

Impact of Educational Program on pregnant Women's Knowledge, Attitudes and Intention Regarding Intrauterine Contraceptive Device Insertion During Cesarean Section

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Abstract

Background: The utilization of Intrauterine Contraceptive Device (IUCD) insertion during cesarean section supports pregnant women to achieve their need for childbirth interval spacing and avoid unexpected pregnancies and so diminish maternal mortality and morbidity. Affording women with knowledge around IUCD insertion during cesarean section increase their thoughtful and alteration their attitude towards IUCD insertion during cesarean section and therefore strengthening their intention for use. **Aim of the study:** To discover the impact of educational program on enhancing pregnant women's attitude, knowledge, also intention regarding IUCD insertion during cesarean section. **Subjects and Method:** A Quasi experimental study design conducted in this study using one group (pre and posttest) was used. **Setting:** The study was performed at an outpatient clinic in an antenatal care clinic, obstetric and gynecological hospital Ain Shams University. **Sample size:** A purposive sample of 355 pregnant women undergoing cesarean section was involved permitting to inclusion criteria. **Data Collection Tools:** Three tools were utilized for gathering data. Tool (I): Pregnant women structure interviewing questionnaire it was comprise four parts (subjective features, obstetric history, family planning history, and knowledge of women about consuming IUCD during cesarean section, tool (II): An attitude measurement scale and last tool intention measurement scale. **Results:** There was a highly statistically significant variance between pre and post program total knowledge score and total attitude of pregnant women regarding IUCD during cesarean section ($P < 0.001$). Strong positive intentions (Scores $\sim 3.85 - 3.90$) For items correlated to personal acceptance, sharing information, recommending the IUCD, perceived husband support, and planning to use the IUCD during cesarean section afterward educational program. A statistically significant association between the post-program total knowledge and total attitude of pregnant women and their intention to utilization the IUCD during cesarean section ($P < 0.001$). **Conclusion:** A positive impact and significantly post intervention improvement of pregnant women's knowledge, attitudes, also intention to use IUCD insertion during cesarean section. **Recommendations:** Applying the educational program habitually to increase women's awareness regarding using IUCD insertion during cesarean section at all maternal health care facility points.

Keywords: Educational program; Pregnant women; Knowledge; Attitude; Intention, IUCD, Cesarean section.

Introduction

Intrauterine contraceptive device (IUCD) is utmost safe and effective birth control device, which a manner of long-acting flexible contraception with insignificant problems. The utilization of IUCD insertion during cesarean section supports women to achieve their need for childbirth interval spacing and avoid unexpected pregnancies (Kassa, et al., 2021). WHO recommended intrauterine contraceptive device insertion in 10 min of placenta delivery or in two days of delivery (World Health Organization, 2023).

Nonetheless numerous pregnant women undergo cesarean section do not submit to immediate IUCD insertion in developing nations, which subsequently rises the hazard of pregnancy-related problems, unsafe abortions and unwanted pregnancies and eventually unfortunate maternal and childbirth consequences correlated with small childbirth intervals (Pimentel, et al., 2020).

According to the newest estimations published by United Nations agencies, each two minutes, a childbearing woman dies during childbirth or pregnancy Worldwide (Utomo, Kurnia, Arum, Sachs, & Imma., 2021). Sustainable Development Goal agenda is to reduce

maternal mortality rate to lower than 70 deaths per 100 000 surviving births by 2030 (World Health Organization, 2020). Consequently, the utilize of recent birth control methods is imperious in progressing new natal and maternal health (Omona & Namuli, 2020).

IUCD insertion during cesarean section is a recent method that has numerous advantages over further changeable methods. Furthermore, their period of action is elongated once in place, not require preservation and effectiveness of 10 years at least. over that It is good intended for lactating post-natal women (Terefe, Wakjira, & Abebe, 2023).

The reviewed health policy of reproductive health prioritizes extended-acting contraceptive approaches by 2030, including definite goal line to raise prevalence of IUCD and reach 100% instant utilization coverage of postnatal birth control.

Several behavior modification theories established the intention as the close-adjacent motivator for real act and several studies declare the strong predictor of behavior is intention (Somesh, et al., 2014) . During pregnancy is the most important period to determine whether pregnant women willing to utilize IUCD during cesarean section delivery.

Strengthens pregnant women's knowledge about IUCD insertion during cesarean section, addressing whichever misconception, boost referral system all of this needed to enhance update of IUCD insertion during cesarean section. (Walker, Hooks, & Blake., 2021)

Community health nurses play a critical role to provide knowledge to pregnant women in the community, help pregnant women to take decisions arranged the utilize of IUCD insertion during cesarean. (Kalne, Kalne, & Mehendle, 2022). Ought to pay attention toward giving pregnant women by essential knowledge relating IUCD insertion during cesarean, advantages for postnatal women, specifically through apprehensions around reducing the barriers throughout attendance prenatal clinics as they strategy to usage during cesarean birth.

Significant of the problem

Lots of review have been shown toward evaluate pregnant women's knowledge, acceptance and attitude of IUCD as standard

birth control device decision. However, few studies evaluate women's intentions, attitudes, also knowledge of IUCD during cesarean section. (Castleberry , Stark, Schulkin, & Daniel., 2020)

Furthermore, previous study discovered that small rates of instant postnatal intrauterine birth control device application, deficiency of women's knowledge around postnatal intrauterine birth control device, insurance coverage (Goldstuck & Cheung, 2019). Thus, the researchers are concerned in recognizing the impact of educational program on enhancing women's information about IUCD during cesarean section. Explore pregnant women intentions during obtaining prenatal care follow-up in utilizing IUCDs during cesarean section.

Aim of the study:

To discover the impact of educational program on enhancing pregnant women's attitude, knowledge, and intention regarding IUCD insertion during cesarean section.

Research hypothesis:

- Pregnant women who obtain the educational program will have superior knowledge grade about IUCD insertion during cesarean section.
- Pregnant women who obtain the educational program will have an affirmative attitude regarding IUCD insertion during cesarean section.
- Pregnant women's intention to utilize IUCD insertion during cesarean section will be boosted.

Subjects & Methods:

The study was presented keen on four designs: technical, operational, administrative, and statistical.

Technical Design:

It involved research design, setting, research sample, and tools of data gathering.

Research design:

A Quazi experimental study design was conducted in current study utilizing one group (pre and posttest) was used.

Setting:

The study was performed at an outpatient clinic in antenatal care clinic, obstetric and gynecological hospital Ain Shams University,

this place was selected because it is a large tertiary care hospital, serves many cases from other governorates, a huge hospital covering the significant numeral of cesarean deliveries every day, with about 400 deliveries every month and an attendance antenatal woman in the outpatient department every day. with about 700 every month.

Sample size:

A purposive sample was used, the sample size was determined utilizing Thompson method where a population of 4836 cases who attended the previous mentioned setting during one year with confidence level at 95%, acceptable margin of error 5%. The method revealed a sample size of 355 pregnant women, (Thompson, 2012). The sample implied criteria of pregnant women, age above 18 years to 45 years, in late third trimester undergoing cesarean section. Exclusion criteria Pregnant women who were in critical condition

$$n = \frac{N \times P(1 - P)}{\left[\left[N - 1 \times (d^2 \div z^2) \right] + P(1 - P) \right]}$$

Which: N = total population size, n = sample size, $Z = 1.96$, D = error level 5% and $p = 0.5$

Data Collection Tools:

Data was gathered utilizing three tools as the ensuing.

- 1- Pregnant women interviewing questionnaire** was constructed by the investigators after studying related literature. It was comprised of four parts:

First Part: Which contained information connected to subjective features such as residence, age, certification, occupation, and matrimonial period.

Second Part: This section involved obstetric history such as gestation, parity, number of abortions, previous live children, last delivery type and unintended pregnancy occurrence.

Third Part: This section contained the history of family planning as consuming some method, type of Family planning method consumed, any complications happened for the duration of consumed, hearing around consuming IUCD during cesarean section and information sources.

Fourth part: knowledge assessment

This part was utilized to assessing knowledge of women about consuming IUCD during cesarean section including definition, indications, time of placing, contraindication, advantages, action, disadvantage, effectiveness, and adverse impacts. Assistive brochure was utilized as document of brochure it was premeditated by the researcher established on recent literature review, utilize a basic and bright Arabic language proven with photo to strengthen knowledge for pregnant women.

Scoring system: Knowledge assessment item consisted of seven multiple choice questions. five grades for each question, the total knowledge score was thirty- five grade for correct response. A good level of total knowledge was described as more than 70%, fair level from 50-70% and poor level <50%.

- 2- Attitude measurement scale**, that includes tierce-point Likert like- scale (disagree, slightly agree and agree) was established to evaluate pregnant woman's attitude towards IUCD insertion during cesarean section, (Joshi, Dhaliwal, & Dharminder, 2022). It contained eight terms to which pregnant women was questioned to answer single of choosing.

Scoring system

The value of the attitude index was calculated by giving each response a score. A score where agree receives 3 scores, slightly agree receives 2 scores, and the least one disagrees receives 1 score. The overall attitude questions score was calculated for every study subject. positive attitude was considered when total score was 75% or more and considered as negative attitude when a total score < 75%.

A total score < 75% was considered as negative attitude, and 75% or more was considered positive attitude towards IUCD insertion during cesarean section.

- 3- Intention measurement scale:** Instrument comprises a unifactorial scale of 9 items determined by applying a 5-point Likert scale ranging starting strongly to agree (5) to strongly disagree toward Intent to the degree that a pregnant woman has toward the idea of IUCD insertion during cesarean section, The behavioral intentions scale fitted with theories of planned

behavior (Eccles, Anne, Jeremy, Robbie, & et al, 2004), and was validated in prior studies, (Kaczmarek, et al., 2014).

Scoring system

The value of intentions index was estimated by giving each reply to a score. A score where complete agrees receives 5 scores, somewhat agree receives 4scores, Natural receives 3scores, somewhat disagree receives 2scores, and disagree receives 1 scores. The mean intention score was categorized as follows: values between 4.0 and 5.0 reflected a strong positive intention to use intrauterine contraceptive devices, while those between 3.0 and 3.9 indicated a moderately positive intention. Scores within the range of 2.0 to 2.9 signified a moderately negative intention, whereas values from 1.0 to 1.9 denoted a strong negative intention.

Tools Validity:

The tools were examined for comprehensiveness and transparency by a bunch of three specialists in the fields of community health nursing, obstetrics and gynecological medicine, and maternity and newborn health nursing.

Tools Reliability:

The tool internal consistency was calculated via Cronbach's Alpha at 0.87.

Operational design:

It was displayed in two segments, pilot study and field work.

Pilot study:

Pilot study was performed on 10% of the population size, (36) women, to decide the comprehensiveness, transparency of the tools, time required to questionnaire finished and modifications required.

Field work:

The data gathered at the time of current study was continued for 4 months, started in December 2024 and finished in March 2025. The researcher was attending from 9 am to 12pm 4 days per week in the previously mentioned setting. Which was conducted in tierce phases, planning/per implementing, implementing, and evaluation phase.

planning /per implementing phase:

Ethical consideration:

The scientific research ethics committee was approved from faculty of Medicine, Ain Shams University, before the start of the study. The approval code was (FMASU R307/2024). Related authorities agreed with all official permissions toward perform study; permitted written letter clarifying the objective of current study for data gathering was approved of administrator of the obstetrics and gynecological hospital. Ain Shams University.

Written consent from all participated pregnant women was acquired. Participated pregnant women were proven that the participation of this study are volunteers and have rights to leave at any time. The privacy of all data was achieved, and all gathered data was used just for objective of the existing study. All beliefs, cultures, ethics and values are appreciated.

The researchers themselves were introduced to participated pregnant women. Once getting signatures of participated pregnant women on a consent sheet, the researchers clarified the study's objective, then participated pregnant women were interviewed individually in split room to keep privacy and obtained participated pregnant women's features, obstetrical and birth control history.

Implementing phase:

An educational program was produced to given for separately group contain eight of participated pregnant women thru the investigator around three sessions; every session was assumed 20- 35 minutes. While the initially session was targeted toward create bond relationship that linking investigator and participated pregnant women to relieve their worry & anxiety to develop pregnant women's confidence. Additionally, pretest was performed for participated pregnant woman concerning knowledge regarding IUCD insertion during cesarean section, also attitude measurement scale tool was complete by each one, and their intention toward usage it also complete.

The participated pregnant women were given with the essential information regarding IUCD insertion during cesarean section throughout the second session. As well as an instructional endorses brochure was disseminated amongst participated pregnant women

Program was afforded to participated pregnant women on the paradigm of lecture, video, plus discussion. The program sessions were implemented at the outpatient clinic of pregnancy through awaiting period of participated pregnant women for medical inspection. The instructive subjects were established in recent appropriate reviews of literature. The subject included definition of IUCD insertion during cesarean, time of insertion, disadvantage, advantages, when to use IUCD insertion during cesarean, contraindication, effectiveness, indications, action of mechanism, and side effects.

Evaluation phase:

Through the last session the pregnant women were questioned by researcher on the way to recognize their outlook, attitudes about consuming IUCD insertion during cesarean. Additionally, post-tests were done after four weeks through follow-up care visit at outpatient clinic or phone follow up to estimate women's knowledge regarding IUCD insertion during cesarean and their intention toward usage it.

Statistical analysis:

Statistical analysis of the current study was managed through revising, tabulating, and gathering data coding. Then Statistical Package for Social Sciences program version (23) was utilized. Qualitative data was presented as frequencies and percentages whilst mean and standard deviation (SD) were submitted to the quantitative variants. The results were considered significant as: < 0.05 and > 0.05 not significant. A bivariable statistical analysis was done intended for entire individualistic variants versus every individualistic variant independently utilizing binary logistic regression to realize their association. Statistically significant at a p-value of < 0.05 , highly significant at a p-value < 0.001 , with a relevant crude odds ratio (COR); adjusted odds ratio (AOR). and 95 % confidence interval were used to declare the significantly associated variants.

Results:

Table (1): Demonstrated subjective features for studied pregnant women and shows that a mean age of them have (29.7 ± 4.8) and about (59.7% ages ranges (21-30 years). Where 45.4% attended secondary school and (55.8%) of them spent matrimonial period from five to ten years.

Table (2): Illustrated obstetric histories for studied pregnant women, about 80.3% of them are multipara. and 61.1% of studied pregnant women reported that last delivery type was cesarean section.

Table (3): Showed birth control history for studied pregnant women and proved that (72.7%) of them *had utilized* of birth control method before the current pregnancy and verify that the common ways used were: the tablet (42.6 %), the intrauterine birth control device (21.3 %), and injectable (18.6 %)

Figure (1): Disclosed source of hearing about utilizing IUCD during cesarean section and evidenced that about 84.4% of studied pregnant women had no source of hearing.

Table (4): Demonstrated knowledge about IUCD insertion during cesarean section for studied pregnant women and proved that there are highly statistically significant correlation concerning preprogram test and post program test involving all items of knowledge, P-value < 0.001

Figure (2): Clarified of total knowledge score about IUCD insertion during cesarean section for studied pregnant women preprogram test and post program test, about 91% of studied pregnant women have good total knowledge of post program test, and showed that there is statistically significant difference concerning preprogram and post program test with p- value 0.001

Table (5): Revealed of attitudes about utilizing IUCD insertion during cesarean section for studied pregnant women preprogram test, post program test, and illuminated that there are highly statistically significant difference concerning wholly attitude matters test with p- value 0.001.

Figure (3): Showed of participated pregnant women over-all attitudes score toward IUCD insertion during cesarean section in preprogram test and post program test and disclosed that 93% of

studied pregnant women had a positive attitude and there is highly statistically significant difference with p- value 0.001, regarding preprogram test and post program test.

Table (6): Disclosed of participated women intention toward utilize IUCD insertion during cesarean section after completion educational interference program and revealed that strong positive intentions (Scores ~3.85 - 3.90) For items correlated to personal adoption, sharing information, recommending the IUCD, perceived husband support, and planning to use the IUCD during cesarean section.

Figure 4: Unveiled barriers and concerns that participant women did not utilize IUCD insertion during cesarean section and explained that the utmost shared concerns declared by study participants craving of future pregnancy (29.5%) followed by medical issue barriers during cesarean section (22.5%).

Table (7): Released the relationship between posttest total knowledge and posttest total attitude of participated women concerning IUCD insertion during cesarean section and discovered that there was highly statistically significant correlation among posttest total attitude and posttest total knowledge of studied pregnant

women concerning IUCD insertion during cesarean section and P-value <0.001.

Table (8) A binary logistic regression revealed the association factors with intention to utilization of IUCD insertion during cesarean section among participant women and displayed that highly statistically significant association of entirely the evaluated factors at confidence interval 95%, p-value of < 0.001 were comprised: participant women with advanced maternal age from 31to 40 years (adjusted odd ratio 4.63(1.70, 114.01). Likewise, those who are aged 41 years (adjusted odd ratio 18.91(2.99, 117.3). Concerning high scholastic certificate secondary schooled (adjusted odd ratio 13.44, (4.37 38.43). Identical, those who are academic (adjusted odd ratio 18.72(5.99, 56. 27). As regards matrimonial periods above 10 years (adjusted odd ratio 72.0 (35.12, 194.43), and multipara (adjusted odd ratio 0.24(0.16, 0.31). Likewise, utilizing birth control method before (adjusted odd ratio 6.65(3.85 1118). Moreover, who had good fair post-test total knowledge (adjusted odd ratio 13.11(2.97, 98.30). As well as fair posttest total knowledge (adjusted odd ratio 19.00 (2.98, 174.90). Similarly positive attitude (adjusted odd ratio 44.97(2.82, 810.4).

Table 1 Distribution of Subjective features for studied pregnant women (N=355)

Subjective features	No.	%
Age/year		
Up to 20	24	6.8
21-30	212	59.7
31-40	107	30.1
≥41	12	3.4
Mean ±SD	29.7± 4.8	
Residence		
Urban district	166	46.7
Rural district	189	53.3
Scholastic Certificate		
Unschool ed	45	12.7
Primary schooled	69	19.4
Secondary schooled	161	45.4
Academic	80	22.5
Occupation status		
No job	250	70.4
Employed	105	29.6
Matrimonial period		
>5 years	77	21.7
5 -10 years	198	55.8
Above 10 years	80	22.5

Table 2 Distribution of obstetric histories for studied pregnant women (N=355)

Obstetric history	No	%
Parity		
Primipara	70	19.7
Multipara	285	80.3
Pervious miscarriage.		
No	97	27.3
Yes	258	72.7
Living children		
Male only	79	22.2
Female only	69	19.4
Mixed female and male	207	58.4
Last delivery Type		
Non	70	19.7
Normal delivery	68	19.2
Cesarean section	217	61.1
Unplanned pregnancy Occurrence		
No	104	29.3
Yes	251	70.7
Unplanned pregnancy cause		
Absent of contraceptive method	20	19.2
Missing contraceptive tablets	51	49.1
Failure of contraceptive method	34	32.7

Table 3 Distribution of birth control history for studied pregnant women (N=355)

Birth control history	No	%
The present pregnancy was planned		
Yes	205	57.7
No	150	42.3
Utilizing of any birth control method		
Yes	258	72.7
No	97	27.3
If yes, kind of birth control utilize		
Injectable	48	18.6
Pills	110	42.6
IUCD	55	21.3
Implanon	10	3.9
Condom	35	13.6.
If yes, Occurrence of complications during utilized		
Irregular vaginal bleeding	50	19.3
Menstrual irregularity	63	24.5
Infection	12	4.7
Unplanned pregnancy	34	13.2
No complication	99	38.3
Hearing about utilizing IUCD during cesarean section		
Yes	55	15.6
No	300	84.4
Source of hearing		
Medical team	29	8.1
Friends or Relative	8	2.3
Media	6	1.9
Internet	12	3.3

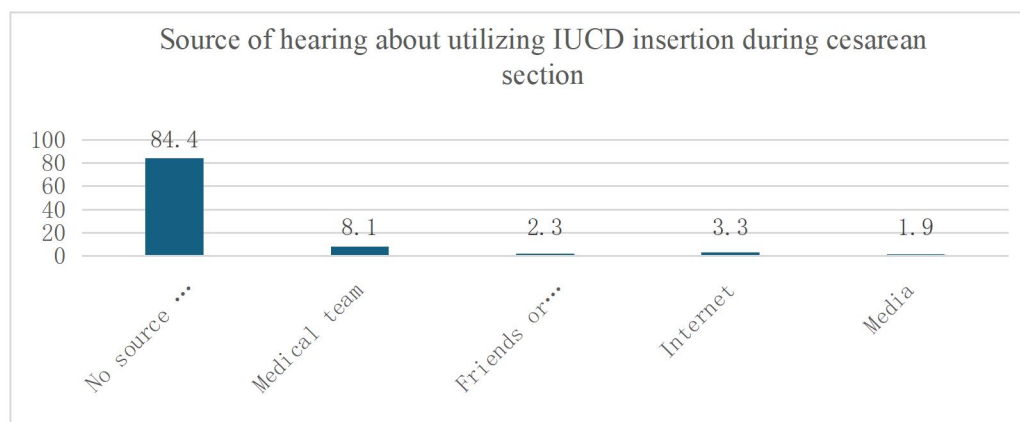


Figure 1 Discloses source of hearing about utilizing IUCD insertion during cesarean section

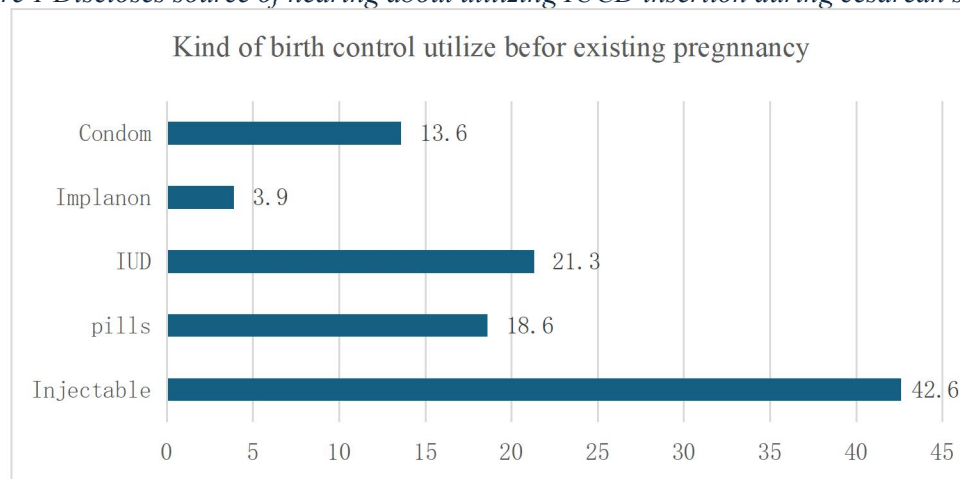


Figure 2 Reveals the kind of birth control utilized before the existing pregnancy and verify that 42.6% of studied pregnant women had utilized injectable approach

Table 4 Distribution of knowledge about IUCD insertion during cesarean section for studied pregnant women for correct answer pre-program test and post program test (N=355):

Items	Correct answers				Chi-square	
	Pre-program test		Post-program test			
	No	%	No	%	X2	P-value
Definition of IUCD during cesarean section as a method of contraception	29	8%	320	90%	477	<0.001**
Time of insertion of IUCD during cesarean section	29	8%	330	93%	510	<0.001**
Effectiveness of IUCD during cesarean section	29	8%	325	92%	494	<0.001**
Mechanism of action of IUCD during cesarean section as a method of contraception						
Affecting fertilization, through preventing fertilizing the ovum by sperm	7	2%	325	92%	572	<0.001**
Reducing the amount of semen achieving to uterus likewise affecting sperms mobility.	5	1%	328	92%	590	<0.001**
Stalling the fertilized ovum beginning imbedding.	3	1%	320	90%	571	<0.001**
Adverse consequence of IUCD insertion during cesarean section						
Slight discomfort to reasonable anguish when the IUCD place	29	8%	335	94%	528	<0.001**
Backaches and Cramping representing some days following IUCD placing	29	8%	335	94%	528	<0.001**
Advantages of IUCD during cesarean section						
Very effective	13	4%	337	95%	592	<0.001**
Arrange option of family planning initiation.	10	3%	300	85%	482	<0.001**
Your ability for future pregnancy wasn't affected.	9	3%	322	91%	554	<0.001**
There is no restriction together with sexual desire and intercourse	11	3%	312	88%	515	<0.001**

Items	Correct answers				Chi-square	
	Pre-program test		Post-program test			
	No	%	No	%	X2	P-value
Instantly revocable (enhance pregnancy instantly after removed).	8	2%	324	91%	565	<0.001**
Breast feeding mothers can use it.	12	3%	325	92%	553	<0.001**
It can be inserted instantly once childbirth.	8	2%	330	93%	585	<0.001**
The insertion of it is free of charge.	30	8%	335	94%	525	<0.001**
It can be removed at whichever moment you desire	9	3%	339	95%	614	<0.001**
Potential disadvantages						
Increased Risk of Bleeding and Infection	45	13%	340	96%	494	<0.001**
IUCD Expulsion or Displacement	8	2%	339	95%	614	<0.001**
Potential for Lower Hemoglobin Levels	30	8%	335	94%	525	<0.001**
Difficulty with IUCD Removal	15	4%	320	90%	526	<0.001**
Contraindication of IUCD during cesarean section						
Untreated sexually transmitted infection	10	3%	310	87%	512	<0.001**
Problems with womb or cervix	13	4%	315	89%	517	<0.001**
Unexplained bleeding between periods	9	3%	312	88%	522	<0.001**

(**) highly statistically significant difference.

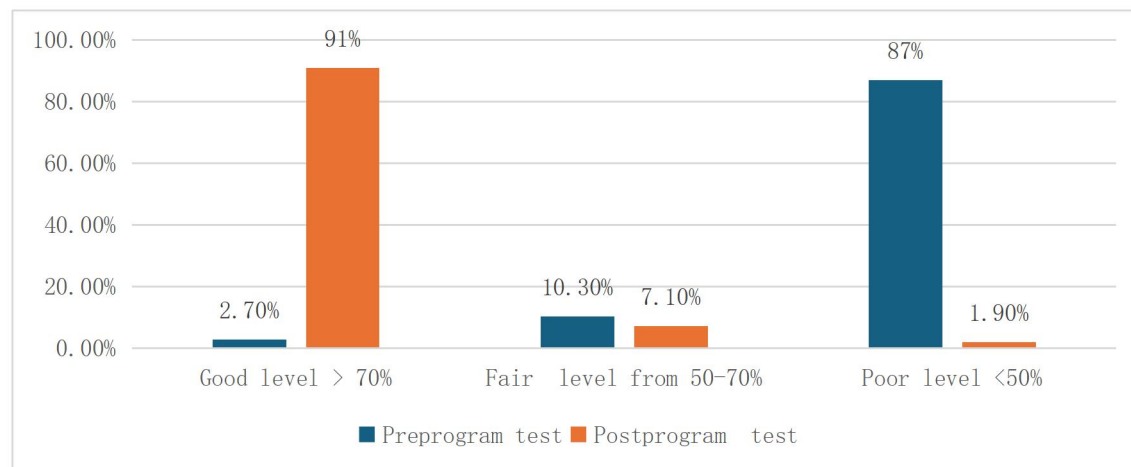


Figure 3 Explained percentage dissemination of total knowledge about IUCD insertion during cesarean section for studied pregnant women Preprogram test and post program test (N=355)

Table 5 Distribution of attitudes about IUCD during cesarean section for studied pregnant women preprogram test and post program test (N=355):

Items	Pretest						Post test						Chi-square	
	Agree		Somewhat agree		Disagree		Agree		Somewhat agree		Disagree			
	No	(%)	No	(%)	No	(%)	No	(%)	No	(%)	No	(%)	X2	P-value
Using IUCD during cesarean section causes irregular bleeding.	340	96%	8	2%	7	2%	35	10%	50	14%	270	76%	528.188041	<0.001**
The insertion and removal of IUCD during cesarean section is highly painful.	322	91%	15	4%	18	5%	78	22%	56	16%	221	62%	344.9387	<0.001**
Placing an IUCD during cesarean section into the uterus ensures privacy.	63	18%	61	17%	231	65%	300	85%	43	12%	12	3%	355.2213	<0.001**
Using IUCD during the cesarean section cannot limit usual activities.	55	15%	54	15%	246	69%	302	85%	41	12%	12	3%	384.9051	<0.001**
Using IUCD during cesarean section does not interfere with newborn breastfeeding.	35	10%	107	30%	213	60%	202	57%	130	37%	23	6%	272.8733	<0.001**
IUCD during cesarean section does not interfere with sexual intercourse.	48	14%	29	8%	278	78%	270	76%	70	20%	15	4%	408.0326	<0.001**
Using IUCD during cesarean section affects future fertility.	324	91%	21	6%	10	3%	42	12%	75	21%	238	67%	457.2666	<0.001**
IUCD during cesarean section does not pass via the body following placing.	34	10%	78	22%	243	68%	326	92%	20	6%	9	3%	488.4567	<0.001**

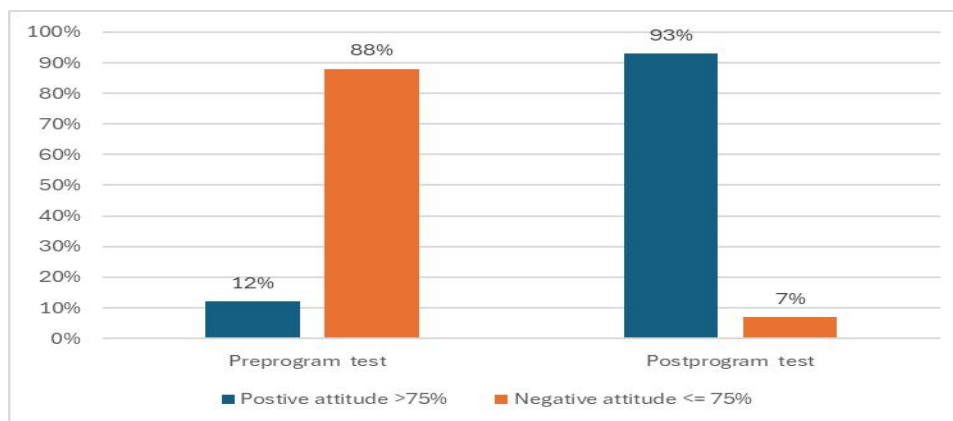


Figure 4 Clarified percentage distribution of studied pregnant women attitudes toward IUCD insertion during cesarean section in pretest and posttest (N=355).

Table 6 Percentage distribution of intention to utilize IUCD during cesarean section for studied pregnant women after completion educational interference:

Item	Compl etely agree	Somew hat agree	Natura l	Somew hat disagr ee	Compl etely disagr ee	Average Intention Scores
	No (%)	No (%)	No (%)	No (%)	No (%)	
Would you like to embrace this procedure at birth?	155 (43.7%)	45 (12.7%)	125 (35.2%)	25 (7.0%)	5 (1.4%)	3.9
Would you like to communicate the knowledge about this birth control way with your partner?	150 (42.3%)	50 (14.1%)	130 (36.6%)	15 (4.2%)	10 (2.8%)	3.89
Husband would support your decisions if you used it.	143 (40.3%)	57 (16.1%)	129 (36.3%)	16 (4.5%)	10 (2.8%)	3.86
Would you like to recommend IUCD during cesarean section to your friends ?	150 (42.3%)	50 (14.1%)	130 (36.6%)	15 (4.2%)	10 (2.8%)	3.89
Does your family members and other friends back your choices?	73 (20.6%)	79 (22.3%)	80 (22.5%)	23 (6.5%)	100 (28.2%)	3.01
Would You plan to use IUCD during cesarean section	155 (43.7%)	45 (12.7%)	125 (35.2%)	25 (7.0%)	5 (1.4%)	3.9
Would you think you don't need contraception	10 (2.8%)	20 (5.6%)	60 (16.9%)	120 (33.8%)	145 (40.8%)	1.96
Would you like to want time to decide the use of IUCD during cesarean section	40 (11.3%)	65 (18.3%)	100 (28.2%)	79 (22.3%)	71 (20.0%)	2.79
Would you like to not use another contraceptive method was satisfied Previously	143 (40.3%)	57 (16.1%)	129 (36.3%)	16 (4.5%)	10 (2.8%)	3.86

Mean score with interpretation guide; (4.0-5.0) Strong positive, (3.0-3.9) moderately positive, (2.0-2.9) moderately negative, (1.0-1.9) Strong negative

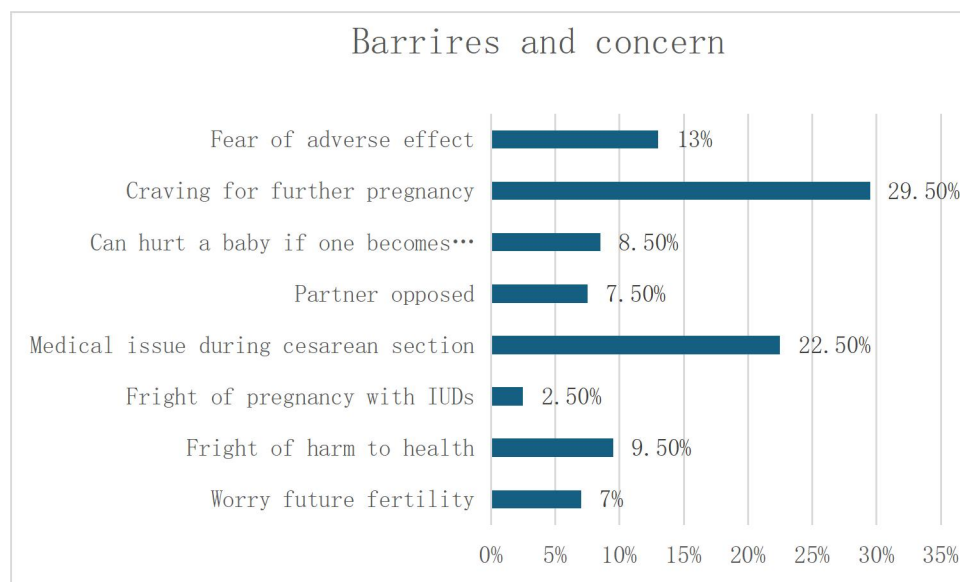


Figure 5 Barriers and concerns that participant women did not utilize IUCD insertion during cesarean section (n=200)

Table 7 Relationship between posttest total knowledge and posttest total attitude of studied pregnant women Concerning IUCD insertion during cesarean section.

Posttest total knowledge	Posttest total attitude				Chi- square	
	Positive attitude (330)		Negative attitude (25)		X2	P-value
	No	%	No	%		
Good ranking > 70%	303	91.8	5	20	131	<0.001**
Fair ranking 50-70%	20	6.1	7	28		
Poor ranking <50%	7	2.1	13	52		

Table 8 A binary logistic regression to assessment association factors with intention to utilization IUCD insertion during cesarean section among participant women

Variable type		Intention to utilize IUCD insertion during cesarean section		COR 95%CI's	AOR 95%CI's
		Yes	No		
Subjective features					
Age/year	Up to 20	5	19	1	1
	21-30	80	123	2.47 (0.89, 6.87)	2.36(0.87, 6.76) *
	31-40	60	47	4.85 (1.69, 13.95)	4.63(1.70, 114.01) **
	≥41	10	2	19.01(3.11, 115.6)	18.91(2,99, 117.3) **
Scholastic Certificate	Unschool	4	41	1.00	1.00
	Primary	10	59	1.74(0.51, 5.93)	1.80(0.52, 6.12)

Variable type		Intention to utilize IUCD insertion during cesarean section		COR 95% CIs	AOR 95% CIs
		Yes	No		
	schooled				
	Secondary schooled	90	71	12.99(4.45, 37.98)	13.44, (4.37 38.43) **
	Academic	51	29	18.02(5.87, 55.38)	18.72(5.99, 56. 27) *
Occupation status	No job	55	195	1.00	1
	Employed	100	5	70.91(27.47, 182.46)	71.51 (28.41, 181.98) **
Matrimonial period	>5 years	7	70	1.00	1
	5 -10 years	78	120	6.5(2.84, 14.83)	7.1(3.33, 145.22)
	Above 10 years	70	10	70.0 (25.19, 193.89)	72.0 (35.12, 194.43) **
Obstetric history					
Parity	Primipara	49	21	1.00	1
	Multipara	101	184	0.24(0.13, 0.41)	0.24(0.16, 0.31) **
Utilizing of any birth control method	yes	125	80	6.25(3.84, 10.18)	6.65(3.85 1118) **
	NO	30	120	1.00	1
Knowledge					
Respondents' total knowledge post test	Good ranking > 70%	129	179	12.71(1.67, 97.20)	13.11(2.97, 98.30) **
	Fair ranking 50-70%	25	2	20.00 (2.31, 173.50)	19.00 (2.98, 174.90)**
	Poor ranking <50%	1	19	1.00	1
Attitude					
Respondents' Attitude post test	Positive attitude	155	175	45.18(2.73, 750.4)	44.97(2.82, 810.4) **
	Negative attitude	0	25	1.00	1

*Statistically significant at a p -value of < 0.05 ; **Highly statistically significant** p -value < 0.001 . Adjusted odds ratio (AOR); Crude odds ratio (COR) and 95 % confidence interval

Discussion:

Our study aims toward discovering impact of educational programs on enhancing pregnant women's attitude, knowledge, and intention regarding IUCD insertion during cesarean section.

Concerning subjective features for studied pregnant women, the mean age of them have (29.7 ± 4.8) and about (59.7% ages ranges (21-30 years). Where 87.3% attended official schooling. This result is like to (Geda, Seid, Mesfin, Berhe, & Adamu, 2021) who study immediate postnatal intrauterine birth control device consumption and

affecting issues in Addis Ababa and found something like mean age 28 years with standard deviation of 4.96 and partially of participants (49.3%) fit in age group (25-29 years) and 85% of the study populace had acquaintance to official schooling.

Regarding obstetric histories for studied pregnant women, about 80.3% of them are multipara. This result is against (Valliappan, Gowri, & Palanivel., 2017) who address, factors and knowledge affecting approval of Post Partum Intra Uterine Contraceptive Device (PPIUCD)

amongst parturient / pregnant women in Puducherry, India. and attained that (45.4%) of participants are multipara and similar (Geda, Seid, Mesfin, Berhe, & Adamu, 2021) who found that about 73.4% have more than one birth.

Considering to birth control history around (72.7%) of studied pregnant women had utilized of birth control method before the current pregnancy and the injectable way one of common ways utilize (%18.6). These end result was match up with (Dhimal, et al., 2023) who studied Practice and knowledge concerning post-natal intra-uterine birth control device amongst attending prenatal women AMDA Hospital, Japa and demonstrated that (65.3 %) were currently use at least one birth control ways, and injectable way one of common ways utilize (12.1 %)

As regard source of hearing about utilizing IUCD during cesarean section plurality of them (84.4%) had no source of hearing this findings was in consistent with (Gupta, Sinha, & AbhaMangal., 2017) who mentioned that postnatal intrauterine birth control device insertion is very less prevalent amongst the pregnant women (9%) were aware of this way of birth control as evidence in our findings. These results may be indicated to the manifestation of unmet counseling and educational needs in reproductive health facilities.

Considering knowledge of participants regarding IUCD insertion during cesarean section. The current study results manifested that there were highly statistically significant differences concerning preprogram test and post program test involving all items of knowledge, P-value <0.001. These results resemble those of (Dawoud, Abdelwahed, & Mohamed, 2021)

who address the effectiveness of instructional guidelines in improving pregnant women's understanding of immediate versus late IUCD insertion in Egypt. and the results displayed that knowledge of antenatal women's concerning early versus late insertion of an intrauterine birth control device post cesarean section and disclosed highly significant improvements after - instructional guidelines, P-value <0.001, as researchers' point of view, this finding displays the advancing effect of educational programs, which encounter women's requirements and provide them with adequate knowledge to support their health.

Furthermore, about 91% of participant pregnant women have good overall knowledge of post program test and showed that there was statistically significant difference concerning preprogram and post program test with p- value 0.001. Of researchers' point of opinion this outcome might be owing to knowledge enhancement which is highlighting that the majority pregnant women have the covet to understand further around their health running and confirmation the effectiveness of the educational program.

As regards studied pregnant women total attitudes score toward IUCD insertion utilization during cesarean section in Preprogram test and post program test our study discloses that 93% of studied pregnant women post program test have positive attitude and there is highly statistically significant difference regarding Preprogram test and posttest test with p- value 0.001.

Nevertheless, existent study outcome was converged with (Patel & Nagar, 2022) who study educational package effect regarding attitude, knowledge and usages of selected birth control methods amongst postnatal mother at PHC of Kheda District Gujarat, India., and found that significant effectiveness on level score of attitudes previously and afterward educational package administration amongst postpartum women.

One of further considerable results of present study is that participated women intention to utilize IUCD insertion during cesarean section after completion educational interference program and revealed that Strong Positive Intentions (Scores ~3.85 - 3.90) For items correlated to personal adoption, sharing information, recommending the IUCD, perceived husband support, and planning to use the IUCD during cesarean section. This result was propped by (Terefe, Wakjira, & Abebe, 2023) who address immediate postnatal intrauterine birth control device usage, Intentions and barriers, amongst antenatal women presence pregnancy clinics in public healthcare facilities, Jimma town, Ethiopia., in addition proves that high knowledge, Parental scholastic level, parity, and previous history of contraceptive mean use were significantly associated with antenatal women's intention toward instant postpartum usage of cf.

Considering to barriers and concerns that participant women did not utilize IUCD insertion during cesarean section the current results explain that the utmost shared concerns declared by study participants craving of future pregnancy (29.5%) followed by medical issue barriers during cesarean section (22.5%), these result compatible with (Valliappan, Gowri, & Palanivel., 2017) who study factors and knowledge affecting approval of PPIUCD amongst parturient / pregnant women in Puducherry, India and point out for causes for disinclination to approve IUCD which included that it can cause permanent sterility and scared of side effects.

As of researchers' point of perceptibility, such result points out the previous pregnant women history of side effect feedback of IUCD usage and fear of recurrent, also the permanent sterility may be due to false myths of think in primipara pregnant women who need for future pregnancy.

As regards the relationship between posttest overall knowledge and posttest over-all attitude of examined pregnant women concerning IUCD insertion during cesarean section our study discover that there was highly statistically significant correlation amongst posttest overall attitude and posttest overall knowledge of studied pregnant women concerning IUCD insertion during cesarean section and $P\text{-value} < 0.001$. This result well-matched with (Patel & Nagar, 2022) who study educational package effect regarding attitude, knowledge and usages of selected birth control methods amongst postnatal mother at PHC of Kheda District Gujarat, India., and proved that significant relation between posttest overall attitude and overall knowledge of studied participants.

Another study supported the current finding by (Vyas & Mamta, 2020) who study attitude and Knowledge regarding postnatal intra uterine devices insertion amongst pregnant women presence prenatal outpatient clinic and demonstrated that positively association found connecting attitude and knowledge concerning PPIUCD. Such a finding points out the of researcher's opinion, in the fact, this exhibits the impact of educational program on altering the attitude of pregnant women in the direction of improved attitude.

Concerning the association factors with intention to utilization of IUCD insertion during cesarean section among participant women our result displayed that of entirely the evaluated factors, showed association in the binary logistic regression analysis. and discovered that participant women with advanced maternal age. have high scholastic certificate secondary schooled / academic and $P\text{-value} < 0.001$. These results were propped by (Guye, Kanea, Nigussie, Girma, & Shambi, 2023) who conducted study in West Wollega Zone, Oromia, Ethiopia, and studied application of instant postnatal IUCD and its related issues amongst women who delivered at communal hospitals and reported that women with advanced age 25 -49 years were farther expected to use instant postnatal IUCD contrasted to that age of 15-24 years.

These results might be related to the older women's further keenness to use instant postnatal IUCD s than newer ladies, meanwhile the age of the ladies is linked with improved perception and insight. It is well predictable that women age actors have a significant character in women's consumption of instant postnatal IUCD (Costa, et al., 2019), in fact, and from the researchers' point of visibility, that women age may occasionally perform as a representation of a gathered experience of long-acting birth control facilities. Women age could be the issue that influences positively on the receiving of IPPIUD usage. Numerous authors at their study were found likely acceptance of PPIUCD linked by Education of pregnant women, husband and family involvement in decision-making.

Furthermore, our result displayed that education as effectively association factors with utilization of IUCD insertion during cesarean section among participant women, these result supported by (Bhudhrani & Godria, 2024) who study approval and aspects associated with postnatal IUCD usage in women giving birth at a tertiary care hospital, Vadodara, in the Gujarat region and mention that receiving of instant PPIUCD procedure affected by education level of women.

Moreover, the present study exhibited that matrimonial period above 10 years and multipara, utilizing birth control method before have effectively association factors with utilization of

IUCD insertion during cesarean section among participant women P-value <0. 001. This result is reliable with (Demie, Tigist, Kolola, Derara, & Libanos., 2018) Who evaluate postnatal birth control method consumption amongst postnatal women in Debre Town, Ethiopia, at Public Health Institutions. As of researcher point of opinion this might be owing for women' consideration, understanding and view on technique and spacing out of deliveries using a wanted pregnancy within application of instant postnatal IUCD.

One beyond considerable finding of existing study is the posttest total knowledge have effectively association factor with intention to utilize of IUCD insertion during cesarean section among participant women, P-value <0. 001. This result is coherent with (Kanakuze, Kaye, Musabirema, Nkubito, & Mbalinda, 2020) who study aspects related with the acceptance of (PPIUCD) in Rwanda and concluded that, the approval to utilization of PPIUCD was great in this populace.

Acceptance of PPIUCD was related with health education of women and partners about PPIUCD, also another study by (Pearson, et al., 2020) who evaluate impact of a postnatal birth control interference on postnatal IUCD choice and counseling in Tanzania and enlightened that those women who had satisfactory information of instant postpartum IUCD instantly afterward birth were further prospective to use IPPUD than their equivalents. The viable interpretation for this result is related to increases women awareness of instant postnatal IUCD application after they perceive proper information and furthermore that the acceptance progress of use.

Furthermore, finding of existing study cleared that posttest positive attitude has effectively association factor with intention to utilization of IUCD insertion during cesarean section among participant women, P-value <0. 001. This end result is matches by (Silesh, et al., 2023) who study instant postnatal birth control use and its linked factors amongst postnatal women in Ethiopia, and explain that a positive attitude of women were substantial predictors of instant postnatal family planning use $P = 0.017$. from researcher point of view these outcomes may perhaps related to women who have a satisfactory attitude regarding instant postnatal IUCD application experience the self-initiative toward

recognize disadvantages and advantages of this procedure.

Conclusion:

Based on existing research hypothesis and findings, the current study supported research hypotheses, our study displayed to there was statistically significant correlation among posttest total attitude and posttest total knowledge of pregnant women participant concerning IUCD insertion during cesarean section and P-value <0.001. A significant association amongst posttest total knowledge and intention to utilize of IUCD insertion during cesarean section among participant women, P-value <0. 001. Also, posttest positive attitude had significant association with intention to utilize of IUCD insertion during cesarean section among participant women, P-value <0. 001. These finding emphasize the critical role of educational program implementing on pregnant women and cleared the positive impact and significantly improvement of participant pregnant women's knowledge, attitudes, and intention toward usage IUCD insertion during cesarean section. Therefore, the research aim was achieved, and hypothesis was supported.

Recommendation:

Constructed on the existing study findings, the developing recommendations are proposed:

- Applying the educational program habitually increases women's awareness regarding using IUCD insertion during cesarean section at all maternal health care facility points.
- Developing Public health education campaigns, counseling, and culturally appropriate outreach programs to strength community awareness toward IUCD insertion during cesarean section.
- Coordinated effort toward promoting partner involvement in counseling to improve encouraging attitude of IUCD insertion during cesarean section.
- Further studies to evaluate continuation rates, satisfaction, side effects, and effectiveness of IUCD insertion during cesarean section.

List of abbreviations

Abbreviation	Description
IUCD	Intra Uterine Contraceptive Device
PPIUCD	Post Partum Intrauterine Contraceptive Device

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