method. 15

The commonest brand name in Nigeria for EC is Postinor. 29 In a study by Okonofua et al, some practitioners refer to it as SFH brand since Postinor is marketed by the Society for Family Health (SFH) in Nigeria. 29 Apart from the oral pill, intrauterine contraceptive device (IUCD) is also not in popular use perhaps due to its invasiveness. 15, 29 EC however should not be confused with medical abortion drugs – mifepristone or methotrexate that ends an established pregnancy. 75

Emergency Contraceptive Pills (ECP) is indicated anytime sexual intercourse is unprotected (e.g. nothing is used to prevent pregnancy) or under – protected. Under – protection occurs in such instances when a condom breaks or slips, two or more progestin only pill is missed, a depot medroxy-progesterone acetate (Depo Prevera) shot is two or more weeks late, vaginal spermicide is used alone, or a diaphragm or cervical cap is dislodged during intercourse. 14, 22, 23, 76
ECPs reduce the risk of pregnancy after unprotected sex, preventing approximately eighty to eighty-five percent of pregnancies that would otherwise occur. If used after all contraception failures, ECPs could prevent fifty percent of unintended pregnancies. The efficacy of progestin only ECPs is greater than that of combination ECPs. In one study, progestin only ECPs prevented eighty-five percent of pregnancies, that would have been expected to occur without medication, whereas combination ECPs prevented fifty-seven percent. Apart from the high rate of effectiveness, ECPs are also safe. Additionally the fact that it can be self-administered by adolescents over a short period of time, without the need for a prescription means that its use can overcome some of the barriers that presently limit access to effective contraception in Nigeria.

There are virtually no contraindications to using ECPs in healthy adolescents. ECPs will not interrupt or harm an established pregnancy. Several studies involving the long-term use of oral contraceptive pills have not shown any teratogenic effects on the fetus. For combination ECP, some health care providers use the same contraceptives containing estrogen such as history of thromboembolism, ischemic heart disease, uncontrolled hypertension or hypersensitivity to any of the components. However, these conditions are rare among adolescents and many experts feel that a single course of combination ECP does not carry the same risks as ongoing contraceptive use. Progestin-only ECP when compared to combination ECP have fewer theoretical medical risks; contraindications are limited to ongoing pregnancy, hypersensitivity to any component of the product (which is rare), and undiagnosed abnormal vaginal bleeding and requires ECPs, there is no reason to withhold the medication while the
cause of the bleeding is being evaluated. Both forms of ECP are however preferred in women with a history of medical contraindications to estrogen such as venous thromboembolism. 14, 78

Current evidence suggests that progestin-only ECP have the most favorable balance of safety, side effects, and efficacy. 14, 79 Given that progestin-only ECP are associated with less nausea and vomiting and are more effective in preventing pregnancy than combination ECPs, progestin-only ECPs are the preferred regimen to provide for emergency contraception. However if progestin-only ECP are not available, adolescent health care providers should provide a combination ECP regimen with which they are familiar. Anti-emetics taken one hour before taking the combination ECPs can decrease the incidence of gastrointestinal side effects. Providers are therefore advised to give anti-emetics in conjunction with combination ECP.

When progestin-only ECPs are prescribed, adolescents should be instructed to take both tablets at once (rather than the current approved label instructions to take the first tablet as soon as possible after unprotected or under-protected intercourse and the second tablet twelve hours later). Taking both tablets at once is an easier regimen to follow and there is evidence that this is just as effective as splitting the dose in two. This single, two-tablet dose of progestin only ECP is not associated with more side effects when compared with other standard progestin-only ECP regimen. 14, 23

In a study carried out by Harper et al on the tolerability of levornogestrol emergency contraception in adolescents, it was shown that adolescents tolerated the medication well, experiencing transient side effects. 48 In this study two 0.75mg levornogestrol
tablets was administered to the participants who kept diaries of side effects and menstrual pattern. The result revealed that virtually all participants used the drug correctly, with no serious adverse events. Minor expected side effects occurred, including nausea, fatigue, and vomiting. Adolescents mean duration of menstruation was comparable pre – and post – treatment, and onset of menstruation was within the expected range.

The approved time-frame for use of EC after unprotected intercourse is seventy-two hours. However, ECPs have been shown to reduce the risk of pregnancy if taken up to one hundred and twenty hours after intercourse. Some studies demonstrate ECPs are more effective the sooner they are taken. Delaying the first dose of ECPs by twelve hours from the time of unprotected pregnancy increases the odds of pregnancy by almost fifty percent.

The risk of pregnancy continues to increase with the passage of time from unprotected intercourse up to one hundred and twenty hours. Given the data that suggest ECPs are more effective the sooner they are used, it is of critical importance to improve adolescents’ knowledge, use of, and access to ECPs. The established mechanisms of action of both combination and progestin-only ECPs include delaying or inhibiting ovulation, disrupting follicular development, and/or interfering with the maturation of the corpus luteum.
2.5. KNOWLEDGE OF EMERGENCY CONTRACEPTION AMONG ADOLESCENTS.

Teenagers generally have a low level of awareness about Emergency Contraception (EC). Previous studies reported varying levels of awareness about EC ranging from forty-eight percent, fifty-eight percent, sixty-one percent, sixty-eight percent, seventy-eight percent, eighty percent, eighty-nine percent and ninety-three percent in Nairobi, Kenya, Benin City, Mexico, Lagos, South-West Nigeria, Nova Scotia, Switzerland and Scotland respectively. The lowest level of awareness was found in African countries when compared with their teenage counterparts in Switzerland Nova Scotia and Scotland.

With respect to the various types of EC, Arowojolu et al reported that respectively, thirty-two percent, twenty percent and nineteen percent of respondents were aware that combined pills, progesterone-only pills and intrauterine contraceptive devise could be used for emergency contraception. In Lagos, Ebuehi et al reported that thirty-six percent respondents correctly identified emergency contraceptives.

Knowledge about the side effects of EC appears to be highly deficient. In a study in Ilorin, fear of side effects of modern contraceptives was the most common reason for non use accounting for seventy-eight percent respondents. This is similar to the finding in Lagos where the fear of side effects was the commonest reason cited by respondents for non-use of EC. Also in another similar study among London and Oxfordshire women, forty-three percent expressed fears of the increased health risks of emergency hormonal contraceptives.
Knowledge about those that should use EC was probed into by Gichangi et al in Nairobi-Kenya and it was reported that seventy-seven percent of respondents approved its use for rape victims while twenty-one percent respondents approved its use for adolescents and school girl. Among respondents that were aware about EC, knowledge of the correct time-frame within which it should be used was generally poor. Percentage respondents that knew the correct time-frame within which EC should be used were twelve percent, eighteen percent and thirty-nine percent in south-west Nigeria, Benin-city, and Lagos respectively. In south-west Nigeria, while twelve percent identified the correct timing, twenty-nine percent mentioned the morning after while one percent cited four to six days after, another one percent cited seven or more days after while fifty-seven percent were uncertain.

The trend was similar in Benin City where eighteen percent respondents knew the correct timing but forty-nine percent respondents felt EC will only be effective if used within twenty-four hours of unprotected sex. Although this answer is within the seventy-two hour limit, such misinformation might inhibit someone who could still prevent a pregnancy from taking EC because they thought they had missed their “window” of effectiveness.

Knowing where to obtain EC when needed is also very important. In a study on perception and practice of EC, when respondents were asked about sources of procurement of EC, sixty-seven percent said hospitals/clinics, twenty-seven percent cited pharmacy shops, six percent cited community based distribution agents, five percent cited patent medicine stores and drug hawkers while seventeen percent did not know the sources of procurement.
Various sources of information about EC was reported in different studies ranging from friends, magazines, radio, school teachers, health workers, family planning clinics, parents, relatives, sexual partners to those with no known source. However in four separate studies done in Lagos, Ilorin, Benin and south west Nigeria, highest percentage of respondents cited friends as their source of information about EC. Those that got their information from health care workers were thirty-four percent, thirty-one percent and twenty-seven percent in Lagos, Benin and South-west Nigeria respectively.

As would be expected of a health commodity that few of its users got their information from health care workers, various forms of misconceptions about EC abound in various degrees. In a study done in south west England, some of the misconceptions pin-pointed are: EC can only be used only once in a lifetime; EC can only be procured from a specialist family planning clinic; EC can only be used up to twelve hours after sexual intercourse; EC is a mega dose hormone that works by poisoning the user; EC is really the same as having an abortion; EC always makes you vomit.

In another study by Aziken et al, it was reported that mestrogen-a medication used to treat women with low levels or an absolute lack of estrogen or progesterone was the drug most frequently cited as an emergency contraceptive by fifty percent respondents. In this study, a list of eight drugs were given including mestrogen. In same study, when asked to mention other (unlisted) methods of EC, some respondents mentioned antibiotics or home remedies such as alcohol mixed with lime or lime.
mixed with potash and salty water. Some even mentioned Gynaecosid, which is recommended for the treatment of amenorrhea not related to pregnancy.

Still on the issue of misconceptions about EC, the belief that EC is abortifacient has been documented. Gichangi et al in Nairobi-Kenya reported that forty-nine percent of respondents considered EC as abortifacient. An equally alarming rate of misconception about EC was reported in Zimbabwe where judgmental attitudes by public health sector health workers were involved. In the study, adolescents seeking emergency contraceptives were rebuked by some providers. Only sixteen percent of the health workers consulted could give correct advice to the clients, while majority gave incorrect advices.

2.6. USAGE OF EMERGENCY CONTRACEPTION AMONG ADOLESCENTS

The utilization of modern contraception has been shown to be poor among Nigerian adolescents. The 2008 Demographic and Health Survey found that only nine percent of sexually active women aged fifteen to nineteen years ever used any form by modern contraception. In a similar report by Gilda et al the proportion of adolescents aged less than twenty years using modern contraception was found to be nine percent, slightly lower than the former. Other studies from western and southern Nigeria have found rates of contraception use among sexually active adolescents of about thirty percent. All these rates are considerably lower than the rates reported for developed countries. For example, contraceptive prevalence among sexually active Danish adolescents is ninety-three percent.
Low level of contraceptive use among adolescents in Nigeria may reflect inadequate contraceptive knowledge and access, as well as the spontaneity of adolescent sexual activities. They may also reflect the notion among youths that it is easier and safer to obtain an abortion than to practice contraception on a regular basis. In another study, thirty-nine percent of sexually active respondents reported that they had ever practiced contraception. Of these, seven percent had used the pill, four percent the injectable, two percent EC, twenty-six percent the condom, five percent the intra-uterine contraceptive devise and one percent spermicides; the remainder had used non modern methods such as rhythm (eleven percent) or withdrawal (forty – five percent).  

Different levels of usage of EC have been reported among sexually active adolescents. Percentage use among respondents of two percent, three percent, four percent, twenty percent and thirty percent was reported in Benin, South West Nigeria, Nairobi-Kenya, Switzerland and Scotland respectively. When asked if they were willing to use EC in the future, twenty three percent of those familiar with EC intend to use it in the future in Kenya. Similar trend was reported in Nigeria where approximately thirty-seven percent of respondents would like to use EC in the future, fifty-eight percent would not, while five percent were unsure. As regards promoting it or recommending it, fifty-three percent of sexually active respondents were willing to promote it to friends.
2.7. FACTORS THAT AFFECT KNOWLEDGE AND USAGE OF EMERGENCY CONTRACEPTION AMONG ADOLESCENTS.

The most important factor that affected the knowledge about EC according to a report from Scotland was sexual activity. In this study, sexually active girls were the most knowledgeable about the correct time limits of use of EC. In a related cross-sectional survey on EC in Switzerland, EC awareness was positively associated with the father’s level of education. In same study it was also demonstrated that girls who had a confidant or a group of friends or boys to discuss the issue of contraception with declared greater awareness of EC.

In a similar study in Nigeria, however, responses about knowledge of EC were uninfluenced by neither religion nor educational level of the respondents rather, this study demonstrated a positive association between age and awareness of EC which happened to be the only positive association. Other studies in Nigeria have reported very poor knowledge and practice of EC by health care workers which in turn has affected their ability to educate adolescents and other members of the population who need it. This has led to difficulty in promoting and disseminating information on EC to clients by health workers.

With respect to usage of EC, factors that were reported affecting it by some Nigerian studies are poor availability and distribution, fear of side effects, religious preachments discouraging its use and the perception that it could lead to infertility in later life. Poor availability is a particularly important factor as documented in a report which showed that only twenty-three percent of private health care
providers had EC in their clinics at the time of the study. Another report revealed that pharmacies’ inability to maintain constant supply of EC is another common barrier to timely access to EC by adolescent. Similarly, although non-governmental organizations like Society for Family Health (SFH) have tended to promote EC program, their coverage is often limited.

Health care providers and pharmacists still have many misconceptions and inadequate information about EC that interfere with adolescents’ access to and use of EC. Apart from lack of information by health care providers, some health workers are reluctant to provide EC to adolescents because of the belief that they are abortifacient. Another important barrier to the use of EC in adolescents is cost. More so EC use was higher among girls who lived in urban areas (odds ratio 1.91) and those who occasionally had unprotected intercourse. Another factor reported from three previous studies as affecting the use of EC among adolescents was advance provision of EC to adolescents. In one of these studies, there was three times the likelihood of using EC among those that were provided EC in advance compared with those that had to go to the family planning clinic to get it when needed.

Generally some factors were found to be directly related both to knowledge and use of EC. These are: age, level of study, sexual activity, previous history of use of contraceptives and previous history of induced abortion. In a related study however awareness of the concept of EC and its past use was not significantly influenced by age, education or religion of the respondents.
2.8 EFFECTS OF HEALTH EDUCATION ON ADOLESCENTS’ KNOWLEDGE AND USE OF EMERGENCY CONTRACEPTION.

In South-West England, health education intervention increased the proportion of students who knew the correct time limit of EC by sixteen percent. In a related study in Enugu, there was a significant gain in correct knowledge about reproductive health issues among secondary school students.

Effects on health education intervention was also pronounced in a study done in Ilorin where there was thirty-seven percent increase in condom use at last sex following an health education intervention among secondary school students. The percentage respondents that used condoms pre-intervention was forty-nine percent while it was eighty-five percent post-intervention among sexually active adolescents. In same study, abstention from sexual intercourse increased among those that received health education intervention from ten percent to forty percent respondents.

2.9 HEALTH EDUCATION MODELS

There are five various health education models which have been identified. These are: Health Belief Model; Transtheoretical or Stages of change Model; Consumer Information Processing Model; Theory of Reasoned Action and Social Learning Theory or Social Cognitive theory.
2.9.1. The Health Belief Model (HBM)

This was one of the first models which adapted theories from the behavioural sciences to examine health issues. It is still one of the most widely recognized and used models in health behaviour applications. This model was originally introduced by a group of psychologists in the 1950's to help explain why people would or would not use available preventive services, such as chest x-rays for tuberculosis screening and immunizations for influenza. These researchers assumed that people feared diseases and that the health actions of people were motivated by the degree of fear (perceived threat) and the expected fear reduction of actions, as long as that possible reduction outweighed practical and psychological barriers to taking action (net benefits).  

The HBM can be outlined using four constructs which represent the perceived threat and net benefits: 1) perceived susceptibility, a person's opinion of the chances of getting into a certain condition; 2) perceived severity, a person's opinion of how serious this condition is; 3) perceived benefits, a person's opinion of the effectiveness of some advised action to reduce the risk or seriousness of the impact; and 4) perceived barriers, a person's opinion of the concrete and psychological costs of this advised action.

Another concept is known as cues to action. These are events (internal or external) which can activate a person's "readiness to act" and stimulate an observable behaviour. Some examples of external strategies to activate "readiness" can be delivered in print with educational materials, through any electronic mass media or in one-to-one counselling. Another concept that has been added to HBM since 1988 in order to better meet the challenges of changing unhealthy habitual behaviours (such as
being sedentary, smoking or overeating) is self-efficacy. Self-efficacy, a concept originally developed by Albert Bandura in social cognitive theory (social learning theory), is simply a person's confidence in her/his ability to successfully perform an action. 97-101

Even though the HBM was originally developed to help explain certain health related behaviours, it has also helped to guide the search for "why" these behaviours occur and to identify points for possible change. Using this framework, change strategies can be designed. The HBM has been used to help in developing messages that are likely to persuade an individual to make a healthy decision. Using the HBM, messages that are suitable to health education for such topics as hypertension, eating disorders, contraceptive use, or breast self-examination have been developed. 97-101

However, there are two main weaknesses which have been noted about the HBM. First, health beliefs compete with an individual's other beliefs and attitudes (outside of those described in modifying factors) which can also influence behaviour. Secondly, in decades of research in the social psychology of behavioural change, it has not been shown that belief formation always precedes behavioural change. In fact, the formation of a belief may actually follow a behaviour change. 97-101

2.9.2. Stages of Change Model or Trans-theoretical Model

The Stages of Change or Trans-theoretical Model was initially published in 1979 by Prochaska. In the 1980's Prochaska and DiClemente worked further on this model in outlining the stages of an individual's readiness to change, or attempt to change,
toward healthy behaviours. The Stages of Change Model evolved from research in smoking cessation and also the treatment of drug and alcohol addiction. 97-101

More recently it has been applied to other health behaviours, such as dietary changes. Behaviour change is viewed as a process, not an event, with individuals at various levels of motivation or "readiness" to change. Since people are at different points in this process, planned interventions should match their stage. 97-101

There are six stages that have been identified in the model: 1) Pre-contemplation - the person is unaware of the problem or has not thought seriously about change; 2) Contemplation - the person is seriously thinking about a change (in the near future); 3) Preparation - the person is planning to take action and is making final adjustments before changing behaviour; 4) Action - the person implements some specific action plan to overtly modify behaviour and surroundings; 5) Maintenance - the person continues with desirable actions (repeating the periodic recommended steps while struggling to prevent lapses and relapse; and 6) Termination - the person has zero temptation and the ability to resist relapse. 97-101

In relapse, the person reverts back to old behaviour which can occur during either action or maintenance. This model is a circular, rather than a linear model. In fact, it is more of a spiral as the person may go through several cycles of contemplation, action, relapse (or recycle) before either reaching termination or exiting the system without becoming free of the addictive behaviour. Prochaska has used a "revolving-door schema" to explain the sequence that people pass through in their efforts to become free from addictions. People do not go through the stages and graduate; they can enter
and exit at any point and often recycle several times. Other studies indicate that individuals often go through these same changes whether they use self-help or self-management techniques, seek professional counseling or attend organized programs. 97-101

2.9.3. Consumer Information Processing Model

The Consumer Information Processing (CIP) Model developed out of the study of human problem solving and information processing. Information processing has been one of the dominant paradigms in social psychology for quite a while, even though CIP is still relatively new. This model was not developed specifically for health related behaviour, but it has many useful applications in the area of health education. Information is a necessary tool in health education. However, just as knowledge is necessary but not sufficient for behaviour change, information is necessary but not sufficient for knowledge. There are limits to any person's information processing capacity. This is defined as the limitations upon individuals in the amount of information they can acquire, use and remember. 97-101

By understanding the key concepts and processes of CIP, health educators can examine why people use or fail to use health information, and then design informational strategies that have better chances for success. The search for information is the process of acquiring and evaluating information. This process is affected by the person's motivation, attention and perception at that point in time. In general, consumers tend not to engage in extended information searches. 97-101
There are two central assumptions of CIP. First, individuals are limited to how much information they can process (the information processing capacity referred to earlier). Secondly, in order to increase the usability of information, individuals combine little pieces or bits of information into "chunks" and make decision rules or heuristics to make choices faster and more easily. These are the rules of thumb which are developed and used to help consumers select more easily among alternatives. 97-101

There are some basic CIP concepts that can be applied to health education. Before people will use health information, it must be: 1) available, 2) seen as useful and new, and 3) processable or in a friendly format. It is necessary to choose the most important and useful points to communicate (either verbally or in print) and place this information first and/or last in the presentation in order to be remembered best. 97-101

The information should take little effort to obtain, draw the consumer's attention, and be clear. Key ways to synthesize information that have meaning and appeal for the target population should be formulated. In the learning process, keep in mind that participants have probably made related choices before and are not necessarily starting from scratch. The information designed specifically for the target population must be placed conveniently for their use. 97-101

2.9.4. Theory of Reasoned Action (Fishbein and Ajzen)

The Theory of Reasoned Action was designed to explain not just health behaviour but all volitional behaviours. This theory is based on the assumption that most behaviours of social relevance are under volitional (wilful) control. In addition, a person's
intention to perform (or not perform) the behaviour is the immediate determinant of that behaviour. The goal is to not only predict human behavior but also to understand it.\textsuperscript{97-101}

According to this theory, a person's intention to perform a specific behaviour is a function of two factors: 1) attitude (positive or negative) toward the behaviour and 2) the influence of the social environment (general subjective norms) on the behaviour. The attitude toward the behaviour is determined by the person's belief that a given outcome will occur if s(he) performs the behaviour and by an evaluation of the outcome. The social or subjective norm is determined by a person's normative belief about what important or "significant" others think s(he) should do and by the individual's motivation to comply with those other people's wishes or desires.\textsuperscript{97-101}

Attitudes are a function of beliefs in this theory. If a person believes that performing a given behaviour will lead to on the whole positive outcomes, then s(he) will hold a favourable attitude toward performing that behaviour. On the other hand, a person who believes that performing the behaviour will lead to mostly negative outcomes will hold an unfavourable attitude. These beliefs that form the foundation of a person's attitude toward the behaviour are referred to as behavioural beliefs.\textsuperscript{97-101}

Subjective norms are also a function of beliefs. However, these are beliefs of a different kind. These are the person's beliefs that certain individuals or groups think (s)he should or should not perform the behaviour. If the person believes that most of these significant others think s(he) should perform the behaviour, the social pressure to perform it will increase the more s(he) is motivated to comply with these others. If
s(he) believes that most of this reference group is opposed to performing the behaviour, her/his perception of the social pressure not to perform the behaviour will increase along with her/his motivation to comply with these referents. The beliefs which underlie a person's subjective norms are termed normative beliefs. 97-101

2.9.5. Social Learning Theory or Social Cognitive Theory (Rotter and Bandura)
In Social Learning Theory, human behavior is explained using a three-way reciprocal theory in which personal factors (one's cognitive processes), behavior, and environmental influences continually interact in a process of reciprocal determinism or reciprocal causality. These are very dynamic relationships where the person can shape the environment as well as environment shaping the person. Change is bi-directional. Social Learning Theory is the result of separate research by Rotter (1954) and Bandura (1977). Bandura re-titled the theory Social Cognitive Theory to emphasize the cognitive aspect. According to this theory, reinforcement contributes to learning, but reinforcement along with an individual's expectations of the consequences of behavior determines the behavior. Behaviors is seen as a function of the subjective value of an outcome and the subjective probability (or expectation) that a particular action will achieve that outcome. This type of approach has been referred to as "value-expectancy theory". 97-101

There are several constructs in Social Learning Theory (SLT) which help to explain learning. According to SLT, reinforcement can be accomplished in one of three ways: 1) direct, 2) vicarious, or 3) through self-management. Direct reinforcement is supplied directly to the person. In vicarious reinforcement the participant observes
someone else being reinforced for behaving in an appropriate or inappropriate manner. This has also been called social modeling or observational learning. Reinforcement by self-management involves record-keeping by the participant of her/his own behavior. When the behavior is performed correctly, the person would reinforce or reward her/himself. The construct of self-control goes along with this type of reinforcement since it reflects the idea that individuals may gain control of their own behavior by monitoring it.97-101

There are several other constructs which may be applicable to learning situations in health education. Behavioral capability refers to the knowledge and skills necessary to do a behavior which influence actions. If individuals are to be able to perform specific behaviors, they must first know what the behaviors are and how to perform them. Therefore, clear instructions and/or training may be needed. Another construct mentioned earlier, expectations, refers to the ability of humans to think and, therefore, to expect certain results in certain situations. Expectancies are the values that people place on an expected outcome. The more highly valued the expected outcome, the more likely the person will perform the needed behavior to yield that outcome.97-101

One construct of SLT has received extra attention in health education programs. Bandura considered self-efficacy the single most important aspect of the sense of self that determines one's effort to change behavior. This self-confidence in one's ability to successfully perform a specific type of action has been so well accepted that it was also added to the Health Belief Model in 1988 as mentioned earlier in this review.97-101
This internal state is very situation specific. For example, a person may experience a high level of self-efficacy in aerobic exercise but very little when attempting to reduce the amount of fat in her/his diet. These feelings of competency have been called an individual's efficacy expectations. Even though people may have efficacy expectations, they still may not attempt the behaviour because they believe the outcome of that behaviour (reinforcement) is not great enough for them. These beliefs are called outcome expectations. A person can increase self-efficacy through: 1) personal mastery of a task; 2) observing the performance of others (vicarious experience); 3) verbal persuasion, such as receiving suggestions from others; and 4) arousal of her/his emotional state. In the construct of emotional coping responses, a person must be able to deal with any sources of anxiety surrounding that behaviour in order to learn. It has, as its overall goal, "maximizing human rather than economic development." 97-101

2.10 REASONS FOR THE APPROPRIATENESS OF HEALTH BELIEF MODEL IN THIS STUDY

The Health Belief Model was selected for this study for the following reasons:

Health motivation is the central focus of HBM hence it is good fit for addressing problem behaviours that evoke health concerns (e.g., high-risk sexual behaviour and the possibility of contracting HIV). It is one of the most widely recognized and used models in health behaviour applications with proven result. It has been further
fortified in 1988 by Albert Bandura’s social cognitive theory. This was achieved by introduction of ‘self-efficacy’.

It has produced behavioural change for important health issues like Hypertension, Eating disorders, Contraceptive use, and Breast self-examination. Together, the six constructs of the HBM provide a useful framework for designing both short-term and long-term behaviour change strategies. These six constructs refer to the four primary constructs of perceived susceptibility, perceived severity, perceived benefits, and perceived barriers are all applicable to behavioural and knowledge change. In addition to these four primary constructs are two others, cues to action and self-efficacy.

2.11 THE HEALTH BELIEF MODEL (HBM) OF HEALTH EDUCATION

The Health Belief Model (HBM) is a psychological model that attempts to explain and predict health behaviours by focusing on the attitudes and beliefs of individuals. The HBM was developed in the 1950s as part of an effort by social psychologists in the United States Public Health Service to explain the lack of public participation in health screening and prevention programmes (e.g., a free and conveniently located tuberculosis screening project). Since then, the HBM has been adapted to explore a variety of long- and short-term health behaviours, including sexual risk behaviours and the transmission of HIV/AIDS. 100-102
It was primarily developed by Godfrey Hochbaum (1958) and Irwin Rosenstock (1974), and Rosenstock & Kirscht (1974). The model has been used successfully for many decades to promote health behaviors such as seat belt use and the use of health screening (Becker, 1974; Heidarinia, 2002). HBM is based on the premise that people are most likely to take health-related action (e.g., eat a healthy diet), if they feel that by doing so they can avoid a negative health condition.100-102

"The Health Belief Model (HBM) was one of the first models that adapted theory from the behavioural sciences to health problems, and it remains one of the most widely recognized conceptual frameworks of health behaviour. It was originally introduced in the 1950s by psychologists working in the U.S. Public Health Service (Hochbaum, Rosenstock, Leventhal, and Kegeles). Their focus was on increasing the use of then-available preventive services, such as chest x-rays for tuberculosis screening and immunizations such as flu vaccines. They assumed that people feared diseases, and that health actions were motivated in relation to the degree of fear (perceived threat) and expected fear-reduction potential of actions, as long as that potential outweighed practical and psychological obstacles to taking action (net benefits)."100-102
2.11.1. The key variables/Constructs of the HBM are as follows

**Perceived Threat:** Consists of two parts: perceived susceptibility and perceived severity of a health condition.

1. **Perceived Susceptibility:** One's subjective perception of the risk of contracting a health condition.

2. **Perceived Severity:** Feelings concerning the seriousness of contracting an illness or of leaving it untreated (including evaluations of both medical and clinical consequences and possible social consequences).

3. **Perceived Benefits:** The believed effectiveness of strategies designed to reduce the threat of illness.

4. **Perceived Barriers:** The potential negative consequences that may result from taking particular health actions, including physical, psychological, and financial demands.

5. **Cues to Action:** Events, either bodily (e.g., physical symptoms of a health condition) or environmental (e.g., media publicity) that motivate people to take action. Cues to actions is an aspect of the HBM that has not been systematically studied.

6. **Other Variables:** Diverse demographic, sociopsychological, and structural variables that affect an individual's perceptions and thus indirectly influence health-related behaviour.
7. **Self-Efficacy**: The belief in being able to successfully execute the behaviour required to produce the desired outcomes. (This concept was introduced by Bandura in 1977.)

<table>
<thead>
<tr>
<th>Concept</th>
<th>Definition</th>
<th>Application</th>
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</thead>
<tbody>
<tr>
<td>Perceived</td>
<td>One's opinion of chances of getting a condition</td>
<td>Define population(s) at risk, risk levels.</td>
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<tr>
<td>Susceptibility</td>
<td></td>
<td>Personalise risk information based on a person's features or behaviour.</td>
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<td></td>
<td></td>
<td>Heighten or help the individual develop an accurate perceived susceptibility if too low.</td>
</tr>
<tr>
<td>Perceived</td>
<td>One's opinion of how serious a condition and its sequelae are</td>
<td>Specify consequences of the risk and the condition.</td>
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<tr>
<td>Severity</td>
<td></td>
<td>Specify consequences of the recommended action.</td>
</tr>
<tr>
<td>Perceived</td>
<td>One's opinion of the efficacy of the advised action to reduce risk or</td>
<td>Define action to take: how, where, when; clarify the positive effects to be expected.</td>
</tr>
<tr>
<td>Benefits</td>
<td>seriousness of impact</td>
<td></td>
</tr>
<tr>
<td>Perceived</td>
<td>One's opinion of the tangible and psychological costs of the advised</td>
<td>Identify and reduce barriers through reassurance, incentives, assistance Correct mis-information.</td>
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<td>Barriers</td>
<td>action</td>
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| Source: Glanz et al, 2002, p. 52

Cues to Action: Strategies to activate 'readiness'
- Provide how-to information
- Promote awareness
- Use reminders

Self-Efficacy: Confidence in one's ability to take action
- Provide training, guidance in performing action
- Use progressive goal setting
- Give verbal reinforcement
- Demonstrate desired behaviours
2.11.2 Example of the application of HBM to control of Hypertension

High blood pressure screening campaigns often identify people who are at high risk for heart disease and stroke, but who say they have not experienced any symptoms. Because they don’t feel sick, they may not follow instructions to take prescribed medicine or lose weight. The HBM can be useful for developing strategies to deal with noncompliance in such situations.100-102
According to the HBM, asymptomatic people may not follow a prescribed treatment regimen unless they accept that, though they have no symptoms, they do in fact have hypertension (perceived susceptibility). They must understand that hypertension can lead to heart attacks and strokes (perceived severity). Taking prescribed medication or following a recommended weight loss program will reduce the risks (perceived benefits) without negative side effects or excessive difficulty (perceived barriers). Print materials, reminder letters, or pill calendars might encourage people to consistently follow their doctors’ recommendations (cues to action). For those who have, in the past, had a hard time losing weight or maintaining weight loss, a behavioural contract might help establish achievable, short-term goals to build confidence (self-efficacy). 100-102

2.11.3 Core Assumptions of Health Belief Model

The HBM is based on the understanding that a person will take a health-related action (For example use condoms) if that person:

1. feels that a negative health condition (For example HIV) can be avoided,

2. has a positive expectation that by taking a recommended action, he/she will avoid a negative health condition (For example using condoms will be effective at preventing HIV), and
3. believes that he/she can successfully take a recommended health action (For example he/she can use condoms comfortably and with confidence). 100-102

2.11.4 Major Authors who have applied health belief model

Pooya et al in his work on the effect of Zinc and ‘Health Belief Model’ Based Education on Common Cold Prevention in Soldiers applied the Health Belief Model. This was published in the American Journal of Infectious Diseases. 103 Hazavehel et al in their work titled: Application of Health Belief Model for Osteoporosis Prevention among Middle School Girl Students, Garmsar, Iran also worked with the Health Belief Model. This work was published in Education for Health in 2007. 104

Lennon JL also applied the HBM in his work titled: The use of Health Belief Model in Dengue Health Education. This work was published in Dengue Bulletin in year 2005. 105 Larsson M et al also used the HBM in their work titled: Emergency contraceptive pills in Sweden: evaluation of an information campaign using Health Belief Model. This work was published in International Journal of Obstetrics and Gynecology in 2004. 106

VanLandingham J et al also applied the HBM in their work titled: Two views of risky sexual practices among Northern Thai males: The Health Belief Model and the Theory of Reasoned Action. This was published in the Journal of Health and Social Behavior in the year 1995. 107 Rosenstock I et al also applied the HBM in their
research titled The Health Belief Model and HIV risk behavior change. DiClemente RJ et al also applied the HBM in their work Preventing AIDS: Theories and Methods of Behavioral Interventions. This was published in New York in 1994. Other authors that used the HBM are Brown LK, DiClemente RJ, and Reynolds LA. They used the model in their research titled: HIV prevention for adolescents: Utility of the Health Belief Model. This research was published in AIDS Education and Prevention in 1991.

2.11.5 Application of one of the Authors who have applied health belief model to various aspects of the research.

Hazavehel SM, Taghdisi MH, and Saidi M applied the HBM to their research titled: Application of Health Belief Model for Osteoporosis Prevention among Middle School Girl Students, Garmsar, Iran. This was published in Education for Health 2007; 20(1): 1-11. In the design of their study they applied the construct of perceived susceptibility to students' belief that they are susceptible to osteoporosis when they have an inactive lifestyle.

They applied the construct of Perceived Severity of osteoporosis to Knowledge and beliefs of the consequences of having osteoporosis, including bone fractures and disability. They also applied cues to action as Advice from family members and friends, encouragement of students by teachers, and group discussion and workshops on the subject of osteoporosis. Perceived Benefits and Barriers was also applied by focusing on Improvement of musculoskeletal strength, the possession of good self-
esteem and a sense of well being, and prevention of low back pain and obesity. They also applied taking of health actions Increasing nutritional intake of calcium, engaging in routine physical activity, and ensuring that there is sufficient routine exposure to sunlight to prevent osteoporosis.

These constructs in HBM was also applied to their health education intervention. During a two-week period, students in HBM intervention Group received two one-hour-long educational intervention sessions based on the HBM conceptual framework process. According to this model, the health education planning included goals and objectives based on: Individual Perceptions (perceived susceptibility and severity); Modifying Factors (perceived threat and cues to action); and Likelihood of Action (perceived benefits and barriers and taking health action) that influenced osteoporosis preventive behaviour among the students (Becker, 1974).

The educational methods used included short lectures, slide shows, group discussion and role-playing activities designed by the investigators and school administrators. In order to create a teachable moment and a "perceived threat", a 42 year-old female volunteer with osteoporosis, who had experienced 2 bone fractures as a result of the disease, participated in the group discussion. She described her unhealthy habits related to nutrition and physical activity that might have contributed to her condition. The teaching materials (a poster, a booklet, and a pamphlet) were based on the pre-test data analysis of the students’ needs.

They also determined reliability and validity. The reliability test-retest coefficient on second-form students for the questionnaire was 0.77. The content validity of the
questionnaire was determined by a panel of reviewers consisting of college professors in health education. More so the design of their questionnaire, HBM was applied. Nineteen (19) multiple choice questions were used to assess students' knowledge. Fourteen (14) items were used to assess the students' perceived threat, that is, their perceived susceptibility to having osteoporosis and their perception of the severity of the condition. Response options were "absolutely yes", "no", and "do not know.

To assess the students’ perceptions of benefits and barriers students were asked to respond to 23 items. Response options were “yes” and “no”. The students' behaviour (taking health action) related to the osteoporosis prevention was assessed using 3 items (physical activity, intake of milk products, amount of exposure to sun. The criteria for taking health action were as follows: physical activities of 20 to 30 minutes duration, more than three times a week; drinking more than 2 glasses of milk or its products (daily calcium intake more that 1300 mg) per day by report; and experiencing more than 15 to 30 minute daily of direct exposure to the sun.

The result of this study showed that a health education program based on the HBM appeared to have been effective in changing the behaviors of female adolescents to reduce risk for osteoporosis. The results of the study showed that prior to the intervention, all elements of HBM were below average in the study and control groups. After the intervention, students in study group showed significant improvement for all three types of behavior assessed, while students in the control group showed no improvement. This supports the hypothesis that a health education program based on the HBM combined with non-traditional pedagogic methods for
teaching, can be effective in promoting the adoption of behaviors by adolescent girls to prevent osteoporosis.
CHAPTER THREE: METHODOLOGY

3.1 DESCRIPTION OF THE STUDY AREA

Ilorin, the capital city of Kwara State is strategically located at the geographical and cultural confluence of the North and South. Its “middle belt” position and relative ease of access are definite assets. Located on the longitude $4^0\ 35'E$ and latitude $8^0\ 3'N$, it is situated about 302 kilometers north of Lagos, 602 kilometers south of Kaduna and about 475 kilometers south of Abuja, Nigeria’s capital.\(^{110}\)

The major ethnic group in the metropolis is the Yoruba tribe. Others are the Nupes, Barubas, Gobiris, Igbos, Igalas and Gambaris. Ilorin became the capital of Kwara State in 1967 following the creation of 12 states (the number has since increased to 36 states with a Federal Capital Territory). Prior to that, Ilorin had indigenous occupations that included farming, pottery, weaving, leatherwork and embroidery.

The city has grown substantially since becoming a state capital and additional employment opportunities have opened up in Federal and State Agencies (including a University, Polytechnic, College of Education, Federal Government College, a Specialist Hospital as well as a Teaching Hospital). There are a few additional private companies that employ people. There are also various forms of artisans practicing their vocational trades. These include tailors, hairdressers, panel beaters, battery chargers, motor mechanics, barbers, printers, carpenters, bricklayers, furniture makers etc.
Ilorin can now be described as an emerging modern city with a diverse population. It has many social groups based on religious, political and ethnic inclination. Currently, the population of the city based on a projection from the 2006 census and annual population growth rate of 3.2% is 854,737. Ilorin is made up of three local government areas viz: Ilorin East, Ilorin West and Ilorin South with their headquarters at Oke-Oyi, Oja-Oba and Fufu respectively. Within the metropolis, there are many primary and secondary health institutions but two tertiary health institutions namely the University of Ilorin Teaching Hospital and Sobi Specialist Hospital. There are many private health facilities scattered all over the city.

The study was carried out in Ilorin metropolis. There are 53 public secondary schools within the 3 LGAs distributed as follows: Ilorin East – 22, Ilorin West – 17 and Ilorin South – 14. There are 47 mixed schools, 4 female only schools and 2 male only schools. Currently, the projected population based on 2006 census and annual population growth rate of 3.2% is 854,537. An estimated population of adolescents is 153,853 which is 18% of total population.

### 3.2 STUDY POPULATION

The study group consisted of students of three schools that were selected using simple random sampling from one of the LGAs in Ilorin. The control group consisted of students of three schools selected using simple random sampling from one of the remaining two LGAs. The selected Local Governments were similar as both were urban LGAs. Subsets of students from the selected study schools were used for the Focus Group Discussions. There
were 4 FGD sessions, two for the male respondents and the other two for the females. Only students aged 10-19 years as at the time of the study were included in the study.

3.3.1 INCLUSION CRITERIA
Students aged 10 to 19 years as at the time of the study were included in the study. Students who were in JSS 2, JSS 3, SSS 1 and SSS 2 were included in the study. This is to ensure that students with less than six months to the completion of studies were excluded and students must have been enrolled for at least a session to be included in the study.

3.3.2 EXCLUSION CRITERIA
Students younger than 10 years or older than 19 years as at the time of the study were excluded from the pre- and post-intervention assessment but were allowed to benefit from the intervention. Students with less than six months to the completion of studies were excluded and students must have been enrolled for at least a session to be included in the study.

3.4 ADVOCACY AND COMMUNITY PENETRATION
A letter of introduction requesting for permission to carry out the study was obtained from the Department of Epidemiology and Community Health of the University of Ilorin Teaching Hospital to the respective Principals of the schools in the study area. Their cooperation and permission in allowing their students to participate in the study was solicited and the purpose and benefits of the project was explained to them. The purpose of the study as well as its inherent benefits was also explained. The parents’ teachers’ association
of each school was consulted and the purpose and benefits of the research explained to them. There was also advocacy visit to the state ministry of Education to get their support for the research before embarking on it.

3.5 STUDY DESIGN
The study was a quasi-experimental study carried out in 3 stages viz: Pre intervention, Intervention and Post-intervention. It was designed to assess the effectiveness of health education on knowledge and use of emergency contraception among the study group. For the purpose of this study, emergency contraception referred to modern methods of use of estrogen and progestin – containing pills (combined emergency contraceptive pills) or levornogestrol - only pills (progestin – only emergency contraceptive pills). In the pre-intervention stage, pre-tested questionnaires were administered to both the study and control groups to generate quantitative data. Focus group discussions were also carried out to obtain qualitative data among the study group.

In the intervention stage, respondents in the study group were given health education sessions consisting of lectures, film show and distribution of IEC materials. At the post-intervention stage, the same questionnaire used in the pre-intervention stage was administered again to the study and control groups to determine the effect of the health education on knowledge and use of emergency contraceptives among the study group. Post-intervention data were collected after 4 months.

3.5.1. Pre-intervention:
A cross-sectional survey was carried out using pre-tested semi-structured questionnaire to provide baseline quantitative information on the socio demographic characteristics,
knowledge and use of emergency contraceptive among the study and control groups. The questionnaires were self–administered. The questionnaires were distributed by trained Research Assistants in Ilorin East and Ilorin South LGAs which will be the study and control LGAs respectively.

Four FGD sessions were conducted by the researcher with the help of two research assistants who were also responsible for note taking and audio recording. There was a session for the male students and another for the female students. Ten participants took part in each FGD session and each session lasted for about 60 minutes.

3.5.2. Intervention:

The intervention consisted of providing information and teaching to the students who were recruited to participate in the research on emergency contraception and various issues of reproductive health. The intervention was carried out once a week for a total of 4 weeks and it was carried out by the researcher. It involved health talks, film shows and demonstrations on EC with question and answer sessions. The intervention was carried out in a conducive environment. The school halls were used for the HEI. (To manage ethical issues, the HEI was given to all other students at the end of the research)

Various IEC materials including leaflets, booklets, posters and handbills about EC were distributed to participants. The IEC materials were obtained from the Society for Family Health, Lagos. Three health talk sessions were carried out with each lasting for about 45 minutes to 1 hour. At the end of each health talk session, the respondents were allowed to ask questions with the researcher providing answers to such questions. Health education was conducted in each of the schools in the study group.
An educational film titled “slope” was shown to the study group during the intervention period. The film lasted for about 45 minutes and dwelt on the dangers of illicit and unprotected sexual intercourse as it affects the lives of in-school adolescents. It was obtained from the Association for Reproductive and Family Health (ARFH), Ibadan who produced the film.

**The topics that were covered during the teaching sessions include:**

1. Anatomy and physiology of their bodies.
2. Contraception and prevention of unintended pregnancies with special emphasis on emergency contraception.
3. Sexually transmitted infections (STIs) including Human Immunodeficiency Virus (HIV).
4. Encouraging the students to consider their actions when taking decisions and to consider the consequences of their decisions.
5. Risky sexual behavior and consequences of such action.
6. Knowledge on Emergency Contraception

### 3.5.3.1. Pilot Testing of the health education tools

There was pilot testing of the health education tools in the secondary school where pre-test for the instrument was done. This was done in Afon, Asa LGA about 20Km from any of the study and control schools.

### 3.5.3.2. Standardization of the intervention elements (information and teaching)
The health information, messages and teaching followed the Health Belief Model (HBM) constructs. This involved perceived threats, perceived susceptibility, perceived benefits and perceived barriers. The Godfrey Hauchbaun Paradigm of Awareness, Knowledge, Understanding, Beliefs, Attitude, and Health Habits was used. Health information included specific actions in them hence were delivered as health messages and not just health information. Verbal and non-verbal communication media were used.

3.5.4. Post-intervention Stage

All students who participated in the intervention package were followed up for post-intervention assessment in the study LGA. A similar reassessment was carried out in the control LGA which, however, did not benefit from the intervention. This was to compare the effects of health education if any on knowledge and use of emergency contraceptives. The time interval between intervention and post-intervention was 4 months.

A period of four months was selected because of the frequency of exposure to sexual intercourse. Adolescent sexual activity is usually highest during the holidays and 4 months would have allowed a holiday to be in between the intervention and post-intervention period. The same students sampled at the pre-intervention were followed up at post-intervention. The post intervention survey questionnaires were distributed by the same trained research assistants.
### 3.6 SAMPLE SIZE DETERMINATION

The formula for estimating the minimum sample size in comparison of two proportions was used: \(^{111}\)

Minimum Sample Size: \( n = \frac{(U + V)^2 (P_1(100-P_1) + P_2(100-P_2))}{(P_2 - P_1)^2} \)

Where \( n \) = minimum sample size.

\( P_1 \) = Proportion of adolescents (10 – 19 yrs) exhibiting correct Knowledge about Emergency Contraception =36% \(^{84}\)

\( P_2 \) = Proportion of adolescents (10 – 19 yrs) exhibiting correct Knowledge about Emergency Contraception after health education intervention =51%

\( U \) = Probability of finding a significant result = 0.84.

\( V \) = Level of significance = 1.96.

\( n = \frac{(1.96+0.84)^2[36(100-36) + 51(100-51)]}{(51-36)^2} \)

\( n = \frac{7.84 (2304+2499)}{171.61} \)
\( n = 219.42 \)

To compensate for anticipated non-response of 5%, the sample size was calculated as follows using the formula \(^{20}\)

\( N_s = \frac{N}{0.95} \)

\( N_s \) = Sample Size to compensate for non-response rate

0.95 = Taken that 95% response rate is anticipated

\( N_s = 219.45 \)

\( N_s = 231 \)

However a total of 273 (study group) and 254 (control group) were surveyed on the field
3.6.1. Minimum Sample Size for Change in Usage of Emergency Contraception

The formula for estimating the minimum sample size in comparison of two proportions was used: 94

Minimum Sample Size: \( n = \frac{(U + V)^2 (P_1(100-P_1) + P_2(100-P_2))}{(P_2 - P_1)^2} \)

Where \( n \) = minimum sample size.

\( P_1 = \) Proportion of adolescents (10 – 19 yrs) using Emergency Contraception = 2% 11

\( P_2 = \) Proportion of adolescents (10 – 19 yrs) using Emergency Contraception after health education intervention = 17%

\( U = \) Probability of finding a significant result which is the power of the study = 0.84.

\( V = \) Level of significance which is the percentage of the normal distribution corresponding to the two sided significance level = 1.96 at 5% significance level.

\( n = \frac{(1.96 + 0.84)^2 |2(100-2) + 17(100-17)|}{(17-2)^2} \)

\( n = \frac{7.84 (1607)}{225} \)

\( n = 56 \)

To compensate for anticipated non-response of 5%, the sample size was calculated as follows using the formula 20

\( N_s = \frac{N}{0.95} \)

\( N = \) Calculated Sample Size

\( N_s = \) Sample Size to compensate for non-response rate

0.95 = Taken that 95% response rate is anticipated

\( N_s = \frac{56}{0.95} \)

\( N_s = 59 \)
Since the minimum sample size required for knowledge change (231) is higher than that required for use change (59), the higher minimum sample size of 231 was used for this research approximated to 273 in the study and 254 in the control group.

3.7 SAMPLING TECHNIQUE

Multi-stage sampling method was applied to select respondents.

Stage 1: Selection of 2 urban out of the 3 urban LGAs in Ilorin metropolis

The list of all public schools in the 3 Local Government Areas (LGAs) was obtained from the State Ministry of Education. Selection of one LGA for the study and another LGA for control by simple random technique was done using simple balloting without replacement.

Stage 2: Selection of 3 schools each in the 2 selected LGAs above

In each LGA, three schools were selected by simple random sampling technique. This gave 3 schools in each of the two selected LGAs i.e. 3 schools for the study and 3 schools for the control. Sample sizes \( n_1, n_2 \) and \( n_3 \) respectively from each study school was determined as follows for study group.

\[
\begin{align*}
  n_1 &= \frac{273 \times N_1}{N_1 + N_2 + N_3} \\
  n_2 &= \frac{273 \times N_2}{N_1 + N_2 + N_3} \\
  n_3 &= \frac{273 \times N_3}{N_1 + N_2 + N_3}
\end{align*}
\]

- \( N_1 \) = Population of School 1
- \( N_2 \) = Population of School 2
- \( N_3 \) = Population of School 3

Sample sizes \( n_1, n_2 \) and \( n_3 \) respectively from each study school was determined as follows for control group.
Sample size from each control school was determined above using 273 (study) and 254 (control) as the total. (The minimum sample size calculated was 231).

In each school, sample size calculated for that school was divided proportionately among the four levels i.e. JSS2 – SSS2

**Stage 3: Selection of one arm of each class using simple random sampling**

One of the arms at each class level was selected using simple random technique. Students were recruited from the selected arm.

**Stage 4: Selection of participants from arm using Systematic random sampling**

Using the nominal roll, the required number of respondents in each arm was selected by systematic sampling technique. The sampling interval was determined by dividing the total population of each arm with the sample size desired from that arm. The starting point was determined by simple random sampling using a table of random numbers. The same was applied to all the arms. Where a respondent refuses to participate, the next person on the sampling frame was enlisted until the desired size for that arm is attained.

**3.8 RESEARCH INSTRUMENT**

An FGD guide and Self-Administered Semi-Structured Questionnaires adapted along the Health Belief Model Constructs and other previous researches were used for the study. The
questionnaire contained questions to elicit the respondent’s socio-demographic characteristics, their knowledge and use of emergency contraceptives.

3.9 INDICATORS TO BE MEASURED

1. Proportion of students with correct knowledge about emergency contraception
2. Proportion of students that are sexually active
3. Proportion of students who use emergency contraception
4. Percentage change in proportion of students with correct knowledge about emergency contraceptives
5. Percentage change in proportion of students who practice use of emergency contraception

3.9.1 Independent Variables

1. Age
2. Sex
3. Father’s level of education
4. Mother’s level of education
5. Religion
6. Tribe
7. Type of family
8. Class in school
9. Marital status of parents

3.9.2 Outcome/Dependent Variables
1. Knowledge of Susceptibility to adolescent pregnancy
2. Knowledge of Severity of the effect of adolescent pregnancy
3. Knowledge of Benefits of Emergency Contraception
4. Knowledge of Barrier to use of Emergency Contraception.
5. Correct knowledge of emergency contraception
6. Usage of emergency contraception

3.10 PRE-TESTING OF INSTRUMENT
The questionnaire was pre-tested on students of another public secondary school other than the study and controls schools in order to see its logical sequence, inconsistencies (if any) and make necessary amendments before it was administered to the respondents. This was carried out in a public secondary school in Afon, Asa LGA which is located about 20 kilometers away from Ilorin metropolis.

3.11 PROTECTING RELIABILITY AND VALIDITY
The reliability of the instrument was guaranteed by a test-retest method prior to the study. The correlation result was 0.8. Questionnaires were administered to 10% of the sample size in another school. This was repeated among same subjects in one week and the correlation coefficient computed. In addition to the foregoing, methodological triangulation was done with two separate research assistant using same questionnaire to interview the same respondent. The findings were then compared.
The content validity of the questionnaire was determined by a panel of consultants and a health education expert in the department of Epidemiology and Community Health, University of Ilorin Teaching Hospital, Ilorin.

3.12 CORE ASSUMPTIONS OF HEALTH BELIEF MODEL
The HBM is based on the understanding that a person will take a health-related action when he/she:

1. feels that a negative health condition can be avoided,
2. has a positive expectation that by taking a recommended action, he/she will avoid a negative health condition and
3. believes that he/she can successfully take a recommended health action

3.13 DATA COLLECTION AND ANALYSIS
Data collation and editing were done manually to detect omission and ensure uniform coding. Subsequently the data were fed into an IBM computer for statistical analysis. Statistical Package for Social Sciences (SPSS) software version 21.0 was used to generate frequency tables and percentages. Two stage analysis was done; analysis of the pre-intervention questionnaires and the post-intervention questionnaires.

During the analysis, the 3 schools in the control group were collapsed into one control group. The 3 groups in the study group were also collapsed into one study group. The rationale for the collapse is because the three schools are all similar in being public
schools. The results were displayed in tables and charts. Cross tabulation of variables was also done.

Chi-squared test was used to test for significant associations between variables that were nominal. Yates’ chi square was used when an expected cell contained less than 5 respondents in 20% of the cells. Students’ t test was used to test between two means if there was statistical significance while ANOVA was used to test if there was significant difference when more than 2 means were involved. A p-value of less than 0.05 was considered as statistically significant.

### 3.13.1 Scoring for Knowledge during analysis

During analysis, knowledge was scored. Five sections of the questionnaire using the Health Belief Construct added up to the score of the knowledge. They are Knowledge of susceptibility to sexual activity and pregnancy, knowledge of severity of pregnancy as an adolescent, knowledge of benefit of use of emergency contraceptive, and knowledge of barrier to the use of emergency contraceptive. In addition to these four sections, knowledge about side effects, correct time frame and other important aspects were all added together. Correct knowledge in each variable was scored one while incorrect knowledge/do not know was scored zero. The maximum score an individual can have was 55 while the minimum score was 0. All the respondents who were not aware about EC scored zero and were analyzed in the group that had zero as part of it. These scoring consisted of questions 13 to 45 in the questionnaire.
This range of score (0-55) was further divided into three equal groups. Those that fell within 0-17 were termed to have poor knowledge, while those that fell within the category of 18-35 were termed to have fair knowledge while those that fell within the category of 36-55 were termed to have good knowledge. This application of general knowledge score was used in Tables 7 as a frequency table. It was applied in Table 17 which was a cross-tabulation between Knowledge score and history of use of EC. It was also applied in Table 21 which elucidated the effect of Health Education intervention on the knowledge score pre and post-intervention.

Knowledge was further scored along the 4 main Health Belief Model constructs. Knowledge of susceptibility to sexual activity and pregnancy consisted of questions 13 to 20 in the questionnaire. There are 8 questions. The minimum score was 0 while the maximum score was 8. This was equally divided into Poor knowledge (0-2), fair knowledge (3-5), and good knowledge (6-8). This was applied in Tables 18 and 22.

Knowledge of severity of effects of pregnancy on adolescents consisted of questions 21 to 31 in the questionnaire. There are 11 questions. The minimum score was 0 while the maximum score was 11. This was equally divided into Poor knowledge (0-3), fair knowledge (4-7), and good knowledge (8-11). This was applied in Tables 18 and 22.

Knowledge of benefits of use of EC on adolescents consisted of questions 32-34 in the questionnaire. There are 3 questions. The minimum score was 0 while the maximum score was 4. This was equally divided into Poor knowledge (0-1), and good knowledge (2-3). This was applied in Tables 19 and 23.

Knowledge of barriers to the use of EC consisted of questions 35-36 in the questionnaire. There are 2 questions. The minimum score was 0 while the maximum
score was 2. Respondents that scored zero were termed to have poor knowledge, 1 was termed fair knowledge while 2 was termed good knowledge. This was applied in Tables 19 and 23.

3. 14 ETHICAL ISSUES

Ethical approval for the study was obtained from the ethical committee of University of Ilorin Teaching Hospital, Ilorin as well as approval from the Kwara State Schools Management Board and Ministry of Education. Written Informed consent was sought from the respondents that were aged 18 and above and they were assured of confidentiality at every stage of the study. (Written informed consent from parents and guardian was sou obtained for students less than the age of 18 years at the time of the study) Also their teachers were not allowed to be present at collection of pre and post intervention data. For ethical reasons, the control group also benefitted from health education sessions after collection of post-intervention data.

3.14.1 Managing parent/guardian consent

The consent of the parent-teacher association was also sought as part of the advocacy process. In addition to this, a letter of introduction and consent was sent to the parents/guardians of respondents through their wards a week before the research among the study group seeking parental/guardian consent. The letter explained the benefits of the study, the participation status, confidentiality and what is expected of their wards if they choose to participate.
3.15 LIMITATION OF THE STUDY

1. Concurrent health education of the respondents both study and control groups on issues relating to reproductive health during the time of the study from other sources (e.g. mass media) cannot be prevented.

2. Discussions on reproductive health issues in this environment are seen as sensitive issues hence responses may be somewhat inhibited. In other to counter this limitation, the students were assured of confidentiality at every stage of the research.

3. Male students were asked about the pregnancy history of their sexual partners.

This could affect the accuracy of the pregnancy rate quoted in this study.
CHAPTER 4: RESULTS

At pre-intervention phase, 273 students were recruited into the study group while 254 students were recruited into the control group. Same respondents were interviewed at the post-intervention stage. In the study group however, the number of respondents that were found to be interviewed were 269 giving an attrition rate of 1.5%. In the control group, the number of students that were found to be interviewed was 251 giving an attrition rate of 1.2%.

Various reasons were given for the students that we did not find at post-intervention. Some of them had re-located, some had changed school, some traveled at the period of the study while one of them was said to be sick and hospitalized.
SECTION A: SOCIO – DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Table 1: Age, Sex and Religion of Respondents

<table>
<thead>
<tr>
<th>Socio-demographics</th>
<th>Study Frequency (%)</th>
<th>Control Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=273</td>
<td>N=254</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-14 (Early)</td>
<td>138 (50.5)</td>
<td>124 (48.2)</td>
</tr>
<tr>
<td>15-19 (Late)</td>
<td>135 (49.5)</td>
<td>130 (51.2)</td>
</tr>
<tr>
<td>$X^2=0.158$</td>
<td>p =0.690</td>
<td></td>
</tr>
<tr>
<td>Mean Age</td>
<td>14.52 ± 1.86</td>
<td>14.61 ± 1.75</td>
</tr>
<tr>
<td>Student t = 0.571</td>
<td>p = 0.568</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>136 (49.8)</td>
<td>124 (48.8)</td>
</tr>
<tr>
<td>Female</td>
<td>137 (50.2)</td>
<td>130 (51.2)</td>
</tr>
<tr>
<td>$X^2 = 0.052$</td>
<td>p =0.819</td>
<td></td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christian</td>
<td>127 (46.5)</td>
<td>130 (51.2)</td>
</tr>
<tr>
<td>Islam</td>
<td>146 (53.5)</td>
<td>124 (48.8)</td>
</tr>
<tr>
<td>$X^2 = 1.144$</td>
<td>p = 0.285</td>
<td></td>
</tr>
</tbody>
</table>
Early adolescents aged 10 -13 years age group accounted for about half of the sample study in the study and control groups. The proportion of female respondents was slightly higher in both study (50.2%) and control (51.2%) groups. There were more Moslem respondents (53.3%) in the study group and more Christians in the control group (51.2%). In terms of age, sex and religion, there was no statistically significant difference between the study and control groups (p=0.690, 0.819, 0.285 respectively).
<table>
<thead>
<tr>
<th>Tribe &amp; Class</th>
<th>Study Frequency (%)</th>
<th>Control Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=273</td>
<td>N=254</td>
</tr>
<tr>
<td>Tribe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yoruba</td>
<td>169 (61.9)</td>
<td>164 (64.6)</td>
</tr>
<tr>
<td>Hausa</td>
<td>58 (21.2)</td>
<td>49 (19.3)</td>
</tr>
<tr>
<td>Igbo</td>
<td>16 (5.9)</td>
<td>21 (8.3)</td>
</tr>
<tr>
<td>Others</td>
<td>30 (11.0)</td>
<td>20 (7.8)</td>
</tr>
<tr>
<td>(X^2 = 2.826)</td>
<td>(p = 0.419)</td>
<td></td>
</tr>
<tr>
<td>Class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JSS 2</td>
<td>61 (22.3)</td>
<td>53 (20.9)</td>
</tr>
<tr>
<td>JSS3</td>
<td>38 (13.9)</td>
<td>42 (16.5)</td>
</tr>
<tr>
<td>SSS1</td>
<td>99 (36.3)</td>
<td>89 (35.0)</td>
</tr>
<tr>
<td>SSS2</td>
<td>75 (27.5)</td>
<td>70 (27.6)</td>
</tr>
<tr>
<td>(X^2 = 0.782)</td>
<td>(p = 0.854)</td>
<td></td>
</tr>
</tbody>
</table>

More respondents belonged to the Yoruba tribe than any other with 61.9% and 64.6% in the study and control groups respectively while students in SS1 accounted for the highest proportion of respondents in the study (36.3%) and control groups (35.0%) respectively. There was also no statistically significant difference in the tribe (\(p=0.42\)) and class (\(P= 0.85\)) of the study and control respondents.
Table 3: Parents’ Level of Education and marital status

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level of Education &amp; Marital status</strong></td>
<td>N=273</td>
<td>N=254</td>
</tr>
<tr>
<td><strong>Mother’s Level of Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>12 (4.4)</td>
<td>14 (5.5)</td>
</tr>
<tr>
<td>Primary</td>
<td>12 (4.4)</td>
<td>10 (3.9)</td>
</tr>
<tr>
<td>Secondary</td>
<td>111 (40.7)</td>
<td>76 (30.0)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>138 (50.5)</td>
<td>154 (60.6)</td>
</tr>
<tr>
<td><strong>X² = 7.087</strong></td>
<td>p = 0.069</td>
<td></td>
</tr>
<tr>
<td><strong>Father’s Level of Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>13 (4.7)</td>
<td>9 (3.5)</td>
</tr>
<tr>
<td>Primary</td>
<td>4 (1.5)</td>
<td>11 (4.3)</td>
</tr>
<tr>
<td>Secondary</td>
<td>77 (28.2)</td>
<td>64 (25.3)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>179 (65.6)</td>
<td>170 (66.9)</td>
</tr>
<tr>
<td><strong>X² = 4.746</strong></td>
<td>p = 0.191</td>
<td></td>
</tr>
<tr>
<td><strong>Marital Status of Parents</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>242 (88.6)</td>
<td>216 (85.0)</td>
</tr>
<tr>
<td>Divorced/Separated</td>
<td>19 (7.0)</td>
<td>23 (9.1)</td>
</tr>
<tr>
<td>Widowed</td>
<td>12 (4.4)</td>
<td>15 (5.9)</td>
</tr>
<tr>
<td><strong>X² = 1.507</strong></td>
<td>p = 0.471</td>
<td></td>
</tr>
</tbody>
</table>
More of the respondents in the study and control groups had mothers with tertiary education (50.5% and 60.6% respectively). Likewise, more of the respondents in the study and control groups had fathers with tertiary education (65.6% and 66.9% respectively). About 7.0% and 9.1% respectively had parents who were divorced/separated in the study and control groups respectively.
Figure 1: Marital status of parents (Study)

Most parents of respondents had a monogamous marriage while 90 (33.0%) had a polygamous marriage.
Figure 2: Marital status of parents (Control)

Most parents of respondents had a monogamous marriage while a few 56 (22.0%) had a polygamous marriage
SECTION B: SEXUAL ACTIVITY, CONTRACEPTION AND PREGNANCY

Table 4: Sexual Activity among Respondents

<table>
<thead>
<tr>
<th>Sexual Activity</th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever had Sexual Intercourse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>81 (29.7)</td>
<td>78 (30.7)</td>
</tr>
<tr>
<td>No</td>
<td>192 (70.3)</td>
<td>176 (69.3)</td>
</tr>
<tr>
<td>Total</td>
<td>273 (100.0)</td>
<td>254 (100.0)</td>
</tr>
<tr>
<td>$X^2 = 0.067$</td>
<td>$p = 0.796$</td>
<td></td>
</tr>
<tr>
<td>Times engaged in sexual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>intercourse in past 3 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 – 2</td>
<td>23 (28.4)</td>
<td>46 (59.0)</td>
</tr>
<tr>
<td>$\geq 3$</td>
<td>58 (71.6)</td>
<td>32 (41.0)</td>
</tr>
<tr>
<td>Total</td>
<td>81 (100.0)</td>
<td>78 (100.0)</td>
</tr>
<tr>
<td>$X^2 = 15.127$</td>
<td>$p = 0.000$</td>
<td></td>
</tr>
<tr>
<td>Mean times engaged in sex</td>
<td>2.30±1.346</td>
<td>1.90±2.111</td>
</tr>
<tr>
<td>in the past 3 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student $t = 1.430$</td>
<td>$p = 0.155$</td>
<td></td>
</tr>
<tr>
<td>Number of sexual partners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>since sexual initiation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 – 2</td>
<td>68 (84.0)</td>
<td>61 (78.2)</td>
</tr>
<tr>
<td>$\geq 3$</td>
<td>13 (16.0)</td>
<td>17 (21.8)</td>
</tr>
<tr>
<td>Total</td>
<td>81 (100.0)</td>
<td>78 (100.0)</td>
</tr>
<tr>
<td>$X^2 = 0.860$</td>
<td>$p = 0.360$</td>
<td></td>
</tr>
<tr>
<td>Mean sexual partners since</td>
<td>1.67±0.676</td>
<td>2.11±1.260</td>
</tr>
<tr>
<td>sexual initiation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student $t = 1.676$</td>
<td>$p = 0.096$</td>
<td></td>
</tr>
</tbody>
</table>
About a third (29.7%) and 30.7% of the study and control respondents respectively had ever had sexual intercourse (p=0.80). While most (71.6%) of the respondents in the study group who had ever had sex engaged in sexual intercourse more than 3 times in the past 3 months, less than half (41.0%) of the respondents in the control group who had ever had sex engaged in sexual intercourse more than 3 times in the past 3 months (p= 0.00019). The mean number of times respondents in the study and control groups engaged in sexual intercourse in the past 3 months was 2.30±1.346 and 1.90±2.111 respectively.

Also, the number of sexual partners since sexual initiation was 1-2 for 84.0% and 78.2% of the study and control groups respectively while the mean number of sexual partners since sexual initiation was 1.67±0.676 and 2.11±1.260 for respondents in the study and control groups respectively (p= 0.092).
Table 5: History of Contraception Use and Type Used

<table>
<thead>
<tr>
<th>Use of Contraception</th>
<th>Study Frequency (Percentage)</th>
<th>Control Frequency (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ever used any form of Contraception</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>50 (61.7)</td>
<td>57 (73.1)</td>
</tr>
<tr>
<td>No</td>
<td>31 (38.3)</td>
<td>21 (26.9)</td>
</tr>
<tr>
<td>Total</td>
<td><strong>81 (100.0)</strong></td>
<td><strong>78 (100.0)</strong></td>
</tr>
<tr>
<td></td>
<td>X² = 2.325 p = 0.127</td>
<td></td>
</tr>
<tr>
<td><strong>Type Of Contraception Used</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condom</td>
<td>37 (74.0)</td>
<td>41 (71.9)</td>
</tr>
<tr>
<td>Oral contraceptive pills</td>
<td>5 (10.0)</td>
<td>7 (12.2)</td>
</tr>
<tr>
<td>Emergency contraception</td>
<td>35 (70.0)</td>
<td>37 (64.9)</td>
</tr>
<tr>
<td>Spermicide</td>
<td>5 (10.0)</td>
<td>9 (15.8)</td>
</tr>
<tr>
<td>Safe periods</td>
<td>19 (38.0)</td>
<td>15 (26.3)</td>
</tr>
<tr>
<td>Rhythm method</td>
<td>4 (8.0)</td>
<td>3 (5.3)</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>10 (2.0)</td>
<td>6 (10.5)</td>
</tr>
<tr>
<td></td>
<td>X² = 3.312 p = 0.769</td>
<td></td>
</tr>
</tbody>
</table>

*Multiple responses

Respondents who had used any form of contraception were 61.7% and 73.1% among the study and control groups respectively. Condoms were the most common type of contraceptive used, with study and control groups having 74.0% and 71.9% respectively amongst those that have ever had sexual intercourse. This was closely followed by use of EC.
Table 6: Pregnancy History and Outcome of Pregnancy

<table>
<thead>
<tr>
<th>Pregnancy History and Outcome</th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency (%)</td>
<td>Frequency (%)</td>
</tr>
<tr>
<td>*Ever been pregnant or before</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>12 (14.8)</td>
<td>19 (24.4)</td>
</tr>
<tr>
<td>No</td>
<td>69 (85.2)</td>
<td>59 (75.6)</td>
</tr>
<tr>
<td>Total</td>
<td>81 (100.0)</td>
<td>78 (100.0)</td>
</tr>
<tr>
<td>$X^2 = 2.306$</td>
<td></td>
<td>$P=0.129$</td>
</tr>
<tr>
<td>*Number of times been pregnant before</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>9 (75.0)</td>
<td>17 (89.5)</td>
</tr>
<tr>
<td>≥2</td>
<td>3 (25.0)</td>
<td>2 (10.5)</td>
</tr>
<tr>
<td>Total</td>
<td>12 (100.0)</td>
<td>19 (100.0)</td>
</tr>
<tr>
<td>Yates $X^2 = 0.320$</td>
<td>$p =0.572$</td>
<td></td>
</tr>
<tr>
<td>*Mean number of times been pregnant before</td>
<td>1.33±0.651</td>
<td>1.11±0.315</td>
</tr>
<tr>
<td>*Outcome of most recent pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abortion</td>
<td>11 (91.7)</td>
<td>16 (84.2)</td>
</tr>
<tr>
<td>Delivery</td>
<td>1 (8.3)</td>
<td>3 (15.8)</td>
</tr>
<tr>
<td>Total</td>
<td>12 (100.0)</td>
<td>19 (100.0)</td>
</tr>
<tr>
<td>Yates $X^2 = 0.003$</td>
<td>$p =0.956$</td>
<td></td>
</tr>
</tbody>
</table>

*Males were asked if ever impregnated someone before
Respondents who had ever been pregnant or impregnated someone before accounted for 14.8% and 24.4% among the study and control groups respectively. Those who had been pregnant or impregnated someone 2 or more times among the study and control groups were 25% and 10.5% respectively. While the outcome of those with recent pregnancy among the respondents showed 91.7% and 84.2% of the study and control groups respectively had an abortion.
Figure 3: Awareness about EC

Awareness of Emergency Contraception was similar among study and control group at baseline being 78.4% among the study and 79.9% among the control group.
Figure 4: Source of first Knowledge about EC (Study)

The major source of first knowledge about Emergency Contraception was health workers and hospitals in the study group. This was followed by the mass media (Television and Radio).
Figure 5: Source of first Knowledge about EC (Control)

The major source of first knowledge about Emergency Contraception was Television in the control group. This was followed by Radio. This underscores the importance of the mass media in disseminating health information especially on reproductive health issues.
Table 7: Knowledge about Emergency Contraception at Pre – Intervention

<table>
<thead>
<tr>
<th>Knowledge score</th>
<th>Study Frequency (%)</th>
<th>Control Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor (0-17)</td>
<td>59 (21.6)</td>
<td>52 (20.5)</td>
</tr>
<tr>
<td>Fair (18-35)</td>
<td>143 (52.4)</td>
<td>128 (50.4)</td>
</tr>
<tr>
<td>Good (36-55)</td>
<td>71 (26.0)</td>
<td>74 (29.1)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>273 (100.0)</strong></td>
<td><strong>254 (100.0)</strong></td>
</tr>
</tbody>
</table>

\[ X^2 = 0.650 \quad p = 0.723 \]

Mean Knowledge Score

- Study: 26.7 ± 14.4
- Control: 27.4 ± 14.1

Students’ t test = 0.563 \quad p = 0.574

Questions that assessed knowledge were scored and added together for each of the respondents. At the pre-intervention period the knowledge score was similar for both study and control group. Respondents with fair knowledge accounted for about half of all respondents in both groups.
Table 8: Knowledge of Indication, Time Frame and Side Effect of Emergency Contraception

<table>
<thead>
<tr>
<th></th>
<th>Study Frequency (%)</th>
<th>Control Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indication, time-frame &amp; side-effects of EC</td>
<td>N=273</td>
<td>N=254</td>
</tr>
<tr>
<td><strong>Most Important Indication</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect</td>
<td>66 (24.2)</td>
<td>116 (45.7)</td>
</tr>
<tr>
<td>Correct</td>
<td>207 (75.8)</td>
<td>138 (54.3)</td>
</tr>
<tr>
<td>(X^2 = 26.886)</td>
<td>(p = 0.000)</td>
<td></td>
</tr>
<tr>
<td><strong>Time Frame</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect</td>
<td>91 (33.3)</td>
<td>62 (24.4)</td>
</tr>
<tr>
<td>Correct</td>
<td>182 (66.7)</td>
<td>192 (75.6)</td>
</tr>
<tr>
<td>(X^2 = 5.086)</td>
<td>(p = 0.024)</td>
<td></td>
</tr>
<tr>
<td><strong>Side Effect</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect</td>
<td>75 (27.5)</td>
<td>90 (35.4)</td>
</tr>
<tr>
<td>Correct</td>
<td>198 (72.5)</td>
<td>164 (64.6)</td>
</tr>
<tr>
<td>(X^2 = 3.877)</td>
<td>(p = 0.049)</td>
<td></td>
</tr>
<tr>
<td><strong>What is EC</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect</td>
<td>71 (26.0)</td>
<td>45 (35.4)</td>
</tr>
<tr>
<td>Correct</td>
<td>202 (74.0)</td>
<td>209 (64.6)</td>
</tr>
<tr>
<td>(X^2 = 5.269)</td>
<td>(p = 0.022)</td>
<td></td>
</tr>
</tbody>
</table>

More of the respondents in the study (75.8%) than control (54.3%) groups had correct knowledge of most important indication of emergency contraception \((p = 0.000)\). Also more of both control group (75.6%) and study group (66.7%) respondents had correct knowledge of time frame of emergency contraception. Majority of the respondents had correct knowledge of side effect and what emergency contraception is.
SECTION D: USE OF EMERGENCY CONTRACEPTION AT PRE – INTERVENTION

Table 9: Respondents that ever used Emergency Contraception

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever used EC</td>
<td>Frequency (%)</td>
<td>Frequency (%)</td>
</tr>
<tr>
<td>Yes</td>
<td>35 (12.8)</td>
<td>37 (14.6)</td>
</tr>
<tr>
<td>No</td>
<td>238 (87.2)</td>
<td>217 (85.4)</td>
</tr>
<tr>
<td>Total</td>
<td>273 (100.0)</td>
<td>254 (100.0)</td>
</tr>
</tbody>
</table>

\[ X^2 = 0.340 \quad p = 0.559 \]

Majority of respondents in both study (87.2%) and control (85.4%) groups had never used emergency contraception. This is not statistically significant which shows that the study group is similar to the control group at baseline.
### Table 10: Where Emergency Contraception was obtained

<table>
<thead>
<tr>
<th>Where EC was obtained</th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency (%)</td>
<td>Frequency (%)</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>24 (68.6)</td>
<td>14 (37.9)</td>
</tr>
<tr>
<td>Family Planning Clinic</td>
<td>4 (11.4)</td>
<td>10 (27.0)</td>
</tr>
<tr>
<td>Patent Medicine Store</td>
<td>3 (8.6)</td>
<td>3 (8.1)</td>
</tr>
<tr>
<td>Friend</td>
<td>2 (5.7)</td>
<td>7 (18.9)</td>
</tr>
<tr>
<td>Sexual partner</td>
<td>2 (5.7)</td>
<td>3 (8.1)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>35 (100.0)</strong></td>
<td><strong>37 (100.0)</strong></td>
</tr>
</tbody>
</table>

Yates $X^2 = 5.866$  
Yates $p = 0.209$

Most of the respondents in the study group obtained emergency contraception from pharmacists (68.6%) and family planning clinic (11.4%) while in the control group pharmacists and family planning clinic are the commonest sources accounting for 37.9% and 27.0% respectively.
Table 11: Time interval between coitus and use of EC

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency (%)</td>
<td>Frequency (%)</td>
</tr>
<tr>
<td>Yes (Within 72 hours)</td>
<td>5 (14.3)</td>
<td>4 (10.8)</td>
</tr>
<tr>
<td>No (Greater than 72 hours)</td>
<td>30 (85.7)</td>
<td>33 (89.2)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>35 (100.0)</strong></td>
<td><strong>37 (100.0)</strong></td>
</tr>
</tbody>
</table>

Yates $X^2 = 0.008$  
Yates $p = 0.929$

Majority in both study (85.7%) and control (89.2%) groups used emergency contraception incorrectly, using it more than 72 hours after sexual intercourse ($p=0.928$).
Figure 6: Experienced Side effects with EC use (Study)

Respondents that experienced side effects among the study group from the use of EC were 23 (66.0%) out of those that ever used EC.
Figure 7: Experienced Side effects with EC use (Control)

Respondents that experienced side effects among the control group from the use of EC were 24 (56.0%) out of those that ever used EC.
SECTION E: FACTORS AFFECTING USE OF EMERGENCY CONTRACEPTION

Table 12: Age, Sex, Religion and use of Emergency Contraception

<table>
<thead>
<tr>
<th>Socio-demographics</th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ever used EC</td>
<td>Ever used EC</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>N=35</td>
<td>N=238</td>
<td></td>
</tr>
</tbody>
</table>

**Age**

<table>
<thead>
<tr>
<th></th>
<th>N=35</th>
<th>N=238</th>
<th></th>
<th>N=37</th>
<th>N=217</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-14</td>
<td>13 (9.4)</td>
<td>125 (90.6)</td>
<td>15 (12.1)</td>
<td>109 (87.9)</td>
<td></td>
</tr>
<tr>
<td>15-19</td>
<td>22 (16.3)</td>
<td>113 (83.7)</td>
<td>22 (16.9)</td>
<td>108 (83.1)</td>
<td></td>
</tr>
</tbody>
</table>

\[ X^2 = 2.887 \quad p = 0.089 \quad X^2 = 1.118 \quad p = 0.272 \]

**Sex**

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td>26 (19.0)</td>
<td>111 (81.0)</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>9 (6.6)</td>
<td>127 (93.4)</td>
</tr>
</tbody>
</table>

\[ X^2 = 9.329 \quad p = 0.002 \quad X^2 = 0.111 \quad p = 0.739 \]

**Religion**

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Christian</strong></td>
<td>15 (11.8)</td>
<td>112 (88.2)</td>
</tr>
<tr>
<td><strong>Islam</strong></td>
<td>20 (13.7)</td>
<td>126 (86.3)</td>
</tr>
</tbody>
</table>

\[ X^2 = 0.217 \quad p = 0.641 \quad X^2 = 10.113 \quad p = 0.001 \]

*Males were asked if their spouses ever used Emergency contraception*
Some (8.0%), and 16.3% of those belonging to the age groups 10-14 and 15-19 years respectively among the study group respondents had ever used emergency contraception while among the control group, 12.1%, 16.9% of those belonging to the age groups 10-14 and 15-19 respectively had ever used emergency contraception.

In the study group 19.0% and 6.6% of male and female respondents respectively had ever used emergency contraception while in the control group, 13.8% and 15.3% of male and female respondents respectively had ever used emergency contraception. Also, 11.8% and 13.7% of Christian and Muslim study group respondents had ever used emergency contraception while 7.7% and 21.8% of Christian and Muslim control group respondents had ever used it.
Table 13: Tribe, Class and use of Emergency Contraception

<table>
<thead>
<tr>
<th>Tribe &amp; Class</th>
<th>Study Ever used EC</th>
<th>Control Ever used EC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>N=35</td>
<td>N=238</td>
</tr>
<tr>
<td>Tribe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yoruba</td>
<td>16 (9.5)</td>
<td>153 (90.5)</td>
</tr>
<tr>
<td>Igbo</td>
<td>3 (18.8)</td>
<td>13 (81.2)</td>
</tr>
<tr>
<td>Hausa</td>
<td>13 (22.4)</td>
<td>45 (77.6)</td>
</tr>
<tr>
<td>Others</td>
<td>3 (10.0)</td>
<td>27 (90.0)</td>
</tr>
<tr>
<td></td>
<td><strong>Yates X^2 = 5.518</strong></td>
<td><strong>p = 0.138</strong></td>
</tr>
<tr>
<td>Class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JSS 2</td>
<td>6 (9.8)</td>
<td>55 (90.2)</td>
</tr>
<tr>
<td>JSS 3</td>
<td>5 (13.2)</td>
<td>33 (86.8)</td>
</tr>
<tr>
<td>SSS1</td>
<td>19 (19.2)</td>
<td>80 (80.8)</td>
</tr>
<tr>
<td>SSS2</td>
<td>5 (6.7)</td>
<td>70 (93.3)</td>
</tr>
<tr>
<td></td>
<td><strong>Yates X^2 = 5.357</strong></td>
<td><strong>p = 0.147</strong></td>
</tr>
</tbody>
</table>

The distribution of study group respondents by tribe and use of emergency contraception showed 9.5%, 18.8%, 22.4% and 10.0% of Yoruba, Igbo, Hausa and others respectively had ever used it while in the control group, 10.4%, 19.0%, 24.5% and 20.0% of Yoruba, Igbo, Hausa and others respectively had ever used it.

Also in the study group, 9.8%, 13.2%, 19.2% and 6.7% of JSS2, JSS3, SSS1 and SSS2 students sampled had ever used emergency contraception while in the control group, 7.5%, 19.0%, 14.6% and 17.1% of JSS2, JSS3, SSS1 and SSS2 students had ever used it.
Table 14: Family type, Marital Status of Parent and use of Emergency Contraception

<table>
<thead>
<tr>
<th></th>
<th>Study Ever used EC</th>
<th>Control Ever used EC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>N=35</td>
<td>N=238</td>
</tr>
</tbody>
</table>

Family type & Marital status

<table>
<thead>
<tr>
<th>Type of Family</th>
<th>Ever used EC</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Monogamous</td>
<td>21 (11.5)</td>
<td>162 (88.5)</td>
<td>28 (14.1)</td>
</tr>
<tr>
<td>Polygamous</td>
<td>14 (15.6)</td>
<td>76 (84.4)</td>
<td>9 (16.1)</td>
</tr>
<tr>
<td></td>
<td>$\chi^2 = 0.899$</td>
<td>$p = 0.343$</td>
<td>$\chi^2 = 0.131$</td>
</tr>
</tbody>
</table>

Marital Status of Parent

<table>
<thead>
<tr>
<th>Marital Status of Parent</th>
<th>Ever used EC</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>29 (12.0)</td>
<td>213 (88.0)</td>
</tr>
<tr>
<td>Divorced/Separated</td>
<td>4 (21.1)</td>
<td>15 (78.9)</td>
</tr>
<tr>
<td>Widowed</td>
<td>2 (16.7)</td>
<td>10 (83.3)</td>
</tr>
<tr>
<td></td>
<td>$\chi^2 = 1.463$</td>
<td>$p = 0.481$</td>
</tr>
</tbody>
</table>

In the study group, 11.5% and 15.6% of respondents from monogamous and polygamous families respectively had ever used emergency contraception while in the control group, 14.1% and 16.1% of respondents from monogamous and polygamous families respectively had ever used it. Also, 12.0%, 21.1% and 16.7% of study group respondents whose parents were married, divorced or widowed respectively had ever used emergency contraception while 10.6%, 78.6% and 12.5% of control group respondents who were married, divorced or widowed respectively had ever used it.
Table 15: Father/ Mother’s Level of Education and Use of Emergency Contraception

<table>
<thead>
<tr>
<th></th>
<th>Study Ever used EC</th>
<th>Control Ever used EC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes: N=35</td>
<td>No: N=238</td>
</tr>
<tr>
<td></td>
<td>Yes: N=37</td>
<td>No: N=217</td>
</tr>
<tr>
<td>Parents educational level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother’s Level of Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>3 (25.0)</td>
<td>9 (75.0)</td>
</tr>
<tr>
<td>Primary</td>
<td>1 (8.3)</td>
<td>11 (91.7)</td>
</tr>
<tr>
<td>Secondary</td>
<td>17 (15.3)</td>
<td>94 (84.7)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>14 (10.1)</td>
<td>124 (89.9)</td>
</tr>
</tbody>
</table>

Yates $X^2 = 1.766$ p = 0.622  
Yates $X^2 = 7.702$ p = 0.053

Father’s Level of Education |                    |                      |
None                        | 2 (15.4)           | 11 (84.6)            |
Primary                     | 0 (0.0)            | 4 (100.0)            |
Secondary                   | 18 (23.4)          | 59 (76.6)            |
Tertiary                    | 15 (8.4)           | 164 (91.6)           |

Yates $X^2 = 9.554$ p = 0.023  
Yates $X^2 = 0.289$ p = 0.962
In the study group, 25.0%, 8.3%, 15.3% and 10.1% of respondents whose mothers had none, primary, secondary and tertiary levels of education respectively had ever used emergency contraception while 42.9%, 20.0%, 14.5% and 11.7% of those in the control group whose mothers had none, primary, secondary and tertiary levels of education respectively had ever used emergency contraception.

For father’s level of education, 15.4%%, 0%, 23.4% and 8.4% of respondents in the study group whose fathers had none, primary, secondary and tertiary education respectively had ever used emergency contraception while 11.1%, 18.2%, 17.2% and 13.5% of respondents in the control group whose fathers had none, primary, secondary and tertiary levels of education respectively had ever used emergency contraception.
Table 16: Sexual Activity and Use of Emergency Contraception

<table>
<thead>
<tr>
<th></th>
<th>Study Ever used EC</th>
<th>Control Ever used EC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>N=35</td>
<td>N=238</td>
<td>N=37</td>
</tr>
</tbody>
</table>

Sexual activity

Times engaged in sex in the past 3 months

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=35</td>
<td>N=238</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 1</td>
<td>7 (30.4)</td>
<td>16 (69.6)</td>
</tr>
<tr>
<td>≥ 2</td>
<td>28 (48.3)</td>
<td>31 (51.7)</td>
</tr>
<tr>
<td>X² = 1.960</td>
<td>p = 0.162</td>
<td>X² = 0.296</td>
</tr>
<tr>
<td>Mean times engaged in sex in the past 3 months</td>
<td>2.28±1.325</td>
<td>1.90±2.111</td>
</tr>
<tr>
<td>Student t = 1.814</td>
<td>p = 0.078</td>
<td></td>
</tr>
</tbody>
</table>

Sexual partners since sexual initiation

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=35</td>
<td>N=238</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 – 2</td>
<td>32 (47.1)</td>
<td>26 (52.9)</td>
</tr>
<tr>
<td>≥ 3</td>
<td>3 (23.1)</td>
<td>11 (76.9)</td>
</tr>
<tr>
<td>X² = 5.141</td>
<td>p = 0.024</td>
<td>X² = 0.356</td>
</tr>
<tr>
<td>Mean sexual partners</td>
<td>1.79±1.021</td>
<td>1.97±1.269</td>
</tr>
<tr>
<td>Student t = 1.733</td>
<td>p = 0.092</td>
<td></td>
</tr>
</tbody>
</table>
For those who had sexual intercourse once in the last three months, 30.4% and 50.0% among study and control group respectively had ever used emergency contraception while for those who had sexual intercourse twice or more in the last three months, 48.3% and 43.8% among study and control groups respectively had ever used emergency contraception.

Some (47.1%) and 43.5% of respondents in the study and control groups respectively who had 1-2 sexual partners had ever used emergency contraception while 23.1% and 51.0% of respondents in study and control groups respectively who had 3 or more sexual partners had ever used emergency contraception.
Table 17: Knowledge about Emergency Contraception and its Use

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ever used EC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>N=35</td>
<td>N=238</td>
<td>N=37</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Ever used EC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6 (10.2)</td>
<td>5 (9.6)</td>
</tr>
<tr>
<td>No</td>
<td>53 (89.8)</td>
<td>125 (87.4)</td>
</tr>
<tr>
<td>Knowledge Score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor (0-17)</td>
<td>18 (12.6)</td>
<td>22 (17.2)</td>
</tr>
<tr>
<td>Fair (18-35)</td>
<td>11 (15.5)</td>
<td>10 (13.5)</td>
</tr>
<tr>
<td>Good (36-55)</td>
<td>60 (84.5)</td>
<td></td>
</tr>
<tr>
<td>$X^2 = 0.832$</td>
<td>$p = 0.420$</td>
<td>$X^2 = 1.797$</td>
</tr>
</tbody>
</table>

While 10.2% and 9.6% of the respondents in the study and control group respectively who had poor knowledge of emergency contraception had ever used it, 12.6% and 17.2% of study and control group respondents respectively who had fair knowledge had ever used emergency contraception and 15.5% and 13.5% of study and control group respondents respectively who had good knowledge of emergency contraception had ever used it.
Table 18: Susceptibility to and Severity of pregnancy and Usage of Emergency Contraception

<table>
<thead>
<tr>
<th>Study</th>
<th>Ever used EC</th>
<th>Control</th>
<th>Ever used EC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>N=35</td>
<td>N=238</td>
<td>N=37</td>
</tr>
</tbody>
</table>

Knowledge score

**Susceptibility to sexual activity and pregnancy**

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor (0-2)</td>
<td>3 (5.1)</td>
<td>56 (94.1)</td>
</tr>
<tr>
<td>Fair (3-5)</td>
<td>10 (9.8)</td>
<td>92 (90.2)</td>
</tr>
<tr>
<td>Good (6-8)</td>
<td>22 (19.6)</td>
<td>90 (80.4)</td>
</tr>
</tbody>
</table>

\[X^2 = 8.653 \quad p = 0.013\] \[X^2 = 7.487 \quad p = 0.024\]

**Severity of effect of pregnancy on adolescents**

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor (0-3)</td>
<td>5 (8.5)</td>
<td>54 (91.5)</td>
</tr>
<tr>
<td>Fair (4-7)</td>
<td>10 (16.4)</td>
<td>51 (83.6)</td>
</tr>
<tr>
<td>Good (8-11)</td>
<td>20 (13.1)</td>
<td>133 (86.9)</td>
</tr>
</tbody>
</table>

\[X^2 = 1.702 \quad p = 0.427\] \[X^2 = 4.400 \quad p = 0.111\]
Some (5.1%) and 5.9% of the respondents in the study and control groups respectively who had poor knowledge of susceptibility to sexual activity and pregnancy had ever used emergency contraception. Also, 9.8% and 11.4% of respondents in the study and control groups respectively who had fair knowledge of susceptibility to sexual activity and pregnancy used emergency contraception while 19.6% and 20.9% of the study and control groups respectively who had good knowledge of susceptibility to sexual activity and pregnancy had used emergency contraception. It can be seen in table 18 that the higher the level of knowledge about their susceptibility to sexual activity and pregnancy, the higher the likelihood of using EC seems.

Some (8.5%) and 7.8% of the respondents in the study and control groups respectively who had poor knowledge of severity of effect of pregnancy on adolescents had ever used emergency contraception. Also, 16.4% and 21.1% of the study and control groups respectively who had fair knowledge of severity of effect of pregnancy on adolescents used emergency contraception while 13.1% and 13.6% of the study and control groups respectively who had good knowledge of severity of effect of pregnancy on adolescents used emergency contraception.
## Table 19: Knowledge of Benefits and Barriers to Use of Emergency Contraception

<table>
<thead>
<tr>
<th></th>
<th>Study Ever used EC</th>
<th>Control Ever used EC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>N=35</td>
<td>9 (15.0)</td>
<td>51 (85.0)</td>
</tr>
<tr>
<td></td>
<td>26 (12.2)</td>
<td>187 (87.8)</td>
</tr>
</tbody>
</table>

**Knowledge of Benefits of Use of EC**

- Poor (0-1)  
  - Study: 9 (15.0)  
  - Control: 6 (11.8)
- Good (2-3)  
  - Study: 26 (12.2)  
  - Control: 31 (15.3)

$X^2 = 0.327$  $p = 0.567$

**Knowledge of Barriers to Use of EC**

- Poor (0)  
  - Study: 5 (8.5)  
  - Control: 2 (3.9)
- Fair (1)  
  - Study: 21 (15.3)  
  - Control: 23 (20.5)
- Good (2)  
  - Study: 9 (11.7)  
  - Control: 12 (13.2)

$X^2 = 1.856$  $p = 0.395$  $X^2 = 0.403$  $p = 0.526$

Some (15.0%) and 11.8% of the respondents in the study and control groups respectively who had poor knowledge of benefits of use of emergency contraception had ever used one while 12.2% and 15.3% of the study and control groups respectively who had good knowledge of benefits of use of emergency contraception had ever used it.
Table 20: Pregnancy History, Outcome and Usage of Emergency Contraception

<table>
<thead>
<tr>
<th></th>
<th>Study Ever used EC</th>
<th>Control Ever used EC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>N=35</td>
<td>N=238</td>
<td>N=37</td>
</tr>
</tbody>
</table>

*Pregnancy History

Ever been pregnant

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes (25.0)</td>
<td>9 (75.0)</td>
</tr>
<tr>
<td></td>
<td>No (46.4)</td>
<td>37 (53.6)</td>
</tr>
</tbody>
</table>

$X^2 = 1.9 \quad p = 0.17 \quad X^2 = 4.18 \quad p = 0.04$

Number of times been pregnant

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1–2 (27.3)</td>
<td>8 (72.7)</td>
</tr>
<tr>
<td></td>
<td>≥3 (0.0)</td>
<td>1 (100.0)</td>
</tr>
</tbody>
</table>

Yates $X^2 = 0.364 \quad p = 0.546 \quad$ Yates $X^2 = 0.497 \quad p = 0.48$

Mean number of times been pregnant

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.33±0.651</td>
<td>1.11±0.315</td>
</tr>
</tbody>
</table>

Outcome of most recent pregnancy

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abortion</td>
<td>3 (27.3)</td>
<td>8 (72.3)</td>
</tr>
<tr>
<td>Delivery</td>
<td>0 (0.0)</td>
<td>1 (100.0)</td>
</tr>
</tbody>
</table>

Yates $X^2 = 0.364 \quad p = 0.55 \quad$ Yates $X^2 = 0.143 \quad p = 0.71$

*Males were asked about the pregnancy history of their sexual partners
In the study group, among those who had ever been pregnant or who had impregnated someone before, 75.0% had never used emergency contraception while in the control group, 10.5% of those who had ever been pregnant or who had impregnated someone before had never used emergency contraception.

On the number of times respondents had been pregnant or had impregnated someone before, 27.3% and 94.1% of those who had a count of 1-2 times had ever used Emergency Contraception among the study and control groups respectively while 0.0% and 50.0% of those who had a count of 3 times or more had ever used emergency contraception among the study and control groups respectively. The mean number of times respondents had ever been pregnant or impregnated someone before was 1.33±0.651 and 1.11±0.315 among the study and control groups respectively.

In the study group, 27.3% of those that had an abortion in the most recent pregnancy had ever used Emergency contraception while the corresponding proportion among the control group was 93.8%. Also, 0.0% and 66.7% of those whose most recent pregnancy resulted in delivery had ever used Emergency Contraception among the study and control groups respectively.
SECTION F: EFFECT OF HEALTH EDUCATION INTERVENTION ON KNOWLEDGE OF EC

Table 21: Effect of HEI on Knowledge

<table>
<thead>
<tr>
<th>Knowledge Score</th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre (%)</td>
<td>Post (%)</td>
</tr>
<tr>
<td>Poor (0-17)</td>
<td>59 (21.6)</td>
<td>8 (3.0)</td>
</tr>
<tr>
<td>Fair (18-35)</td>
<td>143 (52.4)</td>
<td>54 (20.1)</td>
</tr>
<tr>
<td>Good (36-55)</td>
<td>71 (26.0)</td>
<td>207 (76.9)</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 145.54 \quad p = 0.000 \]
\[ \chi^2 = 0.342 \quad p = 0.843 \]

Mean Knowledge

<table>
<thead>
<tr>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.70±14.40</td>
<td>46.68±6.22</td>
</tr>
<tr>
<td>27.40±14.10</td>
<td>28.72±12.16</td>
</tr>
</tbody>
</table>

\[ \text{Students } t = 20.93 \quad p=0.000 \]
\[ \text{Students } t=1.13 \quad p=0.261 \]

Only 26.0% of respondents in the study group had good knowledge of emergency contraception before the intervention. However, this proportion increased to 76.9% after the intervention and this was statistically significant (p=0.000). In the control group, the percentages of respondents with good knowledge were 29.1% and 27.5% respectively before and after the intervention. The intervention produced a statistically significant increase in the knowledge score.
Table 22: Effect of HEI on perceived Susceptibility and Severity

<table>
<thead>
<tr>
<th>Knowledge score</th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre (%)</td>
<td>Post (%)</td>
</tr>
<tr>
<td></td>
<td>N=273</td>
<td>N=269</td>
</tr>
</tbody>
</table>

**Susceptibility to sexual activity and pregnancy**

<table>
<thead>
<tr>
<th>Category</th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor (0-2)</td>
<td>59(21.6)</td>
<td>8 (3.0)</td>
</tr>
<tr>
<td>Fair (3-5)</td>
<td>102 (37.4)</td>
<td>51 (19.0)</td>
</tr>
<tr>
<td>Good (6-8)</td>
<td>112 (41.0)</td>
<td>210 (78.1)</td>
</tr>
</tbody>
</table>

\[X^2 = 85.6 \quad p = 0.000\] \[X^2 = 0.097 \quad p = 0.953\]

**Severity of effect of pregnancy on adolescents**

<table>
<thead>
<tr>
<th>Category</th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor (0-3)</td>
<td>59 (21.6)</td>
<td>14 (5.2)</td>
</tr>
<tr>
<td>Fair (4-7)</td>
<td>61 (22.3)</td>
<td>56 (20.8)</td>
</tr>
<tr>
<td>Good (8-11)</td>
<td>153 (56.1)</td>
<td>199 (74.0)</td>
</tr>
</tbody>
</table>

\[X^2 = 33.94 \quad p = 0.000\] \[X^2 = 0.665 \quad p = 0.717\]
Prior to intervention, 41.0\% of the study group respondents had good knowledge of susceptibility to sexual activity and pregnancy. The percentage increased to 74.0\% after the intervention with statistical significance. In the control group, proportion of respondents with good knowledge of susceptibility to sexual activity and pregnancy were 45.3\% and 44.2\% before and after the intervention respectively. This showed that the intervention produced a statistically significant increase in knowledge among the study group which was not seen among the control group. About half of the study group, respondents (56.1\%) had good knowledge of severity of effect of pregnancy on adolescents before the intervention. However, after intervention, 74.0\% had good knowledge and this was statistically significant (p=0.000). Such increase was not observed among the control group.
Table 23: Effect of HEI on Knowledge of Benefits and Barriers

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre (%)</td>
<td>Post (%)</td>
</tr>
<tr>
<td>N=273</td>
<td>N=269</td>
<td>N=254</td>
</tr>
<tr>
<td>Knowledge score</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Benefits of Use of EC</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor (0-1)</td>
<td>60 (22.0)</td>
<td>21 (7.8)</td>
</tr>
<tr>
<td>Good (2-3)</td>
<td>213 (78.0)</td>
<td>248 (92.2)</td>
</tr>
<tr>
<td></td>
<td>(X^2 = 21.407) (p = 0.000)</td>
<td>(X^2 = 0.866) (p = 0.299)</td>
</tr>
<tr>
<td><strong>Barriers to Use of EC</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor (0)</td>
<td>59 (21.6)</td>
<td>24 (8.9)</td>
</tr>
<tr>
<td>Fair (1)</td>
<td>137 (50.2)</td>
<td>45 (16.7)</td>
</tr>
<tr>
<td>Good (2)</td>
<td>77 (28.2)</td>
<td>200 (74.4)</td>
</tr>
<tr>
<td></td>
<td>(X^2 = 115.9) (p = 0.000)</td>
<td>(X^2 = 0.833) (p = 0.659)</td>
</tr>
</tbody>
</table>

Some (22.0%) of the respondents in the study group had poor knowledge of benefits of use of emergency contraception before intervention. This proportion reduced to 7.8% post intervention with statistical significance \((p=0.000)\). In the control group, proportions of respondents with poor knowledge of benefits were 20.0% and 23.9% before and after intervention respectively. Knowledge of barriers to the use of emergency contraception was also poor among the study group with 21.6% of them having poor knowledge prior to the intervention. This percentage was however reduced to 8.9% after the intervention \((p=0.000)\). However, in the control group, 20.1% and 22.3% of respondents had poor knowledge of barriers to the use of emergency contraception before and after the intervention respectively.
### Table 24: Effect of HEI on Knowledge of Indication, Time Frame and Side Effect

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre (%)</td>
<td>Post (%)</td>
</tr>
<tr>
<td></td>
<td>N= 273</td>
<td>N=269</td>
</tr>
<tr>
<td>Indication, time frame &amp; side effect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most Important</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect</td>
<td>66 (24.2)</td>
<td>13 (4.8)</td>
</tr>
<tr>
<td>Correct</td>
<td>207 (75.8)</td>
<td>256 (95.2)</td>
</tr>
<tr>
<td>$X^2 = 40.715</td>
<td>p =0.000</td>
<td>$X^2 = 0.705</td>
</tr>
<tr>
<td>Time Frame</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect</td>
<td>91 (33.3)</td>
<td>17 (6.3)</td>
</tr>
<tr>
<td>Correct</td>
<td>182 (66.7)</td>
<td>252 (93.7)</td>
</tr>
<tr>
<td>$X^2 = 61.968</td>
<td>p =0.000</td>
<td>$X^2 = 0.118</td>
</tr>
<tr>
<td>Side Effect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect</td>
<td>75 (27.5)</td>
<td>14 (5.2)</td>
</tr>
<tr>
<td>Correct</td>
<td>198 (72.5)</td>
<td>255 (94.8)</td>
</tr>
<tr>
<td>$X^2 = 48.954</td>
<td>p =0.000</td>
<td>$X^2 = 0.564</td>
</tr>
</tbody>
</table>
The proportion of respondents with correct knowledge of the most important indication for emergency contraception in the study group was 75.8% and 95.2% pre and post intervention respectively. This difference was statistically significant with p=0.000. In the Control group 54.3% and 50.3% respectively had correct knowledge before and after intervention.

Also, 66.7% and 93.7% of the respondents in the study group had correct knowledge of Time frame for use of emergency contraception before and after intervention respectively (p=0.000) while in the control group, 75.6% and 76.9% of the respondents had correct knowledge pre and post intervention. An assessment of the respondents’ knowledge of side effect of emergency contraception showed that 72.2% and 94.8% of those in the study group had correct knowledge before and after intervention respectively (p=0.000) while in the control group, 64.6% and 67.7% of respondents had correct knowledge of side effect before and after intervention respectively.
SECTION G: EFFECT OF HEALTH EDUCATION INTERVENTION ON USAGE

Table 25: Effect of HEI on usage of Emergency Contraception

<table>
<thead>
<tr>
<th></th>
<th>Study</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre (%)</td>
<td>Post (%)</td>
</tr>
<tr>
<td>N= 273</td>
<td>35 (12.8)</td>
<td>53 (19.7)</td>
</tr>
<tr>
<td>N=269</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=254</td>
<td>238 (87.2)</td>
<td>216 (80.3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ever used any form of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contraception</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

|                          | X² = 4.719     | p=0.029       | X² = 0.302 | p = 0.583 |
|                          |                |               |         |           |

In the study group, 12.8% and 19.7% of the respondents had ever used emergency contraception before and after intervention respectively while in the control group, 14.6% and 16.3% of respondents had ever used emergency contraception before and after intervention respectively.
Table 26: Effect of HEI on Timing of Usage of Emergency Contraception

<table>
<thead>
<tr>
<th>Correct time frame</th>
<th>Study</th>
<th>Control</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre (%)</td>
<td>Post (%)</td>
<td>Pre (%)</td>
<td>Post (%)</td>
<td></td>
</tr>
<tr>
<td>N=35</td>
<td>5 (14.3)</td>
<td>49 (92.4)</td>
<td>4 (10.8)</td>
<td>7 (17.1)</td>
<td></td>
</tr>
<tr>
<td>N=53</td>
<td>30 (85.7)</td>
<td>4 (7.6)</td>
<td>33 (89.2)</td>
<td>34 (82.9)</td>
<td></td>
</tr>
</tbody>
</table>

In the study group, 14.3% of the respondents had correct knowledge of timing of usage of emergency contraception pre intervention. This increased to 92.4% post intervention which was statistically significant (p=0.000) while in the control group, the proportion of respondents with knowledge of correct usage of Emergency Contraception was 10.8% and 17.1% pre and post intervention respectively.
SUMMARY OF RESPONSES FROM FOCUSED GROUP DISCUSSION

Contraception
Most of the respondents believed that contraception helps to prevent unintended pregnancy.
This was evidenced by some of the comments made as outlined below

‘I know it to be anything done to control childbirth and unintended pregnancy for either married or unmarried couples’.

Another respondent said

‘I believe it is a general method to control childbirth or unintended or unplanned pregnancy as well as for population control in Nigeria’

However while some of them felt it was meant for the unmarried and the under-age, some felt it was meant for the married only in deciding the number of children that they want to have.

One of the comments made was:

‘I know it is a way of preventing unintended pregnancy for girls who are unmarried and underaged’

while another respondent made a comment that

‘I feel it is a situation where a family comes together to agree on how many children they will have’.

Source of Knowledge about contraception
While some of the students obtained their knowledge of contraception from posters and signboards, others got theirs from the television.

‘I have seen details on contraception on posters and signboards. There is this particular bill-board near my home on which is written zip-up’
Another respondent said:

‘I have heard about it on the radio jingles. I have heard about condoms which is said to protect against pregnancy and HIV/AIDS. They always say HIV no dey show for face’

Of particular interest is the response from one of the respondents who said that he watched a program on Television where a Doctor was invited to speak on contraception

‘I watched a program on television where contraception was discussed. There is a program where they normally invite doctors to come and talk every Sunday afternoon titled Ilera-loro. There was a day they invited a doctor to talk on various forms of contraception. I remembered that the doctor said contraception is not meant for only married people but also for adolescents and youths who cannot hold themselves’

Some other excerpt from their responses are noted below:

‘I have also watched a programme on contraception on the television’

‘I read about it in the newspaper’

‘I have browsed for information and read about contraception on the internet’

‘I heard about contraception from my friends while they discussed about it’

**Emergency Contraception**

Some of the respondents said emergency contraception was a way of preventing unintended pregnancy and some said it helps prevent pregnancy after sexual intercourse. One of the respondents said:

‘It is a way of preventing pregnancy after sexual intercourse’

Another respondent appeared to have a good understanding of EC and he said

‘I know it is an urgent way of preventing unintended pregnancy especially if you do not have a more stable contraception method’
However, most of the respondents appeared to have an incomplete knowledge or false knowledge about EC. While some felt it is meant for only married couples, others felt it must be taken at home and some others think it has to do with Emergency treatment in the hospital.

These are reflected in the following comments:

‘It is a way of preventing pregnancy after sexual intercourse by taking drugs at home’

‘I feel it is a way of preventing unintended pregnancy after sex by married or unmarried couples only’

‘Yes, I know it is a way of controlling childbirth for people who do not want to give birth or who want to space their child bearing’

The only Emergency I know of is when someone is about to die and they rush him/her to the hospital to see a Doctor so I think Emergency Contraception is a family planning method given to someone about to die’

**Side effects of Emergency Contraception**

The comments given about the side effects ranged from maternal deaths, fetal deformations, still births, damage to the uterus, and sexually transmitted infections. It appeared the word ‘side-effect’ meant something very bad as none of the male respondents mentioned any of the common side-effects of EC which is usually mild. Excerpts from their comments are:

‘I know people can bleed for a long time or have stillbirth after using emergency contraception. It can also cause sexually transmitted infections’

‘There can be death due to overdose or damage to the uterus and fetal malformation’

‘I know it can cause permanent damage to the uterus’

‘I also know it can lead to fetal deformity and maternal death’

‘It can lead to maternal death, vaginal bleeding and fetal deformation’
Categories of people using Emergency Contraception

Some of the respondents implied that only married women use emergency contraception while some said it can be used by both married and single women. The responses they gave were:

‘I know unmarried women as well as married women who have completed childbearing use them’

‘I feel females between the ages of puberty and menopause are the ones who use them’

‘It is the females between the ages of 18 and menopause that use them’

‘I know there are married couples who do not use any other form of contraception apart from emergency contraception’

Indications for EC

Some of the respondents said EC can be used to prevent unintended pregnancy

‘Unmarried girls can use it after unprotected sexual intercourse to avoid getting pregnant’

‘It can be used by any female to prevent unintended pregnancy’

‘I know it is used to prevent unplanned pregnancy’

‘I also know that it is used by individuals who want to avoid an unplanned pregnancy’

Of particular interest is the response by one of the students who said EC can be used when a girl is raped.

‘I also believe it can be used to prevent unintended pregnancy. For example, if a girl is raped emergency contraception can be used to prevent her from getting pregnant. I have heard of a case of a girl who was raped and that was one of the prescriptions
given to him by the Doctor. My mother is a nurse and she told us when she got home when warning us that we should be careful and not move with bad friends’

Some misconceptions were however noted at this point as some respondents made the following comments

‘It is those from low socio-economic class that use it’

‘It is a form of family planning used by married couples only’

**Safety of EC**

Some respondents said EC is not safe because of the side effects and drug misuse while some said it is safe if used properly. This was deduced from their responses:

‘I believe it is not safe because the negative side effects outweigh the advantages’

‘I know it is safe because it can prevent unintended pregnancy’

‘It is not safe because the risk of abuse is high and people who do not need it can use it or people can use it wrongly’

‘Yes, it is safe but only if used properly’

**Effectiveness of EC**

The respondents to this questions said EC is effective while one cited the example of a neighbor who had used it.

‘It is effective if properly used’

‘Yes it is effective. I have a sexually active neighbor who used it and it worked for her’
**Correct time between coitus and use of EC for it to be effective?**

The respondents gave varying times for use of EC. While some of the responses were outrightly wrong, some fell within the range of time within which it could be used but not completely correct. Their responses include:

- ‘It can be used 24 hrs after sexual intercourse’
- ‘I know it should be use within 24-48hrs after sexual intercourse to prevent pregnancy’
- ‘It should be used just before sexual intercourse’
- ‘I feel it should be used immediately after sexual intercourse’
- ‘Can be used within 3-5 days after sexual intercourse’

A particular respondent who appeared knowledgeable mentioned the importance of reading the instruction on the drug before taking it although he does not know the specific timing.

- ‘It all depends on the instruction on the label. Me I don’t know the specific time but we have been told in the school clinic to always read the instruction on the label’

**Barriers against the use of EC**

Illiteracy and low level of awareness are some of the barriers to EC use that respondents said existed. Some of their responses were:

- ‘Illiteracy can lead to an inability to obtain adequate information about its use’
- ‘Low level of awareness’
- ‘Illiteracy is a barrier’
- ‘People may have a fear of obtaining fake drugs’
Where EC can be obtained

Respondents knew they could obtain EC from the hospital and pharmacy. One included a standard laboratory as a place where one can get EC.

‘You can get it from a teaching hospital or any standard laboratory’
‘I know one can get it in a reputable pharmacy and also federal hospitals’
‘It is available in hospitals and pharmacies’
‘You can get it from hospitals’
‘It can be obtained from a pharmacy’

Effects of adolescent Pregnancy

Responses to this question revealed that respondents are aware of various examples of the effects of pregnancy on adolescents. Their responses were:

‘It can lead to maternal death’
‘Adolescents who get pregnant usually drop out of school and are rejected by the society’
‘It gives rise to several abandoned babies’
‘It increases cases of school drop-outs and family rejection’
‘It can damage the immature uterus of the adolescent and if they are able to deliver, the child suffers from poor care’
‘It leads to unemployment’
‘I know it causes uncontrolled population increase’
‘It may lead to the girl dropping out of school, rejection by sexual partner and complications during labour’
‘Maternal death as well as fetal death can also result from adolescent pregnancy’
‘It may make young people seek abortion in dirty and illegal manners and also lead to labour complications’

**Misconceptions about EC**

The misconceptions about EC mentioned by the respondents were that it is same as abortion and that its use almost always leads to infertility. The comments raised were:

‘Some people equate EC and abortion’

‘Some think the effects of family planning on fertility is absolute, that anyone using EC would be infertile’

**Reasons students engage in sexual intercourse**

The reasons the respondents gave why students engage in sex were:

‘For financial gain’

‘For fun’

‘To satisfy sexual urge’

‘Some do it for pleasure’

‘It is to satisfy sexual urge’

‘I know it is to satisfy sexual urge’

‘I know it is usually for fun’

‘Some students do it under peer pressure’
Effects of adolescent pregnancy

The effects of adolescent pregnancy mentioned by the respondents were mainly shame and rejection. The comments of the respondents were:

‘It leads to school drop –out’

‘Adolescent pregnancy causes labour complications since adolescents are not really mature enough for pregnancy’

‘It causes family rejection as the parents could disown the girl involved’

‘It can lead to social rejection by everyone who knows the person involved’

‘Yes, social rejection’

‘It causes shame’

‘I also know it can cause social rejection’

‘It causes shame’

‘It causes shame’

‘It causes embarrassment’

Adolescent pregnancy was known to lead to dropping out of school by the student that responded to this question and the response was:

‘Yes, I have seen some. They all dropped out of school.

Knowing anyone who has had an abortion and where abortions can be done

The respondents knew at least one person that had an abortion. This gives an impression of their knowledge on abortion as revealed in their comments:
‘yes, I know someone who had an abortion and it became bad because she was admitted in the hospital thereafter. What she did not want anyone to know became known to everyone’

Self medication, hospitals and herbs are the options of getting an abortion that the students mentioned. The following were the statements that they made:

‘I know people use drugs to abort pregnancies’

‘One can get an abortion in some hospitals’

‘I am aware that some women use herbs’

Types of contraception

The respondents mentioned the types of contraception that they know and based on their responses, more of them knew about pills than any other type of contraception. They made the following statements:

‘There is a type I heard about that is in liquid form’

‘I know a tablet being used but cannot remember its name’

‘I am also aware of certain tablets being used for emergency contraception’

‘Herbs can be used’

‘I know that some women use pills’

‘I know of certain concoction that a neighbor had used before to prevent pregnancy. I am also aware of pills that can be obtained from ‘chemists’’

‘There are tablets’

‘I know about the tablets too’
CHAPTER 5: DISCUSSION

This was a quasi-experimental study carried out among secondary school students in the 3 local government areas in Ilorin. The proportion of respondents within the age group of 10-14 years (early adolescence) was about half of the respondents in both study and control group. This finding shows that early and late adolescence were about equally distributed among the study and control group. This differs from the findings by Aderibigbe et al in their study on sex education among adolescents in Ilorin also had majority of their respondents within the age group 14-18 yrs. A similar finding was reported by Anochie et al and Oladokun et al. This differences may just have been because of the grouping. However in these other studies, the reason for this may be because the 14-16 years age group is usually in senior secondary class and they account for higher number of adolescents with increased risk of sexual intercourse. Also in this study, the proportions of female respondents were slightly higher than males in both study (50.2%) and control (51.2%) groups. This is similar to the findings of Graham in Scotland who posited a similar sex variation.

Adolescents from divorced or separated homes accounted for 7% and 9% of the respondents from the study and control groups respectively. This finding is important because Young et al found out that adolescents from incomplete family structure have increased risk of sexual behavior and other delinquencies. Also, it has been found that stable homes protect adolescents from indiscriminate sexual escapades. It is
therefore important to ensure factors supporting stable homes and discourage family disharmony.

Majority of the parents of the respondents achieved a tertiary education in both the study (50.2%) and control (60.6%) groups. It has been found that the educational status of parents have a positive influence on the sexual activities of adolescents. For example in Ibadan, fathers’ and mothers’ educational background were statistically and significantly associated with previous sexual exposure and contraceptive use among secondary school students.\(^{51}\)

Some (30%) of the respondents in this study had ever had sexual intercourse. This was also in keeping with other studies in Nigeria. Prevalence of sexual intercourse among adolescents has been reported in studies done in Ilorin (28%), Port Harcourt (25%) and Niger State (32%).\(^{51-55}\) However in Slovenia, 53% of the in-school adolescents are sexually active. This difference could be as result of permissiveness of culture in different countries.

Furthermore, the number of times engaged in sexual intercourse in the past 3 months was only once or twice for 28.4% of the respondents in the study group. This was also in keeping with the findings of Aderibigbe et al who reported over 20% of their respondents have sexual intercourse once in 3 months.\(^{2}\) This was an important finding that makes contraception necessary for adolescents.\(^{40}\)

The use of any contraception among adolescents in the study and control groups was found to be 61.7% and 73.1% respectively. This was higher than findings of previous studies done in Nigeria and other developing countries where it was found that
contraception usage among adolescents was as low as 30%. This could be because this study was more recent than those previously carried out, with the effects of increasing urbanization, adoption of western lifestyle, ease of accessing foreign culture through the internet in recent times having improved their contraception habits.

Also, in the last decade there has been a mass awareness on HIV/AIDS and methods of its prevention including condom use which is also a method of contraception. More so, the commonest method of contraception among the study and control groups is condom use, accounting for 68% and 72% respectively. Coupled with above reasons, other advantages of the condom such as easy accessibility, availability, can be obtained without prescription, inexpensive make its use commonplace amongst adolescents.

However, prevalence of emergency contraception was found to be 14% in the study group. This was in discordance with findings from studies in Benin, Nigeria and Nairobi, Kenya which reported 2% and 3% prevalence of emergency contraception respectively. This may be due to poor knowledge of emergency contraception amongst the adolescents as this study revealed only 27.8% of the respondents has good knowledge of emergency contraception.

Furthermore, 20% and 32% prevalence of was reported in Switzerland and Scotland respectively. Developed countries are known to have better information systems and health awareness when compared to developing nations. Awareness
education campaigns should be encouraged and instituted to improve knowledge and eventual use of emergency contraception among adolescents.

In this study, more of the respondents (31.8% of study and 12.6% of control groups) learnt about emergency contraception through hospital or health workers while 16.4% of study and 27.0% of control group heard about emergency contraception for the first time from television. This might be as a result of poor awareness. Therefore, all stakeholders such as parents, teachers and the government should take active role in properly educating adolescents on sex at an early age. Especially important is the impact that training from parents can have on children.

FGD finding also buttressed the importance of mass media in being a source of knowledge about EC as one of the respondents said: ‘I watched a program on television where contraception was discussed. There is a program where they normally invite doctors to come and talk every Sunday afternoon titled Ilera-loro. There was aday they invited a doctor to talk on various forms of contraception. I remembered that the doctor said contraception is not meant for only married people but also for adolescents and youths who cannot hold themselves’

Most (91.7%) pregnancies from the adolescents in this study resulted in induced abortion. A study carried out by Aderibigbe in Ilorin found that 100% of pregnancies in adolescents were terminated. Similarly, Abiodun et al reported 65% induced abortion rate among young female students in tertiary institutions in Ilorin, Nigeria. The implication of this finding is that emergency contraception reduces the reproductive health risks associated with unintended pregnancies in adolescents and
well as reduce maternal mortality towards achievement of Millennium Development Goal 4 which is to improve maternal health.

Figures from this research show that nearly half of the respondents in the study had poor knowledge of susceptibility to sexual activities and pregnancy. This result was similar to the surveys carried out by the Demographic and Health Surveys (DHS) in Ghana and Kenya where the proportion of currently pregnant women under age 20 who reported that their pregnancies were mistimed or unwanted was 46% and 50% respectively. Apparently, knowledge deficits on sexual activities and pregnancy among adolescents would lead to behavioral lifestyles (experimentation and risk taking) that will frequently put them at greater risk of unintended pregnancy.

Another factor contributing to the low knowledge among adolescents in Nigeria is the poor knowledge and practice of EC by health care workers which in turn has affected their ability to educate adolescents and other members of the population who need it. Also, gender inequity and cultural norms often make it hard to address the issue of contraception for adolescents, thereby making them susceptible to unintended pregnancy. While condoms are available to adolescents in many countries, lack of power within relationships can make it difficult, if not impossible, for young women to negotiate condom use with their partners thereby making them susceptible to getting pregnant.

Benefit of the use of emergency contraception was generally low among respondents. This can be buttressed by the fact that hospital-based studies in Nigeria showed up to 80% of patients with abortion-related complications to be adolescents. Similarly, a
Nigeria community-based study of abortion prevalence found that one-third of women who obtained an abortion were adolescents.\textsuperscript{117}

This knowledge gap was also buttressed in the FGD result. \textit{One of the respondents said that side effects of EC are fetal malformations, deaths and uterine damage}. This is gross misconception as there are no such side effects scientifically. Another comment from the \textit{FGD is that usage of EC is for those who are above the age of 18 years}. This also is another misconception as adolescents of any age group can use EC and it is safe among them. These various misconceptions call for a need to include health education intervention programs which will address sexuality focusing on EC knowledge.

In another study among young women who had previously had clandestine abortions in Nigeria, only 16\% of them had used emergency contraceptive pills.\textsuperscript{118} These studies allude to the fact that majority of adolescents in Nigeria have low knowledge of the benefits of using EC. These figures show there is the need to massively scale-up teachings on the benefits of using EC locally and internationally especially in the developing nations that have observed low use.

The knowledge of barrier to use EC was generally low and this could be responsible for the low use of EC as the adolescents may not know how to overcome the barriers to EC use. Some of the barriers noted from literature include lack of familiarity with the clinics, inconvenient clinic hours, fear of a pelvic examination and provider attitudes.\textsuperscript{119}
Others are monetary cost, moral and family views against birth control. Some youths also acknowledged feeling uncomfortable and intimidated by the thought of asking adults or a pharmacists for EC, especially in community settings where “everyone knows everyone.” Adequate impartation of knowledge will go a long way in rectifying the barriers noted.

Among the respondents that were aware about EC, knowledge of the correct time-frame within which it should be used was generally poor (33.3% and 24.4% of study and control groups respectively). In previous studies done in south-west Nigeria, Benin-city, and Lagos, respondents that knew the correct time-frame within which EC should be used were 12%, 18% and 39% respectively. In south west Nigeria, while 12% identified the correct timing, 29% mentioned the morning after, 1% cited four to six days after, 1% cited seven or more days after and 57% were uncertain.

The trend was similar in Benin City where 18% respondents knew the correct timing but 49% of the respondents felt EC will only be effective if used within twenty-four hours of unprotected sex. Although this answer is within the seventy-two hour limit, such misinformation might inhibit someone who could still prevent a pregnancy from taking EC because they thought they had missed their “window” of effectiveness. 

FGD also showed gross misconception about time of usage of EC. One of the respondents mentioned 5 days as the usual timing to take EC. This is a misconception and it just buttresses the quantitative study. It shows that there is a need to introduce contraceptive education in the curriculum for secondary school students.
A study on emergency contraceptive label comprehension for teens found that 79% or more of adolescents aged 12-17 correctly understood six key concepts found in labeling (EC prevents pregnancy after unprotected sex, it should be taken as soon as possible, it should be taken within 72 hours, it should not replace regular contraception, it does not protect against sexually transmitted infections (STIs), it should not be used by women who are already pregnant). Cremer et al. found that older teens (aged 16-17) were a bit more likely to understand the key comprehension points of the study than the younger girls (aged 12-15), but the younger girls understood a majority of the points with very high accuracy, including the reason to use EC and that it does not protect against HIV/AIDS. However, knowledge about the side effects of EC appears to be highly deficient in some studies. For example, in a study in Lagos the fear of side effects was the commonest reason cited by respondents for non-use of EC. Also in another similar study among London and Oxfordshire women, 43% expressed fears of the increased health risks of emergency hormonal contraceptives. These figures are higher than those on the level of knowledge of side-effects among the respondents in this study (27.5% and 35.4% of study and control groups respectively).

Some of respondents in both the study (12.8%) and control groups (14.6%) had ever used emergency contraception. Different levels of usage of EC have been reported among sexually active adolescents. Studies previously done in Benin, South West Nigeria, Nairobi, Switzerland and Scotland reported percentage use among respondents of 2%, 3%, 4%, 20% and 30% respectively. In the study done in Benin, only 2% had ever used EC of the 39% that were sexually active who had ever
practiced contraception.\textsuperscript{11} This difference in use might be due to the level of awareness among adolescents about EC, the norms and policies in different countries.

For example in the United Kingdom, young people over 16 years of age can purchase ECPs without a prescription and Canada recently approved purchase without a prescription. This is also true for France, where adolescents can access ECPs from a pharmacy free of charge without parental approval or a doctor’s prescription. However, the pharmacist is required to educate adolescents about ECPs and encourage them to visit a doctor.\textsuperscript{113}

Rates of emergency contraceptive use vary widely but are generally low, especially as reported from population-based surveys. Demographic and Health Surveys from 2000 show that fewer than 2\% of youth ages 15 to 24 have ever used emergency contraception in Armenia, Cambodia, Haiti, Malawi, Turkmenistan, and Uganda and in a survey of sexually active youths in 2000-2001, 10\% of Jamaican university students had used ECPs.\textsuperscript{120}

Many (68.6\%) of the study group respondents that had ever used EC obtained it from Pharmacists and 11.4\% obtained it from Family planning clinics. This was in contrast to a previous study in Southwest Nigeria where 67\% obtained EC from hospitals/clinics, 27\% cited pharmacy shops, 6\% cited community based distribution agents, 5\% cited patent medicine stores and drug hawkers while 17\% did not know the sources of procurement.\textsuperscript{15} Findings from this study are also different from studies done in Lagos, Ilorin and Benin, Nigeria in which highest percentage of respondents
cited friends as their source of information about EC.\textsuperscript{11,15,24} The disparity could be as a result of possible different cultural factors and policies in different communities.

A minority of respondents in both study (14.3\%) and control (10.8\%) groups used the emergency contraception correctly. This was in keeping with surveys on the knowledge of timeframe of EC use among university and postsecondary students in several African countries where accurate knowledge about its use was minimal despite a quarter to three-quarters of youth having heard of emergency contraception.

Some (43.2\%) and 47.4\% of respondents who had sexual intercourse had ever used emergency contraception among the study and control groups respectively. These figures were higher than what has been reported in previous studies. The 2008 Demographic and Health Survey found that (9\%) of sexually active women aged fifteen to nineteen years ever used any form of modern contraception.\textsuperscript{3}

Also, it was reported that the proportion of adolescents aged less than twenty years using modern contraception was found to be (9\%).\textsuperscript{28} The relatively higher proportion of emergency contraception use found in this study might be due to some awareness in the media and the influence of western culture in Nigeria. The proportion is however still lower than ideal and what is reported for developed countries where it is as high as 93\% in sexually active Danish adolescents.\textsuperscript{17}

For those who had sexual intercourse once in the last three months, 30.4\% and 50.0\% among study and control group respectively had ever used emergency contraception while for those who had sexual intercourse twice or more in the last three months,
48.3% and 43.8% among study and control groups respectively had ever used emergency contraception.

In this study, 47.1% and 43.5% of respondents in the study and control groups respectively who had 1-2 sexual partners had ever used emergency contraception while 23.1% and 51.0% of respondents in study and control groups respectively who had 3 or more sexual partners had ever used emergency contraception. The number of sexual partners among sexually active individuals correlates with the risk of getting pregnant.

This study also showed that the higher the knowledge score on EC, the higher the use of EC. About 15.5% of respondents who had good knowledge used EC among study group while about 13.5% did among control group. These showed a form of correlation between the level of knowledge of emergency contraception and its use. Improving the level of knowledge would likely improve the use of emergency contraception. Also the knowledge of the effects of pregnancy on adolescents appeared to help them make a decision to prevent themselves from getting pregnant even after sexual intercourse.

It is important to improve the knowledge of the effects of pregnancy on the young bodies of adolescents and to offer the sexually active ones help in form of contraception, especially emergency contraception. Considering that 15.4% of those who had ever heard of emergency contraception had ever used it among the study group and 12.6% of those who had ever heard of emergency contraception had ever used it among the control group, the steps and methods being used to educate them
should be reviewed. This is because behavioral change is the most important expectation of the education process and it is vital to focus not only on adolescents but the entire society. Parents, teachers and the government need to be sensitized about the importance of creating an environment that facilitates the use of emergency contraceptives by the young so as to prevent unwanted pregnancies and its medical and social implications in adolescents.

In the study group, 27.3% of respondents who had been pregnant or had impregnated someone 1-2 times before had ever used Emergency Contraception and none of those who had been pregnant or had impregnated someone 3 times or more before had ever used it. This further buttresses the likelihood of getting pregnant without contraception.

The importance of health education was reflected by the results in this study. While 26.0% of respondents in the study group had good knowledge of emergency contraception before the intervention, the proportion increased to 76.9% after the intervention (p=0.000). In the control group, the percentages of respondents with good knowledge were 29.1% and 27.5% respectively before and after the intervention.

Also before the intervention, 41.0% of the study group respondents had good knowledge of susceptibility to sexual activity and pregnancy. The percentage increased to 78.1% after the intervention with a statistical significance. In the control group however, the proportion of respondents with good knowledge of susceptibility to sexual activity and pregnancy were 45.3% and 44.2% before and after the intervention respectively. Furthermore, 56.1% and 74.0% of the study group
respondents had good knowledge of severity of effect of pregnancy on adolescents before the intervention and after the intervention respectively. However, after intervention, 74.0% had good knowledge and this was statistically significant (p=0.000). Similar changes in knowledge due to health education intervention had been reported in previous studies in Enugu, \cite{13} Ilorin\cite{2} and in South-West England.\cite{7}

The proportion of respondents with correct knowledge of the most important indication for emergency contraception in the study group was 75.8% and 95.2% pre and post intervention respectively. This was statistically significant with p=0.000. In the Control group 54.3% and 50.3% respectively had correct knowledge before and after intervention.

Also, 66.7% of the respondents in the study group had correct knowledge of Time frame for use of emergency contraception before the intervention and this increased to 93.7% of them after the intervention (p=0.000) while in the control group, 75.6% and 76.9% of the respondents had correct knowledge before and after intervention. This is similar to changes observed in South-West England in which the proportion of students who knew the correct time limit of EC increased by 16% after health education intervention.\cite{7}

*FGD was consistent with poor knowledge. One of the respondents during the FGD said it was not safe to use EC because the negative side effects outweigh the positive side effects. Another respondent during the FGD said that the EC was used for termination of early pregnancy. All these misconceptions keep pointing to a need for concerted effort by all governments to draw up policies that will integrate sexuality*
education with special emphasis on EC in the curriculum of secondary school students.

In the study group, 12.8% and 19.7% of the respondents had ever used emergency contraception before and after intervention respectively while in the control group, 14.6% and 16.3% of respondents had ever used emergency contraception before and after intervention respectively. This also reflected the importance of health education intervention in improving not only the knowledge, but also the use of emergency contraception.

In the study group, 14.3% of the respondents had correct knowledge of timing of usage of emergency contraception before the intervention. This increased to 92.4% after the health education intervention while in the control group, the proportion of respondents with knowledge of correct usage of Emergency Contraception was 10.8% and 17.1% before and after intervention respectively. The effects of health education intervention in ensuring emergency contraception is procured and used correctly by sexually active adolescents have been shown in this study.
CONCLUSION

Mean knowledge score about EC at pre-intervention was 26.7 ± 14.4 and 27.4 ± 14.1 in both study and control groups. Students’ past usage of EC too was low among both groups (12.8% and 14.6% in study and control group). Health Education Intervention (HEI) led to statistically significant increase in knowledge score from 26.7 ± 14.4 to 46.7 ± 6.2 and increase in usage of EC from 12.8% to 19.7% among the study group. Such increases were not noted among control group (knowledge score from 27.4 ± 14.1 to 28.72 ± 12.2 and increase in usage of EC from 14.6% to 16.3% was noted among the control group). Among respondents that used EC, HEI led to statistically significant increased usage within correct time frame from 14.3% to 92.4% post-intervention.

Factors that positively affected usage of EC were male gender with more males having EC used among their sexual partners; those with divorced/separated parents used it more; those whose fathers had up to secondary level of education used it more; and those with higher knowledge score had a higher level of EC usage. Key findings from the focus group discussion (FGD) showed that there are misconceptions about what EC is as some still feel it is used to terminate pregnancies and there is a gross knowledge gap about its side effects and time frame for usage which is a reflection of findings in the quantitative aspect. It can be concluded from this study that HEI about knowledge and use is important in adolescent sexual education.
RECOMMENDATIONS

To the Local Government

1. There is need to incorporate adolescent friendly clinic into Primary Health Care system with easy access to EC.

2. There is a need to introduce contraceptive education in the curriculum for secondary school students.

To the State Government

3. Introduction of sexual education classes at an earlier stage to inform adolescents on consequences of sexual initiation at an early stage such as social stigma, limitations in pursuing education and the health consequences for both mother and child that occur in adolescent pregnancy.

4. The need to include health education intervention programs which will address sexuality focusing on EC knowledge to help prevent misconceptions about EC.

To the Federal Government

5. There is need for a policy to incorporate sexuality education in the secondary school curriculum to address the gross knowledge gaps seen among secondary school students with special emphasis on EC

6. A policy making EC available and free for adolescent students as a form of prevention of unplanned pregnancy and reducing maternal mortality.
REFERENCES


Appendix 1: INFORMATION SHEET FOR STUDENTS

WHAT IS THE STUDY ABOUT?
This is a research study design to determine students’ knowledge and use of emergency contraception. Also health education would be offered to students and the effect of this health education would be evaluated 3 months after the health education.

WHAT IS EXPECTED OF YOU IF YOU AGREE TO PARTICIPATE?
You will be expected to answer question on age, sex, and your knowledge and use of emergency contraception.

CONFIDENTIALITY
The information collected from you will be treated in absolute confidentiality. No part or whole of it shall be divulged to anybody, agent or authority without your prior permission or knowledge.

BENEFIT OF PARTICIPATION
By your participation, you will have the benefit to be educated on emergency contraception and other issues on adolescent reproductive health.

PARTICIPATION STATUS
Your participation in this study is voluntary and your may withdraw from the study at anytime.

RISK TO RESPONDENTS
There is no risk as it is purely health education and questionnaire survey.
Appendix 2: PARTICIPANT’S INFORMED CONSENT FORM (Students)

I, .......................................................... ..........................................................

after being fully aware of my right and privileges and having been informed about the study in a language that I understand, and realizing no risk associated to this study and the benefits of participating in the study, hereby give my consent.

.......................... ..........................................................

Signature/Date Thumb print/Date
Appendix 3: INFORMATION SHEET FOR PARENT

WHAT IS THE STUDY ABOUT?
This is a research study design to determine students’ knowledge and use of emergency contraception. Also health education would be offered to students and the effect of this health education would be evaluated 3 months after the health education.

WHAT IS EXPECTED OF YOUR CHILD/WARD IF YOU AGREE TO ALLOW HIM/HER PARTICIPATE?
Your ward or child will be expected to answer question on age, sex, and knowledge and use of emergency contraception.

CONFIDENTIALITY
The information collected from your child/ward will be treated in absolute confidentiality. No part or whole of it shall be divulged to anybody, agent or authority without the prior permission or knowledge of your child/ward.

BENEFIT OF PARTICIPATION
By your child/ward participation, he/she will have the benefit to be educated on emergency contraception and other issues on adolescent reproductive health.

PARTICIPATION STATUS
Your child/ward participation in this study is voluntary and he/she may withdraw from the study at anytime.

RISK TO YOUR CHILD/WARD
There is no risk as it is purely health education and questionnaire survey.
Appendix 4: PARENT’S INFORMED CONSENT FORM

I, .......................................................... after being fully aware of my right and privileges and having been informed about the study in a language that I understand, and realizing no risk associated to this study and the benefits of participating in the study, hereby give my consent to allow my child/ward to participate.

........................ ...................
Signature/Date Thumb print/Date
Appendix 5: QUESTIONNAIRE

SECTION A: SOCIODEMOGRAPHIC DETAILS

1. Age (years at last birthday) ..........................................................

2. Sex
   1. Male
   2. Female

3. Class
   1. J.S I
   2. J.S II
   3. J.S III
   4. S.S I
   5. S.S II
   6. S.S III

4. Religion
   1. Christian
   2. Muslim
   3. Traditional
   4. Others (specify) ..........................................................

5. Tribe
   1. Yoruba
   2. Igbo
   3. Hausa
   4. Others (specify) ..........................................................

6. Father’s level of education
   1. None
   2. Primary
   3. Secondary level
   4. Tertiary level
   5. Others (specify) ..........................................................

7. Mother’s level of education
   1. None
   2. Primary level
   3. Secondary level
   4. Tertiary level
   5. Others (specify) ..........................................................

8. Type of family
   1. Polygamous
   2. Monogamous

9. Are your parents
   1. Married
   2. Separated
   3. Widowed
   4. Divorced
   5. Others (specify) ..........................................................
10. Position in the family………………………………
11. Number of siblings………………………………
12. Who do you live with
   1. Parents
   2. Relatives ❑
   3. Alone
   4. Others (specify)………………………………

SECTION B: KNOWLEDGE OF SUSCEPTIBILITY, SEVERITY, BENEFITS
AND BARRIER TO THE USE OF EMERGENCY CONTRACEPTION.

Section B1: Knowledge of Susceptibility to sexual activity and pregnancy
13. Do you know that you may find yourself in a situation whereby you will engage in sexual intercourse as an adolescents?
   1. Yes 2. No 3. I don’t know ❑
14. Do you know that you may become pregnant or impregnate a girl during your adolescent years if you engage in sexual activities?
   1. Yes 2. No 3. I don’t know ❑
15. Do you know that you may have need for contraception during your adolescent years?
   1. Yes 2. No 3. I don’t know ❑
16. Do you know that you can be engaged in sexual intercourse without the use of condom during your adolescent years?
   1. Yes 2. No 3. I don’t know ❑
17. Do you know that condom may slip or burst during sexual intercourse?
   1. Yes 2. No 3. I don’t know ❑
18. Do you know that you or your partner may miss two or more oral contraceptive pills during your adolescent years?
   1. Yes 2. No 3. I don’t know ❑

19. Do you know that you or your partner may be two weeks late in taking a shot of Depo-Provera contraception during your adolescent years?
   1. Yes 2. No 3. I don’t know ❑
20. Do you know that you or your partner may be raped during your adolescent years?
   1. Yes 2. No 3. I don’t know ❑

Section B2: Knowledge of Severity of pregnancy as an adolescents
21. Do you know that you can be pregnant or impregnate someone during your adolescent years?
   1. Yes 2. No 3. I don’t know ❑
22. Do you know that you can perform an induced abortion or instruct your partner to perform an induced abortion during your adolescent years?
   1. Yes 2. No 3. I don’t know ❑
23. Do you know that you or your partner can die as a result of performing an induced abortion during your adolescent years?
1. Yes 2. No 3. I don’t know [ ]

24. Do you know that you or your partner may end up with infertility later in life as a result of performing an induced abortion during your adolescent years?
   1. Yes 2. No 3. I don’t know [ ]

25. Do you know that your academic career or that of your partner may end up being truncated as a result of adolescent pregnancy?
   1. Yes 2. No 3. I don’t know [ ]

26. Do you know that adolescent pregnancy that is carried to term can increase the chances of Pregnancy-induced hypertension?
   1. Yes 2. No 3. I don’t know [ ]

27. Do you know that adolescent pregnancy that is carried to term can increase the chances of Anemia in pregnancy?
   1. Yes 2. No 3. I don’t know [ ]

28. Do you know that adolescent pregnancy that is carried to term can increase the chances of Obstructed labour?
   1. Yes 2. No 3. I don’t know [ ]

29. Do you know that adolescent pregnancy that is carried to term can increase the chances of Maternal death?
   1. Yes 2. No 3. I don’t know [ ]

30. Do you know that adolescent pregnancy that is carried to term can increase the chances of Pre-term delivery?
   1. Yes 2. No 3. I don’t know [ ]

31. Do you know that adolescent pregnancy that is carried to term can increase the chances of Peri-natal Death?
   1. Yes 2. No 3. I don’t know [ ]

Section B3: Knowledge of Benefit of use of emergency contraceptive
32. Do you know that Emergency Contraception can help prevent adolescent pregnancy when sexual intercourse is unprotected?
   1. Yes 2. No [ ]

33. Do you know that Emergency Contraception can help prevent adolescent pregnancy when condom spills or breaks?
   1. Yes 2. No [ ]

34. Do you know that Emergency Contraception can help prevent adolescent pregnancy when one or more oral contraceptive pill is missed?
   1. Yes 2. No [ ]

Section B4: Knowledge of Barriers to the use of emergency contraceptives
35. Do you know that Emergency Contraception can lead to nausea as side effect?
   1. Yes 2. No [ ]

36. Do you know that Emergency Contraception can lead to vomiting as side effect?
   1. Yes 2. No [ ]
SECTION C: KNOWLEDGE ABOUT EMERGENCY CONTRACEPTION (EMERGENCY FAMILY PLANNING)
37. Have you ever heard of emergency contraception (emergency family planning).
   1. Yes  [ ]
   2. No

IF ANSWER TO Q37 IS NO, END OF QUESTIONNAIRE FILLING
38. How did you first learn about Emergency Contraception (emergency family planning)?
   1. Radio
   2. Television
   3. Parents
   4. Hospital/Health Worker
   5. Friend
   6. Books
   7. Siblings
   8. Newspaper
   9. Internet
   10. Teacher
   11. Sexual partner
   12. Others (specify) …………….

39. What do you know as Emergency Contraception (emergency family planning)?
   (Tick the one you know, you can tick more than one option)
   A. Combined pills (estrogen & progesterone)
   B. Progesterone only pill (e.g. postinor)
   C. Intrauterine Contraceptive Device
   D. Menstrogen
   E. Gyneacosid
   F. Antibiotics
   G. Alcohol mixed with lime
   H. Lime mixed with potash & salty water
   I. Bitter lemon drink
   J. Others (specify) …………….
   K. I don’t know*

40. Are you aware of any of the side effects of Emergency Contraception (emergency family planning)?
   1. Yes  [ ]
   2. No

41. If yes to Q40, which of the following side effects do you know of most?
   1. Nausea  [ ]
   2. Vomiting
   3. Fatigue
   4. Delayed menstruation
   5. Others (specify) ……………………………
   6. I don’t know

42. When is Emergency Contraception most importantly indicated?
   1. Unprotected sexual intercourse  [ ]
   2. Condom breaks or slips during intercourse
   3. Missing of oral contraceptive pills
   4. Depoprovera is two or more weeks late.
   5. Vagina spermicide only is used
   6. Diaphragm or cervical cap is dislodged during intercourse.
   7. I don’t know
43. What is the time frame to use Emergency Contraception after unprotected/under protected intercourse? (pick most appropriate answer)
   1. Within 12 hours
   2. Within 24 hours
   3. Within 72 hours
   4. Within 120 hours
   5. Within 7 days
   6. Greater than 7 days
   7. Others (specify)………………………………………
   8. I don’t know
44. Where can Emergency Contraception be obtained? (tick the one(s) you know; you can tick more than one option)
   A. Hospital/clinics
   B. Pharmacy
   C. Community based distribution
   D. Patent medicine store
   E. Family planning clinic
   F. Drug hawkers
   G. Others (specify)……………………………………
   H. I don’t know
45. The following(s) is/are true about Emergency Contraception. (you can tick more than one option)
   A. It can be used only once in a lifetime
   B. It can only be procured from a specialist family planning clinic.
   C. It can only be used up to 12 hours after unprotected sexual intercourse.
   D. It is a mega dose hormone that works by poisoning.
   E. It is the same as having an abortion
   F. It always makes the user vomit
   G. Menstrogen is an example of Emergency Contraception
   H. Gyneacosid is an example of Emergency Contraception.

SECTION D: USAGE OF EMERGENCY CONTRACEPTION
46. Have you ever had sexual intercourse before?
   1. Yes
   2. No
   IF NO TO Q46 END OF QUESTIONS FILLING
47. How often do you engage in sexual intercourse? (Pick nearest estimate)
   1. Daily
   2. Weekly
   3. Fortnightly
   4. Monthly
   5. Once in 3 months
   6. Once in 6 months
   7. Others (specify)………………
   8. I cannot say
48. In the last 3 months how many times did you engage in sexual intercourse?
   ……………………………
49. Since sexual initiation, how many sexual partners have you had?
50. If yes to Q46 have you ever used any form of contraception before?
   1. Yes
   2. No

51. If yes to Q50 what type of method of contraception have you used before? (You can tick more than one option)
   A. Condom
   B. Oral contraceptive pills
   C. Emergency Contraception
   D. Spermicide
   E. Safe periods
   F. Rhythm method
   G. Withdrawal
   H. Others (specify)……………………..

52. Have you ever used Emergency Contraception
   1. Yes
   2. No

53. If yes to Q52 what type did you use?
   1. Combined pill
   2. Progestin only pill (postinor)
   3. Intrauterine contraceptive devise.
   4. Others (specify)……………………………………………………

54. Where did you get the Emergency Contraception that you used?
   1. Pharmacist
   2. Family planning clinic
   3. Patent medicine store
   4. Friend
   5. Sexual partner
   6. Others (specify)…………………………..

55. How many hours following unprotected sexual intercourse did you use it? (Pick most appropriate)
   1. Within 12 hours
   2. Within 24 hours
   3. Within 72 hours
   4. Within 120 hours
   5. Within 7 days
   6. Greater than 7 days
   7. Others (specify)………………

**SECTON E: FACTORS AFFECTING THE USE OF EMERGENCY CONTRACEPTION (THIS SECTION IS FOR THOSE WHO HAVE USED EMERGENCY CONTRACEPTION BEFORE)**

56. Do you have a friend or a group of friends that you discuss about contraception with?
   1. Yes
   2. No

57. If answer to Q56 is yes, how many such friends do you have-------------------
58. Do you have membership with a reproductive health club/group where issues about contraception are discussed?
   1. Yes  
   2. No  
59. If answer to Q58 is yes, what is the name(s) of such group/club?------------------
60. Have you been pregnant or impregnated someone before ?
   1. Yes  
   2. No  
61. If yes to Q 60, how many times have you been pregnant or impregnated someone before?---------------------------------------------

62. What was the outcome of the last/most recent pregnancy ?
   1. Currently pregnant  
   2. Aborted it  
   3. Delivered the baby  
63. If currently pregnant, what do you hope to do to the pregnancy?
   1. Abortion  
   2. Deliver the baby  
   3. I don’t know  
   4. Others (specify)..............................................................
64. If you have used emergency contraception before, was the Emergency Contraception paid for or free?
   1. Free  
   2. Paid for  
65. If paid for, how much did you pay?...........................................
66. Is Emergency Contraception readily available whenever you want to use it?
   1. Yes  
   2. No  
67. Did you experience any side effect when you used the emergency contraception?
   1. Yes  
   2. No  

Appendix 6: FOCUS GROUP DISCUSSION GUIDE

GROUP COMPOSITION

1. Coordinator (Researcher)
2. Photographer
3. ‘Research Assistant in charge of audio recording
4. Research Assistant in charge of note taking
5. 4 FGD groups each comprising of 8 participants of students of public secondary schools in Ilorin
6. Medium of communication : English

OBJECTIVES

1. To assess the student’s knowledge about emergency contraception.
2. To determine the level of use of emergency contraception among the students.
3. To identify factors responsible for the use of emergency contraception among the students.
4. To design and implement a Health Education Intervention on contraception with special emphasis on emergency contraception.
5. To assess the change in their level of knowledge and use of emergency contraception following the Health Education Intervention.

PROCEDURE

1. Introduction of the researcher, assistants and the purpose of the study.
2. Highlight the benefit of such Program to the individuals involved and the community at large.
3. Assurance of confidentiality of individual opinion

4. Acknowledge the sensitive nature of the issue for discussion but emphasize the importance and need for such discussion.

5. Convenient sitting arrangement and relaxed atmosphere will be provided.

6. Follow-up questions will be asked where necessary.

ISSUES FOR DISCUSSION

1. What is contraception

2. Source of knowledge about contraception

3. Perceived susceptibility to sex and pregnancy

4. Perceived severity of the effect of adolescent pregnancy

5. Types of contraception

6. What is emergency contraception

7. Side effects of emergency contraception

8. Categories of those to use emergency contraception

9. Indications for Emergency Contraception

10. Perceived benefits of the use of Emergency contraception

11. Safety of emergency contraception

12. Effectiveness of emergency contraception

13. Time frame for the use of emergency contraception

14. Perceived barriers to the use of Emergency Contraception

15. Where emergency contraception can be obtained

16. Misconceptions about emergency contraception

17. Involvement in sexual intercourse
18. Age at first sexual intercourse

19. Reasons students engage in sexual intercourse

20. Frequency of sexual intercourse among sexually active students

21. Pregnancy among students

22. Outcomes of pregnancies

23. Abortion among students

24. Where students obtain abortion

**PROCESSING AND ANALYSIS OF DATA FROM QUALITATIVE METHOD**

After the focus group discussion session, a debriefing meeting will be held between the moderator and research assistants to examine the focus group activities and results. The tape recordings will be transcribed and reconciled with the notes taken. The recording will also be edited to remove responses that were forced from the participants or sessions that were poorly transcribed.

The results of the focus group discussion will be summarized in a logbook such that the full ranges of discussions are entered. It will display all the responses on the right side and columns for each FGD sessions on the left.
Appendix 7: HEALTH EDUCATION MANUAL

ADOLESCENT SEXUALITY

✓ Adolescents constitute about 20% of the world’s population.

✓ 20-50% of adolescents have initiated sexual activity

✓ Age at first sexual intercourse ranges from 14-18 years.

✓ 20% of secondary school girls in Nigeria are sexually active.

✓ Unintended pregnancy poses a major challenge to the reproductive health of young adults.

✓ In a study in Ilorin, Nigeria, 5% of all sexually active adolescent girls have been pregnant all of which were unintended. This led to an induced abortion rate of 100%.

✓ In USA (2000) adolescents had over 800,000 pregnancies of which 85% were unintended.

✓ Studies from Western and Southern Nigeria have found rates of contraceptive use among sexually active adolescents of about 30%.

✓ This is considerably lower than the rates reported for developed countries. For example, contraceptive prevalence among sexually active Danish adolescents is 93%.

✓ About 20% of teenagers conceive during their 1st sexual exposure and 50% within the first 6 months.

✓ Unsafe abortion therefore, is often the end result of an unintended pregnancy, which in turn is often the result of lack of contraceptive use. This trend is most profoundly demonstrated among adolescents.
Hospital – based studies have shown that in Nigeria, up to 80% of those with abortion – related complications are adolescents.

Izugbara in southern part of Nigeria reported that 84% of males and 92% of female adolescents did not use any form of contraception at 1st sexual encounter.

One of the major factors responsible for unintended pregnancies and unsafe abortion is lack of knowledge of the various methods of contraceptives available especially Emergency contraception which is important for adolescents because of the sporadic and occasional nature of sexual intercourse among them.

The few teenage pregnancies that do not end in abortion constitute a health hazard both to the mother and fetus. The mother is at increased risk of pregnancy – induced hypertension, anemia, obstructed labor and its sequelae.

They are also three times more likely to die as a result of the complications of delivery and pregnancy than those aged 20-24 years.

The fetus is prone to be delivered preterm, small for gestation age and has an increased risk of perinatal death.

**VARIOUS CONTRACEPTIVE METHODS**

- Abstinence
- Condoms
- Spermicidies
- Oral Contraceptives
EMERGENCY CONTRACEPTION (EC)

✓ Among the various forms of contraception, emergency contraceptives are the only one that can be used after sexual intercourse, offering a second chance to prevent unintended pregnancy
✓ Emergency contraception is a safe, effective and cheap way to prevent pregnancy.
✓ It involves methods of contraception used for preventing a pregnancy after an unplanned or unprotected sexual intercourse.
✓ The concept appears appropriate for adolescents and students who engage in sporadic and occasional sexual intercourse.
✓ The effectiveness of EC is proved by the fact that it has the capacity to prevent 85% of pregnancies that would otherwise occur in cases of unprotected sexual intercourse. Also timely use of EC could prevent up to 70% of abortions.
A study on tolerability of EC in adolescents to prove its safety revealed that there was no serious adverse effect on the adolescents that used it.

Only minor expected side effects like nausea, fatigue and vomiting occurred. The onset and mean duration of menstruation was comparable before and after its use.

Another important rationale for EC is the fact that traditional, moral and religious beliefs of Nigerians make it difficult to accept legal abortion as an option.

EC therefore remains one of the major potential solutions to the problem of unwanted pregnancies. More so, it can be self administered without the need for a prescription. This makes it easy for the use of EC to overcome some of the barriers that limit access to effective contraception in Nigeria.

Not to be forgotten, also, is its important use in the event of rape or sexual assault.

EC have been available in form of oral pills also known as Yupze method.

Emergency Contraceptive Pills (ECP) is indicated anytime sexual intercourse is unprotected (e.g. nothing is used to prevent pregnancy) or under – protected. Under – protection occurs in such instances when a condom breaks or slips, two or more progestin only pill is missed, a depot medroxy-progesterone acetate (Depo Prevera) shot is two or more weeks late, vaginal spermicide is used alone, or a diaphragm or cervical cap is dislodged during intercourse.

There are virtually no contraindications to using ECPs in healthy adolescents. ECPs will not interrupt or harm an established pregnancy.
The approved time-frame for use of EC after unprotected intercourse is 72 hours.

The established mechanisms of action of both combination and progestin-only ECPs include delaying or inhibiting ovulation, disrupting follicular development, and/or interfering with the maturation of the corpus luteum.

The established mechanisms of action of both combination and progestin-only ECPs include delaying or inhibiting ovulation, disrupting follicular development, and/or interfering with the maturation of the corpus luteum.

**DOSAGE OF EMERGENCY CONTRACEPTION**

Emergency contraception (EC) refers to the use of estrogen and progestin – containing pills (combination emergency contraceptive pills) or levonorgestrol – only pills (progestin – only pills with dosage of 1.5 mg start within 72 hours of unprotected sexual intercourse) that are taken after unprotected intercourse to prevent pregnancy.

It is not a prescription drug.

**SOME POSSIBLE SIDE EFFECTS OF EMERGENCY CONTRACEPTION**

- Nausea
- Vomiting
- Fatigue
- Delayed menstruation
Appendix 8: Pictures taken during the Health Education Intervention

Picture 1: Researcher giving a talk during the health education intervention in one of the schools

Picture 2: A cross-section of students listening attentively during one of the sessions of health education interventions in one of the schools
Picture 3: A research assistant taking notes during one of the sessions of Focus Group Discussion

Picture 4: A research assistant giving a talk during one of the Health Education Intervention sessions in Okelele secondary school, Ilorin
Picture 5: A cross-section of students at St. Anthony’s secondary school listening attentively during one of the sessions of Health Education Intervention.

Picture 6: A cross-section of the students listening attentively during the Health Education Intervention in St. Anthony’s secondary school.
Picture 7: The researcher speaking during one of the lecture sessions of the Health Education Intervention in one of the schools

Picture 8: A cross-section of students at Bishop Smith secondary school listening attentively during the Health Education Intervention
Picture 9: A cross-section of students listening attentively during the briefing session prior to Health Education Intervention at GDSS Tanke, Ilorin.

Picture 10: A cross-section of students listening attentively during one of the sessions of health education interventions in one of the schools
Picture 11: A cross-section of students listening attentively during one of the sessions of health education interventions in one of the schools

Picture 12: The students filling the pre-test after one of the Health Education Intervention sessions in one of the schools
Picture 13: The students of Okelele secondary school, Ilorin filling the pre-test after one of the Health Education Intervention sessions in one of the schools.

Picture 14: A cross-section of students listening attentively during one of the sessions of health education intervention in St Anthony’s Secondary school.
Picture 15: A cross-section of students listening attentively during the briefing session prior to Health Education Intervention in GDSS Tanke, Ilorin

Picture 16: The students filling the pre-test after one of the Health Education Intervention sessions
Picture 17: The students filling the pre-test after one of the Health Education Intervention sessions at St Anthony’s Secondary School, Ilorin

Picture 18: A cross-section of students at GSS Maraba, listening attentively during one of the sessions of health education interventions
Picture 19: The students filling the post-test after one of the Health Education Intervention sessions.

Picture 20: The students filling the post-test after one of the Health Education Intervention sessions
Picture 21: A cross-section of students listening attentively during the briefing session prior to Health Education Intervention in GDSS Tanke, Ilorin