

Outcome Of Immediate Postpartum Insertion of IUCD - A Prospective Study

Yusra Mushtaq Shah¹, Omer Khursheed², Tabasum Rashid³,
Tawseefa Rashid⁴, Aijaz Ahmad⁵

¹Post Graduate Scholar, Department of Obstetrics and Gynaecology Gmc Srinagar

^{2,5}Senior Resident, Department of Surgery Gmc Srinagar

^{3,4}Junior Resident, Gmc Srinagar

Abstract

Introduction:

Immediate postpartum intrauterine contraceptive device insertion is an outstanding approach to family planning, offering women in the delivery setting a secure, efficient, and reversible method of contraception for the long term. The primary objective of this study was to evaluate the safety and effectiveness of immediate postpartum intrauterine contraceptive device insertion. Additionally, it aimed to compare the outcomes of two different insertion routes, namely vaginal deliveries and caesarean sections.

Objective: The aim of this study is to assess the level of awareness regarding postpartum intrauterine contraceptive device (PPIUCD) among women who have recently given birth. This study seeks to investigate the safety and effectiveness of inserting a PPIUCD immediately after childbirth.

Materials and methods: In this prospective interventional study, a total of 100 vaginal deliveries and 100 caesarean deliveries with postpartum intrauterine contraceptive device (PPIUCD) insertion were included. The study spanned a duration of 1 year, and the participants were followed up for a period of three months. The study focused on assessing various outcome measures related to safety and efficacy. Safety outcomes included evaluating incidences of perforation, irregular bleeding, unusual vaginal discharge, and infection. Efficacy outcomes encompassed measuring occurrences of pregnancy, expulsions, discontinuation, and the presence of coiled up or undescended strings. Subsequently, the data collected was compiled and subjected to analysis.

Results: According to the findings of this study, a minority of the study sample, specifically 34.5% (N=69), demonstrated awareness of the postpartum intrauterine contraceptive device (PPIUCD). Conversely, the majority of participants, accounting for 65.5%, were found to be unaware of this contraceptive method. The study did not observe any significant complications, such as pregnancy or perforation, among the participants. The most frequently reported complication in both the vaginal delivery and caesarean section groups was excessive vaginal bleeding, followed by lower abdominal pain. However, it is noteworthy that spontaneous expulsion of the device was documented in 3% of the cases involving vaginal insertions, while no instances of expulsion were observed in the caesarean insertion group.

Conclusion: PPIUCD is a highly effective approach for controlling or spacing childbirths. It is provided to women in situations where they possess strong motivation and a genuine requirement for this method.

Keywords: PPIUCD, Postpartum contraception, Insertion of IUCD.

Introduction

In developing countries, a significant number of unplanned and undesired pregnancies occur due to the lack of contraceptive use, leading to a considerable proportion of induced abortions. According to a recent study on unintended pregnancies that occurred after childbirth, it was found that a substantial majority, specifically 86%, occurred due to the lack of contraceptive use.¹ Failure to address and prevent these unintended pregnancies is also linked to increased maternal complications and adverse perinatal outcomes. In the context of India, it is alarming that approximately 65% of women in the postpartum period have an unmet need for family planning, further emphasizing the importance of providing effective contraception to this population.²

Immediate postpartum insertion of intrauterine contraceptive devices (I-PPIUCD) is a secure and convenient choice for women seeking long-lasting, effective, non-hormonal contraception that does not depend on timing intercourse. It allows for the insertion of an intrauterine contraceptive device immediately after childbirth, providing women with a hassle-free and private option. I-PPIUCD offers safety, convenience, effectiveness, coitus-independent protection, and a hormone-free alternative for those who desire it. It is important for women to consult with their healthcare provider to determine if I-PPIUCD is suitable for them based on their individual needs and medical history. I-PPIUCD has the advantage of being compatible with breastfeeding and has minimal side effects. It can be initiated during the crucial postpartum period when women are motivated to find a dependable, long-term, safe, and reversible contraceptive option. Since the woman is already in the hospital for childbirth, I-PPIUCD can be conveniently inserted before she is discharged, ensuring that she leaves with an effective form of contraception. This approach allows for seamless integration of contraception into the postpartum care process, providing women with immediate protection and peace of mind.

I-PPIUCD insertion presents a valuable opportunity to provide postpartum contraception to women in rural areas who have limited access to medical services and face challenges in attending postpartum visits due to socioeconomic reasons. These women may have infrequent and unreliable access to healthcare, making it difficult for them to receive timely and appropriate contraception. By offering I-PPIUCD during childbirth, healthcare providers can address this gap and ensure that these women have access to effective contraception without the need for frequent follow-up visits.

It is worth noting that a short birth-to-pregnancy (BTP) interval of less than 24 months is associated with an increased risk of maternal mortality, induced abortion, and miscarriage.³ Providing immediate postpartum contraception like I-PPIUCD can help reduce the risk of unintended and closely spaced pregnancies, which in turn contributes to improved maternal health outcomes. By offering contraception at this crucial time, healthcare providers can play a crucial role in promoting women's health and well-being, particularly in rural areas with limited access to ongoing medical care. Additionally, a short birth-to-pregnancy (BTP) interval of less than 24 months is linked to an elevated risk of preterm birth, infants being small for their gestational age, low birth weight babies, and increased neonatal and infant mortality rates. These adverse outcomes highlight the importance of spacing pregnancies appropriately to allow for optimal maternal and child health. By offering immediate postpartum contraception such as I-PPIUCD,

healthcare providers can help women in rural areas mitigate these risks by providing them with a reliable method to prevent unintended and closely spaced pregnancies. This can contribute to healthier pregnancies, improved birth outcomes, and reduced neonatal and infant mortality rates.⁴ To minimize the risk of adverse maternal, perinatal, and infant outcomes, it is recommended to wait for a minimum interval of 24 months before attempting the next pregnancy. This guideline emphasizes the importance of spacing pregnancies adequately to allow the mother's body to recover fully from the previous pregnancy and ensure optimal health for both the mother and the baby in subsequent pregnancies. By adhering to this recommended interval, women can reduce the risks associated with closely spaced pregnancies, including complications during pregnancy, preterm birth, low birth weight, and neonatal/infant mortality. It is essential for women to consult with their healthcare providers to discuss their specific circumstances and receive personalized recommendations regarding the optimal timing for their next pregnancy.⁵

This prospective interventional study aimed to assess the safety and effectiveness of I-PPIUCD insertion, considering two routes: vaginal deliveries and caesarean sections. The study focused on specific outcome measures to evaluate safety and efficacy.

The safety outcomes examined included the occurrence of perforation, irregular bleeding, unusual vaginal discharge, and infection. These indicators were used to assess the overall safety of I-PPIUCD insertion in both delivery methods.

The efficacy outcomes investigated included pregnancy rates, expulsion or discontinuation of the intrauterine contraceptive device (IUCD), as well as the presence of coiled or undescended IUCD strings. These measures aimed to evaluate the effectiveness and reliability of I-PPIUCD as a contraceptive method following its insertion.

By examining these outcomes, the study aimed to provide insights into the safety and efficacy of I-PPIUCD insertion in different delivery scenarios, contributing to the existing knowledge and understanding of this contraceptive approach.

Objective

1. to assess the level of awareness regarding postpartum intrauterine contraceptive devices (PPIUCD) among women who have recently given birth
2. to investigate the safety and efficacy of postpartum intrauterine contraceptive device (PPIUCD) insertion.

Materials and Methods

This prospective interventional study took place within our institution's Department of Obstetrics and Gynaecology, following the necessary approval from the institutional ethical committee. Two hundred postpartum subjects after contraception counselling constituted material for this study.

All pregnant individuals admitted to the hospital for delivery and meeting the eligibility criteria were provided with a selection of contraceptive options and received counselling regarding the insertion of an Immediate Postpartum Intrauterine Contraceptive Device (I-PPIUCD). Consent was obtained from those

who chose to have the I-PPIUCD inserted, and they were subsequently provided with the CuT 380A device.

The study subjects were divided into two groups: Group A: Post placental insertion following vaginal deliveries (100 cases). Group B: Post placental insertion, intra caesarean (100 cases).

The acceptance rate of the Postpartum Intrauterine Contraceptive Device (PPIUCD) and the continuation rates were documented, along with the reasons for acceptance. The post-placental insertion of the PPIUCD was performed using two techniques:

1. Manual technique.
2. Long ring forceps technique, with the recommended inserter being Kelly's placental forceps as suggested by the World Health Organization (WHO).

Insertion following Vaginal Delivery Manual Technique: The manual technique for PPIUCD insertion is specifically utilized within 10 minutes after the delivery of the placenta. During this timeframe, the cervix is nearly fully dilated, enabling the passage of either forceps or the hand for insertion. Once the active management of the third stage of labour (AMTSL) is completed, a bimanual examination is conducted to ensure that the uterine cavity is empty. Implementing AMTSL is crucial as the initial step for a safe PPIUCD insertion procedure. During the PPIUCD insertion procedure, several steps were followed. The uterus was palpated to assess the height of the fundus and its tone. Aseptic techniques were employed, and the perineum was cleaned with povidone-iodine. The vaginal walls were inspected for lacerations. A Sims speculum was gently inserted, allowing for a clear view of the cervix. The IUCD pack was opened using aseptic measures, and the CuT (Copper T) device was held in the right hand and slowly inserted through the cervix into the lower uterine cavity. The left hand was placed on the abdomen, specifically over a sterile towel covering the fundus of the uterus. The CuT device was gradually advanced upwards until the fundus of the uterus could be felt. Following the placement of the CuT device at the fundus of the uterus and the hand positioned over it, they were brought closer together. The IUCD was left in position at the fundus, while the hand slowly moved along the lateral wall of the uterus, taking care not to dislodge the device. Simultaneously, the outside hand provided stability to the uterus. The strings of the IUCD were cut at the level of the cervix, and the Sims speculum was removed. The woman remained lying down for a few minutes to prevent a vasovagal collapse. It is important to note that the insertion of the IUCD should be performed before initiating the repair of multiple vaginal lacerations or an episiotomy.

Long Ring forceps Technique: Post-placental insertion of the IUCD using ring/Kelly's forceps after a vaginal delivery is considered to be less painful for the client. This method is particularly advantageous when the client has a well-contracted uterus and has undergone active management of the third stage of labour (AMTSL). The ease of performing the procedure is enhanced under these conditions. The use of forceps for IUCD insertion offers advantages to the clinician in terms of maintaining appropriate infection prevention measures. Consequently, the need for long sterile gloves or regular length gloves with a water-impermeable apron is reduced. In contrast, during manual insertion, there is a higher likelihood of accidental displacement of the IUCD into the lower uterine cavity or active removal when the hand is withdrawn. This issue is less likely to occur with forceps insertion because forceps are slimmer than a

hand, providing better control and reducing the risk of unintentional displacement or removal of the device.

Educational Status	No.	Aware	Unaware
No Education	79	11	68
Primary	89	30	59
Higher Secondary	22	18	04
Graduate	10	10	00
Total	200	69	131

Trans Caesarean Insertion: After a caesarean delivery, once the uterine angles are secured, it is important to massage the uterus until the bleeding subsides. It is crucial to ensure that the uterine cavity is empty and haemostatic. The placement of the IUCD at the uterine fundus can be done manually by holding it between the index and middle finger or with the assistance of a grasping instrument. Before stitching the uterine incision, the strings of the IUCD should be positioned in the lower uterine segment near the internal cervical os. It is important not to pass the strings through the cervix as it increases the risk of infection. Prior to discharge, each woman who received the IUCD underwent post-insertion counselling and received appropriate advice. A discharge card indicating the type of IUCD and the date of insertion was provided. The woman was briefed about the potential side effects of the IUCD and informed about normal postpartum symptoms. Clear instructions were given regarding when to return for IUCD follow-up, postnatal care (PNC), or new born check-up (typically around 6 weeks after insertion). Additionally, she was notified to return at any time if she experienced specific symptoms such as foul-smelling discharge that differs from normal lochia, lower abdominal pain accompanied by general discomfort, fever and chills, the sensation of being pregnant, or suspicion that the IUCD has been expelled. These instructions aim to ensure the woman's well-being and encourage timely medical attention if needed. All participants in the study were scheduled for follow-up appointments at 6 weeks and 12 weeks after the IUCD insertion. The researchers compared various socio-demographic factors and outcomes between the vaginal delivery and caesarean section groups. The study specifically examined complications such as IUCD expulsion, bleeding, pain, infection, and the need for medical removal. All the collected data were compiled, and statistical analysis was conducted using SPSS version 22.0 software. This analysis aimed to identify any significant differences or associations between the studied factors and outcomes in the two delivery groups.

Observations

The mean age of the study subjects was 27.5 years with a standard deviation of 3.1 years. The age range of the participants was between 24 and 35 years. Out of the total participants, a significant number of 106 (53%) were prim parous women who accepted the I-PPIUCD. It is noteworthy that there was a relatively equal distribution of prim parous and multiparous women who opted for the I-PPIUCD. The percentage of acceptance did not show a significant difference between the two groups. In this study, the majority of women (42.5%) had given birth to their last child less than 2 years ago. This suggests that a significant proportion of participants were relatively recent mothers at the time of the study.

Distribution of cases according to educational status and awareness.

A linear correlation was found between the level of education and the awareness of I-PPIUCD among women in the study. It was observed that all women with a graduate level of education were aware of PPIUCD. This indicates a strong association between higher education and awareness of this contraceptive method.

Side effects and complications

Side Effects/Complications	Follow up			
	4-6 weeks		8-12 weeks	
	Vaginal deliveries	Caesarean sections	Vaginal deliveries	Caesarean section
Pain	08	10	01	03
Excessive PV bleeding	23	11	03	01
Abnormal discharge per vagina	10	03	04	01
Spontaneous Expulsion	02	00	01	00
Misplaced IUCD	02	01	03	02
Coiled up thread	02	01	00	03
Perforation	00	00	00	00
Pregnancy	00	00	00	00

During the first follow-up visit between 4-6 weeks, the most common complication reported by participants in both the vaginal delivery and caesarean section groups was excessive bleeding from the vagina (PV). Following excessive bleeding, the next most frequently reported complication was pain in the lower abdomen. Spontaneous expulsion of the IUCD was reported more frequently in women who had vaginal deliveries (2 cases) compared to those who had caesarean sections (0 cases). It is worth noting that no cases of perforation or ongoing pregnancy related to the IUCD were reported during the study period. During the second follow-up visit between 8-12 weeks, participants who had vaginal deliveries reported a higher frequency of complaints regarding excessive bleeding from the vagina (PV) and unusual vaginal discharge. These symptoms were more commonly observed in women who had undergone vaginal delivery compared to those who had undergone caesarean sections. It is important to assess and address these symptoms during follow-up visits to ensure the well-being and satisfaction of the participants.

Indications for removal of IUCD in the two groups

Indications	Vaginal deliveries	Caesarean sections
Pain	03	08
Menorrhagia	08	04
Discharge per vagina	07	01
Misplaced IUCD	05	03
Coiled up thread	01	04

Total	24	20
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In cases of vaginal deliveries, the most common reasons for the removal of I-PPIUCD were menorrhagia (excessive menstrual bleeding) and vaginal discharge that could not be relieved through conservative treatment. On the other hand, for women who had undergone caesarean sections, the indications for removal included abdominal pain, menorrhagia, and the presence of a coiled-up thread. These reasons highlight the specific issues and concerns that led to the decision of I-PPIUCD removal in each delivery group. It is crucial to address these issues and provide appropriate management to ensure the well-being of the women involved. The overall discontinuation rate was 27% in vaginal deliveries and 20% in caesarean section.

Follow up details of I-PPIUCD acceptance

Follow up	Vaginal deliveries	Caesarean sections	Total
1st visit	46	26	72
2nd visit	12	10	22

The follow-up percentage reported in the study was not satisfactory. Only 36% of the participants attended the first follow-up visit, and a further 11% attended the second follow-up visit. The majority of the subjects were lost to follow-up, indicating a significant challenge in tracking and retaining participants for the duration of the study. This loss to follow-up can potentially impact the overall reliability and generalizability of the study's findings. It is important to consider strategies to improve follow-up rates and minimize loss to follow-up in future research studies.

Discussion

CuT 380A has been found to provide contraceptive protection that is comparable to the effectiveness of tubal sterilization.^{6,7} It is a highly effective contraceptive method. However, the acceptance rates for CuT 380A can vary across different studies and populations. Depending on the education status of the participants, acceptance rates have been reported to range from 9.4% to 48.3%.⁸⁻¹³ This suggests that educational background can influence the acceptance and uptake of CuT 380A as a contraceptive option. According to a report released by the World Health Organization (WHO) in 2010 on unmet need for family planning, lack of awareness is a common reason for non-use of contraception. In the present study, it was found that only 34.5% (N=69) of the study sample were aware of the PPIUCD, while the remaining 65.5% were unaware. This highlights a significant gap in knowledge and awareness about the PPIUCD among the participants of the study. Increasing awareness and education about contraceptive options like the PPIUCD is crucial to addressing the unmet need for family planning and promoting informed decision-making among individuals.

Among the participants who were aware of the PPIUCD, the study found that the highest acceptance rates were observed among those with secondary education (81.81%) and higher education (100%). The levels of awareness of the PPIUCD varied across different studies, ranging from 5.79% to 53.5%.^{8,11,14}

Regarding parity, the present study reported that 47.5% of the women were para-1 (having one child), 37.5% were para-2 (having two children), and 14% were para-3 (having three children). Other studies have shown that the acceptance rates of IUCDs among women with one child varied from 46.5% to

73.17%, while the acceptance rates among women with two or more children ranged from 35.76% to 47%.^{10,14-18} These findings suggest that the decision to accept IUCDs can vary based on the number of children a woman has.

It is important to note that the specific percentages mentioned in the information provided refer to the results of the present study or other studies and may not represent a general trend or universal findings. The fact that over a third of the participants (42.5%) who had the PPIUCD inserted had given birth within a period of less than two years is noteworthy. In a report released by the World Health Organization (WHO) in 2006, it was highlighted that healthy timing and spacing of pregnancies have a direct impact on maternal health and new-born outcomes. In countries with high birth rates, it was estimated that approximately 32% of all maternal deaths and over one million deaths of children under the age of 5 could be prevented through healthy timing and spacing of pregnancies. This finding emphasizes the importance of well-spaced pregnancies for positive maternal health outcomes, regardless of the contraceptive method used. The duration since the last childbirth has been found to be significantly correlated with the acceptance of PPIUCD in various studies. This suggests that the time elapsed since the previous childbirth plays a role in women's decision-making regarding the acceptance of PPIUCD as a contraceptive option. The specific nature and direction of this correlation may vary across different studies, but it highlights the importance of considering the timing of previous childbirths when discussing contraceptive choices with women.^{9,10}

In our study, the expulsion rate of the IUCD was found to be 10% in caesarean sections and 13.5% in vaginal deliveries. This aligns with findings from a cohort study that also reported significantly lower expulsion rates at the time of caesarean delivery compared to vaginal delivery. The expulsion rates in vaginal deliveries reported in other studies have varied from 1.6% to 10.7% by 6 months post-insertion.^{14,16,19-22} These findings highlight the importance of monitoring and assessing the expulsion rates of IUCDs, especially in different delivery methods, to ensure their effectiveness as a long-term contraceptive option.

In our study it was observed that spontaneous expulsion of the IUCD was more common in vaginal deliveries (N=3) compared to caesarean sections (N=0), particularly in the immediate period following delivery. This finding suggests that the risk of spontaneous expulsion may be higher in vaginal deliveries, especially soon after childbirth. Monitoring and addressing the risk of expulsion is important to ensure the continued effectiveness of the IUCD as a contraceptive method. It is noteworthy that no serious complications were observed in this study, indicating the overall safety of the IUCD as a contraceptive method. Among the cases, 23.5% (N=47) reported menorrhagia (excessive menstrual bleeding). Out of these cases, the IUCD had to be removed in 12 instances as the menorrhagia did not respond to the given treatment. The incidence of menorrhagia varied from 11.5% to 27.23% in various studies, indicating that it can be a common complication associated with IUCD use.^{10,23} It is important to monitor and manage menorrhagia effectively to ensure the satisfaction and well-being of the individuals using the IUCD. In the present study, 10.5% of the cases (N=21) reported experiencing pain in the abdomen. Interestingly, pain was reported more frequently in cases of caesarean sections (N=14) compared to vaginal deliveries (N=9). Out of the 21 cases experiencing abdominal pain, 11 opted for the removal of the PPIUCD for this reason. These findings are consistent with similar results reported in other studies, suggesting that

abdominal pain can be a common concern associated with PPIUCD use.²⁴ Monitoring and managing pain effectively are crucial to ensuring the comfort and satisfaction of individuals using the PPIUCD as a contraceptive method. In the present study, no cases of perforation or pregnancy were reported, which aligns with findings from other studies.^{25,26} The absence of perforation indicates that the insertion procedure was performed safely and without complications. Additionally, the absence of pregnancy suggests that the PPIUCD was effective in preventing unintended pregnancies among the study participants. These results are reassuring and consistent with the established safety and efficacy profile of the PPIUCD when properly inserted and managed. In the present study, there were no reported cases of pelvic inflammatory disease (PID). However, it is worth noting that about 10.5% of women in the study reported experiencing pain in the lower abdomen, and 9% reported experiencing discharge per vaginum (vaginal discharge). It is important to recognize that the incidence of PID in women using intrauterine devices (IUDs) is generally similar to that in women who do not use IUDs.^{27,28} Proper insertion and adherence to infection prevention protocols are crucial in minimizing the risk of PID associated with IUD use. Regular follow-up visits and prompt evaluation of any symptoms are essential to ensure the early detection and management of any potential complications. In the study, it was observed that among the women who had the PPIUCD inserted, five women (2.5%) experienced loss of strings at four weeks, and eight women (4%) experienced loss of strings at 12 weeks. However, ultrasound examination confirmed that the IUCD was still in place, indicating the possible retraction or curling of the strings into the endocervical canal or uterine cavity. Despite reassurance, all of these women opted to have the IUCD removed. Ultimately, 153 cases (76.5%) continued with the PPIUCD, indicating a high rate of continuation.

The absence of uterine perforation and low incidence of infection in the study serve as strong indicators of the safety of PPIUCD use. Immediate postpartum IUD insertion is a common practice in several countries, and the findings from this study support its safety and effectiveness as a contraceptive option.^{29,30}

Conclusion

Based on the findings of this study, it can be concluded that post-placental IUCD insertion is an effective method of contraception. Despite the expulsion rate of 10-15%, the retention rate was high, exceeding 85-90%. In a country where access to healthcare is limited and postpartum care is infrequent, achieving such a high retention rate can be considered a significant success.

Interestingly, even with poor awareness among the women in the study, the acceptance of PPIUCD was high. This highlights the need for developing strategies to increase public awareness of PPIUCD through various media sources. Moreover, the study demonstrated that PPIUCD was safe, with no reported cases of perforation and low rates of expulsion, infection, and lost strings.

To promote the use of PPIUCD and reduce expulsion rates, it is important to provide training on PPIUCD to healthcare providers, enhancing their knowledge and skills. Additionally, in a country where incentives and subsidies play a significant role, providing cash incentives to acceptors and motivating healthcare providers could substantially increase the usage of PPIUCD in developing countries like India.

References

1. Yuang YM, Merkatz JZR, Kang ZJ. Postpartum unintended pregnancy and contraception practice among rural-to-urban migrant women in Shanghai. *Contraception*. 2012;86(6):731-738.
2. Postpartum IUCD Reference Manual, Family Planning Division. Ministry of Health and Family Welfare, Government of India, New Delhi, India 2010.
3. Agudelo AC, Belizan JM. Maternal morbidity and mortality associated with interpregnancy interval: cross sectional study. *Br Med J*. 2000;321(7271):1255-9.
4. Agudelo AC. Birth Spacing and the Risk of Adverse Perinatal Outcomes: A Meta-Analysis. *JAMA* 29. 2006:1809-1923.
5. World Health Organization. (2006). Birth spacing: report from a WHO technical consultation. Geneva: World Health Organization <http://www.who.int/iris/handle/10665/73710>.
6. United Nations Development Programme/UN Population Fund/WHO/World Bank, Special Programme of Research, Development and Research Training in human Reproduction. Long-term reversible contraception. Twelve years of experience with the TCU380A and TCU220C. *Contraception*. 1997;56:341-52.
7. Peterson HB, Xia Z, Hughes JM, Wilcox LS, Tylor LR, Trussell J. The risk of pregnancy after tubal sterilization: findings from the U.S. Collaborative Review of Sterilization. *Am J Obstet Gynecol*. 1996;174:1161-8.
8. Awadalla HI. Contraception Use among Egyptian Women: Results from Egypt Demographic and Health Survey in 2005. *J Reprod Infertil*. 2012;13(3):167–173.
9. Ali RAM. Acceptability and Safety of Postpartum Intrauterine Contraceptive Device among Parturients Muhimbili. National Hospital, Tanzania Muhimbili University of Health and Allied Sciences. November 2012.
10. Maluchuru S, V. Aruna, N. Prabhavathi, Postpartum – Intrauterine Device Insertion – 2yr Experience at a Tertiary Care Center in Guntur Medical College /Govt. General Hospital, Guntur. *IOSR*. 2015;14(3):56-61.
11. Katheit G, Agarwal J. Evaluation of post-placental intrauterine device (PPIUCD) in terms of awareness, acceptance, and expulsion in a tertiary care centre. *Int J Reprod Contracept Obstet Gynecol*. 2013;2(4):539-543.
12. Choudhary, R.H. The influence of female education, labour force participation & age at marriage on Fertility Behaviour in Bangladesh *Social Biology*. 1984;31(1- 2):59-74.
13. Ullah, M.S. & Chakraborty, N. The use of modern & traditional methods of fertility control in Bangladesh: a multivariate analysis. *Contraception*. 1994;50(4):363- 372.
14. Kumar S, Sethi R, Balasubramaniam S. Women's experience with postpartum intrauterine contraceptive device use in India. *Reprod Health*. 2014;11:32
15. Khan ME, Patel BC. Male involvement in family planning: a knowledge, attitude, behaviour and practice survey of Agra district. New Delhi: population council, 1997.
16. Bhalerao AR, Purandare MC. Post-puerperal Cu-T insertion: a prospective study. *J Postgrad Med*. 1989;35:70.
17. Kittur S, Kabadi YM. Enhancing contraceptive usage by post-placental intrauterine contraceptive devices (PPIUCD) insertion with evaluation of safety, efficacy, and expulsion. *Int J Reprod Contracept Obstet Gynecol*. 2012;1:26-32.
18. Grimes L. Immediate postpartum insertion of an IUD is safe & effective. *Global health technical briefs*. Family Health International; 2007.

19. Tatum PR. Clinical aspects of intrauterine contraception. In: Anoniem. Infertiliteits informatorium Fertile Steril. 1977;28:3-28.
20. Treiman K, Liskin L, Kols A, Rinehart W. IUDs – an update. Popul Rep B. 1995;(6):1-35.
21. Thiery M. Pioneers of the intrauterine device. European Journal of Contraception and Reproductive Health Care. 1997;2(1):15–23.
22. Thiery M. Intrauterine contraception: from silver ring to intrauterine contraceptive implant. Eur J Obstet. Gynecol Reprod Biol. 2000;90(2):145–52.
23. Shukla M. Post-placental intrauterine device insertion - A five year experience at a tertiary care centre in north India. Indian J Med Res. 2012;136(3):432–435.
24. Stefan Welkovic, L Costa, A Faundes, R Ximenes, C Costa. Postpartum bleeding & infection after postplacental IUD insertion. Contraception. 2001;63:155- 8.
25. El-shafei MM, Mashali A, Hassan EO, El Boghdadi L, El Lakkany N. Post partum and post abortion intra uterine device insertion unmet needs of safe reproductive health: 3 years experience of a Mansoura university hospital. Egypt Soc Obstet Gynaecol. 2000;26:253-62.
26. Ricalde Roger Lara, Gerardo Menacol Tobias, Carlos Ramos Parez, Norma Velazquez Ramirez. Estudiocomparativo al azar entre los dispositivos intrauterinos Multiload Cu375 y TCU 380A colocados durante el postparto. Ginecol Obstet Mex. 2006;74:306- 11.
27. Kessel E. Pelvic Inflammatory Disease with Intra Uterine Devices use: a reassessment. Fertil Steril 1989, 51:6-10. Chi I. What we have learned from recent IUD studies: a researcher's perspective. Contraception. 1993;48:81-108.
28. Farley TMM, Rosenberg MJ, Rowe PJ, Chen JH, Meirik O. Intra- uterine devices and pelvic inflammatory disease: an international perspective. Lancet. 1992;339:7858.
29. Moran C, Fuentes G, Amado F, Higareda H, Bailon R, Zarate A. Postpartum contraceptive practice in hospitals of the federal District. Salud Publica de. Mexico. 1992;34:18-24.
30. Morrison C, Waszak C, Katz K, Diabate F, Mate EM. Clinical outcomes of two early postpartum IUD insertion programs in Africa. Contraception. 1996;53:17-21.