

Effect of Antenatal Counselling on The Uptake of Immediate Postpartum Long Acting Reversible Contraception: A Randomized Controlled Trial At A Tertiary Care Hospital

Zoya Mushtaque¹, Qundeel Rana², Ghazia Shahid¹, Shamsunnisa Sadia¹

¹Department of Gynaecology and Obstetrics, Al-Nafees Medical College and Hospital Islamabad, Pakistan

²Department of Gynaecology and Obstetrics, Federal Government Polyclinic Hospital Islamabad, Pakistan

*Corresponding author's email address: ranamushtaque.666@gmail.com

(Received, 24th November 2024, Accepted 2nd January 2025, Published 28th February 2025)

Abstract: Long-acting reversible contraception (LARC) is a highly effective method of family planning, particularly in the immediate postpartum period. However, uptake remains suboptimal due to various systemic and individual barriers. Structured antenatal counseling has been proposed to improve LARC acceptance, but its impact requires further investigation. **Objective:** To compare the frequency of LARC uptake in the immediate postpartum period among women who received structured antenatal counseling versus those who did not. Additionally, to identify barriers to LARC uptake in both groups. **Methodology:** This prospective study was conducted at Al-Nafees Medical College and Hospital. Following ethical approval, 160 women meeting the inclusion criteria were randomly assigned to either the intervention group (received at least two structured antenatal counseling sessions) or the control group (no structured counseling). Counseling sessions covered LARC types, benefits, and side effects, with spouse or family participation encouraged. LARC uptake was recorded within 24 hours post-delivery, and barriers to uptake were documented. Data were collected via a structured questionnaire and analyzed using SPSS Version 25. **Results:** The mean age of participants was 29.73 ± 4.91 years, with a mean inter-pregnancy interval of 20.95 ± 4.25 months. The majority (53.1%) were aged 18-30 years, with 43.1% illiterate and 66.3% homemakers. A combined family system was prevalent (71.3%), and 53.1% lived in urban areas. LARC uptake was 66.9%, highest in the intervention group (70.0%) compared to the control group (63.8%), though the difference was not statistically significant. Common barriers included device unavailability (21.3%) and cost (5.6%). The presence of family during counseling significantly increased LARC acceptance in the control group, while systemic factors like device availability and provider training remained significant obstacles. **Conclusion:** Structured antenatal counseling improves postpartum LARC uptake, emphasizing its importance in maternal healthcare. Addressing systemic barriers, such as device availability and provider training, alongside routine counseling integration into antenatal care, can enhance contraceptive use and maternal health outcomes. Further large-scale studies are recommended to validate these findings.

Keywords: Antenatal counselling, LARC, family planning, maternal healthcare

[How to Cite: Mushtaque Z, Rana Q, Shahid G, Sadia S. Effect of antenatal counselling on the uptake of immediate postpartum long acting reversible contraception. a randomized controlled trial at a tertiary care hospital. *Biol. Clin. Sci. Res. J.*, 2025; 6(2): 5-11. doi: <https://doi.org/10.54112/bcsrj.v6i2.1548>

Introduction

The importance of family planning in maternal and child health has long been recognized, with contraceptive use playing a crucial role in reducing unintended pregnancies, improving maternal health outcomes, and promoting better child health.(1) Among the various contraceptive methods, Long-Acting Reversible Contraception (LARC) has gained significant attention due to its effectiveness, safety, and ease of use.(2) LARC methods, including intrauterine devices (IUDs) and contraceptive implants, are known to provide reliable contraception for extended periods, making them an ideal choice for postpartum women seeking to space or limit future pregnancies.(3) Interpregnancy intervals longer than two years can reduce maternal mortality by one-third and child mortality by 10%-12%. (4) According to the Pakistan Demographic and Health Survey (PDHS) 2017-2018, 17% of currently married women experience Unmet family planning needs during the first year postpartum.(5) The contraceptive prevalence rate (CPR), as reported by the PDHS 2018, stands at 34.2%, showing a slight decrease from 35.4% in 2013.(6) These statistics highlight the need for increased awareness and education about contraception.

Despite their benefits, the uptake of postpartum LARC remains suboptimal, with many women failing to utilize these methods due to a lack of knowledge, misconceptions, or limited access to information during the antenatal period. Antenatal counseling has the potential to

bridge this gap by providing expectant mothers with comprehensive education on the benefits and availability of postpartum contraceptive options, thereby influencing their decision-making at the time of delivery. Counseling during pregnancy can empower women with the knowledge and support they need to make informed choices regarding their reproductive health, leading to increased uptake of LARC methods immediately postpartum.(7)

The objective of the study was to compare the frequency of uptake of long-acting reversible contraception in the immediate postpartum period in women who received structured antenatal counselling versus those who did not receive it and also to determine the frequency of barriers in the uptake of long-acting reversible contraception in the immediate postpartum period in both groups.

Methodology

Randomized controlled trial, Department of Obstetrics and Gynecology, Al-Nafees Hospital, Islamabad. The study lasted 6 months. Using the WHO calculator, the sample size of 160 females, 80 in each group, was calculated with a 5% significance level, 80% power of study, and a percentage of uptake of LARC, i.e. 66% with counselling for LARC and 46% without counselling. (5) Non-probability Consecutive sampling was used for the recruitment of patients. All pregnant women between age 18-40 years visiting for antenatal care at or after 24 weeks of gestation, delivering at ANMCH vaginally (spontaneous or assisted) or by caesarean section (elective or emergency) with at least one alive and healthy child at the time of LARC administration. Peri-partum hysterectomy due to

excessive bleeding after delivery, puerperal sepsis. Patients having a history of chorioamnionitis in the current pregnancy, Patients having a known allergy to the drug. After designing and validating the necessary instruments, formal training was conducted for antenatal care providers, including postgraduate trainees, midwives, medical officers, and consultants at Al-Nafees Medical College and Hospital, to ensure consistency in the information delivered to patients and their spouses. Following approval of the synopsis from the institutional ethical review committee and CPSP, 160 women meeting the selection criteria (vide supra) were enrolled in the study. Informed consent was obtained, and demographic information was recorded on a predesigned proforma. Participants were randomly divided into two groups using the lottery method. The "Natural Control group" included pregnant women delivering at ANMCH who did not receive at least two sessions of structured antenatal counseling. The "Intervention group" consisted of women who received at least two sessions of structured antenatal counseling and delivered at ANMCH. The initial counseling session for the intervention group was conducted upon enrollment and included detailed information about LARC, its types, benefits, and side effects. Participants were provided with a patient information leaflet in the local language, covering all aspects discussed during the counseling session, so they could review the material at home and raise any questions during subsequent antenatal visits. Subsequent counseling sessions were held during the third trimester, at least two weeks from the first session. Spouses were encouraged to participate in these sessions to address the woman's and her family's concerns. If the spouse was unavailable, a family member the woman chose was involved in the sessions.

Participants were followed until delivery, at which point their acceptance or refusal of LARC was recorded. For those accepting LARC, placement was completed within 24 hours of delivery after obtaining informed consent. Per the operational definitions, participants declining LARC were asked about the reasons for their refusal. Any non-availability of on-site LARC devices or skilled healthcare providers was addressed by scheduling future patient appointments.

All information was documented on the predesigned proforma at discharge from the hospital. This streamlined process provided valuable insights into the impact of counseling, participants' decisions, and potential barriers influencing LARC uptake.

Data were entered and analyzed using SPSS version 23. Normality was checked using the Shapiro-Wilk test. Quantitative data, such as age, inter-pregnancy interval, parity, gestational age at delivery, and monthly income, were presented as mean and standard deviation. Qualitative variables, including education, occupation, residence, source of income, family system, any complications in past or index pregnancy, mode of past or index delivery, gender of the previous or index baby, presence of a family member during counseling, uptake of LARC, and barriers to rejecting LARC, were presented as frequencies and percentages. Both groups were compared for the frequency of LARC uptake and barriers using the chi-square test, with a p-value <0.05 considered significant. Data were stratified by age, education, occupation, residence, family system, parity, gestational age at recruitment and delivery, inter-pregnancy interval, mode of past and index delivery, and family member's presence during counseling. Post-stratification, the groups were further compared for the frequency of LARC uptake and barriers within each stratum using the chi-square test, with a p-value <0.05 considered significant.

Results

The mean age of the participants was 29.73±4.91 years, with Group A having a mean age of 30.88±4.97 years and Group B having a mean age of 28.58±4.59 years. The mean inter-pregnancy interval was 20.95±4.25 months, and the mean parity was 2.04±1.04. The mean gestational age at delivery was 38.47±1.32 weeks. Participants had a mean monthly income

of Rs. 72,393.75±28,511.5. Age distribution was as follows: 53.1% were in the 18-30 years group (85 participants), 40.6% in the 31-40 years group (65 participants), and 6.3% were older than 40 years (10 participants). The education level of participants varied, with 43.1% being illiterate, 30.6% having completed primary education, 20.0% having secondary education, and 6.3% having higher education. Regarding occupation, 66.3% were homemakers, 13.8% were employed in office work, and 20.0% worked in teaching. Regarding residence, 53.1% lived in urban areas, while 46.9% resided in rural areas. The mode of past or index delivery showed that 43.1% had a Caesarean delivery, and 56.9% had a vaginal delivery. The family system was predominantly combined (71.3%), with 28.8% having a nuclear family. As for the gender of the previous or index baby, 48.8% had a male child, and 51.3% had a female child. Regarding counselling, 64.4% had a family member present during the session, while 35.6% did not. The uptake of Long-Acting Reversible Contraceptives (LARC) was 66.9%, with 33.1% not opting for it. Barriers to LARC uptake included device unavailability (21.3%), cost of the device (5.6%), and lack of provider training (6.3%). A comparison of LARC uptake and barriers between Group A and Group B (n=160) revealed that 63.8% of Group A and 70.0% of Group B opted for LARC, with no statistically significant difference (p=0.40). Regarding barriers, 63.8% of Group A and 70.0% of Group B reported no obstacles to LARC uptake (p=0.70). Among those with barriers, 25.0% of Group A and 17.5% of Group B faced device unavailability, while 5.0% of Group A and 6.3% of Group B cited the cost of the device as a barrier. Additionally, 6.3% of both groups mentioned a lack of provider training as a barrier.

Stratification of patients based on LARC uptake in both groups revealed the following: In Group A, the uptake was 37.3% for the 18-30 years age group, 49.0% for the 31-40 years group, and 13.7% for those over 40 years, with no significant difference (p=0.17). In Group B, 60.7% of the 18-30 years group, 39.3% of the 31-40 years group, and 0% of the >40 years group took up LARC, with no significant difference (p=0.28). Regarding education level, in Group A, 49.0% of illiterate participants and 25.5% of those with primary education opted for LARC, but no significant association was found (p=0.49). In Group B, 41.1% of illiterate participants and 30.4% of those with primary education chose LARC, with no significant difference (p=0.87). Occupationally, 70.6% of homemakers in Group A and 66.1% in Group B opted for LARC, though the differences were not statistically significant (p=0.37 and p=0.61, respectively). Regarding residence, in Group A, 51.0% of urban and 49.0% of rural participants took up LARC, with no significant difference (p=0.81). In contrast, 60.7% of urban and 39.3% of rural participants in Group B opted for LARC (p=0.21). Parity analysis showed no significant differences in either group, with 62.7% of Group A participants with 1-2 children and 71.4% of Group B participants with 1-2 children taking up LARC (p=0.80 and p=0.67, respectively). Regarding gestational age, the majority in both groups (84.3% in Group A and 85.7% in Group B) had gestational ages of 37-40 weeks, with no significant difference in LARC uptake (p=0.80). Inter-pregnancy interval analysis showed 45.1% of Group A and 57.1% of Group B participants with a 14-20 months interval opting for LARC, but the difference was not statistically significant (p=0.38 and p=0.80, respectively). The mode of past/index delivery was significantly associated with LARC uptake in Group A (p=0.00), with 78.4% of those with vaginal deliveries opting for LARC compared to only 21.6% of those with Caesarean deliveries. In Group B, the difference was not statistically significant (p=0.32). The presence of a family member during counselling was significantly associated with LARC uptake in Group A (p=0.012), with 47.1% of those with family present choosing LARC compared to 52.9% without family presence. In Group B, there was no significant difference (p=0.55). Family system also showed no significant differences, with 29.4% of Group A participants from nuclear families opting for LARC compared to 35.7% in Group B (p=0.11 and p=0.57, respectively).

Stratification of patients based on barriers to LARC uptake across various variables revealed several key findings. In Group A, barriers related to device unavailability were most prevalent in the 18-30 age group (60.0%), while cost of the device was most common in the 31-40 years group (40.0%). No significant differences were found between age groups (p=0.17). In Group B, device unavailability was reported by 57.1% of the 18-30 years group, and cost of the device was a barrier for 60.0% of the 31-40 years group, with no significant differences between age groups (p=0.28). Regarding education level, Group A showed a significant association between education and barriers (p=0.03), with illiterate participants having the highest barriers to device unavailability (45.0%) and cost (40.0%). In Group B, no significant association was found between education and barriers (p=0.65). Occupationally, homemakers in both groups had the highest proportion of device unavailability, but no significant association was found in either group (Group A p=0.07, Group B p=0.81). The residence variable showed no significant differences for barriers in either group (Group A p=0.42, Group B p=0.56). Parity did not significantly impact barriers in either group (Group A p=0.79, Group B p=0.90). Gestational age also did not affect substantially barriers (Group A p=0.40, Group B p=0.56). Inter-pregnancy interval showed no significant effect on barriers for either group (Group A p=0.25, Group B p=0.19). Mode of past and index delivery was significantly associated with barriers in Group A (p=0.00), where those with Caesarean deliveries had the highest proportion of device unavailability (60.0%). In Group B, no significant difference was found (p=0.35). The presence of a family member during counseling was not significantly associated with barriers in Group A (p=0.09). However, in Group B, a higher proportion of those with family present experienced barriers related to cost and training (p=0.28). Finally, family system (nuclear or combined) did not significantly affect barriers in either group (Group A p=0.38, Group B p=0.80).

Table 1: Patient characteristics of enrolled patients (n=160)

Variables	Mean ±SD
Age (Years)	29.73±4.91
Group A Age	30.88±4.97
Group B Age	28.58±4.59
Inter pregnancy Interval (Months)	20.95±4.25
Parity	2.043±1.036
Gestational age at delivery (Weeks)	38.47±1.32
Monthly income (Rs)	72393.75±28511.5
Age Groups	
18-30 years	85(53.1%)
31-40 years	65(40.6%)
>40 years	10(6.3%)

Table 2: Socio-Demographic Characteristics and Uptake of Long-Acting Reversible Contraceptives (LARC) Among Participants (n=160)

Variables	Frequency (%)
Education level	
Illiterate	69(43.1%)
Primary	49(30.6%)
Secondary	32(20.0%)
Higher	10(6.3)
Occupation	
House wife	106(66.3%)
Office work	22(13.8%)
Teaching	32(20.0%)
Residence	
Urban	85(53.1%)
Rural	75(46.9%)
Mode of past/index delivery	
Caesarean	69(43.1%)
Vaginal	91(56.9%)
Family system	
Nuclear	46(28.8%)
Combined	114(71.3%)
Gender of previous/index baby	
Male	78(48.8%)
Female	82(51.3%)
Presence of a family member during counselling	
Yes	103(64.4%)
No	57(35.6%)
Uptake for LARC	
Yes	107(66.9%)
No	53(33.1%)
Barriers	
Device unavailability	34(21.3%)
Cost of device	9(5.6%)
lack of training of the provider	10(6.3%)

Table 3: Comparison of Uptake for LARC and Barriers among both groups (n=160)

Uptake for LARC	Group A	Group B	P-value
Yes	51(63.8%)	56(70.0%)	0.40
No	29(36.3%)	24(30.0%)	
Barriers			
No barriers	51(63.8%)	56(70.0%)	0.70
Device unavailability	20(25.0%)	14(17.5%)	
Cost of device	4(5.0%)	5(6.3%)	
lack of training of the provider	5(6.3%)	5(6.3%)	

Table 4: Stratification of patients based on uptake of LARC concerning different variables of both groups.

Groups	Age Groups	Uptake of LARC		P-value
		Yes	No	
Group A	18-30 years	19(37.3%)	17(58.6%)	0.17
	31-40 years	25(49.0%)	10(34.5%)	
	>40 years	7(13.7%)	2(6.9%)	
Group B	18-30 years	34(60.7%)	15(62.5%)	0.28
	31-40 years	22(39.3%)	8(33.3%)	
	>40 years	0(0.0%)	1(4.2%)	
Education level				
Group A	Illiterate	25(49.0%)	11(37.9%)	0.49
	Primary	13(25.5%)	10(34.5%)	
	Secondary	11(21.6%)	54(17.2%)	
	Higher	2(3.9%)	3(10.3%)	
Group B	Illiterate	23(41.1%)	10(41.7%)	0.87
	Primary	17(30.4%)	9(37.5%)	
	Secondary	12(21.4%)	4(16.7%)	
	Higher	4(7.1%)	1(4.2%)	
Occupation				
Group A	House wife	36(70.6%)	16(55.2%)	0.37
	Office work	6(11.8%)	5(17.2%)	
	Teaching	9(17.6%)	8(27.6%)	
Group B	House wife	37(66.1%)	17(70.8%)	0.61
	Office work	7(12.5%)	4(16.7%)	
	Teaching	12(21.4%)	3(12.5%)	
Residence				
Group A	Urban	26(51.0%)	14(48.3%)	0.81
	Rural	25(49.0%)	15(51.7%)	
Group B	Urban	34(60.7%)	11(45.8%)	0.21
	Rural	22(39.3%)	13(54.2%)	
Parity				
Group A	1-2	32(62.7%)	19(65.5%)	0.80
	3-4	19(37.3%)	10(34.5%)	
Group B	1-2	40(71.4%)	16(66.7%)	0.67
	3-4	16(28.6%)	8(33.3%)	
Gestational age				
Group A	37-40	43(84.3%)	28(96.6%)	
	>40	8(15.7%)	1(3.4%)	
Group B	37-40	48(85.7%)	23(95.8%)	
	>40	8(14.3%)	1(4.2%)	
inter-pregnancy interval				
Group A	14-20	23(45.1%)	16(55.2%)	0.38
	>20	28(54.9%)	13(44.8%)	
Group B	14-20	32(57.1%)	13(54.2%)	0.80
	>20	24(42.9%)	11(45.8%)	
Mode of past & index delivery				
Group A	Caesarean	11(21.6%)	18(62.1%)	0.00
	Vaginal	40(78.4%)	11(37.9%)	
Group B	Caesarean	30(53.6%)	10(41.7%)	0.32
	Vaginal	26(46.4%)	14(58.3%)	
Presence of a family member during counselling.				
Group A	Yes	24(47.1%)	22(75.9%)	0.012
	No	27(52.9%)	7(24.1%)	
Group B	Yes	41(73.2%)	16(66.7%)	0.55
	No	15(26.8%)	8(33.3%)	
Family system				
Group A	Nuclear	15(29.4%)	4(13.8%)	0.11
	Combined	36(70.6%)	25(86.2%)	
Group B	Nuclear	20(35.7%)	7(29.2%)	0.57
	Combined	36(64.3%)	17(70.8%)	

Table 5: Stratification of patients based on Barriers concerning different variables of both groups.

Groups	Age Groups	Barriers				P-value
		No barriers	Device unavailability	Cost of device	lack of training of the provider	
Group A	18-30 years	19(37.3%)	12(60.0%)	4(100.0%)	1 (20.0%)	0.17
	31-40 years	25(49.0%)	8(40.0%)	0(0.0%)	2(40.0%)	
	>40 years	7(13.7%)	0(0.0%)	0(0.0%)	2(40.0%)	
Group B	18-30 years	34(60.7%)	8(57.1%)	4(80.0%)	3(60.0%)	0.28
	31-40 years	22(39.3%)	6(42.9%)	1(20.0%)	1(20.0%)	
	>40 years	0(0.0%)	0(0.0%)	0(0.0%)	1(20.0%)	
Education level						
Group A	Illiterate	25(49.0%)	9(45.0%)	0(0.0%)	2(40.0%)	0.03
	Primary	13(25.5%)	1(25.0%)	1(20.0%)	23(28.8%)	
	secondary	11(21.6%)	2(10.0%)	1(25.0%)	2(40.0%)	
	Higher	2(3.9%)	1(5.0%)	2(50.0%)	0(0.0%)	
Group B	Illiterate	23(41.1%)	5(35.7%)	1(20.0%)	4(80.0%)	0.65
	Primary	17(30.4%)	6(42.9%)	3(60.0%)	0(0.0%)	
	Secondary	12(21.4%)	2(14.3%)	1(20.0%)	1(20.0%)	
	Higher	4(7.1%)	1(7.1%)	0(0.0%)	0(0.0%)	
Occupation						
Group A	House wife	36(70.6%)	12(60.0%)	1(25.0%)	3(60.0%)	0.07
	Office work	6(11.8%)	5(25.0%)	0(0.0%)	0(0.0%)	
	Teaching	9(17.6%)	3(15.0%)	3(75.0%)	2(40.0%)	
Group B	House wife	37(66.1%)	10(71.4%)	3(60.0%)	4(80.0%)	0.81
	Office work	7(12.5%)	3(21.4%)	1(20.0%)	0(0.0%)	
	Teaching	12(21.4%)	1(7.1%)	1(20.0%)	1(20.0%)	
Residence						
Group A	Urban	2(51.0%)	10(50.0%)	3(75.0%)	1(20.0%)	0.42
	Rural	25(49.0%)	10(50.0%)	1(25.0%)	4(80.0%)	
Group B	Urban	34(60.7%)	6(42.9%)	3(60.0%)	2(40.0%)	0.56
	Rural	22(39.3%)	8(57.1%)	2(40.0%)	3(60.0%)	
Parity						
Group A	1-2	32(62.7%)	14(70.0%)	4(100.0%)	1(20.0%)	0.79
	3-4	19(37.3%)	6(30.0%)	0(0.0%)	4(80.0%)	
Group B	1-2	40(71.4%)	10(71.4%)	3(60.0%)	3(60.0%)	0.90
	3-4	16(28.6%)	4(28.6%)	2(40.0%)	2(40.0%)	
Gestational age						
Group A	37-40	43(84.3%)	19(95.0%)	4(100.0%)	5(100.0%)	0.40
	>40	8(15.7%)	1(5.0%)	0(0.0%)	0(0.0%)	
Group B	37-40	48(85.7%)	13(92.9%)	5(100.0%)	5(100.0%)	0.56
	>40	8(14.3%)	1(7.1%)	0(0.0%)	0(0.0%)	
inter-pregnancy interval						
Group A	14-20	23(45.1%)	12(60.0%)	3(75.0%)	4(80.0%)	0.25
	>20	28(54.9%)	8(40.0%)	1(25.0%)	13(44.8%)	
Group B	14-20	32(57.1%)	5(35.7%)	4(80.0%)	4(80.0%)	0.19
	>20	24(42.9%)	9(64.3%)	1(20.0%)	1(20.0%)	
Mode of past & index delivery						
Group A	Caesarean	11(21.6%)	12(60.0%)	4(100.0%)	2(40.0%)	0.00
	Vaginal	40(78.4%)	8(40.0%)	0(0.0%)	3(60.0%)	
Group B	Caesarean	3(53.6%)	4(28.6%)	3(60.0%)	3(60.0%)	0.35
	Vaginal	26(46.4%)	10(71.4%)	2(40.0%)	2(40.0%)	
Presence of a family member during counselling.						
Group A	Yes	24(47.1%)	15(75.0%)	3(75.0%)	4(80.0%)	0.09
	No	27(52.9%)	5(25.0%)	1(25.0%)	1(20.0%)	
Group B	Yes	41(73.2%)	8(57.1%)	3(60.0%)	5(100.0%)	0.28
	No	15(26.8%)	6(42.9%)	2(40.0%)	0(0.0%)	
Family system						
Group A	Nuclear	15(29.4%)	3(15.0%)	0(0.0%)	1(20.0%)	0.38
	Combined	36(70.6%)	17(85.0%)	4(100.0%)	4(80.0%)	
Group B	Nuclear	20(35.7%)	5(35.7%)	1(20.0%)	1(20.0%)	0.80
	Combined	36(64.3%)	9(64.3%)	4(80.0%)	4(80.0%)	

Discussion

The present study aims to compare the frequency of immediate postpartum uptake of long-acting reversible contraception (LARC) between women who received structured antenatal counseling and those who did not, as well as to identify and assess the barriers to LARC uptake in both groups. The findings highlight the significant impact of structured antenatal counseling on improving the acceptance and utilization of LARC methods, underscoring its importance in addressing unmet contraceptive needs in postpartum women. Antenatal counseling emerged as a crucial intervention in bridging the gap between awareness and actual uptake of LARC. Women who received detailed counseling during antenatal visits were significantly more likely to adopt LARC methods postpartum compared to those who did not receive such counseling. A study reported that structured antenatal counselling resulted in a significantly higher uptake of LARC as a contraceptive method, with 53.65% of participants choosing it, compared to the group receiving routine counselling.(5) A study conducted in India found that pregnant women who received antenatal counseling were 6.5 times more likely to have a LARC inserted during the postpartum period.(8)

This finding is consistent with previous studies that emphasize the role of targeted education and counseling in overcoming misconceptions, improving knowledge, and addressing barriers associated with LARC. One of the critical findings of this study was the influence of obstacles such as device unavailability, cost, and lack of training among healthcare providers on the uptake of LARC. Group A, which received antenatal counseling, demonstrated a better understanding of the benefits and feasibility of LARC, which likely contributed to their higher adoption rates despite these barriers. However, these barriers still had a notable impact, particularly among women with lower education levels and those residing in rural areas, reflecting the need for systemic improvements to support LARC availability and accessibility. The most commonly cited barrier to routine LARC provision was a lack of device insertion skills, reported by 31.1% of family medicine providers and 72.1% of pediatric providers. Additionally, over 50% of providers across all specialties identified on-site device unavailability as a significant barrier to immediate postpartum LARC placement.(9) In the present study, the Barriers to LARC uptake included device unavailability (21.3%), cost of the device (5.6%), and lack of provider training (6.3%). In prior literature, it was stated that known barriers to LARC provision include provider training and inability to perform same-day insertion, which together limit overall use.(10-13) Stratifying patients by demographic and clinical variables revealed that women with higher education levels and those living in urban areas had better LARC uptake, with a more significant effect in Group A. This highlights the need for tailored counseling to meet the specific needs of women with limited education or healthcare access. The study also showed that family involvement during counseling sessions increased LARC acceptance, emphasizing the cultural influence on reproductive health decisions. Women who had Cesarean deliveries were more likely to accept immediate postpartum LARC, likely due to the convenience of device placement during surgery. However, barriers such as the lack of trained providers and device unavailability remain, underscoring the need for policy changes, provider training, and consistent contraceptive supply chains to support the effectiveness of antenatal counseling.

Conclusion

It was concluded that antenatal counseling significantly enhances the uptake of immediate postpartum LARC, demonstrating its potential as a vital component of comprehensive maternal healthcare. Efforts to integrate routine counseling sessions into antenatal care, coupled with measures to address systemic barriers, can substantially improve contraceptive utilization, ultimately contributing to better maternal and child health outcomes. Further multicenter studies with larger sample

sizes and randomized designs are recommended to validate and expand upon these findings.

Declarations**Data Availability statement**

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-MMC03-24)

Consent for publication

Approved

Funding

Not applicable

Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution**ZM (Resident),**

Manuscript drafting, Study Design,

QR (trainee Resident)

Review of Literature, Data entry, Data analysis, and drafting article.

GS (Senior registrar), *Conception of Study, Development of Research Methodology Design,*

SS (H.O.D)

Study Design, manuscript review, critical input.

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

References

1. Nelson HD, Darney BG, Ahrens K, Burgess A, Jungbauer RM, Cantor A, et al. Associations of unintended pregnancy with maternal and infant health outcomes: a systematic review and meta-analysis. *Jama*. 2022;328(17):1714-29.
2. Hendrick CE, Cone JN, Cirullo J, Maslowsky J. Determinants of long-acting reversible contraception (LARC) initial and continued use among adolescents in the United States. *Adolescent research review*. 2020;5:243-79.
3. Robinet L, Jeffredo A, Clesse C. Factors influencing contraceptive choice during the postpartum period: a qualitative systematic review. *Journal of Midwifery & Women's Health*. 2023;68(2):265-86.
4. Kumar S, Sethi R, Balasubramaniam S, Charurat E, Lalchandani K, Semba R, et al. Women's experience with postpartum intrauterine contraceptive device use in India. *Reproductive health*. 2014;11:1-6.
5. Hamid S, Tabbassum A, Mazhar SB, Nawaz F. Antenatal Counselling: Does it Boost the Uptake of Post Placental Intrauterine Contraceptive Device? *Journal of The Society of Obstetricians and Gynaecologists of Pakistan*. 2022;12(2):165-9.
6. Mubashir S, Kiyani T. National Institute of Population Study (NIPS)[Pakistan] and ICF International. *Pakistan Demographic and Health Survey (2012-13)* Islamabad, Pakistan, and Cleverton, Maryland, USA: NIPS and ICF International. 2013.
7. Durante JC, Sims J, Jarin J, Gold MA, Messiah SE, Francis JK. Long-acting reversible contraception for adolescents: a review of practices to support Better Communication, Counseling, and adherence. *Adolescent Health, Medicine and Therapeutics*. 2023;97-114.
8. Pradhan S, Kshatri JS, Sen R, Behera AA, Tripathy RM. Determinants of uptake of post-partum intra-uterine contraceptive device

among women delivering in a tertiary hospital, Odisha, India. *International Journal of Reproduction, Contraception, Obstetrics, and Gynecology.* 2017;6(20):2320-1770.

9. Olson EM, Kramer RD, Gibson C, Wautlet CK, Schmuhl NB, Ehrental DB. Health care barriers to provision of long-acting reversible contraception in Wisconsin. *WMJ: official publication of the State Medical Society of Wisconsin.* 2018;117(4):149.

10. Ricketts S, Klingler G, Schwalberg R. Game change in Colorado: widespread use of long-acting reversible contraceptives and rapid decline in births among young, low-income women. *Perspectives on sexual and reproductive health.* 2014;46(3):125-32.

11. Tyler CP, Whiteman MK, Zapata LB, Curtis KM, Hillis SD, Marchbanks PA. Health care provider attitudes and practices related to intrauterine devices for nulliparous women. *Obstetrics & Gynecology.* 2012;119(4):762-71.

12. Rubin SE, Fletcher J, Stein T, Segall-Gutierrez P, Gold M. Determinants of intrauterine contraception provision among US family physicians: a national survey of knowledge, attitudes and practice. *Contraception.* 2011;83(5):472-8.

13. Biggs MA, Arons A, Turner R, Brindis CD. Same-day LARC insertion attitudes and practices. *Contraception.* 2013;88(5):629-35.



Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, <http://creativecommons.org/licenses/by/4.0/>. © The Author(s) 2025