

**FACTORS INFLUENCING ACCEPTABILITY AND UPTAKE OF IMMEDIATE
POSTPARTUM INTRAUTERINE CONTRACEPTIVE DEVICE AMONG
ADOLESCENTS DELIVERED AT MBAGATHI DISTRICT HOSPITAL**

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A research dissertation, presented to the University of Nairobi, Department of Obstetrics and Gynecology, in partial fulfillment for the award of the degree of Master of Medicine in Obstetrics and Gynecology.

DECLARATION

I declare this dissertation does not incorporate without acknowledgement, any material previously submitted for a degree or diploma in any university and that to the best of my knowledge, it does not contain any material previously published or written by another except where due reference have been made in the text. It is the product of my own research endeavors with the guidance of my supervisors.

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This is to certify that this dissertation is the original work of Dr Yumbe Rita Kiattu, MMed student in the department of obstetrics and Gynecology, registration number H58/65050/2010, School of medicine, College of Health sciences, University of Nairobi. The research was carried out under the guidance and supervision of Prof. Omondi Ogutu and Dr. John Kinuthia. It has not been presented in any other university for award of a degree.

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DEDICATION

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ACRONYMS AND ABBREVIATIONS

WHO	World Health Organization
UNICEF	United Nations Children’s Fund
JHPIEGO	John Hopkins Program for International Education in Gynecology and Obstetrics
IUCDS’	Intrauterine Contraceptive Devices
KDHS	Kenya Demographic Health Survey
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
FP	Family Planning
LAM	Lactation Amenorrhea Method
CU T380A	Copper Intrauterine Contraceptive Device type T380A
ACOG	American Council of Obstetrics and Gynecology
MDH	Mbagathi District Hospital
PPIUCD	Postpartum intrauterine contraceptive device
VCT	Voluntary Counseling and Testing
PMTCT	Prevention of Mother to Child Transmission
ANC/PNC	Antenatal /Postnatal Care
ARV	Antiretroviral (medication/therapy)
MEC	Medical Eligibility Criteria

PR Pulse Rate

T Temperature

SPSS Statistical Package for the Social Sciences

USAID United States Agency for International Development

APHIA Aids, Population and Health Integrated Assistance

UNDP United Nations Development Programme

ERC KNH/UON Ethical Review Committee Kenyatta National Hospital/University of Nairobi

OPERATIONAL DEFINATIONS

Postpartum: The period after delivery of the products of conception until 6weeks.

PPIUCD insertion: Insertion of the IUCD during the postpartum period.

Post placental insertion: Insertion of the IUCD after expulsion of the placenta following a vaginal delivery. In this study, insertion will be within 24 hours of delivery.

Transcaesarian insertion: Insertion of the IUCD following a caesarian delivery before the uterus is sutured.

Interval insertion: Insertion of the IUCD after 4weeks of delivery or anytime in a woman's menstrual cycle as long as there is confirmation that she is not pregnant.

Acceptance: The number of clients who after counseling agreed to have the IUCD inserted Post placental delivery or Transcaesarian.

Uptake: The number of clients who agreed to the method and actually had the IUCD inserted Post placental or Transcaesarian.

Primary outcome of measure: Use of immediate PPIUCD among adolescents. Other measurable outcomes include the incidence of IUCD expulsion, continuation rates at 1-2weeks postpartum and incidence of pelvic infections.

Exit point: 1-2weeks postpartum visit at the postnatal clinic.

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ABSTRACT

There are over 18 million births among adolescents every year. These mainly occur in the developing countries and are linked to poor socio-economic status, lack of sex education, early marriages, repeat unintended pregnancy and low contraceptive use. Adolescent pregnancies are preventable with contraception but, among those able to access family planning, there's a preference for short acting methods with lower continuation rates and higher failure rates with typical use. Long acting reversible contraceptives like intrauterine contraceptive devices (IUCDS') have great potential to prevent unintended pregnancies. However, IUCD use in Kenya is at an extreme low and it is also unclear whether adolescent mothers would be willing to use the method within the postpartum period.

Objective: To determine factors influencing acceptability and uptake of immediate postpartum intrauterine contraceptive device among adolescents who have delivered at Mbagathi District Hospital (MDH).

Methodology: Cross-sectional study among adolescent mothers delivered at Mbagathi District Hospital. Consenting eligible adolescents were consecutively enrolled and completed a structured questionnaire that assessed socio demographic status, knowledge and use of family planning (FP). Counseling on FP was done and a postpartum intrauterine contraceptive device (PPIUCD) offered. Those who consented had the IUCD inserted within 24 hours of placental delivery. Data collected was analyzed using SPSS software version 17 to determine the acceptability and factors influencing acceptability, to determine insertion rate and the proportion of early complications post immediate PPIUCD insertion. Categorical data were analyzed by Chi square and Fischer's exact tests and continuous variables were assessed by the student's t-test.

Results: Of the 117 adolescents enrolled, 14(12%) were willing to use PPIUCD in future but only 6(5.1%) had the PPIUCD inserted. Adolescents between age 14-16 were more willing to accept the method compared to 17-19 years (OR 0.16, 95% CI 0.05-0.52). There was no significant statistical difference in the socio-demographic and reproductive characteristics among the acceptance or uptake arms of the PPIUCD and those who declined the method. The commonly cited reasons for declining the PPIUCD was lack of interest in a FP method 66(56%) and lack of PPIUCD awareness 26(22%). The most common cited reason for willingness to use the PPIUCD was its long term pregnancy protection. Among the six who had the PPIUCD inserted, the post insertion complications reported within the first two week clinic follow up were abdominal pain 3/6, and misplacement 1/6. Complementarily, 4/6 (67%) mothers were satisfied with the method and would recommend it to other adolescent mothers.

Conclusion: We found low acceptability and uptake of PPIUCD among adolescent mothers. Generally, there was lack of awareness and low prior use of the IUCD, lack of interest in FP among sexually active adolescents, myths, misperception and fear of complications cited as the barriers to use PPIUCD.

Recommendation: Adequate information on the risks of teenage pregnancies, family planning methods especially the long acting reversible contraceptive methods should be provided to sexually active adolescents during antenatal and postnatal care.

INTRODUCTION

The term adolescent; synonymously used with teenager, refers to a person who is still undergoing pubertal changes and thus has not attained full maturity, where maturity refers to the formation of an adult body form.(1) World Health Organization defines adolescents as persons within the 15-19 year age bracket. While, United Nations Children's Fund, extend this age bracket to 10-19 years.(2)(3) Due to dynamic factors such as; the progressive declining age of menarche. It is during this period of transition from childhood to adulthood that many at this age begin to explore their sexuality and have sexual relationships. In Kenya, the proportion of first time teenage mothers has declined from 5% in 2003 to 3% in 2008/09 KDHS; accompanied by a decline in the general proportion of teenage mothers from 19% to 15% in 2003 and 2008/09 respectively.(4) This reduction has been linked to the increase in the level of education among adolescent girls. However, our teenage pregnancy prevalence rate is still high compared to other countries worldwide such as France at 6%, Sweden at 4% and China at 2%.(5)(6)

LITERATURE REVIEW

The world is home to 1.2 billion individuals' aged 10-19 years.(3)(7) In Kenya, there are 9.5 million adolescents.(8) The World Health Organization estimates over 18 million births worldwide every year among this age group. These births mainly occur in developing countries and are linked to poor socio economic status, early marriages, repeat unintended pregnancies and low contraceptive use.(7)(9)(10) Sexual activity during the pubertal period puts adolescents at risk of sexual and reproductive health problems.

Majority of adolescent pregnancies in Kenya are unintended. It is estimated that more than 4 in 10 pregnancies are unplanned and on average a mother gives birth to one child more than she

wants.(11) This has been associated with several factors like, cultural practices that include early marriages (common in some communities), poor social economic factors associated with poor health seeking behaviors and lack of education including sex education.(2)(3) Other factors include gender imbalance. Young males unlike their female counterparts are often perceived to need premarital sexual experiences.(3) The young females within the similar age group conform to these standards with consequent early sexual exposure but due to inequity, the adolescent girls are unable to negotiate for the use of contraception and fear to disclose their sexual experience and practice.(12) This fear contributes to the inhibition of seeking contraceptive services from health care centers or care providers. Furthermore, there is low contraceptive use among adolescents. In 2001 in United States of America, a survey showed that 25% of adolescents did not use contraception during their first sexual experience.(6) In Kenya, only 25% of sexually active teenagers used a modern contraceptive method one month prior to the 2008/09 KDHS survey.(13)

Sexual activity as a teenager (intended or otherwise), puts an individual at risk of sexual coercion and violence, unsafe abortions, sexually transmitted infections including HIV.(2) Those that end up with a pregnancy are at risk of gross complications which include; obstructed labor, poor pregnancy outcomes, medical complications of pregnancy, maternal and infant mortality:-

Obstructed labor; teenage girls usually have a small stature. This is because they are still under developed or immature more so in their physical aspect or secondary to poor nutrition(14) As a consequence they undergo difficult deliveries. Most of these end up in caesarian deliveries. Those with undiagnosed or unaided obstructed labor risk developing vesico-vaginal or recto-vaginal fistulae.(15) These complications though are preventable, remain common traumatic complications of obstructed labor. In Nigeria and Ethiopia, more than 25% of fistula patients reported being pregnant before the age of 15 and more than 50% before the age of 18.(14)(15)

Poor pregnancy outcomes; adolescents are more prone to preterm deliveries, low birth weight and small for gestation age babies.(16) This is because pregnant teens are less likely to receive adequate prenatal care or are of poor nutritional status. Their babies also have a 17% likelihood of developing future childhood health problems in comparison to non adolescent mothers.(16)

Medical complications like anemia are quite common among adolescents. According to the 2011 journal of post graduate medical institute in Pakistan, adolescent mothers are at a higher risk of anemia 41% in comparison to 15% in mothers above 20 years of age.(14)(17) However the exact cause is not primarily due to age but secondary to nutritional deficiency following social and or environmental factors for example lack of antenatal follow up, thus late diagnosis of subclinical anemia. A similar discrepancy has been noted with hypertensive disease in pregnancy with 41% prevalence in adolescents compared to 8.1% in non adolescent.(14) Teenagers are also prone to multiple sexual partners either consensually or following coercion. Thus sexually active teens are prone to various sexually transmitted infections including HIV with a reported prevalence of 3.8% in the 2007 Kenya Aids indicator survey.(18)

Poor socio economic growth is a consequence of pregnancies that occur among school growing children. Such individuals end up dropping out of school secondary to stigma associated with teenage pregnancy and or poor support from their family and miss out in opportunities to advance their future. As reported in the 2013 adolescent reproductive policy, by the age 20, about 85 % of the would-be-in-school population has dropped out of school due to; sexual harassment, early and forced marriage, teenage pregnancy, poverty, and harmful practices such as female genital cutting.(19) In some circumstances there is risk of recurrence in that; children born to adolescent mothers may end up as young mothers as well.

Teenage pregnancy greatly contributes to maternal and infant mortality. A Kenyan survey approximated 3 in 10 adolescents procure abortions in a day.(11) Death following postabortal sepsis is a main concern, this is so as, nearly one in five maternal deaths in Eastern Africa can be attributed to unsafe abortion and more than 500 women die per 100,000 unsafe abortions.(2) Adolescents below 16 years face four times the risk of maternal death than women in their 20's.(10) In 2007, a New York study showed the infant mortality rate for children born to teenage mothers was significantly higher than the infant mortality rate among children born to non adolescent mothers at 9.8 deaths per 1000 live births versus 6.75 per 1000 respectively.(16) The figures are worse off in Kenya where the under five mortality rate is higher to mothers below 20 years at 100/1000 live births versus 77/1000 live births among mothers above 20years of age.(4)

Adolescent pregnancies can be prevented with the use of contraception. However, access to contraceptives for unmarried adolescents is difficult in many countries. This is largely because family planning programs mainly focus on married women and are not aimed to meet the needs of young people.(20) Therefore factors like age, culture, geographical location or inaccessibility to health care centers, cost of contraception, ethical matters, missed and or unmet opportunities for service act as barriers to contraceptive access for adolescents.(20)(21) In addition, some countries have laws that require young people to get parental or spousal consent to access contraceptives. This acts as a major barrier, since parents or spouses do not always support a young person's desire for family planning or decision to be sexually active.(20)(21) Among those adolescents able to access family planning, there's a preference for short acting methods with lower continuation rate and higher failure rates with typical use.(21) If no intervention is carried out, chances are they will have another pregnancy while still an adolescent, the span between one pregnancy and the next being short. Approximately 20% of adolescent mothers will give birth again within 2 years.(5)

The most commonly used methods of contraception among all currently married women in Kenya are the injectables and pills, whereas sexually active unmarried women are most likely to use condom.(4) Among the current users of any method, the use of the pill has declined from 13% in 2003, to 10% in 2008/09. While the use of injectables has increased from 31% in 2003 to 39% 2008/09, condoms use has increased from 29% to 34% in 2003 and 2008/09 respectively.(13)(22)

The contraceptive prevalence rate is lowest among 15-19 year olds at 5.9% with prevalence for short acting methods.(4) In 2008, a comparative cohort study among adolescents conducted at Langata Health Center, reported a preference for short acting methods at 76% over the long acting method Implanon at 24%.(23) This is despite high discontinuity and pregnancy rates associated with use of short acting methods.(5)

Other types of long acting contraceptives include the intrauterine contraceptive device (IUCD). These have been in use since 1929 and they have minimal side effects with great efficacy levels with a failure rate of 0.08-0.1% .(24) Newer forms of the IUCDS' that include CU T380A and Mirena are found to be safer. According to American Council of Obstetrician and Gynecologists (ACOG), the risk of pelvic infection with use of IUCDS' is 0-2% when no cervical infection is present.(5) Some critics like the Roman Catholic Church which grants personhood to a fertilized egg argue that IUCDS' are "arbotificient" as they may prevent a fertilized egg from implanting. That definition has been rejected by most scientists and medical experts.(24)(25) Uterine perforation during insertion has been shown to be rare with < 1.5 perforations per 1000 insertions occurring in large clinical trials.(24)(25) Expulsion is a common cause of failure with a prevalence of 2.8% within the first year of use.(24) However, this depends on the skill and experience of the health provider and the timing of insertion. The risk is greater if inserted beyond 48hours postpartum.(24)

Adolescent pregnancies can be prevented with the use of contraception. Advocating for the use of long term contraception like the IUCD among sexually active adolescents has the potential to prevent unintended pregnancies. Insertion in the postpartum period when the woman is highly motivated to use a contraceptive method would reduce the risk of repeat unwanted pregnancy. In 1990 Turkey, a study recognized the postpartum period as an appropriate time for contraception initiation. In this study, 95% of postpartum and 88% of postabortal women were willing to use a contraceptive method.(26) In addition, antenatal and postnatal clinic attendance among the adolescents is poor. Therefore, provision of a method at the point of contact like at the time of delivery provides an opportune time for counseling and initiation. Furthermore, the woman is known not to be pregnant, thus avoiding the delay to wait for menses or a pregnancy test.

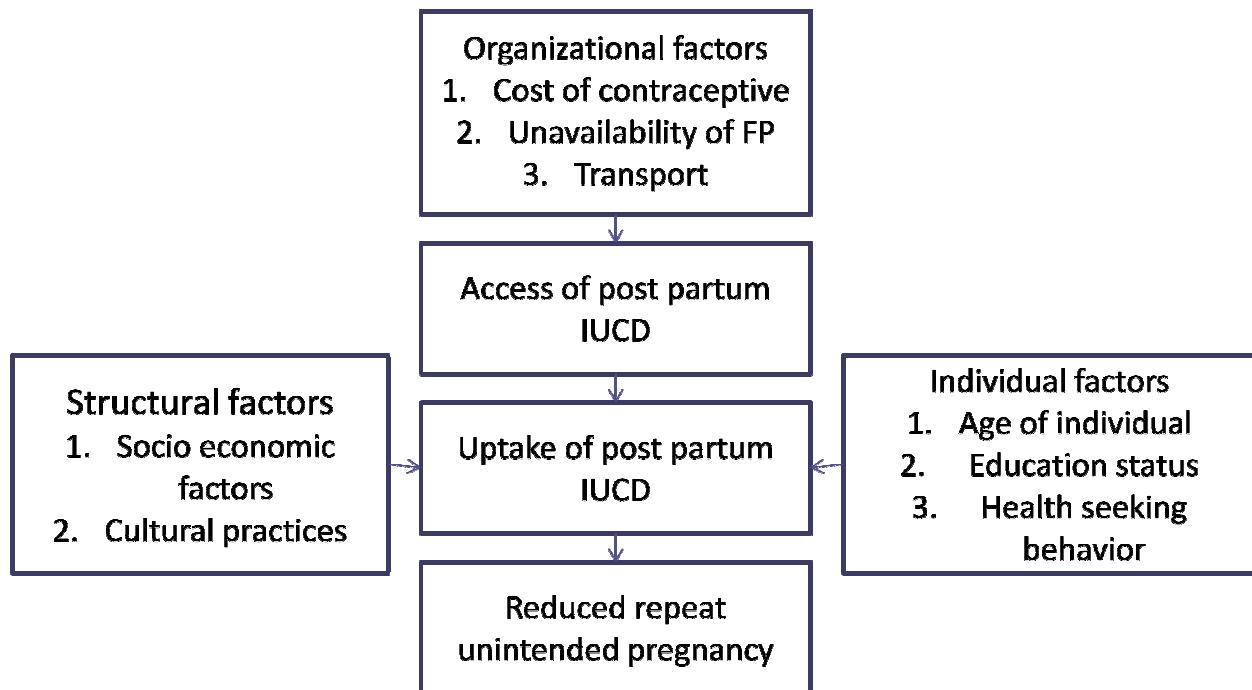
The methods for use in the postpartum period are limited. The combined oral contraceptives are not recommended in the postpartum period for their inhibiting effect on lactation.(27) A review by Baylor College of Medicine, reports progestin only methods used during lactation, small amounts of the steroids are present in breast milk. There is also no sufficient information regarding its long term effects on the neonate.(28) This limits the methods available in the postpartum method to lactation amenorrhea method (LAM), barrier methods (condoms), surgical sterilization and non hormonal IUCDS'.

IUCDS' have no effect in breastfeeding. They are generally safe to use even among the HIV positive women. They are reversible should the need to remove arise, convenient and offer a long term solution to unwanted pregnancy and child spacing. In Kenya, the average prevalence rate of IUCDS' among the reproductive age group has declined from 2.7% in 1998 to 1.6% in 2008/09 KDHS.(2) Not much has been published in Kenya in regards to the prevalence of IUCDS' among the adolescents. Though, according to a 2012 study in U.S.A by ACOG, 8.5% of adolescents use long

acting methods of which 3.9% use IUCDS'.(5) Safwat A. Mohammed et al in 2001 showed a higher acceptance rate of the IUCD among clients with formal education and among those not planning for pregnancies within the near future.(29) Those who declined did so due to poor knowledge of the method, preference of other methods like LAM or following complications experienced with prior use of IUCD.(29) However, no published independent study is present to show the acceptance and use of the IUCD among adolescents.

CONCEPTUAL FRAMEWORK

The study sought to determine what contributes to the decision of accepting a postpartum intrauterine contraceptive device as a form of family planning and the actual use/insertion of the family planning method among adolescents delivered at Mbagathi district Hospital. It focused on the correlations between unintended pregnancy and the use of family planning methods especially the PPIUCD and the structural, organizational and individual factors that influence its acceptance and uptake.



Prior studies done on unmet need of family planning among the reproductive age group have shown that acceptance and uptake of any mode of family planning is influenced by several factors. These include; inaccessibility, which has been associated with geographical location or lack of transport systems to the health facilities, cost of the available method or missed and unmet opportunities for service. Poor uptake has been associated with individual factors for instance, lack of education particularly deficient sex education, which may be linked to one's socio economic status, this generates unawareness and poor health seeking behaviors.(2)(3)

The study thus tried to find if these factors: early marriage, cultural practices found in some of our communities, and individual age contribute to lack of contraceptive use among adolescents leading to pregnancies.(9)(10) It also tried to seek out if the provision of counseling and a long term method of family planning that is the PPIUCD will help reduce repeat unintended pregnancies among the adolescents delivered at Mbagathi district hospital.

PROBLEM STATEMENT

Adolescent sexual and reproductive health needs are poorly understood and often remain largely unmet. Unprotected sexual activity puts adolescents at risk of unintended pregnancy. Adolescent pregnancies are associated with increased risk of obstructed labor, poor pregnancy outcomes, medical complications of pregnancy, maternal and or infant mortality and/or repeat unwanted pregnancies. Adolescent pregnancy can be prevented with the use of contraception. However, use of contraceptives among adolescents is low and there is preference for short acting methods over the more effective long acting method such as Implanon and intra uterine contraceptive devices. Postpartum IUCD offers contraception immediately; they are long acting, safe, efficient, convenient and reversible.

STUDY JUSTIFICATION

In the postpartum period, the woman is highly motivated to take up a contraceptive method and there is surety at the time that the woman is not pregnant. However, it is unclear whether postpartum IUCD insertion is acceptable among adolescent mothers.

The aim of this study was to determine the acceptability of the intrauterine contraceptive device as a contraceptive method in the immediate postpartum period among adolescent mothers. If this method of contraception is acceptable, policy makers will be able to use the method to bridge the unmet needs for contraception among adolescents to prevent unintended pregnancy.

RESEARCH QUESTION

What are the factors influencing acceptability and uptake of immediate postpartum intrauterine contraceptive device among adolescents who delivered at Mbagathi District Hospital in 2014?

OBJECTIVES

Broad objective:

To determine the factors influencing the acceptability and uptake of immediate postpartum intrauterine contraceptive device (PPIUCD) among adolescents who had delivered at Mbagathi District Hospital (MDH)

Specific objective:

Among adolescents delivered at MDH;

1. To determine the acceptability of immediate PPIUCD.
2. To determine the factors associated with the acceptability of PPIUCD.
3. To determine the uptake of immediate PPIUCD.

Secondary objective:

To determine immediate complications arising from insertion of PPIUCD

METHODOLOGY

Study design: This was a cross-sectional study targeting adolescent mothers who delivered at Mbagathi District Hospital.

Study site: The study was conducted at Mbagathi District Hospital, a government level 4 health facility located at the edge of Kibera slum (Africa's largest slum) and situated in Dagoretti Constituency, Nairobi County. It is approximately 5km's from Nairobi city centre. Since Nairobi is of mixed ethnicity, the patients served at the hospital cut across most racial groups present within the country. The hospital has a 200 bed capacity and offers integrated In and Outpatient services, antenatal and postnatal care, comprehensive obstetric care and deliveries, voluntary counseling and testing (VCT) as well as preventive mother to child transmission (PMTCT) services. Family

planning services are offered mainly in the postnatal clinic. There are approximately 3000 deliveries in a year; this includes adolescent deliveries that approximate 280 per annum. The obstetric department consists of three wards for both antenatal and postnatal patients as well as an active labor ward and adjacent theatre. It is run by a team of consultants and departmental matron.

Study population: The target population included all adolescents admitted for delivery at Mbagathi District Hospital during the study period. However, the sample population incorporated adolescent mothers who met the eligibility criteria and gave consent for the study. Due to the poor attendance of pregnant adolescents in the antenatal clinic and poor attendance of adolescent mothers in the postnatal clinic, not in keeping with the hospital delivery records, patient recruitment was carried out in the labor ward.

ELIGIBILITY CRITERIA

Inclusion criteria: All pregnant adolescent mothers who delivered at Mbagathi District Hospital and were,

1. Between 10 - < 20 years.
2. Had a gestation of more than 28 weeks.
3. Willing and able to provide written informed consent.

For postpartum IUCD insertion, the clients;

1. Met the eligibility criteria according to World Health Organization on intrauterine contraceptive device use.⁽³⁰⁾
2. Were willing to use and consent for the IUCD as a method of contraception.
3. Had delivered within 24 hours in the hospital labor ward.

Exclusion criteria: Eligibility for inclusion of adolescents into the study were excluded if,

1. Clinically unstable at the point of delivery or mothers who had delivered >24 hours prior.
2. Had rupture of membranes for over 36 hours prior to their delivery, as factors facilitating sepsis were presumed present.
3. Had evidence of puerperal infections like temperatures (T) > 38 degrees, pulse rates (PR) > 100 beats per minute.
4. Gave a history of complications during the intrapartum period like chorioamnionitis or during delivery for example postpartum hemorrhage, uterine rupture. (These emergencies were controlled first).
5. Had known allergies to the metals incorporated into CU T380A IUCD
6. HIV/AIDS stage 4 and not on ARV therapy.
7. Opted out after enrolment.

SAMPLE SIZE DETERMINATION

Due to no specific data on adolescent IUCD use in Kenya, as KDHS data captures the broad use of IUCD among the reproductive age group, sample size calculation was based on a recent survey done on adolescents by the American College of Obstetricians and Gynecologists, 2012. The survey showed an IUCD prevalence of 3.9% among the adolescents. In addition a six month survey on adolescent deliveries at Mbagathi District Hospital 2013 showed a total of 140, below 20 years old deliveries. Thus, the sample size formula for prevalence studies was used to determine the required sample size.(31)

$$n = \frac{NZ^2P(1-P)}{d^2(N-1) + Z^2P(P-1)}$$

$$n = \frac{140 * 1.96^2 * 0.039(0.961)}{0.02^2(140-1) + 1.96^2 * 0.039(0.961)} = 101$$

$$0.02^2(140-1) + 1.96^2 * 0.039(0.961)$$

n is required minimum sample size

N is the finite population size =140

P is prevalence of the problem = 3.9% (5)

d is the calculated precision as per the prevalence = 0.02

z is the statistic level of confidence =1.96

The sample size therefore was 101; however data was collected from 117 adolescents who presented during the study period (finite population).

SAMPLING PROCEDURE

Recruitment: Consecutive selection of pregnant adolescents, who were in their latent phase or had delivered within 24 hours at MDH labor ward, were approached by the principal investigator or research assistant and invited to participate in the study. All potential participants received an oral detailed explanation on the purpose, procedure, benefits and risks of the study from the principal investigator or research assistant.

Consent: Following a detailed explanation on the nature of the study, a written consent was obtained from adolescent mothers who had attained the age of majority (18 years) and emancipated minors (14 to 17years of age).(32)

Data collection: Questionnaire was the primary tool used for data collection or entry. It was filled by the principal investigator or research assistant after obtaining consent from the adolescents. It assessed the socio demographic characteristics, contraceptive knowledge and prior contraceptive use. This was done in labor ward at the client's bedside or in the privacy of a separate room depending on the patient's general status.

Counseling on contraceptive methods: Counseling of the adolescent mothers was offered by the research assistant or the principal investigator after questionnaire completion using the REDI protocol (Rapport, Exploration of knowledge on family planning, Decision making on a family planning method and Implementation of the decision made). This was to help explore the patient's future reproductive goals, knowledge and misconceptions associated with IUCD use. During this period, adolescent mothers were also educated on the different types of contraceptives available and recommended for use in lactating and non lactating mothers, the advantages and disadvantages of each with particular interest in the IUCD. Adolescents who accepted to use the IUCD were offered the opportunity to have the IUCD inserted if they met the eligibility criteria.

PPIUCD INSERTION TECHNIQUE

The IUCD used in the study was CU T 380A, a provision from the Department of Reproductive Health, Ministry of Health. Prior to the actual study, a pilot study was carried out by the medical personnel trained in postpartum post placental and Transcaesarian IUCD insertion. Before post placental insertion, active management of third stage of labor was to be performed to ensure complete extraction of placenta, proper uterine tonicity and repair of any tears, episiotomies and lacerations to avoid unnecessary bleeding.

Therefore upon vaginal delivery, for each of the five patients who had Transvaginal insertion, the patient confirmed that the PPIUCD was their method of choice. From the sterile set up of a drape

with two ring/ sponge forceps, an unopened, undamaged and non expired IUCD pack, the primary care giver trained on PPIUCD insertion, using clean gloves, washed the patient's perineal region with soap and water before draping. Draping was carried out by placing a dry, sterile cloth on the abdomen and beneath the patient's buttocks. With sterile gloves, thorough cleaning of the perineum with water based antiseptic like povidone iodine or chlorhexidine was done from the inside out. One or two minutes was allocated thereafter to allow the antiseptic to work. Meanwhile, one of the forceps was used to withdraw the IUCD from its pack after removal of the other contents (plunger rod and inserter tube). A Simm's speculum was then placed to depress the posterior vaginal wall for visibility of the cervix. A separate forceps was used to grip the anterior lip of the cervix.

The Simm's speculum was then removed. The cervix gently lifted to allow passage of the forceps holding the edge of the IUCD which was slowly inserted into the vagina and through the cervix into the lower cavity of the uterus. The non dominant hand was used to slowly elevate the uterus through the abdominal wall by an upward movement from above the symphysis pubis towards the umbilicus. While this position was maintained, the dominant hand with the IUCD forceps moved gently upwards to the fundus (point of resistance) and was confirmed by the non dominant hand on the abdominal wall. Thereafter, the forceps was opened and with a slight tilt to dispose the IUCD at the fundus and slowly extracted by a sweep of the uterine side wall without dislodging the IUCD.

One of the six patients, who consented to PPIUCD insertion, had a Transcaesarian insertion. A similar but manual procedure was carried out. The IUCD was held in between the index and middle fingers of the dominant hand. The non dominant hand was used to stabilize and elevate the uterus as the IUCD was placed through the uterine incision to the uterine fundus. The dominant hand was slowly withdrawn ensuring proper placement of the IUCD before closure of the uterus without incorporation of the IUCD strings in the suture.

After the insertion irrespective of the method of insertion used, the adolescent mothers were allowed to rest before being informed on the following; IUCD string assessment, IUCD maintenance and its removal if need arises as well as the adverse effects of the method which include; uterine cramps, heavy menses and displacement/expulsion. This was done according to the PPIUCD reference manual as part of the post procedure counseling. (33)

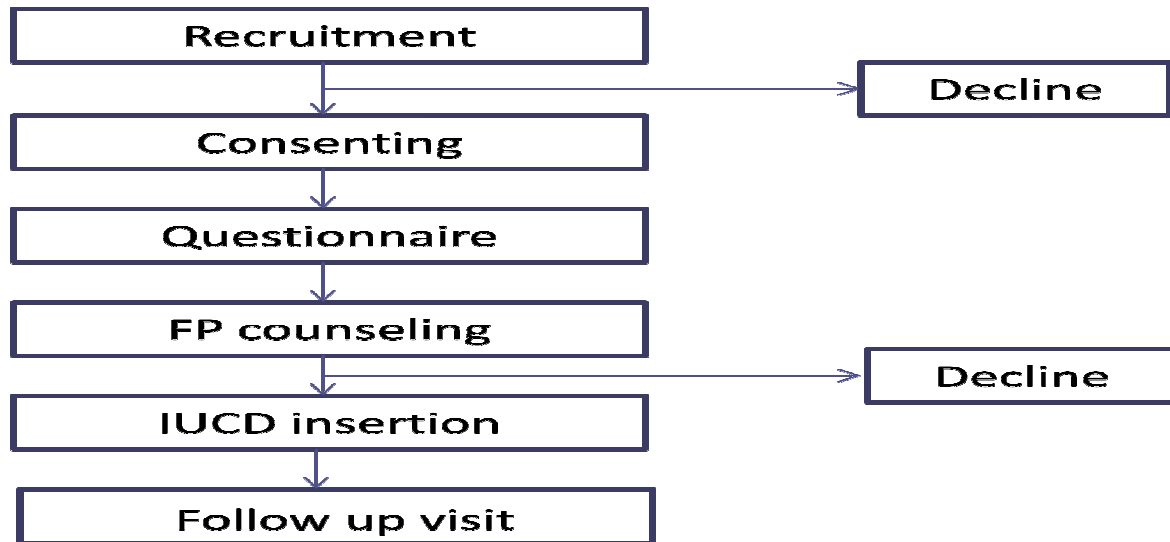
Ultrasound and post insertion follow up: Post insertion follow up was carried out on the 1st or 2nd week after insertion depending on the patient's preference and availability. This was to assess the immediate complications arising following insertion, mainly expulsion and or infections. Due to the inability to assess the strings of the IUCD immediately post insertion due to the expected large puerperal uterine size and involution process, ultrasound imaging was used as the quality assurance to localize the IUCD. Other assessments included measurements of vital signs especially temperature and pulse rate in view of puerperal infection diagnosis. Those with features of expulsion were to be counseled on other forms of contraception as well as interval insertion of the IUCD. Those with features of infection were to be offered prompt treatment.

Training: Two day training was conducted prior to the start of data collection concerning the provision of a standardized technique in the immediate PPIUCD insertion. The training participants included, a doctor to assist in Transcaesarian insertion, four nurses to assist in the post placental insertion following vaginal delivery. The training involved;

Day one: Introduction of the study to the facility and its objectives. Recap on the importance of family planning counseling and need to offer a method at the point of contact to avoid a missed opportunity, introduction of the PPIUCD, the advantages and disadvantages of PPIUCD use and the techniques of PPIUCD insertion.

Day two: Training on the research tool and of the consent forms. An overview of the course with supervised insertions carried out on willing mothers delivered at the Mbagathi District Hospital.

FLOW DIAGRAM OF CLIENT DISTRIBUTION



DATA MANAGEMENT

Data cleaning: Upon collection, data was verified and entered into the statistical software (SPSS version 17) on the same week in a coded form by the principal investigator and saved, awaiting analysis. Any missing data was collected from the patients or from patient medical records. Every precaution was taken to respect the privacy of the patients whose data was collected and analyzed in this study. Patients were identified not by name on the questionnaire but by their Inpatient number. After analysis, the data was stored as a soft copy by the principal investigator and supervisors. The hard copies were stored by the principal investigator until final completion of the study.

Data analysis: Basic socio demographic characteristics were evaluated in comparison to the outcomes of acceptability and uptake. Analysis was done as per the objectives of the study, that is, the acceptability of PPIUCD insertion among adolescents. The factors that influenced PPIUCD acceptance and insertion were determined using student t-test for continuous variables like parity

and categorical data like marital status were analyzed via chi square test or Fischer's test. Lastly, calculations were done on the proportion of any complications arising immediately following PPIUCD insertion among adolescent, during the 1-2 week interval follow up visit. All statistical tests were performed at a 0.05 level of significance (95% confidence interval).

ETHICAL CONSIDERATIONS

Permission to conduct this study was obtained from the department of Obstetrics and Gynecology at the University of Nairobi. Thereafter the study was performed following approval from the Ethical Review Committee at the KNH/UoN, Nairobi.

Patients were recruited after having signed an informed written consent after a detailed explanation of the study purpose, procedure, benefits and risks provided by the interviewer. Any information availed was collected privately at the patient's bedside or in a private room depending on the patient's health status and was kept confidential. The recruits received standard of care as all other patients attending Mbagathi District hospital labor ward, they were not penalized or denied care if they declined to participate in the study neither were they penalized if they chose to get their contraception elsewhere or in the family planning clinic thereafter.

It was also made clear that there was no direct benefit to the patient arising from participating in the study, but the results would be used to change local practice in the future. The patients voluntarily signed the consent form. Only trained personnel were allowed to take part in the post placental and Transcaesarian PPIUCD insertion. This was to ensure standardized insertions and minimal complications arising after insertion. Patients were free to withdraw from the study at any stage and still be accorded standard care.

RESULTS

One hundred and seventeen teenage mothers aged between 10 to < 20 years who delivered at Mbagathi District Hospital during the period between January and May 2014 were consecutively included in the study. The mean age of the participants was 17.5 years (SD 0.23). Majority of the teenage mothers were 96 (82.1%) aged between 17 and 19 years while majority 74/117(63.4%) of their spouses were aged 20-24 years.

Table 1: Demographic and reproductive health characteristics of teenage mothers at Mbagathi District

Hospital	Participant (n = 117)	
	N	(%)
Age group		
14-16 years	21	17.9
17-19 years	96	82.1
Level of education		
Primary	56	47.9
Secondary	55	47
College/University	6	5.1
Employment status		
Unemployed	54	46.2
Housewife	44	37.6
Employed	19	16.2
Marital status		
Married (monogamous)	74	63.2
Single	43	36.8
Residing with:		
Guardian	24	20.5
Partner	71	60.7
Parent	21	17.9
Alone	1	0.9
Reproductive health history		
Parity		
0+0	100	85.5
1+0	15	12.8
>1	2	1.7
Currently planned the pregnancy	49	41.9
Next planned inter pregnancy duration		
1-2 years	5	4.3
3-5 years	16	13.7
Above 5 years	78	66.7
Age of sexual debut		
10-15 years	15	12.8
16-19 year	102	87.2
Number of sexual partners (last 1year)		
1		88.9
2		8.6
3		2.6

Contraceptive awareness and prior contraceptive use: Table 2 presents the reported awareness of contraception among teenage mothers delivered at Mbagathi District Hospital. Most teenage mothers were more informed on oral contraceptives 89.7%; Injectable contraceptives 85.5% and condoms 67.5%. Only 6% had ever heard of the PPIUCD. Similarly, a few of the participants 16/117 (13.6%) had used any form of family planning prior to their current pregnancy. The commonly used methods were oral contraceptives and injectables 31.3% each. None of them had ever used the IUCD.

Table 2: Contraceptive awareness among teenage mothers at Mbagathi District Hospital (n=117)

Method of contraception	Proportion of participants	
	Ever Heard N (%)	Never heard N (%)
Oral contraceptives	105 (89.7)	12 (10.2)
Injectables	100 (85.5)	17 (14.5)
Condoms	79 (67.5)	38 (32.4)
IUCD	64 (54.7)	53 (45.3)
Implants	62 (53)	55 (47)
Tubal ligation	26 (22)	91 (78)
Natural methods	12 (10.2)	105 (89.7)
PPIUCD	7 (6)	110 (94)
Herbal methods	4 (3.4)	113 (96.5)
Spermicides	0 (0)	117 (100)

Willingness of IUCD use: Table 3 below shows the reasons stated for willingness to use the IUCD among these teenage mothers. The most widely stated benefit of the IUCD among those willing to use the method was its ability to offer long term contraception reported by 26 (100%) participants.

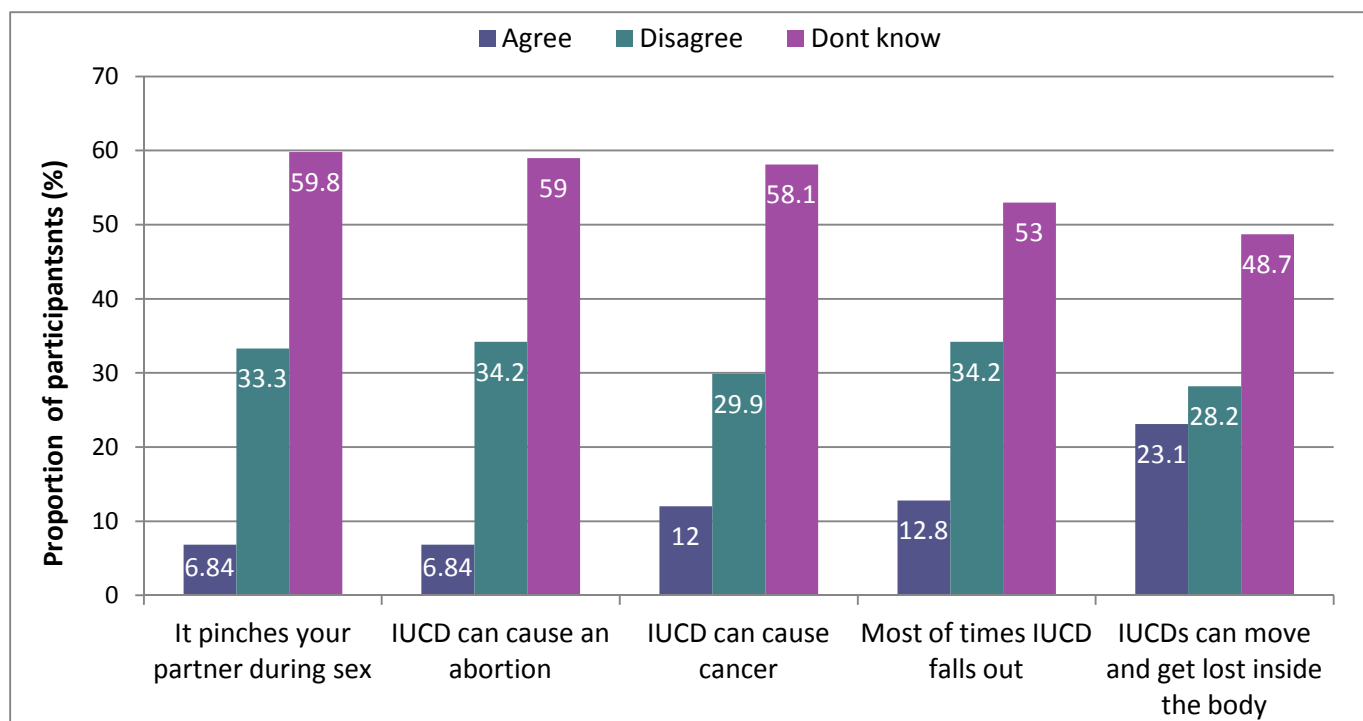
Table 3: Reason for IUCD use among teenage mothers willing to use the IUCD in future (n=26)

	(n=26)	(%)
Effective in preventing pregnancy	8	30.8
Offers long term contraception	26	100
Reversible	1	3.9
Safe	1	3.9
Has few adverse effects	1	3.9
Cost benefit	0	0.0

* The clients gave more than one response.

Myths and misconceptions of the IUCD: Mothers were asked to respond to five commonly reported misconceptions of IUCD. Between 57 out of 117(48.7%) and 70 out of 117(59.8%) mothers reported that they did not know whether any of these misconceptions were true or not (Figure 1). Of the mothers who responded by either disagreeing or agreeing with the misconception, six (6.84%) to 27 (23.1%) agreed with the myths and misconceptions associated with the IUCD. (Figure 2)

Figure 1: Myths and misconceptions of the IUCD among teenage mothers at Mbagathi District Hospital (n=117)



Acceptability of IUCD as a contraceptive method: Fourteen (12%) of the one hundred and seventeen teenage clients reported that they were willing to have an IUCD inserted in the postpartum period. As shown in Table 4, there was a statistically significant association between IUCD acceptance and age. The younger adolescents aged 14-16 years were more likely to accept the method than the older adolescent mothers aged 17-19 years (OR = 0.16, 95% CI 0.05-0.52). The other maternal characteristics were not significantly associated with IUCD acceptability among the teenage mothers at Mbagathi District Hospital (all p values > 0.05).

Table 4: Factors associated with acceptability of IUCD among teenage mothers at Mbagathi District Hospital (n=117)

	YES	NO	OR	95% CI	P value
Age group					
14-16	7(33.3)	14(66.7)	1.00		
17-19	7(7.3)	89(92.7)	0.16	0.05-0.52	0.002
Inter pregnancy interval					
1-2 years	0(0.0)	5(100.0)	NA		-
3-5 years	0(0.0)	16(100.0)	NA		-
Above 5 years	12(15.4)	66(84.6)	NA		-
Level of education					
Primary	4(7.1)	52(92.9)	1.00		
Secondary	10(18.2)	45(81.8)	2.89	0.85-9.85	0.09
College/University	0(0.0)	6(100.0)	NA		-
Employment status					
Unemployed	7(13.0)	47(87.0)	1.00		
Housewife	5(11.4)	39(88.6)	0.86	0.25-2.93	0.81
Employed	2(10.5)	17(89.5)	0.79	0.15-4.18	0.782
Marital status					
Married (monogamous)	9(12.2)	65(87.8)	1.00		
Single	5(11.6)	38(88.4)	0.95	0.3-3.04	0.932
Number of children desired					
0	1(33.3)	2(66.7)	1.00		
1	4(14.8)	23(85.2)	0.35		0.43
2	5(13.9)	31(86.1)	0.32	0.02-4.26	0.39
3	3(10.7)	25(89.3)	0.24	0.02-3.51	0.297
4	0(0.0)	10(100.0)	NA		-
Not stated	1(7.7)	12(92.3)	0.17	0.01-3.89	0.265
Parity					
0+0	13(13.0)	87(87.0)	1.00		
1+0	1(6.7)	14(93.3)	0.48	0.06-3.95	0.493
>1	0(0.0)	2(100.0)	NA		-
Residing with					
Guardian	3(12.5)	21(87.5)	1.00		
Partner	10(14.1)	61(85.9)	1.15	0.29-4.57	0.845
Parent	1(4.8)	20(95.2)	0.35	0.03-3.65	0.38
Alone	0(0.0)	1(100.0)	NA		-
Previous FP use					
Yes	3(18.8)	13(81.3)	1.00		
No	11(10.9)	90(89.1)	0.53	0.13-2.15	0.375

Table 4 above depicts, fourteen (12%) participants accepted to use the PPIUCD, but only eleven (9.4%) of the initial fourteen adolescent mothers willing to use the PPIUCD consented to the insertion as shown in Table 5. Seven (6%) of these had ever heard of IUCD insertion in the immediate post partum period and among these seven, five (4.3%) had the PPIUCD inserted. The most commonly cited reason for using the PPIUCD was they did not want to get pregnant soon (100%).

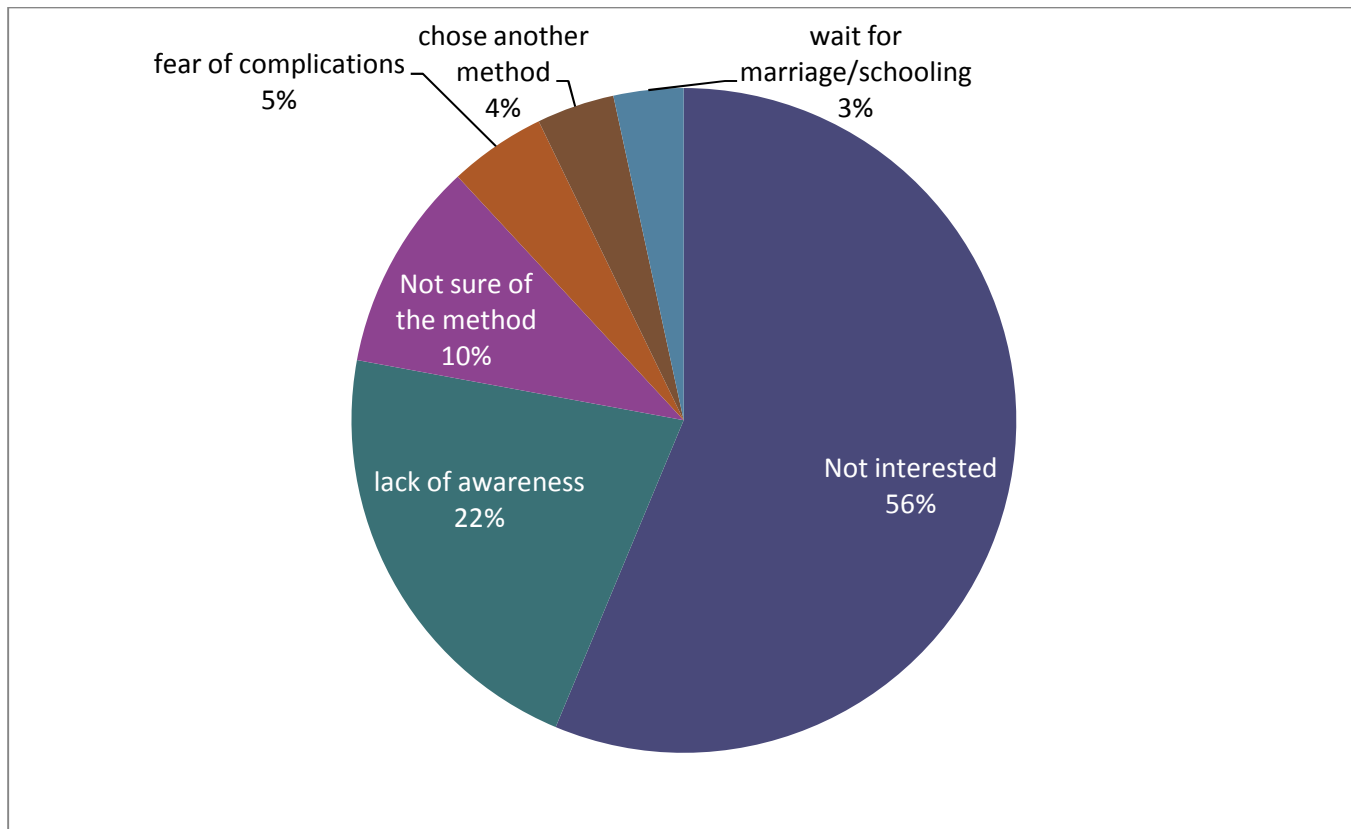
Table 5: PPIUCD awareness and reason for willingness to use PPIUCD among teenage mothers' in Mbagathi District Hospital

	Frequency	Percent (%)
Ever heard of postpartum IUCD insertion	7	6
Would like IUCD inserted immediately	11	9.4
Heard of PPIUCD and had PPIUCD inserted	5	4.3
Reasons for use among those who accepted the PPIUCD (n=11)		
Convenience	2	18.2
Didn't want to get pregnant soon	11	100
Effectiveness	3	27.3
Cost-effective	2	18.2

*The responses on reasons to use were varied and the participants gave more than one response

Figure 2 expounds on the reasons reported by the participants, not willing to have the PPIUCD, why they did not prefer the postpartum IUCD. Majority cited lack of interest 60/106 (56.3%) and lack of knowledge of the method 23/106 (21.6) as the main reasons of reluctance on PPIUCD use.

Figure 2: Reasons for reluctance to use PPIUCD among adolescent mothers delivered at Mbagathi District Hospital (n=106)



Postpartum IUCD uptake: Out of the eleven (9.4%) teenage clients who had initially accepted to have the immediate PPIUCD at Mbagathi District hospital, the actual uptake of IUCD among teenage mothers was 6 out of the 117 (5.1%).

Three out of the eleven clients could not have the insertions due to complications following their delivery. That is; one postpartum hemorrhage, one poor fetal outcome associated with mother declining the PPIUCD insertion and the other was later referred to Kenyatta National Hospital for surgical delivery and thus did not meet our inclusion criteria. Two out of the eleven missed out in the insertion because one of the clients had cesarean section and the research assistant forgot to insert

the PPIUCD intra operatively and the patient opted for an interval insertion in the postnatal period. The other client consented but was later convinced otherwise by her husband's relatives against family planning and thus went home without a method.

Table 6 shows analysis comparing the characteristics of mothers who had IUCD inserted to those who did not take up IUCD. There was a statistically significant association between IUCD uptake and age. The younger adolescent mothers aged 14-16 years were more likely to take up the method than the older adolescent mothers aged 17-19 years (OR = 0.21, 95% CI 0.06-0.78). The remaining maternal factors including education level, occupation and reproductive health history were not significantly associated with IUCD uptake (P value >0.05).

Table 6: Factors associated with uptake of PPIUCD uptake among teenage mothers at Mbagathi District Hospital

	YES	NO	OR	95%CI	P value
Age group					
14-16	5(23.8)	16(76.2)	1		
17-19	6(6.3)	90(93.8)	0.21	0.06-0.78	0.02
Planned inter pregnancy interval					
1-2 years	0(0.0)	5(100.0)	NA		-
3-5 years	0(0.0)	16(100.0)	NA		-
above 5 years	9(11.5)	69(88.5)	NA		-
Level of education					
Primary	4(7.1)	52(92.9)	1		-
Secondary	7(12.7)	48(87.3)	1.9	0.52-6.88	0.331
College/University	0(0.0)	6(100.0)	NA		-
Employment status					
Unemployed	5(9.3)	49(90.7)	1		-
Housewife	4(9.1)	40(90.9)	0.98	0.25-3.89	0.977
Employed	2(10.5)	17(89.5)	1.15	0.2-6.5	0.872
Marital status					
Married (monogamous)	8(10.8)	66(89.2)	1		
Single	3(7.0)	40(93.0)	0.62	0.16-2.47	0.497
Number of children desired					
0	1(33.3)	2(66.7)	1		
1	4(14.8)	23(85.2)	0.35		0.43
2	3(8.3)	33(91.7)	0.18	0.01-2.64	0.212
3	2(7.1)	26(92.9)	0.15	0.01-2.53	0.19
4	0(0.0)	10(100.0)	NA		-
Not stated	1(7.7)	12(92.3)	0.17	0.01-3.89	0.265
Parity					
0+0	10(10.0)	90(90.0)	1		
1+0	1(6.7)	14(93.3)	0.64	0.08-5.42	0.685
>1	0(0.0)	2(100.0)	NA		-
Residing with					
Guardian	1(4.2)	23(95.8)	1		
Partner	9(12.7)	62(87.3)	3.34	0.4-27.83	0.265
Parent	1(4.8)	20(95.2)	1.15	0.07-19.6	0.923
Alone	0(0.0)	1(100.0)	NA		-
Previous FP use					
Yes	2(12.5)	14(87.5)	1		
No	9(8.9)	92(91.1)	0.68	0.13-3.5	0.649

Complications following PPIUCD insertion: There were a limited number of complications noted during the 1st or 2nd week follow up visit (according to patient's availability and preference) among the 6 mothers who had IUCD inserted after delivery. The main complication was pain reported after the insertion procedure in three of the six adolescent mothers. Upon examination, one of the adolescent mothers had a downward displacement of the IUCD into the cervical canal with visible IUCD strings despite a uterus size of 18 weeks and this was confirmed in the follow up ultrasound and the IUCD was removed. None of the participants had features of an infection. Two of the six mothers were lost to follow up thus could not be assessed for immediate complications arising from PPIUCD insertion.

On the contrary, four mothers reported that they would recommend the procedure to other mothers.

DISCUSSION

The results show, a low rate of PPIUCD acceptability and uptake among adolescent mothers. These findings are in keeping with the 2008/09 national survey that reported the use of the IUCD among the reproductive age group was at a relative low at 2%.⁽⁴⁾ It could be that this form of contraception is not widely acceptable in Kenya as this rate of IUCD use is negligible if compared to the 2008 Egyptian survey that reported a 36% use of the method among women of the reproductive age group.⁽³⁴⁾

In our study, mothers of 17-19 years were less likely to accept the PPIUCD than mothers aged 14-16 years. This could be due to a positive partner/guardian influence among the younger 14-16 aged mothers. An informed consent for the younger <16 participants was collected from their guardians prior to their enrolment into our study. Consequently, their guardians/partners may have positively influenced their decision into long term contraceptive use. The most commonly cited reason for choosing the postpartum IUCD was its ability to offer long term contraception.

Other social demographic factors like the level of education, marital status and desired inter pregnancy interval did not show a statistical influence on acceptance. This finding is similar to the 2004 El Salvador study among the adolescents in the postpartum period which showed education/literacy did not influence contraceptive use or intention to use; but, in their study, married adolescents were more willing to accept IUCD.⁽³⁵⁾

In our study, factors arising as prohibitive to the acceptance of PPIUCD use included:

Low levels of awareness of the method. Majority of the participants in our study population were unaware of the PPIUCD. Most of the participants hence preferred to use methods they were more aware of which were the short acting methods like condoms and injectables. Commonly it is highly likely for one to accept a method they are more informed of. In a local study done by Ndegwa et al

in Embu Provincial General Hospital, the centre of PPIUCD revitalization in Kenya, a higher acceptability of 72% was noted following the marked awareness of the method within the study population.(36)

No prior utilization of the method. Among the few adolescents who had used any modern method of contraception, none of them had ever used the IUCD. According the 2012 American college of gynecologists' review, barriers to the wide use of long acting reversible contraceptives is lack of familiarity.(5) In Egypt, a study by Mohammed S.A et al reported a higher uptake of the PPIUCD among the reproductive age group at 23.7%. Among those who accepted the method, 49% of the mothers had used the IUCD before.(29)

Myths and misconceptions associated with the IUCD. The results showed that some of the participants agreed with the myths and misconceptions associated with the IUCD while most of the adolescents were not knowledgeable if these myths and misconceptions were true or not. A study done in Ghana and El Salvador among the reproductive age group and teenagers respectively showed that women with negative perceptions of the IUCD were less likely to accept the method as these misconceptions, negatively influenced their opinions on the method.(34)(35) Also a qualitative assessment on IUCD use done by Stanback et al found rumors and misconceptions to be the main barriers to the utilization of the IUCD.(38) In a local study, Ndegwa found that 5-11% of her study participants believed in the myths surrounding the PPIUCD and hence declined to take up the method.(36) Similarly, a PPIUCD study conducted in Pumwani Maternity and KNH by Balleith et al also showed 11- 21% of her study participants declined to have the PPIUCD inserted due to the associated myths and misconceptions.(39)

In our study, only 6/117(5.1%) of the teenage mothers had postpartum IUCD insertion. This was higher than the IUCD use note among adolescents in U.S.A at 3.9% according to the ACOG 2012,

but much lower than the 40% uptake in a similar postpartum study done by Weston et al among African American adolescents in U.S.A. (5)(40)

The uptake of the PPIUCD was low despite the method offering an immediate, long term, safe, efficient, convenient and reversible mode of family planning. The results indicate that although prior family planning counseling was offered to the adolescent mothers, majority of them left the hospital without a contraceptive method, as most of them were not interested in an immediate postpartum method of contraception. It could be possible that the adolescent mothers in our study population are unaware of the risks and complications associated with teenage pregnancy and motherhood.

Other factors noted as contributory to the low uptake of the PPIUCD included, shift of family planning preference following delivery, fears and concerns of the IUCD method. This finding was similar to a postpartum study done among adolescents in U.S.A that found fears and concerns (including those influenced by peers, family and partners) played a major role in the decline of postpartum IUCD among adolescents as well as the shift in birth control preference after delivery.(40) A difference however noted between our population and theirs was in addition to the above, postpartum adolescent mothers in the U.S.A were unlikely to use the PPIUCD due to service level obstacles like insurance policies, lack of clinic access and missed scheduled appointments.(40)

Among our study population more than half of the participants were not willing to use any form of a family planning method. This is of deep concern as many of them reported their current pregnancy was unplanned at a rate higher than the 42% stated nationally.(4)(23) In view of this, since our study did not address this specifically, a study to look into factors associated with lack of interest in family planning would be necessary as these mothers are at a high risk of a repeat unintended pregnancy. The incidence of this being 84% within one year among the general population of mothers following regular unprotected sex.(18)

During follow up, despite reminders to the clients about their return date, two out of the six adolescents who had the PPIUCD inserted were lost to follow up. This finding was similar to those by Weston et al in a study evaluating factors influencing IUCD uptake among adolescents in the postpartum period. In this study the adolescent mothers cited poor postnatal clinic attendance to the multiple responsibilities of new parenthood.(40) It is possible this also afflicted our adolescent mothers given the follow up visits were done within the first two weeks of delivery.

There were a limited number of complications among participants who had the PPIUCD inserted. This shows that the method is associated with few complications and if policy makers in Kenya supported and promoted its use among adolescent mothers, it may be a widely accepted method that may help curb unwanted and repeat pregnancies among adolescents.

The study had several limitations; adolescence is a fragile age group, in our study, not all adolescent mothers especially those below 16 years of age were able to give consent despite their willingness to participate in the study. The need to get parental assent for these adolescent mothers limited data collection given the time limit of 24 hours for the PPIUCD insertion.

With the poor tendency to seek postnatal services among adolescent mothers, there was loss of follow up after the primary point of contact during delivery. This limited information needed to assess all complications arising following the PPIUCD insertion. In addition, a longer follow up would have been of interest to consolidate the outcome variables of continuation of the method or repeat pregnancy rates thereafter.

Our study was conducted at a single site, Mbagathi District Hospital, and therefore may not be generalized to the whole country.

The study was not powered to evaluate factors associated with uptake of the PPIUCD among adolescent mothers.

Nonetheless, the strengths of the study include; our study is the only study that has focused on postpartum intrauterine contraceptive devices among adolescents mothers in Kenya.

The study has also been able to bring out that the adolescents contribute largely to unplanned/unwanted pregnancies in Kenya and therefore it may be used by policy makers in realizing the need to promote IUCD use among adolescent reproductive health needs.

CONCLUSION

We found low acceptability and uptake of PPIUCD among adolescent mothers. We found that level of education, marital status, residence, parity and planned inter pregnancy duration were not associated with the low acceptability or uptake of the PPIUCD.

Generally, there was lack of awareness of the IUCD, lack of interest in an immediate contraception among the sexually active teenagers, myths, misconceptions and fears associated with the IUCD.

RECOMMENDATIONS

- i. Adequate information on the importance of long term family planning methods especially the IUCD should be provided to these clients for example in their school curriculum or during antenatal care visits.
- ii. Family planning providers and midwives should undergo training and be willing to offer these services to adolescent mothers upon contact to avoid missed contraceptive opportunities.

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APPENDIX A - QUESTIONNAIRE

**FACTORS INFLUENCING ACCEPTABILITY AND UPTAKE OF IMMEDIATE
POSTPARTUM INTRAUTERINE CONTRACEPTIVE DEVICE AMONG ADOLESCENTS
DELIVERED AT MBAGATHI DISTRICT HOSPITAL**

QUESTIONNAIRE

Serial number..... Date of interview.....

Interviewers Name.....

Socio –demographic data:

1. Age in years.....
2. Date of birth (date/month/year).....
3. Marital status
 - a. Married (monogamous)
 - b. Married (polygamous)
 - c. Single
 - d. Separated
 - e. Widowed
4. Number of education years (not counting repetition).....
5. Highest Education level attained
 - a. None
 - b. Primary
 - c. Secondary
 - d. College/university
6. Employment
 - a. Unemployed.....
 - b. House wife.....
 - c. Employed.....specify occupation.....
7. Residence
 - a. With guardian
 - b. With partner
 - c. With parent
 - d. Alone

Partners' characteristics

8. Age in years.....
9. Date of birth (date/month/year).....
10. Number of education years (not counting repetition).....
11. Highest education level attained

- a. None
 - b. Secondary
 - c. Primary
 - d. College/university
12. Employment
- a. Unemployed
 - b. Employed..... (Specify).....

Obstetric and Gynecology History

13. Menarche (years).....
14. Age at first sexual debut (years).....
15. Number of sexual partners in the past one year.....
16. Parity.....+....
17. Number of living children.....
18. Number of abortions/miscarriages.....
19. Date of last deliver.....
20. Mode of last delivery (tick one)
- a. Normal vaginal delivery
 - b. Assisted vaginal delivery
 - c. Caesarian section
21. Date of last normal menstrual period.....
22. Estimated date of delivery.....
23. Had you planned to have this pregnancy (tick one)
- a. No
 - b. Yes
24. How many more children would you like to have in future?...../not sure.....
25. How soon after the delivery, would you like to have your next child? (Years)...../not sure.....

Contraceptive Knowledge and Use

26. Which contraceptive method are you aware of? (tick all that are mentioned)
- a. Natural methods
 - b. Condoms
 - c. Spermicides
 - f. Injectables
 - g. Implants
 - h. IUCD

- d. Herbal remedies
- e. Oral contraceptives
- i. Tubal ligation

27. Have you ever used any family planning method?

- a. No
- b. Yes
- c. If yes,
 - I. Which method(s) have u used.....
 - II. How long did you use the method?
 - III. Why did you discontinue using the method.....(specify)
 - IV. Have you had any problems with a family planning method used?
- a. No
- b. Yes
- c. If yes, which problem.....

28. Have you ever heard about the IUCD?

- a. No
- b. Yes

29. How did you learn about IUCD? (tick all mentioned)

- a. From friends
- b. From health workers
- c. From the radio/TV
- d. Others.....(specify)

30. Have you ever used the IUCD?

- a. No
- b. Yes

31. Would you use an IUCD in future?

- a. No
- b. Yes
- c. If yes, why would you take up the method?
 - I. because it is effective in preventing pregnancy
 - II. it offers long duration of pregnancy prevention
 - III. is cheaper than other family planning methods
 - IV. it is safe
 - V. easily reversible if need be
 - VI. has few side effects
 - VII. Others(specify)
- d. If no, why would you not want the method?.....

32. Do you agree or disagree with the following statements about IUCDS';(tick one)

- a. IUCDS' can move and get lost inside the body. Agree.../Disagree.../Don't know...

- b. It pinches your partner during sex. Agree.../Disagree.../Don't know....
- c. Most of the times IUCDS' fall out. Agree.../Disagree.../Don't know...
- d. IUD can cause cancer. Agree.../Disagree.../Don't know....
- e. IUD can cause an abortion. Agree.../Disagree.../Don't know....

Knowledge on immediate postpartum IUD insertion

33. Have you ever heard that the IUCD can be inserted immediately after delivery?
- a. No
 - b. Yes
34. Would you like to have an IUCD inserted immediately after your delivery?
- a. No
 - b. Yes
 - c. If yes, what are the reasons for accepting to have an IUCD inserted? (Tick all that are mentioned)
 - I. It is convenient
 - II. Don't want to get pregnant soon
 - III. It is efficient
 - IV. It is cost effective
 - d. If no, why? (tick all mentioned)
 - I. Not interested
 - II. Would like to consult my partner
 - III. Not recommended in my religion
 - IV. Don't know much about it
 - V. Others (specify)

(AT THIS POINT THE INTERVIEWER SHOULD GIVE COUNSELLING ON TYPES OF FAMILY PLANING, GIVING TIME FOR INQUIRY AND CONSULTATION WITH GUARDIAN/PARTNER.THEREAFTER THE INTERVIEWER SHOULD REPEAT THE LAST QUESTION)

35. If you were offered this method would you consider using the IUCD after delivery?
- a. No
 - b. Yes
 - b. If no, which alternative method do you intend to use?.....

IF THEY ACCEPT TO HAVE THE IUD INSERTED, PROCEED BELOW)

IUCD Insertion Checklist

Systemic examination:

BP..... PR..... Temperature.....

Abdominal examination:

Size of uterus.....

Uterine consistency: (tick the appropriate choice)

a. Firm/ well contracted

b. Soft/ not well contracted

(IF THE VITAL SIGNS ARE AS FOLLOWS, BP<90/50mmhg, PR>100bpm, T>38degrees. THIS IS NOT A CANDIDATE FOR INSERTION. BEFORE INSERTION, ENSURE THE UTERUS IS CONTRACTING WELL AND RESPONDING TO UTEROTONICS).

36. Does the client fit the medical eligibility criteria for IUCD insertion?

a. No

b. Yes

37. Has the client undergone counseling?

a. No

b. Yes

38. Upon insertion, did the patient have any pain or discomfort?

a. No

b. Yes

39. Were there any complications?

a. No

b. Yes

c. If yes, what complications?.....

Client 1st/2nd week post insertion review visit

Systemic examination:

BP..... PR..... Temperature.....

Abdominal examination:

Size of uterus.....

40. Was the IUCD insertion procedure painful?

a. No

b. Yes

41. Were you satisfied with the procedure?

a. No

b. Yes

42. Would you recommend the procedure to another person?
- a. No
 - b. Yes
 - c. If no, why not?.....
43. Upon ultra sound scan of the patient, is the IUCD present?
- a. No
 - b. yes
 - c. If yes, is it well placed? NO...../Yes.....

APPENDIX B - CONSENT FORM FOR STUDY PARTICIPATION

STUDY WRITTEN CONSENT FORM

FACTORS INFLUENCING ACCEPTABILITY AND UPTAKE OF IMMEDIATE POSTPARTUM INTRAUTERINE CONTRACEPTIVE DEVICE AMONG ADOLESCENTS DELIVERED AT MBAGATHI DISTRICT HOSPITAL

INVESTIGATORS:

Dr Yumbe R.Kiattu; MBChB, MMed Registrar, Department of Obstetrics and Gynecology, University of Nairobi, 0721-241126

Prof Omondi Ogotu; Associate Professor, Department of Obstetrics and Gynecology, University of Nairobi

Dr John Kinuthia; Honorary Lecturer, Department of Obstetrics and Gynecology, University of Nairobi

RESEARCHERS' STATEMENT

Thank you for your time. You are kindly requested to join this study that assesses whether adolescents would like to have an intrauterine contraceptive device inserted after delivery. You (if above 18 years or legally emancipated and >16 years) or your guardian is requested to give a signed consent to enroll into the study. The purpose of this consent form is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You or your guardian are free to ask questions about the purpose of the research, the possible risks and benefits, your rights as the participant and anything else about the research or this form that is not clear. Once your questions have been answered, you can decide whether to be in the study or not. This process is called informed consent. If you wish, a copy of this form may be given to you for your records. Your decision to be in the study will not affect your ability to receive medical care and treatment from Mbagathi District Hospital in any way.

PROCEDURES

If you agree to be interviewed, a written consent will be required of you or your guardian. Your knowledge on family planning methods, what method of contraception you have used before the pregnancy and on any problems experienced with contraceptives will be asked. Thereafter, the primary care giver will counsel you on the different methods of family planning. The method of immediate insertion of IUCD after delivery will also be introduced to you and the advantages and disadvantages of it will be explained. You will be free to ask questions where you do not understand. You will also be free to refuse to answer any questions with no consequences to your treatment.

RISKS AND DISCOMFORTS OF BEING IN THE STUDY

This study may ask you personal questions that may cause discomfort for example, previous contraceptive use, number of sexual partners etc. You do not have to answer any question you do not wish to. The abdominal and pelvic exam may be uncomfortable.

ALTERNATIVES TO PARTICIPATION

You may choose not to participate in the study. If so, you will still continue to receive antenatal and postnatal care from Mbagathi District Hospital.

BENEFITS OF THE STUDY

You may benefit from this study by increasing your knowledge about family planning methods. You may also receive no direct benefit from this study. The study may help increase the provision and use of this method by other adolescents.

OTHER INFORMATION

Information about your family planning choice and other matters arising will be confidential and we will keep your records in a locked office. Information about your participation in the research will be available to you and to the study team but not to anyone outside the study. There is no cost for you to participate in the study. You may refuse to participate or you may withdraw from the study at any time without penalty or loss of benefit to which you were otherwise entitled. Questions about the study or any adverse events should be addressed to the investigator.

Do you agree to participate?

No...../Yes.....

PATIENTS' STATEMENT

The study has been explained to me in detail. I willingly volunteer to take part in this study. I had a chance to ask questions and understand that if I have more questions about the research, I can contact one of the researchers listed above. If I have questions about my rights as a research subject, I can contact Ethical Review Committee at Kenyatta National Hospital. I will receive a copy of this consent form if I so wish.

Printed name of participant or guardian (if not legally emancipated)

.....

Signature of participant

Finger print of the participant (if unable to write).....

Date

**APPENDIX C – CONSENT FORM FOR INTRAUTERINE CONTRACEPTIVE
DEVICE INSERTION**

ENROLLMENT GROUP

(THIS APPLIES TO THOSE WHO HAVE AGREED TO CONTINUE WITH THE STUDY AND HAVE THE IUCD INSERTED)

STUDY WRITTEN CONSENT FORM

FACTORS INFLUENCING ACCEPTABILITY AND UPTAKE OF IMMEDIATE POSTPARTUM INTRAUTERINE CONTRACEPTIVE DEVICE AMONG ADOLESCENTS DELIVERED AT MBAGATHI DISTRICT HOSPITAL

INVESTIGATORS:

Dr Yumbe R.Kiattu; MBChB, MMed Registrar, Department of Obstetrics and Gynecology, University of Nairobi, 0721-241126

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Dr John Kinuthia; Honorary Lecturer, Department of Obstetrics and Gynecology, University of Nairobi

RESEARCHERS' STATEMENT

Thank you for your time. You are kindly requested to join this study that assesses whether adolescents would like to have an intrauterine contraceptive device inserted after delivery. You (if above 18 years or legally emancipated and >16 years) or your guardian is requested to give a signed consent to enroll into the study. The purpose of this consent form is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You or your guardian are free to ask questions about the purpose of the research, the possible risks and benefits, your rights as the participant and anything else about the research or this form that is not clear. Once your questions have been answered, you can decide whether to be in the study or not. This process is called informed consent. If you wish, a copy of this form may be given to you for your records. Your decision to be in the study will not affect your ability to receive medical care and treatment from Mbagathi District Hospital in any way.

PROCEDURES

Consent: Once you have understood and you would like to participate in the study, you will be given time to speak to your guardian or partner about the method and make a decision together. Once you are sure you want to use the method, you will be requested to give a confirmatory signature allowing us to insert the IUCD after the birth of your baby.

Physical Examination: A physical examination will be carried out on you once you arrive in labor ward to make sure you can participate in the study. A doctor will examine your abdomen and the

birth canal to check how far in labor you are and whether there are any infections. Your labor will be monitored carefully and if any problem arises during labor that does not allow us to insert the IUCD, we will not insert one. We will however counsel you on other methods still appropriate for you.

IUCD insertion: Once you have delivered your baby with no complications, a doctor or nurse will insert the IUCD after the placenta is removed. You will be observed for two hours to ensure there are no complications after delivery. Any complications will be medically managed.

Pre Discharge Review: Before you are discharged, a doctor will ensure you are well and that you have no problems. You will be informed on symptoms that will need you to come back to hospital before the usual postnatal appointment. You will also be told how to take care of your birth canal and check whether the IUCD is still in place.

Post discharge Review: Upon discharge, you will be kindly requested to return within 1-2 weeks for follow up and review of matters arising. That is if there are features of infections. An ultra sound will also be done to assure that the IUCD is well placed for efficacy purposes.

RISKS AND DISCOMFORTS OF BEING IN THE STUDY

This study may ask you personal questions that may cause discomfort for example, if insertion was painful. The abdominal and pelvic exam may be uncomfortable. The IUCD may be expelled and require you to come back to the clinic before the usual postnatal clinic time. At any time during the study, may you become distressed or uncomfortable; the contact person will be readily available to assist you.

ALTERNATIVES TO PARTICIPATION

You may choose not to participate in the study. If so, you will still continue to receive antenatal and postnatal care from Mbagathi District Hospital.

BENEFITS OF THE STUDY

The study may help increase the provision and use of this method by other adolescents. You may benefit from this study by having the IUCD inserted at a convenient time and going home after delivery with a long term reversible family planning method. You may also receive no direct benefit from this study.

OTHER INFORMATION

Information about your family planning choice and other matters arising will be confidential and we will keep your records in a locked office. Information about your participation in the research will be available to you and to the study team but not to anyone outside the study. There is no cost for you to participate in the study. You may refuse to participate or you may withdraw from the study at any time without penalty or loss of benefit to which you were otherwise entitled. Questions about the study or any adverse events should be addressed to the investigator.

Do you agree to participate?

No...../Yes.....

PATIENT'S STATEMENT

The study has been explained to me in detail to me. I willingly volunteer to have the post placental IUCD inserted as part of this research study. I have had a chance to ask questions and I understand that if I have questions about the research, I can ask one of the researchers listed above. If I have questions about rights as a research participant, I can call the Review Committee at Kenyatta National Hospital. I will receive a copy of this consent form if I so wish.

Printed name of participant or guardian (if not legally emancipated).....

Signature of participant

Finger print of the participant (if unable to write).....

Date

Printed name of investigator.....

Signature of investigator.....

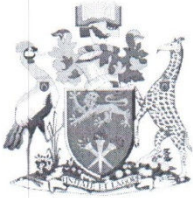
Date.....

APPENDIX D – TIMELINE

ACTIVITY	Apr-Sep 2013	Oct-Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	June 2014	July 2014	Aug 2014	Sept 2014
Proposal writing and presentation											
Ethical committee approval											
Pretesting of data collecting tools											
Data collection											
Data consolidation and analysis											
Compilation of report											

APPENDIX E – BUDGET

ITEM-	QUANTITY	UNIT PRICE (KSH)	TOTAL (KSH)
Biro pens	10	20	200
Pencils	6	10	60
Box files	1	150	150
Spring file	6	100	600
Sharpener	6	150	900
Erasers	6	20	120
Stapler	1	500	500
Paper punch	1	600	600
Staple remover	1	250	250
Notebook	1	100	100
Printing;	10	5	50
Photocopy-	110*5 pages	2	1,100
Printing consent	10	5	50
Photocopy-consent	110*5 pages	2	1,100
Training	2 days	3000	6,000
Motivation pay	110	300	33,000
Communication	6	1,000	6,000
Data statistician	1	10,000	10,000
Ultra sound	6	2,000	12,000
Final book	4	1,500	6,000
<u>Grand total</u>			<u>78,780</u>



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Ref: KNH-ERC/A/386 Link: www.uonbi.ac.ke/activities/KNHUoN 2nd December 2013

Dr. Yumbe Rita Kiattu
Dept. of Obs/Gynae
School of Medicine
University of Nairobi

Dear Dr. Kiattu

RESEARCH PROPOSAL: FACTORS INFLUENCING IMMEDIATE POSTPARTUM INTRAUTERINE CONTRACEPTIVE DEVICE ACCEPTANCE AND UPTAKE AMONG ADOLESCENTS DELIVERED AT MBAGATHI DISTRICT HOSPITAL (P503/102013)

This is to inform you that the KNH/UoN-Ethics & Research Committee (KNH/UoN-ERC) has reviewed and **approved** your above proposal. The approval periods are 2nd December 2013 to 1st December 2014.

This approval is subject to compliance with the following requirements:

- a) Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
- b) All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH/UoN ERC before implementation.
- c) Death and life threatening problems and severe adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH/UoN ERC within 72 hours of notification.
- d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH/UoN ERC within 72 hours.
- e) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
- f) Clearance for export of biological specimens must be obtained from KNH/UoN-Ethics & Research Committee for each batch of shipment.
- g) Submission of an *executive summary* report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/or plagiarism.

For more details consult the KNH/UoN ERC website www.uonbi.ac.ke/activities/KNHUoN.

"Protect to Discover"

Yours sincerely



PROF. M. L. CHINDIA
SECRETARY, KNH/UON-ERC

c.c. Prof. A.N.Guantai, Chairperson, KNH/UoN-ERC
The Deputy Director CS, KNH
The Principal, College of Health Sciences, UoN
The Dean, School of Medicine, UoN
The Chairman, Dept.of Obs/Gynae, UoN
AD/Health Information, KNH
Supervisors: Prof. Omondi Ogutu, Dr. John Kinuthia

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