

Original Research Article

Knowledge and predictors of retention of postpartum intrauterine contraceptive device among users in rural areas of Nadia district, West Bengal, India

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ABSTRACT

Background: Postpartum intrauterine contraceptive device (PPIUCD) is a safe, highly effective postpartum contraceptive, yet to be popularized at the community level in a diversified developing country like India where still the unmet need for spacing remains high. This study aimed to assess the knowledge regarding PPIUCD among users and the predictors of its retention.

Methods: A case-control study had been conducted using multi-stage sampling technique in Nadia district of West Bengal. Face to face interviews of the cases and the controls had been done with the help of a predesigned pretested semi-structured schedule. Data were entered in MS Excel and analysed in SPSS 20.0 version.

Results: Majority of the acceptors (55.2%) had poor knowledge regarding PPIUCD. Most of the participants (62.2%) retained their PPIUCD at least for 6 months. Acceptors who belonged to Hindu religion, higher socio-economic class (I and II), nuclear family, educated up to or above secondary level, ever counselled on PPIUCD, satisfied using that in day to day life, undergone follow-up visits and had correct knowledge regarding different aspects of PPIUCD had higher odds of retention of PPIUCD.

Conclusions: Regular awareness campaigns, counselling at household level, advocacies are the utmost needs of the hour to motivate the eligible couple for its acceptance and retention.

Keywords: India, Knowledge, Postpartum intrauterine contraceptive device, Retention, Rural, West Bengal

INTRODUCTION

Postpartum intrauterine contraceptive device (PPIUCD) has been introduced in national family welfare programme in 2010.¹ It is one of the cost-effective and newer spacing methods available at present with various advantages.^{2,3}

Postpartum period is a unique time to motivate a woman to adopt a contraceptive as they are more receptive during this period in the joy of giving a birth.³⁻⁵ It protects the couples from unwanted pregnancies as termination of lactational amenorrhoea is not well demarcated and

commencement of sexual activity depends upon couple's choice. PPIUCD inserted within 48 hours postpartum has the special advantage of overcoming the above obstacles.³⁻⁶ Also, they then remain in contact with the health care facility which facilitates a golden opportunity for the health care providers to counsel them on family planning methods.⁶

Despite of having a robust family planning programme since 1952, India still has an unmet need for spacing of about 5.7% as per NFHS-4 report and around 61% women maintain a spacing of less than 3 years.^{6,7} With this backdrop, PPIUCD can become a new horizon to

maintain the proposed minimum spacing of 3 years between consecutive births which if not practiced can harm the maternal and child health in various ways.⁸⁻¹⁰ Adequate awareness and correct knowledge regarding every aspect of PPIUCD are of utmost importance to accept and continue its use. Being a long-term contraceptive, it faces various obstacles of misconceptions and socio-cultural taboos which lead to its discontinuation despite of its safety, reversibility and other numerous benefits.^{11,12} This study aimed to assess the knowledge regarding different aspect of PPIUCD and to find out the predictors of its continuation of use among the acceptors of the same in rural areas of Nadia district, West Bengal.

METHODS

A community-based case-control study had been conducted between March 2019 to July 2019 in Nadia district of West Bengal. Mothers delivered at government institution in the study area and accepted PPIUCD at least 6 months prior to the date of the data collection were the study population. Those who did not give consent, suffering from physical or mental illness, residing in urban areas of the district or delivered at private hospitals or home or in any institution (government/ private) outside the study area were excluded from the study. Mothers delivered at government institution of the study area, accepted PPIUCD at least 6 months prior to the date of data collection and retained the same for 6 months from the date of insertion were considered as cases; whereas those who had discontinued it within 6 months of insertion (either spontaneous expulsion or voluntary removal) were controls. Institutional ethical clearance had been obtained beforehand.

Sample size had been calculated with software Epi info for unmatched case control study with the following assumptions: two-sided confidence interval of 95%, p value significance at <0.05, power at 80%, case to control ratio as 1:1, and proportion of controls and cases exposed to counseling regarding PPIUCD which was found as one of the major predictors of retention of PPIUCD in pilot study as 30% and 56.25% respectively.¹³ Thus, the required cases and controls were 56 each respectively with a total sample size of 112.

Regarding sampling technique, a multistage sampling had been conducted. One subdivision was selected randomly out of four such in Nadia district. Then four blocks were selected randomly out of seven blocks of the selected subdivision and four sub-centres were selected randomly from each block i.e. a total of 16 sub-centres were included in the study. At least four each of cases and controls were planned to be interviewed from each sub-centre. Two separate sample frames were considered for PPIUCD retention and PPIUCD non-retention groups. These frames had been prepared by line listing of women who had been inserted with PPIUCD in the month of September and October 2018 of that particular sub-centre

including their present status of PPIUCD (continuation/ spontaneous expulsion/ voluntary removal) with the help of RCH registers and the local staffs. From this frame, required number of cases and controls were selected randomly.

The study tool was a predesigned pretested questionnaire. House to house visits had been conducted to interview the selected mothers. The questionnaire was first prepared in English. Then it was translated into Bengali by a linguistic expert keeping semantic equivalence. To check the translation, it was re-translated into English by two independent researchers who were unaware of the first English version. Face validity of each item had been checked from previous researches in the presence of public health experts. They also decided the content validity of each domain. Reliability was checked by test-retest method ($r=0.9$). Pretesting followed by pilot testing was conducted. Necessary corrections and modifications of the questionnaire were done accordingly.

Data analysis

Data thus collected had been entered in MS Excel and analyzed subsequently in SPSS 20.0 version using descriptive and inferential statistics. Associations between dependent and independent variables were checked through Chi-square or Fisher's Exact test whichever was applicable. Odd's ratios were calculated to find out the strength of association. All the independent variables having statistically significant association with dependent variable were included in multivariate analyses. All analyses were two tailed with $p \leq 0.05$ considered statistically significant. Socio-economic status had been assessed through B.G. Prasad scale modified for the year 2018.¹⁴

RESULTS

Regarding socio-demographic characteristics, it was found that most (71.5%) of the mothers were in the age group 15-25 years, Hindu (59.3%), belonged to general caste (74.4%) followed by Scheduled Caste (SC) (16.9%). Most of the mothers had only one living child (61%) followed by two living children (32%). Around three-fifth of the mothers had at least one living male child. Majority (73.3%) of the mothers belonged to joint families. As a general trend seen in the sample, wives were found to be more educated than their husbands. More husbands than wives (17.4% versus 7.6%) were illiterate.

According to the modified B. G. Prasad scale (2018) for socio-economic class, majority of the families belonged to class I (45.5%) followed by class IV (21.3%). Almost all of the women (92.4%) were home-makers and majority (40.7%) of their husbands were found to be non-agricultural labourer followed by 26.2% involved in small businesses (Table 1).

Table 1: Distribution of study population according to socio-demographic variables (n=172).

Variables	Frequency (N)	Percentage (%)
Age (in completed years)		
15-25	123	71.5
25-35	46	26.7
≥35	3	1.7
Religion		
Muslim	70	40.7
Hindu	102	59.3
Caste		
General	128	16.3
SC	29	16.9
ST	2	1.2
OBC	13	7.6
Number of living children		
0	4	2.3
1	105	61.0
2	55	32.0
3	7	4.1
5	1	0.6
Number of living male children		
0	68	39.5
1	90	52.3
2	13	7.6
3	1	0.6
Type of family		
Joint	126	73.3
Nuclear	46	26.7
Education of woman		
Illiterate	13	7.6
Below primary	3	1.7
Primary	33	19.2
Middle	54	31.4
Secondary	29	16.9
Higher-secondary	29	16.9
Graduate and above	11	6.4
Education of husband		
Illiterate	30	17.4
Primary	53	30.8
Middle	41	23.8
Secondary	21	12.2
Higher-secondary	18	10.5
Graduate and above	9	5.2
Socio-economic class		
I	141	45.5
II	20	6.5
III	58	18.7
IV	66	21.3
V	25	8.1
Occupation of wife		
Home maker	159	92.4
Agricultural work	1	0.6
Non-agricultural work	8	4.7
Small business	3	1.7
Student	1	0.6

Continued.

Variables	Frequency (N)	Percentage (%)
Occupation of husband		
Agricultural work	50	29.0
Non-agricultural work	70	40.7
Small business	45	26.2
Private service	6	3.5
Unemployed	1	0.6

Table 2: Distribution of study population according to fertility/PPIUCD related facts (n=172).

Variables	Frequency (N)	Percentage (%)
Type of last delivery		
Caesarean section	88	51.2
Vaginal delivery	84	48.8
Place of delivery		
BPHC	29	16.9
District hospital	140	81.4
Medical college	1	0.6
Sub-divisional hospital	2	1.2
Place of PPIUCD insertion		
BPHC	28	16.3
District hospital	141	82.0
Medical college	1	0.6
Sub-divisional hospital	2	1.2
Designation of PPIUCD inserter		
Doctor	89	51.7
Nurse	83	48.3
Do you want more child?		
Yes	85	49.4
No	78	45.3
Not decided yet	9	5.2
Do you prefer your child to be male?		
Yes	57	33.1
No	115	66.9
Status of PPIUCD at present		
Continuing	107	62.2
Spontaneous expulsion	28	16.3
Removed	37	21.5
Using any other method of FP (n=65)		
Yes	24	36.9
No	41	63.1
Name of the FP method presently using (n=131)		
PPIUCD	107	81.7
Condom	17	15.9
Injectables	1	0.8
IUCD	1	0.8
OCP	6	4.6

Regarding type of delivery, majority (51.2%) had undergone caesarean deliveries. Majority of delivery (81.4%) and PPIUCD insertion (82%) took place in District Hospital. Nearly equal representation of PPIUCD insertion by doctors and nurses were observed in the sample. Around 50% of the participants desired for more child in the future but male child preference was indicated by only 33.1% of them.

Majority (73.3%) of respondents had heard of PPIUCD before its insertion. In those who had heard of it prior to its insertion, the main source of information was ASHA (50.8%) followed by family member or neighbors (48.4%).

Table 3: Knowledge regarding PPIUCD (n=172).

Knowledge	Yes	No	Don't know
	N (%)	N (%)	N (%)
Using PPIUCD causes frequent irregular bleeding	88 (51.2)	40 (23.3)	44 (25.6)
PPIUCD does not cause future infertility	101 (58.7)	18 (10.5)	53 (30.8)
Breastfeeding during PPIUCD use is dangerous	22 (12.8)	123 (71.5)	27 (15.7)
Long term use of PPIUCD causes cancer in female genital tract	56 (32.6)	36 (20.9)	80 (46.5)
Using PPIUCD does not restrict normal activities	82 (47.7)	76 (44.2)	14 (8.1)
PPIUCD increases the chance of future abortion	22 (12.8)	71 (41.3)	79 (45.9)
PPIUCD does not cause any cardiovascular side-effect like hypertension, stroke etc.	62 (36.0)	82 (47.7)	28 (16.3)
PPIUCD causes frequent uterine perforation	79 (45.9)	23.8 (23.8)	52 (30.2)

Table 4: Predictors of retention/ continuation of PPIUCD (n=172).

Variables	Retention		Test of significance	OR (95% CI)	AOR (95% CI)
	Yes	No			
	N (%)	N (%)			
Age (in completed years)					
>22	49 (65.3)	26 (34.7)	$\chi^2=0.552$, df=1, p=0.457	1.267 (0.678- 2.368)	-
≤ 22 (median)	58 (59.8)	39 (40.2)			
Religion					
Hindu	74 (72.5)	28 (27.5)	$\chi^2=11.397$, df=1, p=0.001	2.963 (1.563- 5.619)	2.337 (1.030- 5.304)
Muslim	33 (47.1)	37 (52.9)			
Caste					
General	79 (61.7)	49 (38.3)	$\chi^2=0.051$, df=1, p=0.821	0.921(0.453- 1.874)	-
Others	28 (63.6)	16 (36.4)			
SES					
I and II	73 (82.0)	16 (18.0)	$\chi^2=30.797$, df=1, p=0.000	6.575 (3.279- 13.185)	7.182 (1.478- 17.938)
III, IV, V	34 (41.0)	49 (59.0)			
Total no. of living children					
>1	46 (73.0)	17 (27.0)	$\chi^2=4.449$, df=1, p=0.035	2.051 (1.046- 4.021)	1.441 (0.595- 3.490)
≤1	62 (56.9)	47 (43.1)			
Total no. of living male children					
>1	10 (71.4)	4 (28.6)	$\chi^2=0.487$, df=1, p=0.485	1.531 (0.460- 5.098)	-
≤1	98 (62.0)	60 (38.0)			
Type of family					
Nuclear	35 (76.1)	11 (23.9)	$\chi^2=4.751$, df=1, p=0.029	2.310 (1.076- 4.961)	1.849 (1.071- 5.099)
Joint	73 (57.9)	53 (42.1)			
Education of wife					
Secondary and above	51 (73.9)	18 (26.1)	$\chi^2=6.101$, df=1, p=0.014	2.287 (1.178- 4.438)	2.413 (1.038- 5.612)
Up to middle level	57 (55.3)	46 (44.7)			
Education of husband					
Up to middle level	80 (64.5)	44 (35.5)	$\chi^2=0.566$, df=1, p=0.452	1.299 (0.657- 2.568)	-
Secondary and above	28 (58.3)	20 (41.7)			
Type of delivery					
Caesarean	71 (80.7)	17 (19.3)	$\chi^2=24.687$, df=1, p=0.000	5.305 (2.681- 10.497)	1.856 (0.053- 13.940)
Vaginal	37 (44.0)	47 (56.0)			
Place of delivery					
DH, SDH, MC	99 (69.2)	44 (30.8)	$\chi^2=15.056$, df=1, p=0.000	5.000 (2.109- 11.853)	1.310 (0.962- 11.037)
BPHC	9 (31.0)	20 (69.0)			
Place of PPIUCD insertion					
DH, SDH, MC	98 (68.1)	46 (31.9)	$\chi^2=10.494$, df=1, p=0.001	3.835 (1.641- 8.960)	1.172 (0.817- 4.069)
BPHC	10 (35.7)	18 (64.3)			

Continued.

Variables	Retention		Test of significance	OR (95% CI)	AOR (95% CI)
	Yes	No			
	N (%)	N (%)			
Designation of PPIUCD inserter					
Doctor	68 (77.3)	20 (22.7)	$\chi^2=16.175$, df=1, p=0.000	3.740 (1.938- 7.216)	1.464 (0.222- 9.648)
Nurse	40 (47.6)	44 (52.4)			
Pain during insertion					
No	95 (67.4)	46 (32.6)	$\chi^2=7.040$, df=1, p=0.008	2.860 (1.291- 6.336)	1.321 (0.433- 4.033)
Yes	13 (41.9)	18 (58.1)			
Pain after insertion					
No	56 (70.9)	23 (29.1)	$\chi^2=4.098$, df=1, p=0.043	1.920 (1.017- 3.622)	1.305 (0.558- 3.052)
Yes	52 (55.9)	41 (44.1)			
Complication other than pain after insertion of PPIUCD					
No	26 (65.0)	14 (35.0)	$\chi^2=0.109$, df=1, p=0.741	1.132 (0.541- 2.371)	-
Yes	82 (62.1)	50 (37.9)			
Any previous gynaecological problem					
No	83 (64.8)	45 (35.2)	$\chi^2=0.903$, df=1, p=0.342	1.402 (0.697- 2.818)	-
Yes	25 (56.8)	19 (43.2)			
Consent taken before insertion					
Yes	16 (69.6)	7 (30.4)	$\chi^2=0.611$, df=1, p=0.434	1.457 (0.565- 3.757)	-
No	91 (61.1)	58 (38.9)			
Ever counselled on PPIUCD					
Yes	44 (78.6)	12 (21.4)	$\chi^2=9.456$, df=1, p=0.002	3.085 (1.478- 6.436)	1.567 (1.102- 7.159)
No	63 (54.3)	53 (45.7)			
Decided to accept PPIUCD before delivery					
Yes	27 (77.1)	8 (22.9)	$\chi^2=4.168$, df=1, p=0.041	2.405 (1.019- 5.677)	1.359 (0.398- 4.649)
No	80 (58.4)	57 (41.6)			
Satisfied after using PPIUCD					
Yes	52 (74.3)	18 (25.7)	$\chi^2=7.323$, df=1, p=0.007	2.469 (1.273- 4.788)	1.650 (1.159- 4.127)
No	55 (53.9)	47 (46.1)			
Follow up visits attended after insertion of PPIUCD					
Yes	86 (68.8)	39 (31.2)	$\chi^2=7.070$, df=1, p=0.008	2.506 (1.261- 4.979)	1.467 (0.892- 8.147)
No	22 (46.8)	25 (53.2)			
Knowledge					
Good (>median)	57 (74.0)	20 (26.0)	$\chi^2=8.280$, df=1, p=0.004	2.565 (1.340- 4.910)	1.221 (1.015- 4.887)
Poor (\leq median)	50 (52.6)	45 (47.4)			
Hosmer Lemeshow test, p=0.860; Nagelkerke R ² =0.436.					

More than half (62.2%) of the participants were found to be continuing their PPIUCD whereas 16.3% had spontaneous expulsion and 21.5% had their PPIUCD removed. Only 36.9% of the participant women had ever used any family planning (FP) method other than PPIUCD. Those who removed their PPIUCD or had experienced spontaneous expulsion only 38.5% switched to any other FP method (Table 2).

Regarding knowledge on different aspects of PPIUCD, less than half of the study population (44.8%) had good knowledge (score >median value) regarding PPIUCD with the mean of 3.22 (1.8), where maximum attainable score was 8. Majority (51.2%) had misconception that PPIUCD causes frequent irregular bleeding, while 58.7% correctly knew that PPIUCD does not cause future infertility. More than 70% of the mothers knew that breastfeeding during PPIUCD use is not dangerous. But

nearly half of the study population did not have any knowledge regarding relationship of its use and risk of genital cancer. Majority (55.8% and 58.7% respectively) did not know the correct fact that it does not restrict normal activities and it does not increase the chance of future abortion; though most of them (47.7%) had knowledge that it does not cause any cardiovascular side effects. More than 75% of the acceptors either did not know or had wrong knowledge that PPIUCD causes frequent uterine perforation (Table 3).

There was no statistically significant association of knowledge with age, religion, caste, type of family, education of wife/husband, socio-economic status, occupation of wife/husband.

Regarding predictors of PPIUCD retention, multivariate analyses revealed that mothers belonging to Hindu

religion, higher socio-economic class (I and II), nuclear family, educated up to or above secondary level, ever counseled on PPIUCD, satisfied using that in day to day life, ever undergone follow-up visits and had correct knowledge regarding different aspects of PPIUCD had higher odds of retention or continuation of the same (Table 4).

DISCUSSION

The study tried to focus on assessment of knowledge regarding PPIUCD and predictors of its continuation. Majority (71.5%) of acceptors were in the age group of 15-25 years with the mean age of 22.69 (4.18) years. Janwadkar et al, also found that acceptors in their study mostly belonged to the same age group (86.3%).¹⁵

Most (73.3%) of respondents in this study had heard of PPIUCD before its insertion which was quite higher than that found by Valliappan et al and Asnani et al, (only 44.8% and 36% respectively).^{16,17} Kathpalia SK et al, also reported low knowledge regarding PPIUCD among antenatal women.¹⁸ Though Valliappan et al reported that the first source of information about PPIUCD was mostly doctors (28.9%), the main source of information as found in this study was ASHA (50.8%) followed by family member or neighbors (48.4%).¹⁶ Yadav et al, in their study among antenatal mothers found that majority (81.4%) of antenatal mothers had poor knowledge, though this study reported that 55.2% of acceptors had poor knowledge.⁶ This discrepancy also enlightened the fact that though both the studies had undertaken different study population, yet there was a significant proportion of mothers in this study who had poor knowledge despite of the fact that they had already accepted PPIUCD as a family planning method. This knowledge gap might have influenced their attitude and practice of continuing the same. The multivariate analyses also revealed the fact that acceptors having good knowledge had significantly higher odds of continuation of PPIUCD. Valliappan et al, did not find any statistically significant association between age, education, occupation of either wife or husband with knowledge level on univariate analysis; only parity and counseling had been found to be significantly associated with knowledge.¹⁶ The present study also did not find any significant association of knowledge with age, religion, caste, type of family, education of wife/husband, socio-economic status, occupation of wife/husband. Unlike the current study Katheit et al, reported that both multiparity and education were predictors of knowledge.⁵

Regarding the factors associated with retention of PPIUCD, the current study found that religion, socio-economic status, type of family, education, counselling about PPIUCD, satisfaction with its use, follow-up visits and correct knowledge regarding PPIUCD were significant predictors of continuation of its use. Previous researches though not used multivariate analysis identified various factors for discontinuation like fear of perforation, lack of counselling, family pressure, lack of

correct knowledge, bleeding or menstrual problems, lack of follow up visits.^{19,20} A qualitative study from Nepal also found that factors related to subjective norms of family, peer, society or husband's preference negatively affected the women's behavior and attitude towards PPIUCD.²¹

The present study revealed a finding similar with Mishra S, that retention of PPIUCD did not affected by complication related to its use.²⁰ Hence, the gap lies in knowledge and attitude of the acceptors.

The study had faced limitations like resource constraints which had implication in sample size calculation where design effect had not been taken into consideration. Therefore, the results might not reflect the actual scenario. Quantitative studies with large samples using proper sampling techniques and qualitative studies should also be carried out in future to bring out the factors more decisively.

CONCLUSION

The current study revealed that more than half of the study population (55.2%) had poor knowledge regarding PPIUCD with the mean knowledge score of 3.22 (1.8). Majority (62.2%) of the participants retained their PPIUCD. Acceptors who belonged to Hindu religion, higher socio-economic class (I and II), nuclear family, educated up to or above secondary level, ever counselled on PPIUCD, satisfied with its use, ever undergone follow-up visits and had correct knowledge regarding different aspects of PPIUCD had higher odds of retention of PPIUCD.

Adequate knowledge through frequent counselling during antenatal period in presence of family members should be focused. Front-line workers are in a unique position to do so during their home visits. In Indian context where still joint families are run, beliefs and customs are transferred from generation to generation even if it is a wrong practice or misconception. PPIUCD is a highly effective and safe spacing method and to popularize its use in a long-term basis the gap between knowledge and practice should be minimized and the clouds of misconceptions should be addressed with utmost care. Advocacy, community-based awareness generation campaigns should be arranged frequently to overcome these problems.

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