

Dissertation Training

at

International Institute of Health Management Research, Delhi

Study Title:

**Utilization, Acceptance, Refusal, and Interventions for PPIUCD in
India: A Scoping Review**

By

Dr. Bhumika Hooda

PG/23/131

Under the guidance of

Dr. Rupsa Banerjee

PGDM (Hospital and Health Management)

2023-2025



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TO WHOMSOEVER IT MAY CONCERN

This is to certify that Dr. Bhumika Hooda, a student of PGDM (Hospital & Health Management), has undergone dissertation training at the International Institute of Health Management Research, New Delhi, from 10/3/2025 to 21/08/2025.

The candidate has successfully carried out the study designated to him during internship training, and her approach to the study has been sincere, scientific, and analytical. The dissertation is in fulfillment of the course requirements.

I wish her all success in all her future endeavors.



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This is to certify that Dr. Bhumika Hooda, a graduate student of the PGDM (Hospital & Health Management), has worked under our guidance and supervision. She is submitting this dissertation titled **"Utilization, Acceptance, Refusal, and Interventions for PPIUCD in India: A Scoping Review"** at **"IHMR Delhi"** in partial fulfillment of the requirements for the award of the PGDM (Hospital & Health Management). This dissertation has the requisite standard, and to the best of our knowledge, no part of it has been reproduced from any other dissertation, monograph, report, or book.



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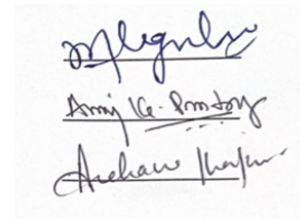
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LIST OF ABBREVIATIONS

Abbreviation	Full Form
ANMs	Auxiliary Nurse Midwives
ASHAs	Accredited Social Health Activists
IUDs	Intrauterine devices
LAM	Lactational amenorrhea method
LARCs	long-acting reversible contraceptives
MPV	Mission Parivar Vikas
NFHS-4	National Family Health Survey
NHM	National Health Mission
PPIUCD	Postpartum Intrauterine Contraceptive Device
RMNCH+A	Reproductive, Maternal, Newborn, Child and Adolescent Health
STIs	Sexually transmitted infections
TFR	Total fertility rate

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About International Institute of Health Management Research New Delhi

The International Institute of Health Management Research (IHMR), New Delhi, is affiliated with the Society for Indian Institute of Health Management Research, established in October 1984 under the Societies Registration Act-1958. IHMR-Delhi was founded in 2008 to address the increasing demand for sustainable management and administrative solutions crucial for the effective functioning of the healthcare sector in India and the Asia-Pacific region. As a leading institute of higher learning, the institute specializes in health and hospital management research, providing technical expertise for policy analysis and formulation, devising effective strategies, and facilitating efficient implementation. The institute enhances both human and institutional capacities to foster a competent and responsive healthcare sector. IIHMR-Delhi has earned recognition nationally and globally for producing socially conscious, skilled healthcare management professionals. The graduates are well-prepared for the dynamic healthcare sector and changing social landscapes. The institute excels in research, teaching, training, community outreach, and policy advocacy in healthcare. With a cutting-edge academic curriculum, state-of-the-art infrastructure, accomplished faculty, and robust research initiatives, IHMR-Delhi is a leader in developing future healthcare leaders proficient in health, hospital, and health information technology management.

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IHMR Delhi is an institution dedicated to the improvement of standards of health through better management of health care and related programs. It seeks to accomplish this through management research, training, consultation, and institutional networking in a national and global perspective.

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IIMR is a premier institute in health management education, training, research, program management, and consulting in the health care sector globally. The Institute is known as a learning organization with its core values as quality, accountability, trust, transparency, and sharing knowledge and information. The Institute aims to contribute to social equity and development through its commitment to support programs aimed at the poor and the deprived population.

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Utilization, Acceptance, Refusal, and Interventions for PPIUCD in India: A Scoping Review

Abstract

Background: Effective contraception is central to improving maternal health and empowering women. In India, the Postpartum Intrauterine Contraceptive Device (PPIUCD) is promoted as a long-acting, reversible option under the national RMNCH+A framework. Despite its clinical benefits and policy backing, its use and continuation remain inconsistent due to individual, socio-cultural, and system-level barriers.

Objective: This scoping review explores the extent of PPIUCD utilization across India, examines factors that shape its acceptance or refusal, and assesses the effectiveness of key interventions aimed at improving uptake and sustained use.

Methods: The review followed the Arksey and O'Malley scoping methodology, supported by the PRISMA-ScR checklist. Relevant studies published in English from 2010 to 2025 were sourced from electronic databases and grey literature. Included studies focused on PPIUCD insertions within 48 hours of delivery and addressed utilization trends, acceptance levels, reasons for refusal, or intervention strategies.

Results: Acceptance rates ranged widely from 1.66% to 71.9%, with facility-level practices, particularly counseling quality, having a greater impact than regional or cultural factors.

Continuation rates were high in the short term but declined significantly over time, often due to side effects and poor follow-up. Expulsion rates varied substantially, highlighting the role of

provider skill. Key facilitators of uptake included perceived convenience, free access, and supportive counseling. Common deterrents included fear of complications, misinformation, lack of partner support, and gaps in service delivery. Interventions such as improved counseling protocols, provider training, male engagement, and use of digital tools showed promise in enhancing uptake.

Conclusion: While PPIUCD has strong potential as a postpartum contraceptive method, its wider adoption depends on addressing deep-rooted barriers through integrated, context-specific strategies. Enhancing antenatal counseling, post-insertion care, and community involvement is critical to realizing its full public health impact.

Introduction

Contraception (birth control) encompasses all methods used to deliberately prevent pregnancy. It is broadly defined as “the intentional prevention of conception through the use of various devices, sexual practices, chemicals, drugs, or surgical procedures”^[1]. In practice, effective contraception enables couples to engage in sexual relations without fear of unintended pregnancy, thereby allowing families to decide when to have children. Contraceptive services are a fundamental component of reproductive health, helping to reduce maternal mortality by preventing unintended pregnancies and unsafe abortions and to empower women to pursue education and work.^[2]

Contraceptive methods are numerous and can be grouped by mechanism of action and duration. Broad categories include modern methods, including condoms and hormonal methods; surgical methods, including intrauterine devices (IUDs) and permanent sterilization; and traditional methods, such as fertility-awareness-based methods^[1]. Each category has distinct examples, advantages, and limitations:

- Barrier methods physically block sperm from reaching the uterus. Common examples are male condoms, female condoms, diaphragms, cervical caps, sponges, and spermicides.

For instance, a male condom is a thin sheath worn on the penis that prevents semen from entering the vagina. When used correctly, condoms are effective at preventing pregnancy and, uniquely among methods, also protect against sexually transmitted infections (STIs).

^[3] Barrier methods require correct use at the time of intercourse, which can be cumbersome, and their typical-use failure rate is higher than that of long-acting methods.

Diaphragms or cervical caps must be fitted and used with spermicide for optimal effect;

they also offer no STI protection. Overall, barriers are reversible and hormone-free but are moderately effective and user-dependent.

- Hormonal methods use steroid hormones (progestin with or without estrogen) to prevent ovulation, thicken cervical mucus, and alter the uterine lining. This category includes oral contraceptive pills (daily pills containing estrogen and progestin or progestin-only), injectable contraceptives (progestin shots lasting 2–3 months), implants (subdermal progestin rods lasting 3–5 years), the vaginal ring (monthly hormone ring), and the hormonal IUD (levonorgestrel-releasing device lasting 3–5 years).^[3] These methods are highly effective when used as directed and can regulate menstrual cycles and reduce dysmenorrhea. However, they have potential side effects like nausea, weight changes, mood effects, or, very rarely, thromboembolism from estrogen-containing methods and, except for implants/IUDs, depend on user adherence. Importantly, hormonal methods do not protect against STIs; only condoms offer dual protection.
- Intrauterine devices (IUDs) are small T-shaped devices inserted into the uterine cavity by a clinician. Two main types exist: the copper IUD (copper wrapped around a plastic frame) and the hormonal IUD (releasing levonorgestrel). The copper IUD can remain effective for up to 10–12 years, while hormonal IUDs last 3–5 years.^[3] The intrauterine device is recognized as one of the most effective reversible contraceptive methods, with first-year effectiveness estimated between 99.2% and 99.8%, thereby exceeding the efficacy of most short-term contraceptive options.^[4] They work by impairing sperm mobility and creating a local foreign-body reaction in the endometrium. Advantages include “fit-and-forget” convenience, long duration, and rapid return of fertility after

removal.^[4] Because they do not rely on daily compliance, they have much lower failure rates than pills or condoms. Drawbacks include the need for clinical insertion and follow-up, a short-term risk of expulsion (estimated at ~5–10% over 6–12 months)^[2], and, in some users, heavier menstrual bleeding or cramping, especially with copper IUDs. IUDs do not protect against STIs. Overall, IUDs are safe, long-acting, reversible, and cost-effective.^[4]

- Permanent sterilization encompasses surgical methods that deliberately block the gamete pathways. In women, this is typically tubal ligation by blocking or cutting the fallopian tubes; in men, it is vasectomy (blocking the vas deferens).^[1] These methods are extremely effective and require no ongoing action once completed. However, they are intended for couples who have decided they do not want any (more) children, as reversal is difficult, costly, and often unsuccessful. Sterilization offers no protection against STIs and carries the usual risks of surgical procedures. Because it is permanent, it is the least flexible method and is considered irreversible.^[1]
- Natural methods (fertility-awareness and coital timing methods) involve no drugs or devices. These include the fertility-awareness method, like tracking the woman's menstrual cycle and abstaining or using barriers on fertile days, withdrawal (coitus interruptus), and the lactational amenorrhea method (LAM) for postpartum breastfeeding women.^[1,5] LAM relies on exclusive breastfeeding to suppress ovulation for up to six months postpartum. The pros are that they are free, non-invasive, and culturally acceptable in some settings. The cons are that they are substantially less reliable than

medical methods; typical-use pregnancy rates can be high, and they provide no STI protection.^[1, 5]

Each method must be chosen based on individual health, preferences, and needs. According to WHO, family planning programs should provide a minimum of five types of modern contraceptive methods to adequately meet diverse client needs.^[6] Despite promoting a “cafeteria” model with five options, India’s family-planning program remains dominated by female sterilization. Modern spacing methods (oral pills, IUCDs, and condoms) account for only approx. 10.1% of use in 2005–06.^[7] Nonetheless, the Indian method mix has been dominated by female sterilization, with low use of IUDs or hormonal methods; IUDs accounted for only 1.5% of contraceptive use among married women in the NFHS-4 (2015–16).^[2] Strengthening access to and acceptance of long-acting spacing methods like IUDs is therefore a priority.

Postpartum Intrauterine Contraceptive Device (PPIUCD)

A postpartum IUD (PPIUCD) is an intrauterine device placed in the uterus soon after childbirth. In practice this means insertion immediately following expulsion of the placenta (post-placental, usually within 10 minutes) or during a Caesarean delivery before uterine closure, as well as within 48 hours of delivery (before discharge).^[8] This timing takes advantage of the fact that most women remain in contact with health services for delivery and are highly motivated about postpartum health. A major advantage of PPIUCD is that it requires no additional visits after childbirth, as the insertion is done while the woman is still in the delivery facility.^[2]

PPIUCD offers all the long-term benefits of IUDs in the postpartum context. It is non-hormonal, long acting, and reversible, with extremely high contraceptive effectiveness.^[4]

Copper IUDs work by releasing copper ions that impair sperm and prevent fertilization; hormonal IUDs (levonorgestrel) additionally thicken cervical mucus. Insertion of an IUD postpartum is safe and does not affect breastfeeding or future fertility. Importantly, studies have shown that women are particularly receptive to family planning immediately after birth; they are “highly motivated” and unlikely to be pregnant again, making this an ideal moment to provide contraception.^[2] In India’s context, where many women deliver in facilities but may not return, PPIUCD capitalizes on a key contact point to meet spacing needs.^[2] PPIUCD is a low-cost, cost-effective family planning strategy that should be prioritized for pregnancy spacing in India.^[9]

Despite these advantages, PPIUCD has limitations. Immediate postpartum insertion has a higher expulsion risk than interval IUD insertion. Recent studies in India report PPIUCD expulsion rates around 5–10% within six months^[2]. Proper technique, like fundal placement with long forceps, and provider training can minimize expulsion.^[2] Other issues include short-term

discomfort, irregular bleeding or spotting (particularly with copper IUCDs), and the possibility of infection if aseptic technique fails.^[1,2] Counseling must ensure women understand these potential side effects and know that the IUD can be removed on request. Cultural or familial barriers also arise; for example, women often decline PPIUCD due to partner refusal or misconceptions about pain and bleeding.^[2] Finally, PPIUCD offers no STI protection, so its use should be combined with barrier methods for dual protection if needed. Overall, PPIUCD is a highly effective, long-acting reversible method ideally suited to the postpartum period, but its success relies on adequate counseling, provider skill, and follow-up care.

Family Planning Programs in India

India holds a pioneering position in global family planning efforts, having launched its national family planning program in 1952, making it the first country worldwide to do so.^[10] Over the decades, this program has undergone significant evolution, transitioning from a target-driven approach heavily focused on sterilization to a more expansive, "target-free," and voluntary framework. This shift reflects a growing emphasis on informed choice and client-centered care within the national health agenda.^[11]

Presently, family planning services are seamlessly integrated into the overarching National Health Mission (NHM), specifically operating under the comprehensive Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCH+A) framework.^[12] This framework, outlined in official documents, emphasizes a "continuum of care" that spans various life stages from adolescence and pre-pregnancy through childbirth, postnatal care, and childhood and across all levels of service delivery, from community-based care to outpatient services and hospitals.^[12]

This integrated approach is designed to address the major causes of mortality among women and children and to overcome delays in accessing and utilizing health care services.

Under the NHM, frontline health workers, such as Accredited Social Health Activists (ASHAs) and Auxiliary Nurse Midwives (ANMs), play a crucial role by providing counseling and contraceptive supplies at the community level. Simultaneously, health facilities are equipped to offer a full spectrum of contraceptive methods. Complementary NHM initiatives further bolster postpartum contraception efforts. For example, the Janani Suraksha Yojana promotes institutional deliveries, thereby creating invaluable opportunities for the provision of immediate postpartum services. Similarly, LaQshya, a labor-room quality improvement initiative, incorporates postpartum family planning counseling as a key component.

In a strategic move to accelerate progress in family planning, particularly in high-fertility areas, the Ministry of Health launched Mission Parivar Vikas (MPV) in 2016. This initiative specifically targeted 146 districts across seven states where the total fertility rate (TFR) exceeded 3.0. ^[13] MPV deployed a comprehensive five-pronged strategy encompassing assured service delivery, capacity building, commodity security, new promotional schemes, and the creation of an enabling environment. Notably, MPV expanded the availability of injectable contraceptives (Antara) even at sub-center levels and significantly augmented PPIUCD services across all delivery points. It also implemented awareness campaigns, such as the "Nayi Pehel" kit for newlyweds and "Saathiyon Ki Salah" radio messages, to stimulate demand for family planning. ^[13] Analysis of these efforts indicates a faster rise in the uptake of modern contraceptive methods in MPV districts compared to other areas, signifying a positive impact of these targeted initiatives. ^[13]

India's commitment to family planning also extends to its international pledges, most notably the FP2020 commitments articulated at the London Summit on Family Planning in 2012. At this summit, India pledged to meet the unmet contraception needs for an estimated 48 million additional couples by 2020. This commitment underscored the nation's dedication to dramatically expanding access to quality contraceptive services and reducing the unmet need for contraception, with a particular emphasis on postpartum interventions and linking key interventions across the continuum of care. ^[14]

While India's policy commitment to family planning is robust and progressive at the national level, evidenced by its historical leadership and comprehensive frameworks, the persistent dominance of permanent methods like female sterilization, despite the "basket of choices" approach, suggests deeply ingrained systemic and socio-cultural inertia. This situation implies that even with progressive policies, deeply entrenched practices, possibly influenced by provider incentives or public perception, create a significant barrier to diversifying the method mix. PPIUCD, as a spacing method, is therefore strategically positioned as an intervention designed to overcome this historical bias and broaden the contraceptive options available, which is crucial for improving maternal and child health outcomes.

Role of PPIUCD in India's Family Planning Strategy

PPIUCD has become an important component of India's broader family planning strategy.

India's demographic goals of maintaining replacement-level fertility and reducing maternal mortality depend in part on improving birth spacing and contraceptive coverage.^[15] Short birth intervals (under 24 months) are associated with higher risks of maternal and child complications, so reliable postpartum contraception is critical. PPIUCD fits squarely into this strategy by providing a highly effective spacing method immediately after birth. The National Family Health Survey (NFHS-4) showed that only about 45% of married couples were using any modern method, and IUCDs comprised a mere 1.5% of the method mix. By contrast, female sterilization (47%) and condoms (5%) dominated.^[16] Thus, increasing postpartum IUCD uptake is a way to shift toward more reversible methods.

In practice, PPIUCD uptake in India remains modest. In one tertiary hospital study, 60% of counseled women accepted PPIUCD, and about 65% of those continued it at six months.^[2]

Other reports estimate that nationally only around 16% of postpartum women ever receive a PPIUCD (with wide variation: some states <2% and others up to 40%).^[17] These figures are well below the level needed to dramatically alter fertility trends. Nonetheless, PPIUCD services are being scaled up: MPV explicitly prioritized “augmentation of PPIUCD services at all delivery points,” and NHM guidelines mandate offering postpartum IUCD in all public sector obstetric units. PPIUCD acceptance is higher if counseling occurs during antenatal care, if female literacy is higher, and if husbands are involved in decision-making.

Implementation challenges have hampered wider PPIUCD coverage. These include shortages of trained providers, inconsistent commodity supply, and socio-cultural barriers. As one review

notes, lack of counseling and “male spouse resistance” are key reasons women decline PPIUCD.

^[2] Healthcare workers’ own biases or skills gaps can lead to under-promotion or improper insertion, increasing expulsion risk. Follow-up systems are also weak: many women do not return for the six-week check, so problems like missing strings or bleeding may prompt IUD removal. Moreover, while PPIUCD is safe and effective, it does not address unmet need entirely: about 15% of pregnancies in India are still unintended, and 6% of births occur within one year of the previous birth. ^[16]

Despite these challenges, PPIUCD is central to India’s goal of expanding the contraceptive method mix. By capitalizing on institutional deliveries (now over 80% nationwide) and postpartum care, it provides an opportunity to reach women who might otherwise have no access to long-term contraception. The government’s family planning objectives, including raising modern contraceptive prevalence and spacing birth intervals, explicitly include “postpartum family planning” as a thrust area. Continuing to invest in PPIUCD (through training, counseling, and quality care) can help India meet its targets for maternal health and population stabilization. In summary, within India’s family planning strategy, PPIUCD represents a low-cost, high-impact method for addressing unmet need in the critical postpartum period. Its wider uptake and continuation are programmatic goals, and ongoing monitoring of PPIUCD indicators is needed to overcome implementation gaps and maximize its role in India’s reproductive health landscape.

The first year postpartum is a vulnerable period for unintended pregnancies. Fertility often resumes quickly after delivery. Short interpregnancy intervals (<24 months) are associated with increased maternal and neonatal morbidity. ^[18] Postpartum family planning is therefore a public health priority. Immediate postpartum insertion of a copper-T IUD (PPIUCD) provides long-

acting reversible contraception at the point of care, avoiding missed opportunities for prevention.

^[19] The method is non-hormonal, compatible with breastfeeding, and can be inserted safely within 10 minutes of placental delivery or during cesarean section.

Despite these advantages, PPIUCD uptake in India has been historically low. National surveys (e.g., NFHS-4) reported that only ~1.5% of married women use any IUD; the assessment found that by 2021 the state-wise PPIUCD acceptance rates ranged dramatically from ~1% to ~40%, with a national average of just ~16%. ^[20] In other words, even though PPIUCD services are offered free in government facilities, only a minority of eligible women opt for them. Various factors have been implicated: limited awareness and counseling, sociocultural norms, provider biases, and health system constraints. The literature suggests that women who receive thorough antenatal counseling and family support are more likely to accept PPIUCD, while myths (e.g., fears of IUDs causing infertility or cancer), fear of side effects (excessive bleeding, pain), and lack of partner support drive refusal.

This scoping review aims to systematically map the evidence on PPIUCD utilization in India. We address the patterns of uptake (utilization) across settings, identify factors associated with acceptance, summarize reasons for refusal, and examine interventions proven to improve uptake. By synthesizing findings across studies, this review highlights successful strategies and persistent gaps to inform policy and program efforts in expanding postpartum contraceptive choice.

Methodology

Research question:

What are the patterns of utilization, acceptance factors, barriers to the adoption of postpartum intrauterine contraceptive devices (PPIUCD) in postpartum women, and interventions improving acceptance in India as identified in existing literature?

Study Design:

This research was conducted as a scoping review using the Arksey and O'Malley 6-stage scoping review framework, enhanced by the PRISMA-ScR checklist, which includes identifying the research question, searching for relevant studies, selecting studies, charting the data, and summarizing the results.

Data Sources and Search Strategy:

A comprehensive search strategy was conducted across electronic databases such as PubMed, Google Scholar, grey literature, government reports, and policy documents such as India's mission FP 2020 and 2030, the Integrated Approach Document for RMNCH+A in India by MoHFW, and the PPIUCD Reference Manual by MOHFW.

The search terms included:

- Postpartum IUCD/PPIUCD/postpartum intrauterine contraceptive device/postpartum copper T/Family planning postpartum contraception/Long-acting reversible contraception adoption
- Barriers/challenges/obstacles/factors affecting/determinants
- Utilization/uptake/acceptance/coverage/adoption
- Intervention/program/strategy/awareness/training/counseling

Boolean operators (AND, OR) were used to refine database searches.

Inclusion criteria:

1. Studies reporting intrauterine device insertion within 48 hours of delivery (postpartum period); Reported data on utilization, acceptance, refusal, or interventions to improve PPIUCD uptake.
2. Studies conducted in India.
3. Studies published in English (2010–2025).
4. Studies employing any design (descriptive, analytical, intervention, mixed methods, reviews).

Exclusion criteria: Studies were excluded if they did not specifically address the immediate postpartum timing (e.g., interval IUDs only), were outside India, or lacked relevant outcomes.

1. Studies on IUCD insertion outside the postpartum period, non-human studies, and studies without relevant data on utilization or influencing factors.
2. Studies focusing exclusively on interval IUD insertion (not postpartum)

Data Extraction and Analysis

1. Selected studies were reviewed, and key data was extracted using a structured data extraction format, including:
2. Study characteristics (author, year, study design, location)
3. Utilization rates
4. Factors influencing acceptance
5. Reasons for refusal
6. Interventions used to increase PPIUCD utilization
7. Recommendations for policy and practice.

Data were extracted into a standardized form, capturing study characteristics (author, year, location, design, sample), PPIUCD utilization rates (acceptance, continuation), and reported factors (acceptance facilitators, refusal reasons, clinical outcomes, intervention outcomes). Quantitative data were tabulated. Extracted data were synthesized descriptively and thematically. Results are presented narratively, highlighting common findings across studies. Key quantitative results are summarized in tables and figures where possible.

Results

Study Selection and Characteristics

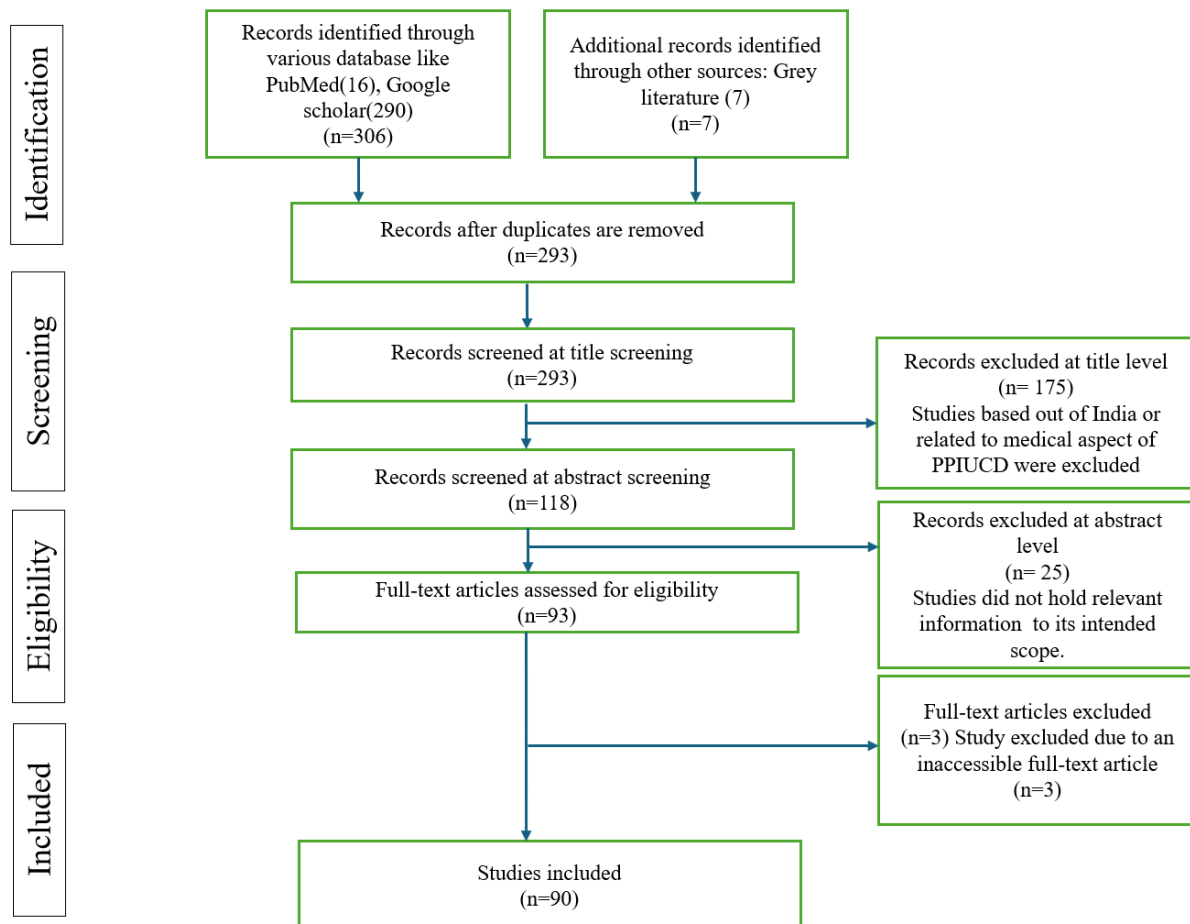


Figure 1: PRISMA Framework for selection of studies

The search identified 306 records and 7 additional records from other sources. After removing duplicates (n=20) and initial screening, 293 records were reviewed by title, resulting in the exclusion of 175 studies for irrelevance (non-India, non-postpartum IUCD focus, etc.), and 118 studies were screened for abstract screening, out of which 25 studies were excluded due to irrelevance to the scope of the study. We assessed 90 full-text articles. Study settings ranged

from tertiary hospitals in urban centers (Delhi, Mumbai, Kolkata, etc.) to rural district hospitals. Sample sizes varied widely, from ~150 to over 3000 women counseled.

Utilization, Continuation and Expulsion Rates

The findings reveal substantial variability in PPIUCD uptake, with acceptance rates ranging from a low of 1.66% to a high of 71.9%. Expulsion rates, while generally manageable, also exhibit a range from 0.3% to 30%, with common rates falling between 3% and 10%. Pronounced geographical disparities are evident, indicating that program effectiveness is deeply influenced by regional socio-cultural contexts and the strength of local health systems. The most critical determinants of PPIUCD acceptance and continuation consistently include the quality and timing of counseling, the active involvement of family members and partners, the socio-economic and educational background of women, and the effective management of perceived side effects. Understanding the rates at which PPIUCDs are adopted is fundamental to assessing the success of family planning programs. In this report, "utilization rate" generally refers to the proportion of all eligible women (e.g., all deliveries in a facility) who adopt PPIUCD. "Acceptance rate," on the other hand, typically denotes the proportion of counseled women who choose PPIUCD.

While these terms are sometimes used interchangeably in the literature, this analysis differentiates them where possible, noting the specific denominator used in each study.

Acceptance/utilization rates:

The data reveals a remarkable variability in PPIUCD acceptance and utilization rates across India, reflecting diverse programmatic and socio-cultural contexts. The reported rates span a wide spectrum, from exceptionally low to notably high.

The lowest reported acceptance rates are observed in studies focusing on baseline awareness or initial program rollouts. A study conducted in Gwalior, Madhya Pradesh, identified a notably low acceptance rate of 1.66% among a total of 15,383 deliveries [20]. In a similar vein, findings from Kancheepuram district in Tamil Nadu, based on NFHS-4 data, revealed an acceptance rate of 1.7% [21]. Research from Solapur, Maharashtra, also reported comparably low uptake, with only 1.97% of women accepting PPIUCD insertion. [22], In Southeast Rajasthan, a study observed a marginally higher acceptance rate of 2.47% following structured counseling interventions [23]. Meanwhile, data from a tertiary care center in Central Gujarat showed a relatively improved rate of 5.4%. [24].

These low figures often highlight the significant initial hurdles in introducing a new contraceptive method or the absence of intensive counseling efforts.

Conversely, several studies demonstrate significantly higher acceptance rates, indicating the potential for successful PPIUCD integration. A study in Ahmedabad, Gujarat, reported that 71.9% of counselled women were willing to accept PPIUCD [25]. In Bathinda, Punjab, a 60% acceptance rate was observed among counselled women [2]. Other notable high rates include 52% in Karnal, Haryana [26], and 51.8% in Chamarajanagar, Karnataka [27]. The overall range of reported acceptance and utilization rates thus spans from 1.66% to 71.9%. This wide range underscores the profound influence of various factors, from study design and setting to the intensity of counseling and the maturity of the program.

Study Citation (Author et al.)	Study Location	Reported Acceptance/ Utilization Rate (%)	Sample Size	Notes on Calculation
Rajput N et al. (2024)	Gwalior, M.P.	1.66%	255/15383 deliveries	% of all deliveries —A proportion expressed as a part per hundred, calculated as (Number of cases in a specific category / Total number of cases) × 100. This is used for categorical data to show relative frequencies.
Mohana A et al. (2021)	Kancheepuram, Tamil Nadu	81.5%	212/260 retention	PPIUCD retention rate - (Number of women with PPIUCD still in place / Total number of women who had PPIUCD inserted in the study sample) × 100
Shrigadhi SA, Gawandi PS. (2021)	Solapur, Maharashtra	1.97%	60/3032 counselled	% accepted insertion—Acceptance Rate = (Number of women who accepted PPIUCD / Total number of women counseled) × 100
Sharma A, Gupta V. (2017)	Kota, Rajasthan	2.94%	-	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) × 100.
Nayak K et al. (2025)	Central Gujarat	5.4%	19/350 women	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) × 100.
Nigam A et al. (2018)	New Delhi	9.1%	50/550 counselled	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) × 100.

Patel J et al. (2017)	Ahmedabad, Gujarat	9.4%	Based on 18,131 counselled deliveries	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) $\times$ 100.
Alukal AT et al. (2018)	Thrissur, Kerala	10.5%	54/514 delivered women	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) $\times$ 100.
Chethan R et al. (2018)	Bangalore, Karnataka	11.98%	2072 insertions out of 17,289 deliveries	Insertion Rate: The proportion of deliveries where PPIUCD was inserted. Calculated as (total PPIUCD insertions / total deliveries) $\times$ 100. Example: 2072 insertions out of 17289 deliveries = 11.98%
Gupta N et al. (2017)	New Delhi	12.67%	152/1200 opted after information	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) $\times$ 100.
Kaiser K et al. (2022)	Srinagar, Kashmir	14%	560/4000 counselled	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) $\times$ 100.
Prakash P et al. (2021)	Bikaner, Rajasthan	14%	58/411 counselled	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) $\times$ 100.
Tayshete R, Gandhi A. (2023)	Mumbai, Maharashtra	14.46%	1194/8258 counselled	Insertion Rate: The proportion of deliveries where PPIUCD was inserted. Calculated as (total PPIUCD insertions / total deliveries) $\times$ 100.

Deshmukh P et al. (2024)	Navi Mumbai, Maharashtra	15%	202/1380 eligible counselled	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) × 100.
Mishra S. (2014)	Balangir, Odisha	17.57%	564/3209 counselled	Insertion Rate: The proportion of deliveries where PPIUCD was inserted. Calculated as (total PPIUCD insertions / total deliveries) × 100.
Asnani M et al. (2019)	Lucknow, Uttar Pradesh	18%	Agreed to insertion after counselling	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) × 100.
Sharma N et al. (2021)	Kota, Rajasthan	19.30%	8,611/44,606 counselled	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) × 100.
Jairaj S, Dayyala S. (2016)	Telangana	19.7%	73/370 counselled	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) × 100.
Gautam R et al. (2014)	Jhansi, Uttar Pradesh	21.77%	423/1941 eligible women	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) × 100.
Gowri Dorairajan et al. (2023)	Puducherry	21%	Among counselled women	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) × 100.

Kakati R et al. (2025)	Jorhat, Assam	22.3%	23/103 accepted immediate PPIUCD	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) × 100.
Rajput N, Bangal VB. (2024)	Loni, Maharashtra	22.5%	351 women	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) × 100.
Bhadra, B., Das, S., Mitra, A., et al. (2018)	West Bengal	23.8%	Of 11,545 women counselled, 11,545 accepted PPIUCD	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) × 100.
Sweta, Anjum S, Mendiratta SL. (2023)	North Delhi	25.5%	102/400 after counseling	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) × 100.
Raghuwanshi M et al. (2020)	Rewa, Madhya Pradesh	25.98%	660/2540 antenatal counselling	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) × 100.
Bahadur BR et al. (2022)	Mangalagiri, Andhra Pradesh	28.46%	456/1602 deliveries	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) × 100.
Radhika AG et al. (2024)	Delhi, Meerut, Rohtak, Chandigarh, Kolkata,	28.7%	Among counselled women	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors /

	Puducherry			Total women recruited) $\times$ 100.
Singh BS et al. (2022)	Bihar	28.7%	Among women surveyed	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) $\times$ 100.
Gaur SS, Mendiratta S. (2019)	Jaipur, Rajasthan	29.3%	5653/19319 offered	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) $\times$ 100.
Chawla R, Ahuja R, Sharma P. (2020)	Faridabad, Haryana	29.5%	Willingness (59/200); actual insertion: 9% (18/200)	Willingness rate —(number of respondents expressing willingness / total respondents) $\times$ 100 Insertion Rate: The proportion of deliveries where PPIUCD was inserted. Calculated as (total PPIUCD insertions / total deliveries) $\times$ 100.
Bansal M, Lagoo J, Pujari K. (2016)	Bastar, Chhattisgarh	30.6%	Among 1959 women delivered	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) $\times$ 100.
Rana M et al. (2019)	Samba, Jammu and Kashmir	31.9%	811/2540 counselled	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) $\times$ 100.
Kant S et al. (2016)	Faridabad, Haryana	38.9%	238/611 eligible women	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: (Number of acceptors / Total women recruited) $\times$ 100.
Pentela G et al. (2022)	Karad,	40%	140/350	Acceptance rate - Antenatal women

	Maharashtra		counselled	who agreed to undergo insertion of the intrauterine contraceptive device Calculation: $(\text{Number of acceptors} / \text{Total women recruited}) \times 100$.
Shukla M, Qureshi S, Chandrawati. (2014)	6 tertiary hospitals across India	49.7%	Among counselled women	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: $(\text{Number of acceptors} / \text{Total women recruited}) \times 100$.
Pradeep MR, Nayana DH. (2019)	Chamarajanagar, Karnataka	51.8%	After counseling	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: $(\text{Number of acceptors} / \text{Total women recruited}) \times 100$.
Bharti A et al. (2024)	Karnal, Haryana	52%	52/100 overall	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: $(\text{Number of acceptors} / \text{Total women recruited}) \times 100$.
Gupta S, et al. (2023)	Bathinda, Punjab	60%	180/300 counselled	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: $(\text{Number of acceptors} / \text{Total women recruited}) \times 100$.
Hegde MG, Varsha KR. (2023)	Mangalore, Karnataka	62%	Post-counseling agreed to insertion	Acceptance rate - Antenatal women who agreed to undergo insertion of the intrauterine contraceptive device Calculation: $(\text{Number of acceptors} / \text{Total women recruited}) \times 100$.
Dalal R et al. (2021)	Ahmedabad, Gujarat	71.9%	719/1000 counselled	% willing for CuT insertion - $(\text{number of respondents expressing willingness} / \text{total respondents}) \times 100$

Table 1: Summary of PPIUCD Utilization and Acceptance Rates in India

Regional Breakdown of Utilization and Acceptance Rates

North India

Delhi: Acceptance rates show considerable variation, from 8.6% of all deliveries in one tertiary hospital^[28] and 9.1% among counselled women in another study to 37.2% in a different tertiary center^[29]. Quality improvement initiatives have demonstrated significant increases, from a baseline of 4.5% to a sustained 30-35% coverage^[30]. Post-counseling acceptance can reach 48%^{[31][32]}.

Uttar Pradesh: Acceptance rates include 21.77% in the Bundelkhand Region^[33], with awareness as low as 5% in Muzaffarnagar^[34], yet post-counseling acceptance reaching 18% in Lucknow^[35].

Rajasthan: Acceptance rates vary from a low of 2.94% in Kota^[23] to 29.3% in Jaipur^[36] and 14% in Bikaner^[37]. Another study in Kota reported 19.30% acceptance among counselled women^[38].

Haryana: Acceptance rates range from 9% (actual insertion) in Faridabad^[39] to 38.9% in rural PHCs of Faridabad^[40] and up to 52% in Karnal^[41].

Jammu & Kashmir: Acceptance rates are reported at 31.9% in Samba^[42] and 14% in Srinagar^[43].

East India

Odisha: Acceptance is reported at 17.57% in Balangir ^[44], with 26.25% of women having ever used IUCD in Khordha ^[45].

West Bengal: Acceptance rates are 23.8% and 37.4% in Kalyani, specifically after nurse training ^[46].

Bihar/Jharkhand/Chhattisgarh/Uttarakhand (multi-state studies): Acceptance rates vary from 11.5% [47] to 28.7% in Bihar ^[48], 30.6% in Bastar, Chhattisgarh ^[49], and 36.23% in Jharkhand [85]. Actual insertion rates reached 39% in Patna, Bihar ^[50].

West India

Maharashtra: Acceptance rates range from a very low 1.97% in Solapur ^[22] to 22.5% in Loni [51], 15% in Navi Mumbai ^[52], and up to 40% in Karad ^[53]. Willingness rates in Nagpur reached 6% ^[54] and 25.5% post-counseling ^[55]. Mumbai reported an acceptance rate of 14.46% ^[56].

Gujarat: Acceptance rates range from 5.4% in Central Gujarat ^[57] to 34.5% in Ahmedabad ^[58], and a high of 71.9% in another Ahmedabad study [25].

South India

Telangana: Acceptance rate is 19.7% ^[59].

Karnataka: Post-counseling acceptance reached 62% in Mangalore ^[60] and 51.8% in Chamarajanagar ^[26], while Bangalore reported 11.98% of deliveries receiving PPIUCD ^[61].

Andhra Pradesh: Acceptance rates are 28.46% in Mangalagiri ^[62] and 8.5% in Visakhapatnam ^[63].

Kerala: The acceptance rate is 10.5% in a study at Thrissur^[64].

Puducherry: Acceptance rates are 21% in the study by Gowri Dorairajan et al.^[65] and 8.6% willingness by Valliappan A et al.^[66].

Central India

Madhya Pradesh: PPIUCD acceptance was found to be higher among primiparous women in Sehore^[67]. Acceptance rates include 1.66% in Gwalior^[20] and 25.98% in Rewa^[68]. Overall IUCD acceptance was 11.98% in Bhopal^[69].

Continuation/retention:

An in-depth analysis of the collected data reveals significant variability in PPIUCD continuation and retention rates across different follow-up periods, reflecting the complex interplay of various influencing factors.

Short-Term Continuation (6 weeks to 3 months)

In the immediate postpartum period, continuation rates for PPIUCD are generally high, indicating initial success in acceptance and insertion. For example, Kumar S. et al.^[47] reported approximately 94% retention at 6 weeks, with only 3.8% of devices removed. Similarly, Bhadra B. et al.^[46] observed about 94.6% continuation among women who were followed up. Mehta S. et al.^[29] showed a 93.5% continuation rate at 6 weeks, and Deshmukh P. et al.^[52] reported an impressive 98% continuation at 6 weeks. Other studies also reported high rates, such as 92% at 6 weeks in Shukla M. et al.^[70] and 91.91% at 6 weeks in Sharma N. et al.^[38]. This consistent

pattern of high short-term continuation rates, often exceeding 90% at 6 weeks, suggests that the initial phase of PPIUCD adoption and insertion is largely successful and that the method is generally well-tolerated immediately after placement. This highlights the critical importance of effective counseling during the immediate postpartum period as a crucial window for effective contraceptive intervention.

Medium-Term Continuation (6 months to 1 year)

During the extended follow-up period ranging from 6 months to 1 year, a marked decline in PPIUCD continuation rates is evident. For example, Srivastava A. et al.^[71] documented a continuation rate of 74.8% at 6 months, which further decreased to 60.1% at the 1-year mark. Similarly, Kumar S. et al.^[47] reported a 62.8% continuation rate at 12 months, while Singal S. et al.^[72] observed a 70.7% rate over the same duration. Gupta S. et al.^[2] indicated a retention rate of 65.6% at the 6-month interval. Although certain studies, such as those by Gudi SN. et al.^[73] and Lal P. et al.^[74], reported higher continuation rates up to 90% at 6 months, these figures were predominantly based on participants who returned for follow-up visits and exhibited low expulsion or removal rates, potentially underrepresenting the broader discontinuation scenario. The observed decline in continuation from 6 weeks to 6–12 months highlights a crucial window during which discontinuation is most likely. This trend may reflect increasing challenges during the adaptation phase to PPIUCD use, including the onset of side effects or socio-cultural influences, such as family or community pressure. Therefore, targeted programmatic strategies, particularly improved follow-up mechanisms and timely management of side effects, are essential during this medium-term period to enhance sustained PPIUCD utilization.

Long-Term Continuation (2 to 3 Years)

Evidence concerning the long-term continuation of PPIUCD use extending beyond the first year is relatively limited in the literature. However, the available data point to a notable and often steep decline in continuation rates over time. For instance, Mishra S. ^[75] recorded a continuation rate of 48.4% for two years, which further declined to just 30.4% by the third year. Similarly, Radhika AG et al. ^[76] observed a continuation rate of 50.6% at 24 months. Although Pillai VM et al. ^[77] reported a relatively higher rate of around 68% over a three-year follow-up, this still reflects a considerable drop when compared to short-term retention figures. These trends underscore the challenges in maintaining long-term use of PPIUCDs, despite their classification as long-acting reversible contraceptives (LARCs). The persistent decline in continuation beyond one year implies that existing programmatic strategies may fall short in offering adequate long-term support to users. As a result, many women may discontinue use prematurely, thereby missing out on the full contraceptive benefits that PPIUCDs are designed to provide.

Strengthening follow-up systems and reinforcing user support throughout the lifespan of the device are critical for improving long-term retention and maximizing the public health impact of PPIUCDs.

Continuation rates of PPIUCD use show significant variation across studies, particularly at the 6-month mark, where reported figures range from 65.6% [2] to as high as 90%. ^[73] This disparity is not simply due to random variation but reflects meaningful differences influenced by the quality of program implementation, provider competencies, and socio-cultural dynamics within the study populations. Methodological differences, such as whether follow-up was conducted through clinic visits or telephonic interviews, as well as variations in study design and participant demographics, contribute to this heterogeneity in outcomes. For example, expulsion rates have

also been found to differ markedly, ranging from as low as 0.5% in the study by Vidya Rama R. et al. ^[63] to 18% among the manual insertion group in Shukla M. et al. ^[70].

Such findings highlight that the success of PPIUCD programs is highly sensitive to contextual factors. As a result, it is essential that program managers and policymakers refrain from assuming standardized outcomes across diverse settings. Instead, emphasis should be placed on tailoring service delivery models to local conditions to ensure more consistent and improved continuation rates.

Study Citation	Follow-up Period	Reported Continuation/Retention Rate (%)	Study site/state
Mishra S. (2014)	6 weeks	81.11% (352 of 434)	Balangir, Odisha
Kumar S. et al. (2014)	6 weeks	~94% (only 3.8% removed)	Bathinda, Punjab
Srivastava A. et al. (2024)	6 weeks	88.70%	Odisha & Chhattisgarh
Bhadra, B., et al. (2018)	6 weeks	~94.6% (among those followed up)	West Bengal
Mehta S. et al. (2017)	6 weeks	93.5% (316 out of 339 who followed up)	New Delhi
Pfitzer A. et al. (2015)	6 weeks	90–96% (e.g., 96.4% Ethiopia; 93.2% Pakistan; implied by complication data) [India: 2.7% expulsion, implying 97.3% continuation]	Ethiopia, Guinea, India, Pakistan, the Philippines, and Rwanda.
Shrigadhi SA, et al. (2021)	6 weeks	83.30%	Maharashtra
Pentela G. et al. (2022)	6 weeks	97.80%	Maharashtra
Deshmukh P. et al. (2024)	6 weeks	98%	Navi Mumbai, Maharashtra

Rana M. et al. (2019)	6 weeks	80.18% (combining expulsion and discontinuation)	Jammu, Jammu and Kashmir, India
Rani K. et al. (2018)	6 months	~91.78% (219 inserted, 6 expulsions and 12 removals, implying 201 continuations)	Uttarakhand, India
Sharma N. et al. (2021)	6 weeks	91.91%	Rajasthan, India
Bhadra B. et al. (2018)	6 weeks	93.7% (4,264 out of 4,551 followed up)	Kalyani, West Bengal
Kumar S. et al. (2014)	6 weeks	~94.1% (removals 5.9% implying)	Assam, Bihar, Jharkhand, Madhya Pradesh, Maharashtra, Rajasthan, Uttar Pradesh, Uttarakhand and Delhi
Kaiser K. et al. (2022)	6 weeks	92.20%	Srinagar, Kashmir
Gupta S. et al. (2023)	6 months	65.6% (118/180)	Bathinda, Punjab,
Vishwakarma S. et al. (2020)	6 months	88.8% (116 removals out of 1,029)	Etawah, Uttar Pradesh
Mehta AU, et al. (2019)	6 months	88%	Gujarat, India
Gudi SN et al. (2023)	6 months	90% (692/765)	Delhi, Faridkot, Mumbai, Wardha
Lal P. et al. (2018)	6 months	90% (implied)	New Delhi
Radhika AG, et al. (2024)	6 months	72.50%	Delhi, Meerut, Rohtak, Chandigarh, Kolkata, Puducherry
Gupta M. et al. (2016-17)	4-12 months	55.1% (overall 62%)	Rajasthan & Maharashtra
Sharma N. et al. (2021)	6 months	85.30%	Kota, Rajasthan

Pillai VM et al. (2024)	Up to 3 years	~68% retained IUCD	Kerala
Mishra S. (2017)	3 years	30.4% overall	Odisha

Table 2: Table of PPIUCD Continuation Rates by Follow-up Period.

PPIUCD Expulsion Rates Across India

Expulsion is a primary concern regarding the efficacy and safety of PPIUCDs. The analysis of reported expulsion rates across India reveals a range of outcomes, with many studies indicating low rates when proper techniques are employed, but some outliers highlighting areas for improvement.

Reported expulsion rates of PPIUCD in India show substantial variability across different settings.

Expulsion rates associated with PPIUCD use in India display considerable variation, with several studies reporting exceptionally low figures. A review by Singh D. et al.^[78] on intra-cesarean insertions noted expulsion rates ranging between 0% and 6.6%, underscoring the method's potential stability when performed during cesarean delivery. Similarly low rates have been documented across various regions, including 0.3% in Kalyani^[46], 0.5% in Visakhapatnam^[63], 0.6% in a national UNFPA initiative^[79], and 0.65% in Mangalagiri^[62]. Collectively, these findings suggest that, under appropriate clinical conditions, PPIUCD offers a highly reliable contraceptive option with minimal risk of expulsion.

In contrast to studies reporting minimal expulsion rates, several investigations have identified substantially higher figures. For example, a study observed a spontaneous expulsion rate of 35.4% among discontinuing users in Kancheepuram, Tamil Nadu^[21]. Similarly, Shrigadhi SA and Gawandi PS^[22] reported an expulsion rate of 30% in Solapur, Maharashtra. A study conducted by Shukla M. et al.^[80], which assessed manual insertion methods, found an 18% expulsion rate, while Kant S. et al.^[40] documented a rate of 17.7% in Faridabad, Haryana. Although many studies report lower expulsion rates in the range of 2% to 7%, these notably

higher figures indicate that certain procedural or contextual variables may significantly elevate the risk of expulsion.

The considerable variation in expulsion rates, from nearly negligible to over one-third of users, highlights that this complication is not a fixed characteristic of the contraceptive method itself. Instead, it reflects modifiable factors closely tied to the quality and consistency of service delivery. This suggests that with appropriate training, insertion technique, and post-insertion care, the incidence of expulsion can be significantly minimized, thereby enhancing both the safety and long-term effectiveness of PPIUCD use.

Study Citation (Author et al.)	Study Location	Reported Expulsion Rate (%)	Follow-up Period
Singh D et al. (2020)	Himachal Pradesh (Review)	0-6.6% (caesarean)	Varied across reviewed studies
Bhadra B et al. (2018)	Kalyani, West Bengal	0.3%	6 weeks
Vidya Rama R et al. (2015)	Visakhapatnam, Andhra Pradesh	0.5%	Majority at 6 weeks
UNFPA (2012)	India (5 states, 30 facilities)	0.6%	6 weeks
Bahadur BR et al. (2022)	Mangalagiri, Andhra Pradesh	0.65%	6 weeks and 6 months
Deshmukh P et al. (2024)	Navi Mumbai, Maharashtra	1% (at 6 weeks & 6 months)	6 weeks, 6 months
Pillai VM et al. (2024)	Kerala	1.8%	Up to 3 years

Pentela G et al. (2022)	Karad, Maharashtra	1.6-2.1%	At discharge, 6 weeks
Dalal R et al. (2021)	Ahmedabad, Gujarat	2.78%	6 weeks, 6 months
Lal P et al. (2018)	New Delhi	2.86%	Not explicitly reported
Gautam R et al. (2014)	Jhansi, Uttar Pradesh	3.1%	6 weeks
Vishwakarma S et al. (2020)	Saifai, Uttar Pradesh	3.4% total (2.2% by 6w, 1.2% by 6m)	6 weeks, 6 months
Kumar S et al. (2014)	8 states + Delhi	3.6%	6 weeks
Shukla M et al. (2014)	6 tertiary hospitals across India	3.6%	6 weeks, 6 months
Kaiser K et al. (2022)	Srinagar, Kashmir	3.6%	6 and 10 weeks
Itagi L et al. (2023)	Kalaburagi, Karnataka	4%	6 weeks
Gudi SN et al. (2023)	Delhi, Faridkot, Mumbai, Wardha	4.16% (at 6w), 1.31% (at 6m)	6 weeks, 6 months
Tayshete R, Gandhi A. (2023)	Mumbai, Maharashtra	4.18%	6 weeks
Gowri Dorairajan et al. (2023)	Puducherry	5% (immediate), 3.7% (early)	Not explicitly reported
Bansal M, Lagoo J, Pujari K. (2016)	Bastar, Chhattisgarh	5.17%	Up to June 2016
Gupta S, et al. (2023)	Bathinda, Punjab	5.6%	6 months

Singal S et al. (2021)	Gujarat and Rajasthan	5.7%	Not longitudinal
Mehta S et al. (2017)	New Delhi	5.9%	6 weeks
Jairaj S, Dayyala S. (2016)	Telangana	6.8%	6 weeks
Mehta AU, Patel B. (2019)	Ahmedabad, Gujarat	7%	6 weeks and 6 months
Kumar S et al. (2019)	Bihar, Jharkhand, UP, Uttarakhand, MP, Chhattisgarh	7.5%	1 year
Mishra S. (2014)	Balangir, Odisha	8.99%	Not explicitly stated
Radhika AG et al. (2024)	6 medical colleges across India	9.84%	24 months
Kotwani P et al. (2019)	Sehore, Madhya Pradesh	10.9%	Within 6 months
Rana M et al. (2019)	Samba, Jammu and Kashmir	12.12%	6 weeks
Srivastava A et al. (2024)	Odisha and Chhattisgarh	12%	1 year
Kant S et al. (2016)	Faridabad, Haryana	17.7%	6 weeks
Shukla, M., Pradhan, T., et al. (2022)	Tertiary care teaching hospital, India	18% (manual), 6% (Kelly's forceps)	6 weeks
Shrigadhi SA, Gawandi PS. (2021)	Solapur, Maharashtra	30%	6 weeks
Mohana A et al. (2021)	Kancheepuram, Tamil Nadu	35.4% (spontaneous expulsion)	6 months to 2 years post-insertion

Table 3: Summary of PPIUCD Expulsion Rates in India (2010-Present)

Clinical Outcomes of PPIUCD usage across India

The safety profile of PPIUCD is generally favorable, with severe complications being rare. However, a range of minor to moderate complications are reported, which, while not life-threatening, can significantly impact user satisfaction and continuation.

Bleeding irregularities are consistently reported as the most common complication associated with PPIUCD use. These can manifest as abnormal uterine bleeding (AUB), prolonged bleeding, heavy bleeding (menorrhagia), or irregular spotting. Incidence rates vary across studies, with some reporting higher figures than others.

For example, an early study in Odisha noted bleeding in 23.5% of cases. Other studies reported AUB at 10.7%, 11.9% at six weeks decreasing to 6% at six months, 2.36%, 6.3%, and 35% for excessive bleeding.^[22, 29, 74, 81] In Andhra Pradesh, excessive vaginal bleeding was noted in 7.2% of cases^[62], while in Ahmedabad, vaginal bleeding was 6.79%.^[82] A study in Gwalior reported approximately 15.2% vaginal bleeding.^[20] Abnormal bleeding was a common complaint in a multicentric study, and menstrual disturbances were reported by 36.5% of discontinuers in Bihar.^[76] Excessive bleeding was observed in 2.1-3.5% of cases at six weeks in Maharashtra.^[53] Menstrual disturbance at six months was 4.3% in Navi Mumbai^[52], and irregular/increased bleeding was 19% in Bundelkhand.^[33] Bleeding was reported 11.61% in Jammu and Kashmir^[42] and was the most common complication in Tamil Nadu.^[21] Irregular vaginal bleeding was 5.48% and menorrhagia 2.28% in Uttarakhand.^[83] Lower abdominal pain and bleeding were reported by 15.9% of clients in Rajasthan and Maharashtra^[84] and excessive bleeding by 12.64% in Jaipur.^[36] Irregular bleeding was the most common complaint in Southern Rajasthan.^[38] Bleeding was 12.92% in Chhattisgarh.^[49] Qualitative data highlighted irregular/heavy/prolonged bleeding as a reason for removal.^[85] In Kolkata, bleeding irregularities were 8.5%^[86], and

irregular bleeding was less common with a long inserter^[87]. Menorrhagia was 35.2% in Kerala^[77], and heavy menstrual bleeding was 6% in Jharkhand.^[50] Heavy bleeding was a reason for removal in Kashmir.^[43]

Pain reported in the form of abdominal discomfort, cramping, pelvic pain, or backache is a commonly cited side effect following PPIUCD insertion and a significant reason for early discontinuation. Reported incidence of pain varied markedly across studies, ranging from as low as 0.5% at six-week follow-up in Navi Mumbai^[52] to as high as 63.5% in Rajasthan and Maharashtra^[84]. Most studies reported pain prevalence within the 2% to 20% range. Lower abdominal pain was frequently documented in states such as Andhra Pradesh (11.62%)^[62], Bihar (36.5% among discontinuers)^[48], Kerala (36.4%)^[85], and Karnataka (pelvic pain at 8%)^[88]. Notably, qualitative findings also revealed pain during menstruation, pricking sensations, and persistent discomfort as common reasons for removal.^[85] Slight variations in pain incidence were observed based on the mode and timing of insertion, with lower reports noted where a dedicated inserter was used.^[87]

Infection rates following PPIUCD insertion remain generally low, affirming the safety of the procedure when performed under proper aseptic conditions. Across studies, the incidence of infection ranged from 0% to 19.19%. Notably, pelvic inflammatory disease (PID), a more severe outcome, was rarely reported, with rates as low as 0.3% in national-level studies^[79] and up to 3.53% in Jammu and Kashmir.^[42]

Comparative studies suggest that the method of insertion influences infection risk, with lower rates observed when using Kelly's forceps (2%) compared to manual techniques (6%).^[80]

Additionally, complaints of vaginal discharge, although often benign, were more common, with

prevalence ranging from 0.12% (intra-caesarean insertion) to 19.4% (in Kerala).^[89] Leukorrhea and itching, while not always indicative of infection, emerged as frequent concerns among users and were occasionally cited as reasons for discontinuation.^[40]

Missing or non-visible threads are a commonly reported complication following PPIUCD insertion, particularly associated with intra-caesarean placements. While often clinically benign, such as threads being curled in the cervix or retracted into the uterus, they are a significant source of anxiety for users and can prompt unnecessary removals due to limited provider confidence in conservative management.

Reported incidence of missing threads ranges widely, from as low as 0.5% at six months [50] to as high as 30% in review literature^[50]. In specific regions, such as Andhra Pradesh and Jharkhand, rates were as low as 0.65%^[62] and 1%^[78], respectively, while higher frequencies were seen in Ahmedabad (27.08%)^[82] and among intra-caesarean insertions (up to 87.5%) in Uttarakhand^[83]. In many cases, up to 59.3% of missing thread cases were asymptomatic, and thread location was identified as curled in the cervix (52.6%) or retracted into the uterus (36.8%).

[75]

Uterine perforation is an extremely rare complication associated with PPIUCD insertion, with reported incidence consistently ranging from 0% to negligible levels across numerous studies. This near-universal absence underscores the high safety profile of the procedure when performed by trained providers.

The contraceptive failure rate with PPIUCD is exceptionally low, ranging from 0% to 1.9%, highlighting its high effectiveness as a birth spacing method. ^[75] Some studies even reported 100% effectiveness at one-year follow-up. ^[50]

Citation	Bleeding (%)	Pain (%)	Infection/ Discharge (%)	Missing Threads (%)	Uterine Perforation (%)	Contraceptive Failure/Pregnancy (%)
Mishra S. (2014)	23.5	11.29	Not specified	8.99 (expulsion)	Not specified	Not specified
Gupta S, et al. (2023)	10.7 (AUB)	Not specified	8.3	Not specified	Not specified	Not specified
Kumar S, et al. (2014)	5.5 (menstrual)	8.9 (cramps)	5.4	3.6 (expulsion)	0	Not specified
Vishwakarma S, et al. (2020)	11.9 (6w), 6 (6m)	2 (6w), 1.6 (6m)	1.3 (6w), 0.7 (6m)	22.2 (6w), 8.6 (6m)	0	Not specified
Srivastava A, et al. (2024)	Reported in removals	Reported in removals	Reported in removals	5.1 (displacement)	Not specified	0.4
Singal S, et al. (2021)	Side effects (83.9%)	Side effects (83.9%)	Side effects (83.9%)	Not specified	Not specified	0.8
Mishra S. (2017)	37.8	33	10.5	59.3 (asymptomatic)	Not specified	1.9

Shukla M., et al. (2022)	Slightly more in manual	Slightly more in manual	2 (Kelly's), 6 (manual)	Not specified	Not specified	Not specified
Mehta S, et al. (2017)	2.36	1.77	Not specified	Not specified	Not specified	Not specified
UNFPA (2012)	Not specified	Not specified	0.3	Not specified	Not specified	Not specified
Shukla M, et al. (2014)	Minimal	Minimal	0.5	6.8	Not specified	Not specified
Pfizer A, et al. (2015)	Associated with removals	Associated with removals	≤ 1.3	Not specified	Not specified	Not specified
Gudi SN, et al. (2023)	3.58 (removals)	2 (6w), 0.73 (6m)	0.42 (6w), 0.20 (6m)	4.16 (6w), 0.58 (6m)	Not specified	Not specified
Lal P, et al. (2018)	6.3	4.7	Not specified	8.4	Not specified	Not specified
Kant S, et al. (2016)	5.5	16.4	7.0 (leukorrhea)	2.3	Not specified	Not specified
Shrigadhi SA, Gawandi PS. (2021)	35 (excessive)	45	Not specified	18.3	Not specified	Not specified
Bahadur BR, et al. (2022)	7.2 (excessive)	11.62	4.6	0.65	0	Not specified

Patel J, et al. (2017)	6.79	5	1	27.08	0	Not specified
Rajput N, et al. (2024)	15.2	10.9	Not specified	21.2 (malposition)	0	Not specified
Radhika AG et al. (2024)	Common complaint	Common complaint	Not specified	Common complaint	Not specified	Not specified
Singh BS, et al. (2022)	36.5 (menstrual)	36.5 (abdominal)	17.5	7.9 (expulsion)	1.6	Not specified
Pentela G, et al. (2022)	2.1-3.5 (excessive)	2.8-5.7	Not specified	4.9-11.4	0	Not specified
Deshmukh P, et al. (2024)	4.3 (menstrual, 6m)	0.5 (6w), 1.6 (6m)	0	0.5 (6m)	0	0
Gautam R, et al. (2014)	19 (irregular)	Not specified	4.3	12.7	0	Not specified
Singh D, et al. (2020)	5-19	2-14	0-10 (infections), 5-13 (discharge)	2-30	0	Not specified
Rana M, et al. (2019)	11.61 (irregular)	Not specified	19.19 (discharge), 8.58 (infections)	26.76 (undescended strings)	0	Not specified

Mohana A, et al. (2021)	Most common	Most common	Not specified	35.4 (spontaneous expulsion)	Not specified	Not specified
Rani K, et al. (2018)	5.48 (irregular), 2.28 (menorrhagia)	15	8.21 (discharge), 0.9 (PID)	14.6	0	0
Gupta M, et al. (2016-17)	15.9	63.5	17.5 (foul discharge)	12.7	Not specified	Not specified
Gaur SS, Mendiratta S. (2019)	12.64 (excessive)	16.10	Not specified	11.63	Not specified	Not specified
Maurya, A., & Paroha, P. (2018)	2.5 (vag), 3.7 (intra), 7.5 (int)	2.5 (vag), 3.7 (intra), 5 (int)	5 (vag), 0.12 (intra), 6.2 (int)	7.5 (vag), 12.5 (intra), 0 (int)	0	0 (PPIUCD), 2.5 (interval)
Dalal R, et al. (2021)	10 (vag), 7 (caesarean)	6 (vag), 5 (caesarean)	2	Common issue	0	Not specified
Sharma N, et al. (2021)	Irregular bleeding most common	17.01	Not specified	3.24 (6w), 2.47 (6m)	0	Not specified
Itagi L, et al. (2023)	Not specified	8 (pelvic)	0	22	0	Not specified
Bansal M, et al. (2016)	12.92	15.87	9.59	16.24	0	Not specified

Tayshete R, Gandhi A. (2023)	0	0	0	Not specified	0	Not specified
Bhadra B, et al. (2018)	Associated with removals	Associated with removals	0.3	5.0	0	Not specified
Radhika AG, et al. (2024)	Irregular/heavy/prolonged	Abdominal, during periods, pricking	White discharge, genital itching	Misplaced IUCD, missing thread	Not specified	Desired pregnancy (3 cases)
Meena A, et al. (2024)	8.5	5.1	Not specified	44.9	0	Not specified
Singh R, et al. (2021)	Fewer in long inserter	Fewer in long inserter	0	Not specified	0	1 (long inserter), 5 (control)
Pillai VM, et al. (2024)	35.2 (menorrhagia)	36.4	19.4 (discharge), 1.8 (fever)	1.8 (expulsion)	Not specified	0.62
Nalini N, et al. (2023)	6 (heavy menstrual)	8 (abdominal)	4	1 (thread not visible), 1 (IUCD not located)	Not specified	0
Kaiser K, et al. (2022)	6.7 (removal reason)	8.1 (backache)	2.1 (discharge)	6.4 (shortened), 3.3 (missing)	0	0

Table 4: Summary of clinical outcomes of PPIUCD usage

Factors Influencing Acceptance

The decision to accept PPIUCD is shaped by a combination of its perceived advantages and the effectiveness of the informational and supportive systems surrounding its provision.

These elements collectively contribute to a woman's willingness to adopt this contraceptive method.

A key factor influencing PPIUCD acceptance is its nature as a long-acting reversible contraceptive. Women frequently cite long-term protection as a major advantage, with several studies reporting this as a primary reason for acceptance (e.g., 42.2% ^[2]; 87.6% ^[27]; 76.19% ^[35]). Equally significant is the method's reversibility, which allows for flexible reproductive planning. This feature appeals to women seeking birth spacing or those undecided about limiting family size ^{[23] [35] [59]}.

The practical advantages of PPIUCD significantly contribute to its appeal. The elimination of a daily regimen, meaning "no need to remember daily," is a substantial convenience. (e.g., 36.88% ^[44], 30% ^[90], 62.1% ^[53], 9% ^[33], 65.07% ^[72], 18.2% ^[89]). Similarly, the requirement for "fewer follow-ups/visits" was a significant facilitator (e.g., 8.3% ^[2], 12.7% ^[3], 30% ^[30], 62.1% ^[45], 9% ^[51], 68% ^[31], 65.07% ^[35], 18.2% ^[43]). The option of immediate postpartum insertion, especially following a cesarean section, is consistently identified as a significant advantage. This feature positions the PPIUCD as a single-intervention contraceptive method, thereby increasing its overall appeal to postpartum women.

The perceived safety of PPIUCD is a consistent factor in its acceptance (e.g., 18.44% ^[44], 10.6% ^[2], 48.33% ^[70], 6.8% ^[59], 48.3% ^[73], 3.5% ^[53], 23% ^[33], 22.9% ^[63], 68% ^[38], 53.96% ^[35], 85% ^[50]). Moreover, the PPIUCD's non-hormonal nature is a key factor contributing to its acceptability

among women who prefer contraceptive methods without hormonal effects. (e.g., 16.1%^[2], 20.5%^[27], 1.3%^[59], 5.7%^[53], 10.8%^[33], 5%^[43]). An important factor influencing acceptance is the assurance that PPIUCD use does not interfere with breastfeeding, which is a primary concern for many postpartum women. (e.g., 15.6%^[2], 13%^[90], 5%^[33], 56%^[84], 28.57%^[35], 12.5%^[43]).

The economic aspect of PPIUCD plays a vital role in its acceptance, especially within public health settings. The provision of "free services" in government facilities makes PPIUCD an accessible option for a broad spectrum of the population, particularly those in low-income brackets (e.g., 22%^[27], 10%^[53], 22%^[47]). This accessibility is further bolstered by broader government support and initiatives aimed at promoting family planning.^[77]

Counselling is consistently identified as a key factor influencing PPIUCD acceptance, with antenatal [2, 9, 26, 30, 32, 35, 36, 37, 38, 41, 44, 48, 50, 53, 55, 62, 65, 66, 67, 68, 69, 73, 76, 78, 80, 82, 84, 86, 91, 92, 93, 94] and multi-session approaches^{[68][95]} proving particularly effective.

Trust in the advice provided by doctors and the confidence instilled through counseling sessions are significant contributors to acceptance.^{[44][46][53]} While some studies suggest that counseling by counselors or doctors may be more effective than by nurses/midwives in certain contexts, evidence also indicates that task-sharing with trained nurses can effectively increase PPIUCD uptake.^{[44][46][96]} This highlights the importance of a skilled and trusted healthcare workforce.

The support or explicit approval from a partner or other family members is a substantial facilitator for PPIUCD acceptance, as reported in several studies^{[23][73][80]}. This recurrently observed factor highlights the significance of collective decision-making within Indian households, where reproductive health choices are frequently shaped by the influence of spouses and other family members.

Prior experience with an IUCD ^{[43][80]}, as well as existing knowledge of the method ^[62], were also influential factors contributing to women's acceptance of PPIUCD.

In summary, acceptance was driven by a combination of method-related advantages and high-quality, empathetic counseling (often involving visual aids) delivered well before delivery.

Acceptance Factor (Theme/Sub-theme)	Specific Reasons Cited	Supporting Studies (Citation IDs)
Perceived Benefits and Advantages		
Long-acting and Reversible Contraception (LARC)	Long-term protection	2, 3, 7, 14, 16, 30, 31, 32, 51, 52, 64, 72, 80, 89
	Reversibility	1, 2, 14, 16, 22, 24, 26, 33, 34, 38, 41, 43, 45, 51, 52, 61, 63, 64, 68, 72, 80, 85, 89
Convenience and Ease of Use	No need to remember daily	1, 4, 14, 30, 31, 32, 35, 45, 51, 68, 72, 89
	Fewer follow-ups/visits	2, 3, 4, 14, 30, 31, 32, 35, 45, 51, 68, 72, 89
	One-time procedure (immediate postpartum insertion)	4, 11, 25, 27, 40, 41, 42, 52, 56, 63, 67, 70, 82, 84, 85
Safety and Non-Hormonal Nature	Perceived safety	1, 2, 6, 12, 14, 16, 19, 26, 40, 41, 43, 45, 51, 52, 56, 63, 68, 85
	Non-hormonal composition	2, 3, 14, 19, 45, 51, 52, 72, 80, 89
	No interference with breastfeeding	2, 12, 14, 30, 31, 32, 35, 45, 51, 56, 58, 72, 85, 89
Affordability/Accessibility	Free services in government facilities	3, 6, 45, 58, 80, 82

Influence of Information and Support Systems		
Effective Counseling and Awareness	Antenatal counseling	1, 2, 9, 10, 13, 26, 37, 38, 39, 40, 42, 43, 45, 46, 47, 49, 52, 56, 59, 61, 65, 66, 68, 71, 72, 76, 78, 79, 83, 84, 85, 87
	Multiple counseling sessions	10, 84
	General awareness of method	13, 43, 46, 48, 49, 52, 71, 72, 83, 87, 88, 89
Trust in Healthcare Providers	Trust in doctor's advice	1, 11, 45
	Confidence from counseling	11
	Task-sharing with trained nurses	11, 36, 75
Partner and Family Support/Approval	Partner/family support/approval	16, 26, 43, 56, 65
Prior Awareness/Experience	Previous experience with IUCD	16, 39, 89
	Existing knowledge about method	39

Table 5: Key Factors Influencing PPIUCD Acceptance in India

Reasons for Refusal

Analysis of the included studies revealed three overarching themes that contribute to the refusal of PPIUCD among women in India:

1. Fears and Misconceptions about Side Effects and Complications
2. Socio-Cultural and Interpersonal Barriers
3. Gaps in Knowledge and Service Delivery

Each of these themes encompasses several sub-themes, which are described in detail below.

Theme 1: Fears and Misconceptions about Side Effects and Complications

A significant number of women declined PPIUCD due to fears rooted in misinformation or previous negative accounts, even when medically unfounded.

Concerns about excessive or irregular bleeding, abdominal cramps, and discomfort were cited as major deterrents in several studies^[2, 26, 30, 31, 32, 33, 35, 37, 43, 44, 45, 51, 52, 55, 62, 66, 86]. These anxieties often stem from peer narratives or previous negative experiences and highlight the need for anticipatory guidance in counseling.

Women expressed concerns that the IUCD might fall out or migrate inside the body, leading to failure or harm^{[35][55]}. This reflects a lack of trust in the device and highlights a knowledge gap regarding its mechanism and safety.

Fear of infection, uterine damage, or even cancer was a recurring concern^[32, 35, 44, 52, 55, 86]. Such beliefs reflect deep-rooted myths and misinformation within communities.

Some participants feared that the IUCD could result in infertility or cause discomfort during sexual activity^[20, 35, 50, 52, 62]. These concerns, although unfounded, deter women from considering PPIUCD as a viable option.

Theme 2: Socio-Cultural and Interpersonal Barriers

Social norms and family dynamics play a pivotal role in reproductive health decision-making, often limiting women's autonomy.

Many women reported that their husbands or family members, particularly mothers-in-law, opposed PPIUCD use.

Spousal refusal was documented in numerous studies [2, 20, 24, 32, 37, 38, 39, 39, 43, 45, 59, 62, 64, 86, 90], while mother-in-law disapproval was also a barrier [26, 28, 44, 55, 72]. Some women reported needing time to discuss with family before accepting the method [33, 44, 52, 97], underscoring the collective nature of contraceptive decisions.

Religious objections to IUCD use were identified in several studies. These beliefs were not always directly linked to doctrine but often stemmed from cultural interpretations of purity, body autonomy, or divine control over fertility.

Several women preferred other family planning methods they were more familiar with, particularly female sterilization [2, 20, 24, 32, 33, 35, 43, 54, 55, 64, 65, 70, 73, 88, 90]. This preference was often influenced by previous experiences or advice from health workers.

For some, refusal was due to a desire to have more children or feeling unprepared for long-term contraception [24, 27, 31, 32, 52, 55, 59, 71, 72, 86, 94]. These women viewed PPIUCD as incompatible with their current reproductive intentions rather than rejecting the method itself.

Theme 3: Gaps in Knowledge and Service Delivery

Lack of accurate information and substandard counseling significantly limited acceptance of PPIUCD.

A large proportion of women reported little or no awareness of PPIUCD, with many having

never heard of the method prior to delivery^[2, 28, 31, 34, 35, 39, 43, 44, 45, 46, 48, 55, 60, 69, 78, 84, 91, 93, 98, 99].

This foundational gap limits the ability to make informed choices.

Many studies noted that women either received no counseling or were inadequately counseled on PPIUCD, especially during the antenatal period^[27, 32, 72, 100]. Counseling that did occur was often too brief, impersonal, or focused on checklists rather than informed dialogue.

Adverse publicity, myths, and anecdotal stories spread within communities strongly influenced perceptions of the IUCD. Even when not personally experienced, negative narratives from peers or neighbors discouraged uptake^[25, 55, 94].

Preference for other methods: Some women opted for alternatives (e.g. condoms, pills, sterilization). In one dataset, 6% of women said they were “already satisfied with another method.” There was a sense among some that IUCD was unnecessary if they planned another child soon or had other family planning preferences^[2].

Programmatic factors: Systemic issues also led to refusal. Women reported inadequate or late counseling (sometimes only after delivery), no follow-up mechanism, unavailability of the device, or rushed procedures during labor^[2]. Provider bias (some doctors/nurses discouraged PPIUCD or favored sterilization) was noted. These health system gaps compounded personal barriers.

In summary, refusals were often rooted in socio-cultural norms and misinformation, highlighting the need for improved education, male involvement, and trustworthy counseling to address fears and misconceptions.

Refusal Factor (Theme/Sub-theme)	Specific Reasons Cited	Supporting Studies (Citation IDs)
Fears and Misconceptions about Side Effects and Complications		
Fear of Pain and Bleeding	Heavy/irregular bleeding (menorrhagia)	1, 2, 11, 17, 18, 29, 30, 31, 32, 33, 34, 35, 39, 50, 51, 57, 60, 61, 65, 66, 71, 72, 78, 79, 85, 86, 89
	Abdominal pain	1, 2, 11, 17, 18, 29, 30, 31, 32, 33, 34, 35, 39, 50, 51, 57, 60, 61, 65, 66, 71, 72, 78, 79, 85, 86, 89
Fear of Expulsion or Displacement	Device falling out (expulsion)	72, 79
	Device misplaced	72
	Lack of visible strings	1,8
Fear of Infection or Malignancy	Risk of infection	57, 61, 72
	Unfounded fear of cancer (malignancy)	1, 20, 50, 57, 61, 72, 78
Fear of Impact on Future Fertility/Intercourse	Negative impact on future fertility	18, 83
	Interference with sexual intercourse	39, 50, 60, 72, 83
Socio-Cultural and Interpersonal Barriers		
Partner and Family Disapproval/Refusal	Husband's refusal	2, 9, 12, 17, 18, 19, 20, 21, 22, 26, 29, 30, 31, 32, 33, 34, 35, 39, 43, 48, 50, 51, 52, 55, 56, 57, 60, 61, 63, 64, 65, 66, 68, 71, 72, 78, 79, 83, 84, 85, 86, 87, 89

	Mother-in-law's refusal	20, 61, 71, 79
	General family pressure	1, 2, 4, 6, 19, 55, 56, 59, 63, 77
	Need to discuss with partner/family	1, 29, 50, 51
Religious Beliefs	Religious objections/beliefs	2, 20, 21, 24, 28, 29, 30, 31, 32, 33, 34, 43, 50, 56, 57, 60, 61, 65, 72, 78, 79, 83, 86
Preference for Other Contraceptive Methods	Preference for permanent sterilization	1, 2, 3, 6, 7, 16, 19, 20, 21, 22, 24, 26, 30, 31, 32, 33, 35, 43, 48, 50, 51, 52, 57, 58, 60, 61, 63, 64, 65, 68, 72, 78, 79, 83, 86, 87, 89
	Satisfaction with previous methods	1, 6, 16, 32, 51, 89
Lack of Readiness/Desire for More Children	Not ready yet/don't want contraception immediately	19, 32, 50, 51, 78, 79
	Desire for more children	5, 6, 21, 60, 83
Gaps in Information and Service Delivery		
Lack of Knowledge/Awareness	General/partial knowledge about PPIUCD	1, 2, 11, 13, 14, 17, 20, 30, 31, 35, 43, 48, 49, 50, 52, 56, 72, 79, 86, 87, 88
	Misinformation/myths	User Query, 6, 14, 17, 34, 43, 52, 56, 58, 65, 68, 72, 86, 89
Inadequate or Poor Quality Counseling	Poor counseling quality	37, User Query, 6, 14, 61
	Lack of counseling	13, 14, 20, 37, 46, 49, 61, User Query, 7

Adverse Publicity/Misinformation	Adverse publicity	10, 14
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Table 6: Key Factors Influencing PPIUCD Refusal in India.

Programmatic Interventions and Outcomes

Several studies evaluated interventions to boost PPIUCD uptake. Common strategies included enhanced counseling programs, provider training, and system reorganization. Key examples:

- **Quality Improvement (QI) initiatives:** A study reported a hospital QI project in Delhi that dramatically increased PPIUCD coverage. By implementing daily antenatal counseling, creating WhatsApp groups for clinicians, providing hands-on training, and ensuring IUCD stock availability, the facility’s insertion rate rose from ~4.5% of deliveries to 19.2% within 3 months, sustaining 30–35% coverage over 18 months.^[30]
- **Task-sharing:** One study authorized nurses and midwives to insert PPIUCDs, significantly expanding provider capacity; initial concerns over their skills were alleviated by simulation training and mentoring, resulting in higher service availability.^[46]
- **Male and community engagement:** Involvement of husbands and family members in antenatal counseling consistently increased acceptance. Several programs recommended couple-counseling sessions and community awareness campaigns (posters, village health worker outreach) to dispel myths. [2, 22, 23, 24, 24, 28, 29, 31, 32, 33, 34, 35, 39, 39, 40, 44, 46, 48, 51, 52, 54, 55, 59, 60, 62, 63, 64, 65, 66, 67, 68, 70, 71, 72, 72, 73, 77, 78, 78, 79, 80, 81, 83, 83, 84, 84, 85, 86, 87, 89, 97, 100]

- Visual aids and mHealth: Use of flipcharts, videos, and smartphone apps during ANC visits helped women understand PPIUCD benefits. One study noted that all satisfied accepters had received antenatal counseling; video materials “supplemented staff efforts” to improve knowledge.^[41]
- Follow-up systems: Programs emphasized scheduling post-insertion visits or using phone reminders. Ensuring consistent follow-up was shown to improve continuation by addressing side effects early.^[100]

Key Barrier/Facilitator	Recommendations suggested	Supporting Studies (Citation IDs)
Specificity Gap in PPIUCD Knowledge	Develop targeted information campaigns.	39, 93, 35, 99
Inadequate/Poor Quality Counseling	Enhance counseling quality and reach.	72, 91, 100, 28, 67, 30, 93, 32, 95, 46, 96
Paramount Family Disapproval	Integrate male partner and family engagement.	1, 2, 4, 6, 9, 11, 12, 16, 17, 18, 19, 20, 21, 22, 26, 29, 30, 31, 32, 33, 34, 35, 37, 39, 43, 48, 50, 51, 52, 55, 56, 57, 60, 61, 63, 64, 65, 66, 68, 71, 72, 77, 78, 79, 83, 84, 85, 86, 87, 89
Systemic Weaknesses (Provider Competence, Supply, Infrastructure, Follow-up)	Strengthen health system capacity and support.	8, 14, 46; 1, 3, 6, 11, 15, 23, 26, 27, 31, 41, 42, 54, 56, 58, 67, 68, 70, 77, 81, 82
Preference for Other Methods	Promote a "cafeteria approach" to contraception.	26, 32
Fear of Negative Anecdotes/Adverse Publicity	Implement strategic communication to counter misinformation.	10, 14

Table 7: Interventions identified from studies to increase PPIUCD uptake

Discussion

Variability in Uptake: A Reflection of Contextual Factors

This scoping review synthesizes evidence from 90 studies on postpartum IUCD use in India. PPIUCD acceptance and utilization rates in India vary widely (1.66% to 71.9%), indicating that local factors like hospital policies, provider engagement, and implementation quality are more influential than broad regional socio-cultural characteristics.

The wide range of acceptance rates observed even within the same state (e.g., Delhi: 8.6% to 48% post-counseling; Gujarat: 5.4% to 71.9%; Maharashtra: 1.97% to 40%) suggests that localized facility-level factors may exert a more significant influence than broad regional socio-cultural characteristics alone. This indicates that the success of PPIUCD programs is heavily dependent on specific hospital policies, the dedication of individual providers or teams, and the quality of local implementation. It also implies that successful models can be replicated even in regions with generally lower uptake, provided the right programmatic elements are in place.

Studies demonstrating significant increases in acceptance following targeted interventions, such as a quality improvement initiative in Delhi^[30] that boosted rates from 4.5% to 30-35%, or nurse training programs in West Bengal^[46] that increased acceptance from less than 1% to 37.4%, underscore that dedicated efforts can dramatically improve uptake, irrespective of baseline regional averages.

While facility-level efforts are crucial, underlying socio-cultural factors continue to shape regional differences. These include pervasive family pressure, religious beliefs, and, in some contexts, a preference for male children. Additionally, health system weaknesses, such as

inadequate provider training, inconsistent supply chains, and poor follow-up mechanisms, contribute to regional disparities. The observation that some studies report higher acceptance in cesarean deliveries while one reports higher acceptance in vaginal deliveries could be a regional or facility-specific anomaly, or it could highlight the varying effectiveness of counseling strategies tailored to different delivery contexts.

PPIUCD acceptance is driven by its perceived benefits as a long-acting, reversible, convenient, safe, non-hormonal, and breastfeeding-compatible method, often provided free of cost. High-quality, empathetic antenatal counseling, ideally with visual aids, is crucial. Partner and family support also significantly facilitate acceptance.

Studies demonstrating significant increases in acceptance following targeted interventions further substantiate this argument. A quality improvement initiative in Delhi, for example, successfully boosted PPIUCD coverage from a baseline of 4.5% to a sustained 30-35% over 18 months through strategies like daily antenatal counseling, clinician WhatsApp groups, hands-on training, and ensuring IUCD stock availability.^[53] Similarly, nurse training programs in West Bengal were instrumental in increasing acceptance from less than 1% to 37.4%.^[46] These successes emphasized that dedicated efforts focused on improving what happens within the healthcare facility such as training, counseling quality, stock management, and provider attitude are paramount. This implies that successful models and best practices can indeed be replicated and scaled up even in regions with generally lower uptake, provided the right programmatic elements and commitment are in place. The "postcode lottery" of PPIUCD uptake across India therefore indicates that programmatic success is not uniformly achieved but is highly dependent on the micro-level efficacy of service delivery points. This highlights the critical role of local

leadership, implementation fidelity, and the capacity to adapt national guidelines to specific facility contexts, rather than solely attributing low uptake to broad socio-cultural factors.

Unpacking Reasons for Refusal and Persistent Barriers

PPIUCD refusal stems from three main areas: fears and misconceptions (e.g., pain, bleeding, expulsion, infection, infertility, interference with intercourse), socio-cultural barriers (e.g., partner/family disapproval, religious beliefs, preference for other methods like sterilization, desire for more children), and gaps in service delivery (e.g., lack of awareness, poor counseling, adverse publicity, programmatic issues like late counseling or provider bias). Addressing these diverse barriers requires improved education, male involvement, and consistent, high-quality counseling.

Continuation and Retention: The Challenge of Sustained Use

Despite high short-term continuation rates following insertion, the data reveals a notable decline in PPIUCD retention over time, indicating significant challenges in sustaining long-term use.

Continuation rates within the first 6 weeks are consistently high, frequently exceeding 90% demonstrating initial acceptance and tolerance of the method. However, this success diminishes markedly by 6 to 12 months, with continuation rates declining to between 60–75%, and further dropping to below 50% in the 2–3-year period in most studies.

This downward trend reflects a critical gap in the continuum of care, particularly in the absence of structured follow-up, side-effect management, and community-level support. The evidence suggests that while the immediate postpartum period offers a strategic opportunity for PPIUCD uptake, the long-acting benefit of the method is often undermined by inadequate post-insertion support. To realize the full potential of PPIUCDs as long-acting reversible contraceptives

(LARCs), sustained counseling, proactive complication management, and community engagement must be prioritized throughout the user's reproductive journey.

Expulsion Rates: A Modifiable Complication

Expulsion remains a significant concern affecting the long-term efficacy of PPIUCDs. While many studies across India report low expulsion rates often below 1% particularly in intra-caesarean insertions and settings with skilled providers, others document substantially higher rates, ranging up to 35%. This wide variability reflects that expulsion is not an inherent flaw of the method but is largely influenced by modifiable factors such as insertion technique, provider training, and post-insertion care.

High expulsion rates in certain contexts point to gaps in clinical practices and highlight the importance of adhering to evidence-based protocols, including fundal placement with appropriate instruments as recommended in the national PPIUCD Reference Manual.

Strengthening provider competency and ensuring consistent quality of care are essential to minimizing expulsions and enhancing the reliability of PPIUCDs as a long-acting contraceptive method.

Clinical Outcomes and User Experience: Beyond Efficacy

PPIUCDs are associated with a favorable safety profile, with serious complications being rare. However, a range of minor clinical concerns including bleeding disturbances, pain, infections, missing threads, and user anxiety can significantly affect user satisfaction and method continuation.

Bleeding irregularities, particularly heavy or prolonged menstrual bleeding, are the most reported side effects.

Pain in the form of abdominal discomfort or cramping is also frequent and is a major contributor

to early removals. These findings highlight the importance of realistic pre-insertion counseling that adequately addresses pain-related expectations and provides reassurance. Equipping providers with appropriate pain management strategies and follow-up protocols is essential to mitigate unnecessary removals and enhance continuation rates.

While the risk of infection is low, symptoms such as vaginal discharge or itching often raise concern and may lead to unnecessary discontinuation without clinical confirmation.

Proper training for healthcare providers in assessment, reassurance, and clinical management of vaginal discharge is essential to prevent unnecessary removals and enhance user confidence along with emphasis on importance of distinguishing between normal postpartum changes and pathological symptoms during counseling..

Missing or non-visible threads, especially following intra-caesarean insertions, are another common issue that frequently leads to premature removal due to limited provider confidence in conservative management. Importantly, serious outcomes such as uterine perforation and contraceptive failure remain exceptionally rare, confirming the method's overall safety and high effectiveness. There is a critical need for enhanced provider training in non-invasive techniques for managing non-visible threads, alongside the routine use of ultrasound to confirm device placement when threads are not observed. Additionally, thorough client counselling is essential to mitigate anxiety related to missing threads. Design modifications, including the use of longer or more detectable threads and dedicated insertion instruments, may contribute to minimizing both the incidence and clinical implications of this complication.

The consistent documentation of no cases of perforation across diverse settings serves as a strong counterpoint to prevailing misconceptions that may hinder acceptance. Public health messaging and counseling initiatives should emphasize this minimal risk to enhance trust and uptake of the method.

The findings reported for contraceptive failure confirm that PPIUCD performs as well as or better than other temporary contraceptive methods. This high efficacy should be emphasized during counseling to strengthen confidence in its reliability for preventing unintended pregnancies.

These results emphasize the critical role of comprehensive pre-insertion counselling, which equips users with knowledge about possible side effects, along with post-insertion support that promptly addresses their concerns. Enhancing provider training and communication skills can help alleviate anxiety and lower the risk of early discontinuation due to manageable complications.

Policy and Programmatic Implications

This scoping review highlights the need for a holistic, context-sensitive strategy to enhance PPIUCD uptake and continuation in India. Strengthening antenatal counseling through empathetic, multi-session interactions that directly address fears and misconceptions is critical. Community-level awareness initiatives, backed by credible sources and localized communication, can further normalize PPIUCD use. However, there is often a disconnect between general awareness of contraception and the actual uptake of PPIUCD, underscoring the need for focused counselling that clearly communicates its distinct advantages such as suitability

for immediate postpartum insertion, non-hormonal nature, and extended duration of effectiveness while actively addressing prevalent misconceptions.

To enhance impact, provider training should move beyond standardized protocols towards a more interactive, empathetic model. Incorporating visual aids, role-playing, and allowing time for patient queries can significantly improve women's understanding and confidence, thereby supporting informed decision-making.

The role of male partners and family members, particularly mothers-in-law, emerged as a key influence on women's contraceptive choices. Policies must therefore promote inclusive family planning discussions through couple-counseling and male engagement initiatives.

Health provider competence remains a pivotal factor. Regular training on insertion techniques, counseling skills, and bias reduction is essential to ensure consistent, quality service delivery. Simultaneously, improvements in health system infrastructure such as uninterrupted device availability, structured follow-up mechanisms, and robust documentation are necessary to support service continuity and user satisfaction.

Furthermore, integrating PPIUCD into a broader method-mix strategy that respects women's autonomy and reproductive preferences is vital. Its promotion should occur within the context of a “basket of choices” rather than as a standalone method.

Finally, India's rising institutional delivery rates offer a strategic entry point for PPIUCD counseling and insertion. Embedding postpartum family planning within routine maternal health services, leveraging platforms like RMNCH+A and Janani Suraksha Yojana, can significantly advance national goals of contraceptive access and equity.

Future Research Directions

The findings of this scoping review highlight several critical knowledge gaps and areas ripe for future investigation, which can further strengthen PPIUCD programming and research in India.

Long-Term Continuation Studies: There is a notable paucity of robust, long-term studies (beyond 1-2 years) on PPIUCD continuation rates in India. Future research should prioritize longitudinal studies with extended follow-up periods to accurately assess the sustained use of PPIUCD and identify factors influencing long-term retention or discontinuation. This would provide a more complete picture of the method's real-world effectiveness and public health impact over its intended lifespan.

Rigorous Evaluations of Counseling Models: While high-quality counseling is consistently identified as a key facilitator, there is a need for rigorous evaluations of specific counseling models. Research should compare the effectiveness of different counseling approaches (e.g., multi-session antenatal vs. single-session postpartum, individual vs. couple counseling, use of specific visual aids or digital tools) on PPIUCD acceptance and continuation. This would help identify the most impactful and cost-effective counseling strategies.

Cost-Effectiveness Analyses: Despite PPIUCD being considered cost-effective, more detailed and comprehensive cost-effectiveness analyses are needed. These studies should evaluate the economic benefits of widespread PPIUCD uptake from both a health system and societal perspective, considering averted pregnancies, reduced maternal and child morbidity, and long-term healthcare costs. Such analyses can provide stronger evidence for policy advocacy and resource allocation.

In-Depth Qualitative Research on Socio-Cultural Nuances: While the review identified socio-cultural barriers, deeper qualitative research is needed to comprehensively understand the nuanced reasons behind spousal and mother-in-law disapproval, religious objections, and persistent myths. Such research could employ ethnographic methods or in-depth interviews to uncover underlying beliefs, power dynamics, and communication patterns within families, informing more culturally sensitive and effective interventions.

Intervention Research and Implementation Science: There is a clear need for intervention research and implementation science studies to translate the identified successful strategies into scalable programs. This includes piloting and rigorously evaluating interventions that:

1. Integrate male engagement strategies into routine antenatal and postpartum care.
2. Develop and test innovative communication strategies to counter misinformation and adverse publicity at the community level.
3. Evaluate the effectiveness of different provider training models, including simulation-based training and ongoing mentorship, on both clinical skills and counseling quality.
4. Assess the impact of strengthening supply chain management and follow-up systems on PPIUCD uptake and continuation in diverse settings.

By focusing on these areas, future research can generate actionable evidence to bridge the gap between PPIUCD's strategic potential and its actual utilization, ultimately maximizing its role in improving reproductive health outcomes across India.

Conclusion

Postpartum IUD insertion holds great promise for spacing births and improving maternal-child health in India, but utilization remains suboptimal due to multifaceted barriers. This scoping review shows that acceptance of PPIUCD depends on both user and system factors: informed demand (through antenatal counseling and dispelling myths) and a supportive service environment with trained providers, device availability, follow-up). Interventions that combine these elements can substantially increase uptake, as demonstrated by rapid gains in program settings. To maximize impact, family planning programs should integrate PPIUCD into standard maternal care, strengthen counseling including partner/family involvement, and address cultural constraints. Further implementation research is needed to refine these strategies, especially in low-uptake regions. By removing both informational and logistical hurdles, India can expand contraceptive choice in the postpartum period and reduce unmet need for family planning.

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Annexure 1

