

The impact of using nurses to perform postpartum intrauterine device insertions in Kalyani Hospital, India

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Abstract

In the postpartum period women are vulnerable to unintended pregnancy, which may lead to legal or illegal abortion and impact on maternal and neonatal morbidity and mortality. Although several postpartum family planning options are available, lack of access to and availability of family planning services and trained staff pose serious challenges. Peripheral centers may not have a doctor; however, they will have nursing staff that can be trained to offer family planning counselling and services. The present study demonstrates how task sharing with nurses to provide postpartum intrauterine device (PPIUD) services worked to give women a convenient and safe contraceptive method. PPIUD insertion provides women the additional advantage of leaving hospital with appropriate long-term contraception after institutional delivery, and also decreases the costs borne by patients and the government. This approach also impacts maternal and newborn health by avoiding unwanted pregnancy.

KEYWORDS

Family planning; FIGO initiative; India; Nurses; Postpartum intrauterine device; PPIUD; Task sharing

1 | INTRODUCTION

During the postpartum period women are vulnerable to unintended pregnancy, which often leads to illegal abortion. In low-resource countries, delivery is probably the only time when a healthy woman comes into contact with a healthcare provider and the likelihood of her returning for contraceptive advice is low.¹ Despite the availability of a wide range of contraceptives, unmet need for family planning is estimated to be 12.8% in India.² The common reasons for unmet need include unsatisfactory services, lack of knowledge or information, and fear about adverse effects of the contraceptive method. Moreover, doctors are not available in many of the peripheral health centers where nurses play a vital role in motivating women to choose a contraceptive method.

The World Health Organization's medical eligibility criteria state that the postpartum intrauterine device (PPIUD) is safe for postpartum

lactating women and that its advantages outweigh any disadvantages.³ Advantages of immediate postpartum insertion of an IUD include convenience, safety, client motivation, facilitation of proper birth spacing, noninterference with lactation, immediate reversibility, and no requirement for repeated healthcare visits for refills. PPIUD insertion gives women the additional advantage of leaving hospital with long-term contraception after institutional delivery, decreasing the costs borne by patients and the government.

Given the high unmet need for birth spacing and the rise in institutional deliveries, the Government of India has been working to reinvigorate and scale up the use of postpartum family planning, with a focused effort on expanding the capacity to provide PPIUD services.⁴ In many rural centers, nurses routinely conduct vaginal deliveries. Task sharing with nurses and midwives can increase women's access to and the acceptability of quality PPIUD services.⁴ To rapidly scale up PPIUD services in India, the government changed the policy in 2013

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to allow trained nurses and midwives to insert PPIUDs.⁵ The hypothesis is that if nurses are trained in family planning counselling and PPIUD insertion, then more women will accept long-term reversible contraception. To test this hypothesis we conducted a study at the College of Medicine and Jawaharlal Nehru Memorial Hospital, which has around 7500 deliveries per annum. At this institution, doctors attend to around 14 000 outpatients in gynecology and 9000 prenatal outpatients annually, in addition to performing operations and other hospital duties. Doctors have a considerable workload and, therefore, training nurses for PPIUD insertion should increase the capacity to deliver this service.

The International Federation of Gynecology and Obstetrics (FIGO) received funding from anonymous donors for an initiative to implement PPIUD services in low-resource countries. Kalyani Hospital in India was selected to participate owing to the high burden of maternal deaths in the region and poor availability of family planning options—PPIUD uptake was less than 1% when the project was initiated.

2 | MATERIALS AND METHODS

This prospective, longitudinal study was conducted in the Department of Obstetrics and Gynecology at the College of Medicine and Jawaharlal Nehru Memorial Hospital, Kalyani, India, from May 1, 2015, to October 31, 2017.

All women attending the prenatal clinic or labor room in early labor were eligible for inclusion and were counselled for postpartum insertion of an IUD following delivery as per the Government of India, Ministry of Health and Family Welfare PPIUCD guidelines.

Women with chorioamnionitis, puerperal sepsis, premature rupture of membranes at more than 18 hours prior to labor (prelabor rupture of membranes), known distorted uterine cavity, acute purulent discharge, or postpartum hemorrhage were excluded from the PPIUD procedure.

Women were counselled about the advantages and importance of family planning during their prenatal visits and also at the time of admission (before delivery but not when in active labor) and method choices were reviewed including the advantages and complications of PPIUD insertion. Women who provided consent had an IUD inserted by either a doctor or a nurse within 10 minutes of placental expulsion in vaginal deliveries. Intraoperative insertion at cesarean delivery was done by doctors only. Women were asked to return for follow-up

6 weeks after insertion. Complications (e.g. expulsion, missing thread) were recorded at return visits. The study received ethics approval from the institutional review board of the College of Medicine and Jawaharlal Nehru Memorial Hospital, Kalyani, West Bengal, India.

3 | RESULTS

During the study period, 171 team members including 47 nursing staff were trained, 19 235 women were counselled, and 19 170 women delivered during this period.

Table 1 shows that the majority of acceptors—women who made an informed choice for PPIUD insertion—were in the 18–25 years age group (43.8%). Most of the women were delivering for the second time (35.9%). The majority of women (39.2%) were primary school educated, while 37.2% were illiterate. The remainder had secondary education and above (23.7%). The Hindu community made up 54.1%, whereas the Muslim community contributed to 45.9% (Table 1). Education and religion did not appear to be related to acceptance of PPIUD insertion.

TABLE 1 Characteristics of PPIUD acceptors (n=7175).

Characteristics	No. (%)
Age, y	
18–25	3145 (43.8)
26–30	2491 (34.7)
31–35	1489 (20.8)
>35	50 (0.70)
Parity	
1	2389 (33.3)
2	2574 (35.9)
≥3	2212 (30.8)
Education	
Illiterate	2668 (37.2)
Primary	2811 (39.2)
Secondary	1575 (22.0)
Higher Secondary and above	121 (1.7)
Religion	
Hindu	3882 (54.1)
Muslim	3293 (45.9)

TABLE 2 Acceptance rate and timing of PPIUD insertion.

Year	Total deliveries	Total insertions	Acceptance rate, %	Timing of insertion	
				At cesarean, No. (%)	After vaginal delivery, No. (%)
2015 (May to December)	5298	120	2.3	93 (77.5)	27 (22.5)
2016	7410	3889	52.5	1415 (36.4)	2474 (63.6)
2017 (up to October)	6462	3166	49.0	540 (17.1)	2626 (82.9)
Total	19 170	7175	37.4	2048 (28.5)	5127 (71.5)

TABLE 3 Comparison of vaginal PPIUD insertion by cadre of health personnel.

Year	Total vaginal insertions	Cadre	
		Trained nurse, No. (%)	Doctor, No. (%)
2015 (May to December)	27	3 (11.1)	24 (88.9)
2016	2474	2142 (86.6)	332 (13.4)
2017 (up to October)	2626	2614 (99.5)	12 (0.5)
Total	5127	4759 (92.8)	368 (7.2)

Acceptance of PPIUD did appear to be related to the quality of PPIUD counselling received. Of the 19 235 women counselled overall, 6029 (31.3%) were counselled at one or more prenatal visits, while 13 206 (68.7%) were counselled at admission; 99.7% delivered at the center.

A total of 7175 women had a PPIUD inserted during the study period, giving an acceptance rate was 37.4%. The majority of insertions were postplacental vaginal delivery insertions (71.5%), while 28.5% were inserted intraoperatively at cesarean delivery (Table 2).

Table 3 shows that the majority of vaginal insertions (92.8%) were performed by trained nurses in the labor room.

It is noteworthy that 63.4% of women returned for follow-up and, of these, 93.7% reported a willingness to continue with the PPIUD (Table 4).

The total number of complications was low and given the small numbers, similar between the nurse and doctor insertion subgroups overall (Tables 5 and 6). There were 14 (0.3%) expulsions and 10 (0.2%) removals. Pain, irregular vaginal bleeding, and family pressure accounted for most (8/10) of the reasons given for removal of the IUD (Table 6).

Missing threads appeared to be more common after cesarean insertion compared with vaginal insertion (4.3% vs 2.7%). In 28 cases the thread was found to be coiled inside the vagina on speculum examination, and in 198 cases the IUD was found in situ on ultrasound scan.

4 | DISCUSSION

In India, the proportion of deliveries occurring in health facilities has increased from 38.7% in 2005–2006 to 78.9% 2015–2016.⁶ This preference has emerged as a result of the government's Janani Suraksha Yojana program (pregnant women's protection program)—a

TABLE 4 Follow-up of women at 6 weeks after PPIUD insertion.

Follow-up	No. (%)
Presented at 6 wk (n=7175)	4551 (63.4)
Willingness to continue	4264 (93.7)
Expulsion	14 (0.3)
IUD removed	10 (0.2)
Missing thread	226 (5.0)
Perforation	0 (0)

TABLE 5 Complications recorded at follow-up after PPIUD insertion.

Complications	Total	Vaginal insertion by cadre		Timing of insertion	
		Nurse (n=4759)	Doctor (n=368)	Vaginal (n=5127)	Cesarean (n=2048)
Expulsion	14	14 (0.3)	0 (0)	14 (0.3)	0 (0)
Removal of IUD	10	7 (0.1)	3 (0.8)	10 (0.2)	0 (0)
Missing thread	226	134 (2.8)	92 (25.0)	138 (2.7)	88 (4.3)

conditional cash transfer scheme for promoting institutional deliveries. The postpartum period is an ideal time to begin contraception as women are strongly motivated at this time. It is also convenient for both women and healthcare providers. Institutional deliveries create a unique opportunity to offer a long-acting reversible contraceptive method to women immediately following childbirth. In India, however, only 26% of postpartum women are using contraceptives.⁷

The PPIUD is a highly effective, long-acting, reversible, cost-effective, and easily accessible family planning method. It is safe for use by most postpartum women and has no adverse impact on breastfeeding.⁸ Limited availability of skilled human resources—essential to ensure quality PPIUD services—poses a challenge for increasing access to PPIUD. Task sharing, which is a globally accepted solution for accelerating access to health services, was identified as a viable strategy to expand the provider base and make postpartum family planning services available to all women delivering at health facilities. Task sharing refers to provision of additional training to existing cadres of providers to enable them to undertake new activities.⁹ The World Health Organization has also recommended the option of insertion of IUDs by nurses and midwives.⁹

Prior to the start of the program, PPIUD insertions at the center were less than 1%, which increased to 2.3% in the first 6 months of the program. During the initial 6 months, nursing staff were involved and training of 68% of the nursing staff was completed. This one step led to an exponential increase in postplacental IUD insertions by nursing staff: 86.6% in year two and 99.5% in year three of the total postpartum insertions. The majority of postplacental vaginal IUD insertions (92.8%) were done by nurses. In some studies, most insertions were done intraoperatively at cesarean delivery.^{10,11} As the nurses in our maternity ward were given comprehensive skills training, they performed the insertions efficiently and contributed to the major increase in postplacental insertions.

TABLE 6 Reasons given for removal of PPIUD.

Reason	No.
Misplaced IUD	2
Pain and vaginal bleeding irregularities	3
Influence of family	5
Total	10

Studies have found that provision of interval intrauterine contraceptive devices by nurse-midwives is effective and feasible in low-resource settings.¹² Task sharing, that is, allowing nurses and midwives to take on tasks previously limited to physicians, is a safe and effective way to address the shortage of health workers.⁴ In our study, most importantly we found that task sharing with nurses allowed the method to be much more accessible to women, as demonstrated by the dramatic increase in insertion rates following nurse involvement.

Acceptance of having a PPIUD inserted increased because nurses were more accessible and acceptable to the women as a result of the bond the nurses create with the pregnant women. A study in Zambia demonstrated the success of a program to expand access to IUDs and implant services by competent midwives; after 14 dedicated midwives were trained in IUD insertions, acceptance of the IUD at their busy clinics increased compared with other long-acting, reversible contraceptives.¹³ Two Indian studies by Kharkwal et al.¹⁰ reported an acceptance rate of 60% for PPIUD. Kanhere et al.¹⁴ reported an acceptance rate of 36% for PPIUD insertion, which is comparable to the present study.

The expulsion rate was low in this study: 0.3% following 4759 vaginal insertions by nurses and 0% following 368 vaginal insertions by doctors. However, we should keep in mind that the total number of vaginal insertions performed by doctors was less than 10% of the total vaginal insertions by nurses. When comparing expulsions by timing of insertion, 0.3% occurred following vaginal insertions and none following intraoperative insertion at cesarean delivery. Expulsion is known to be more common in a postplacental insertion group compared with an intraoperative insertion cesarean group. Hooda et al.¹⁵ found increased expulsion rates in a postplacental group.

The overall expulsion rate was low in our center as the staff received hands-on training before they started performing insertions on their own. Training also included theory lectures, video demonstrations, and practice on anatomical uterus models. The expulsion rate in our study compares favorably with the expulsion rate in other studies. In a study by Shahbaz et al.,⁸ the expulsion rate was 4.5%, and in studies by Katheit and Agarwal² and Jairaj and Dayyala¹⁶ the expulsion rates were 10.5% and 14.3%, respectively. The difference in expulsion risk following PPIUD insertion by nurses and doctors was not statistically significant in study by Yadav et al.⁴ and expulsion rates were also higher in postplacental insertions.

Overall, the present study found that PPIUD insertion by nurses is safe and effective. There were no cases of perforation. After nurses began performing insertions, the acceptance rate improved drastically with no increase in complications. This is in keeping with findings by Yadav et al.,⁴ who also concluded that trained nurses and midwives who conduct deliveries in public health facilities can perform PPIUD insertions as safely as physicians.

5 | CONCLUSION

Immediate PPIUD insertion is a safe, effective, low-cost, long-acting, and reversible contraceptive method. Training nurses who conduct deliveries to insert IUDs during the postpartum period should be

included in programs as they can help to increase women's access to PPIUD services without jeopardizing the quality of care. Following this study we recommend this strategy to be taken up by other units where nurses conduct vaginal deliveries.

AUTHOR CONTRIBUTIONS

BB, SKB, TS, and AB conceptualized the article, presented, cleaned and analyzed the data, drafted the article and made edits based on feedback. CNP and HD reviewed the article and made critical suggestions to improve it.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

REFERENCES

1. Ministry of Health and Family Welfare, Government of India. National Rural Health Mission [website]. <http://nhm.gov.in/>. Accessed June 27, 2018.
2. Katheit G, Agarwal J. Evaluation of post-placental intrauterine device (PPIUCD) in terms of awareness, acceptance, and expulsion in a tertiary care centre. *Int J Reprod Contracept Obstet Gynecol*. 2013;2:539–543.
3. World Health Organization. *Medical Eligibility Criteria for Contraceptive use*, 4th edn. Geneva: World Health Organization; 2010.
4. Yadav V, Balasubramaniam S, Das S, et al. Comparison of outcomes at 6 weeks following postpartum intrauterine contraceptive device insertions by doctors and nurses in India: a case-control study. *Contraception*. 2016;93:347–355.
5. Ministry of Health and Family Welfare, Government of India. FP division letter DO.No.N11012j09j2011-FP. 2013.
6. Ministry of Health and Family Welfare, Government of India. Performance of key HMIS indicators for all India, financial year: 2014–15. Health Management Information System (HMIS) Portal. <https://nrhm-mis.nic.in/SitePages/NFHS.aspx>. Accessed June 27, 2018.
7. Borda M. *Family Planning Needs During the Extended Postpartum Period in India*. Baltimore: Jhpiego, ACCESS, Family Planning Initiative [ACCESS-FP]; 2009.
8. Shahbaz F, Tariq R, Shahbaz F, Tahira T, Mavaid J, Zahida N. Evaluation of post placental trans caesarean/vaginal delivery intrauterine device (PPIUCD) in terms of awareness, acceptance and expulsion in services hospital, Lahore. *Pak J Med Health Sci*. 2016;10:338–340.

9. World Health Organization. *WHO Recommendations: Optimizing Health Worker Roles to Improve Access to key Maternal and new Born Health Interventions Through Task Shifting*. Geneva: WHO; 2012.
10. Kharkwal S, Manisha K, Shashibala, Goel M. Changing trend of PPIUCD acceptance: Hospital based study. *Global J Res Anal*. 2015;4: 186–187.
11. Borthakur S, Sarma AK, Alakananda BAK, Bhattacharjee AK, Deka N. Acceptance of post partum intra-uterine contraceptive device (PPIUCD) among women attending Gauhati Medical College and Hospital (GMCH) for delivery between January 2011 to December 2014 and their follow up. *J Evol Med Dent Sci*. 2015;4:15756–15758.
12. Blumenthal PD, Eber M, Vajpayee J. Dedicated inserter facilitates immediate postpartum IUD insertion. *Glob Health Sci Pract*. 2013;1:428–429.
13. Neukom J, Chilambwe J, Siamwanza N. Piloting and Sustaining Postpartum IUD Services in Zambia. International Family Planning Conference; Entebbe, Uganda; 2009.
14. Kanhere AV, Pateriya P, Jain M. Acceptability and feasibility of immediate postpartum IUCD insertion in a tertiary care centre in Central India. *Int J Reprod Contracept Obstet Gynecol*. 2015;4:179–184.
15. Hooda R, Mann S, Nanda S, Gupta A, More H, Bhutani J. Immediate postpartum intrauterine contraceptive device insertions in caesarean and vaginal deliveries: a comparative study of follow-up outcomes. *Int J Reprod Med*. 2016;2016:7695847.
16. Jairaj S, Dayyala S. A cross sectional study on acceptability and safety of IUCD among postpartum mothers at tertiary care hospital, Telangana. *J Clin Diagn Res*. 2016;10:LC01–LC04.