International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Vachhani SA et al. Int J Reprod Contracept Obstet Gynecol. 2025 Mar;14(3):869-874
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20250520

Original Research Article

A cross-sectional study to assess the knowledge, attitude and practice of contraceptive implants at tertiary care hospital in Ahmedabad, Gujarat

Smitul A. Vachhani[1], Tithi B. Parikh[1], Dhruvi H. Shah[1], Dhruv S. Shah[1]*, Nikhar P. Vekariya[1], Gunvant D. Vaishnav[2], Shital N. Kapadia[2]

[1]B. J. Medical College, Ahmedabad, Gujarat, India
[2]Department of Obstetrics and Gynecology, Civil Hospital, Ahmedabad, Gujarat, India

Received: 21 January 2025
Revised: 17 February 2025
Accepted: 18 February 2025

***Correspondence:**
Dhruv S. Shah,
E-mail: dhruv1910.shah@gmail.com

ABSTRACT

Background: The aim of our study was to evaluate the knowledge, attitude and practice regarding contraceptive implants methods, the acceptance of implants and to find association between the various socio-demographic factors and the awareness about implants.
Methods: A questionnaire based cross-sectional study was conducted among the female client coming to the Family Planning Out-Patient Department (OPD) of Obstetrics and Gynaecology department of a tertiary care-Medical college hospital in Ahmedabad. Sample size came out to be 200 based on time bound systemic sampling method.
Results: Mean age of client is 27.14 years. Out of the 200 respondents, only 62.5% were aware about one of contraceptive method and about 17% had heard about contraceptive implants. 58% women believe that contraception should be used by every woman. 15% women felt that implants were safe and should be promoted. Only about 50 % (half) of the sample population used some form of contraception. 12 participants in our study used implants and 4 of them experienced irregular menstrual cycle. Religion, education and gravidity are significantly associated with the awareness of contraceptive implants.
Conclusions: To conclude, significant improvement needs to be brought by Govt. of India and state Govt., in the awareness by information, education and communication (IEC material) and acceptance of contraception in general and implants in specific. Specific regional loopholes must be searched and identify and targeted to improve the overall acceptance and improving reproductive health of women.

Keywords: Acceptance, Awareness, Contraception, Implants, Knowledge

INTRODUCTION

Contraception means the use of medicines, devices or surgery to prevent unwanted pregnancy. It gives a liberty to woman on control of her own reproductive health and enables her to be an active participant in family planning.[1] Available methods include barriers -condoms, oral contraceptive pills, intra uterine devices, sterilization techniques, implants, DMPA injections etc.[2] Female sterilization is the most commonly used contraceptive methods globally, followed by male barrier condoms, IUDs and the pill. 25 million people uses implants globally.[3] A birth control Contraceptive implant is a small, flexible plastic rod 4 cm in length and 2mm diameter with Barium sulfate impregnated so, visible under X-rays. and containing -active substance-etonogestrol-68 mg. A small amount of Etonogestrol is continuously releases into the bloodstream, preventing ovulation. It also thickens cervical mucus, reducing sperm's ability to reach an egg if ovulation occurs and thins the uterine lining, making it less likely for a fertilized egg to implant.[4] Implant-rod inserted under the skin of inner, upper arm by a trained healthcare provider. It is a widely favoured type of long-acting

reversible contraception (LARC) and gained popularity with the introduction of Norplant in 1983. However, due to significant patient dissatisfaction with adverse effects and challenges in removal, the original Norplant was eventually withdrawn from the market. The new implant for long-term contraception is Nexplanon.[5] It is the most effective form of birth control available and can usually be inserted by trained practitioner in less than one minute. 12.6 per 1000 insertions was the incidence of incorrect insertions as per a study conducted in U.S.[6] The pregnancy rate with the implant is 0.05%, which is slightly lower than IUCD.[7] Contraindications to its insertion are abnormal uterine bleeding, active liver disease, confirmed or suspected pregnancy, breast cancer, cancer of the genital tract and cerebrovascular or coronary artery disease. Side effects include irregular menstrual bleeding, mood changes, headache, skin reactions (including acne), dizziness, weight gain, breast discharge and transient ovarian cysts.[8]

"Health technology assessment of long-acting reversible contraceptives in India" by national institute of research and reproductive health (NIRRH) in 2019 acknowledged that the addition of Implants in the public health sector of India is cost-effective and can be considered for program introduction.[9] The Government of India thus expanded the contraceptive basket under national family planning program by the inclusion of sub-dermal contraceptive implants (single rod) in the year 2023.[10] Our study would throw light on the awareness, beliefs and contraceptive practices of the reproductive age group women with emphasis over implants. The results derived would play a role in re-evaluating the current government strategy towards implants promotion and planning measures to increase the acceptance.

METHODS

The proposed research design is a cross-sectional study conducted among the clients coming to the family planning out-patient department (OPD) of Obstetrics and Gynaecology department of Women and Child Hospital, Civil Hospital, Ahmedabad. Study period is of 2 months duration from June-2024 to August-2024. Predesigned pretested semi structured questionnaire is self-administered by the investigators among the study population (in their preferred language I.e. English/Gujarati/Hindi) to assess the knowledge, acceptance of and reasons for non-acceptance of contraceptive implants. Informed consent to participate in the study is taken in their preferred, if gives consent enrolled in study. Language used for consent is (English/Hindi/Gujarati).

Inclusion criteria

The inclusion criteria for our study were any client/female belonging to the reproductive age group (18-49 years) and presenting to the OPD of Obstetrics and Gynaecology department of Women and Child Hospital, Civil Hospital, Ahmedabad during the study period and those who give their consent to be enrolled in the study.

Exclusion criteria

Any females not belonging to reproductive age group or females who have undergone permanent sterilization or incompletely filled questionnaires or those who deny to give consent were excluded from our study.

Sampling method

The study population is selected as per the systematic random sampling technique where in every 10th client presenting to the OPD on any given day within the data collection period is chosen. If she is eligible for the study according to the inclusion and exclusion criteria and gives consent, she selected and enrolled in study.

Sample size

Considering the fact that this study is conducted under the clinical research program (CRP) of our institute, we have a limited time of 1 month for data collection. On an average, 300 females present to the OPD on every working day. Elimination of Sundays, Saturday half-days and public holidays makes data collection possible on around 20 days of a month. Total of 6000 females would be expected to visit the OPD in this period. Out of these, every 10th female is be selected every day as per systematic sampling technique and if they fall into the inclusion criteria and not in the exclusion criteria, they will be made a part of the study.

The investigators administer questionnaire in the preferred language of the participant- volunteers after taking informed consent. The questions is to enquire about their personal details including sociodemographic factors like age, contraceptive usage, obstetric history, religion and socioeconomic status; knowledge about contraceptive methods and implants in particular; attitude towards using implants; practice of contraception. Attempts is made to identify the apprehensions of the participants against choosing implants through counselling.

Data analysis

An Excel sheet of the collected data is created and Statistical analysis is carried out using JAMOVI. Cross tabulations with socio-demographic variables is done and significance of the association is evaluated through p-value.

RESULTS

70.5% of the total responders, belonged to age group 20-29 years while the mean age of the population was 27.145 years. Hinduism was followed by most of them (86%). 63% females were educated till below class 12th. Mean age of marriage is 18 or above, out of which, 74.5% bore

children (Table 1). Out of the 200 respondents, only 62.5% were aware about any contraceptive method. Strikingly, only 58% women believe that contraception should be used by woman. Regarding the practice of contraception, it was found that only about a half of the sample population uses some form of contraception. IUCD (34.6%) and male condom (29.8%) were the most common choices. Among the women using contraception only 44% of them consulted their gynaecologist before using contraception which raises concern about whether they are making fully informed choices (Table 2).

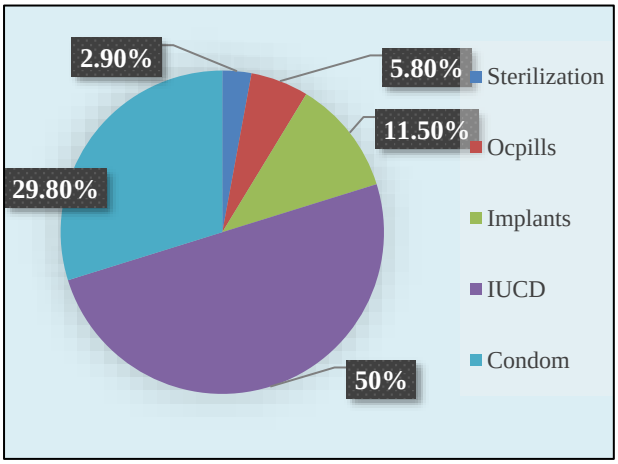

Figure 1: Practice of contraception.

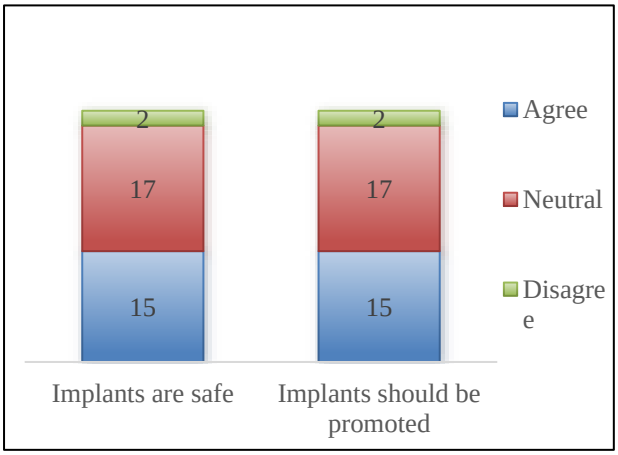

Figure 2: Attitude about contraceptive implants.

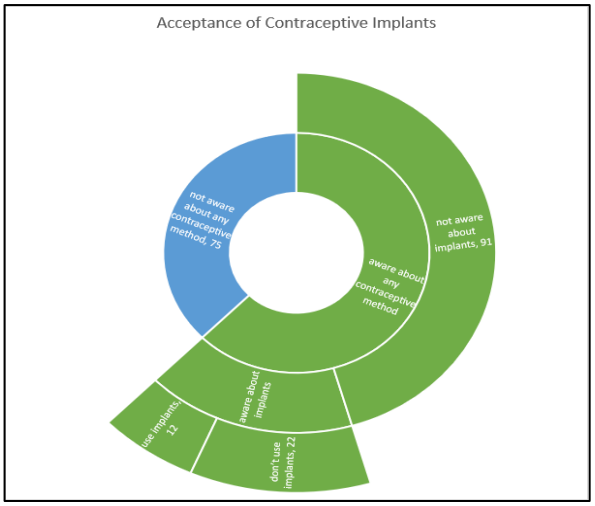

Figure 3: Acceptance of contraceptive implants.

About 17% of our study population had heard about contraceptive implants. Among them, the major source of their information was doctors (70.6%). About 55% correctly answered that it is provided at a government setup only in our country as of now and about 70% rightly believed it to be a temporary method of contraception.

Only 8 women had acquaintances who use implant and 23 were aware about how frequently the implant needs to be replaced. 50% had neutral attitude and 5.9% have negative attitude about the user's safety of promotion of implants (Table 3). Only 12 participants in our study were implant users and 4 of them experienced irregular menstrual cycle and 2 complained of pain in back and abdomen (Table 4).

Acceptance of contraceptive implants can be studied by this pictorial representation. Which clearly states that out of the 125 people aware about any contraceptive method, only 34 are aware about contraceptive implants.

Only 12 of those 34 are using implants for contraception. There is a significant association found between the religion, education, Gravidity of women and awareness about the contraceptive implants (Table 5). Age of the participant was not found to be significantly associated with their awareness regarding implants (Table 5).

Table 1: Socio-demographic characteristics of the sample population.

Attributes (n=200)		Frequency (N, %)
Age (in years)	<20	6 (3)
	20-29	141 (70.5)
	30-39	40 (20)
	40-49	12 (6)
	>49	1 (0.5)
Religion	Hindu	172 (86)
	Muslim	28 (14)
Education	<12	126 (63)
	Till 12	27 (13.5)

Continued.

Attributes (n=200)		Frequency (N, %)
	Graduate	32 (16)
	Postgraduate	15 (7.5)
Age when married	<18	17 (8.5)
	18 and above	182 (91)
	Unmarried	1 (0.5)
Bear children	Yes	149 (74.5)
	No	51 (25.5)

Table 2: Knowledge, attitude and practice of contraceptives.

		N (%)
Knowledge about contraceptives		
Aware about any contraceptive method (n=200)	Yes	125 (62.5)
	No	75 (37.5)
Attitude about contraceptives		
Every woman should use contraceptives (n=200)	Agree	116 (58)
	Neutral	19 (9.5)
	Disagree	65 (32.5)
Practice of contraception		
Use any form of contraceptive (n=200)	Yes	104 (52)
	No	96 (48)
If yes, then which (n=104)		
Consulted gynaecologist before using it (n=104)	Yes	52 (50)
	No	52 (50)

Table 3: Knowledge of contraceptive implants.

		N (%)
Aware about contraceptive implants (n=200)	Yes	34 (17)
	No	166 (83)
Source of information	Doctors	24 (70.6)
	Others	10 (29.4)
Its availability	Government setup	19 (55.9)
	Both government and private	9 (26.5)
	Not aware	6 (17.6)
Type of contraceptive	Temporary	24 (70.6)
	Permanent	2 (5.9)
	Not aware	8 (23.5)
Know someone who uses it	Yes	8 (23.5)
	No	26 (76.5)
Know how frequently to replace it	Yes	19 (55.9)
	No	15 (44.1)

Table 4: Practice of contraceptive implants.

		N (%)
Use contraceptive implants, if aware about it (n=34)	Yes	12 (35.3)
	No	22 (64.7)
Faced side effects of using contraceptive implants (n=12)	Irregular menstrual cycle	4 (33.3)
	Pain in back or abdomen	2 (16.7)
	None	6 (50)

Table 5: Association between awareness about contraceptive implants and socio-demographic factors.

Categories of the variable		Aware about contraceptive implants	Not aware about contraceptive implants
Age (in years)	20-29	22	119
	30-39	9	31
	40-49	3	9
The chi-square statistic is 1.502. The P value is 0.471895. The result is not significant at P<0.05.			
Religion	Hindu	33	139
	Muslim	1	27
The chi-square statistic is 4.1609. The P value is 0.041366. The result is significant at P<0.05			
Education	<12	15	111
	Till 12	5	22
	Graduate	11	21
	Postgraduate	3	12
The chi-square statistic is 9.3047. The P value is 0.025503. The result is significant at P<0.05			
Bear children	Yes	31	118
	No	3	48
The chi-square statistic is 5.9967. The P value is 0.014333, The result is significant at P<0.05			

DISCUSSION

In our study population 70.5% of clients, belonged to age group 20-29 years while the mean age of the population was 27.145 years. Client with religion Hindus is (86%). 63% females were educated below higher secondary-class 12th. Most of the women were married at the age of 18 or above, out of which, 74.5% bore children.

Out of the 200 respondents, only 62.5% were aware about any contraceptive method. Alkalash et al, conducted similar research in Saudi Arabia and found that 69.8% of the participants (women) had good knowledge about contraception.[11] Strikingly, only 58% women believe that contraception should be used by every woman. A study done in south India amongst the urban slum community noted a higher percentage (72%) of women who expressed positive attitude towards contraceptive use.[12]

Regarding the practice of contraception, it was found that only about a half of the sample population uses some form of contraception. IUCD (34.6%) and male condom (29.8%) were the most common choices. Equivalent results were obtained in the South Indian study done on contraceptive behaviours, where 56.9% were using contraception and among them most used method was also IUCD followed by male condoms.[12] Among the women using contraception only 44% of them consulted their gynaecologist before using contraception which raises concern about whether they are making fully informed choices.

About 17% of our study population had heard about contraceptive implants. In the Saudi Arabia study, 21% females knew about contraceptive implants, which is comparable.[11] Among them, the major source of their information was doctors (70.6%). A study done in Ethiopia by Tegegne et al, about implants, also identified health care workers (95.1%) as the major source of information for its participants.[13]

About 55% correctly answered that it is provided at a government setup only in our country as of now and about 70% rightly believed it to be a temporary method of contraception, This shows that our study participants have better knowledge than those in the study done by Mulekhwa et al, in Uganda, where 54 % women believed that implants were a permanent method of contraception.[14] Only 8 women had acquaintances who use implant and 23 were aware about how frequently the implant needs to be replaced. 50% had neutral attitude and 5.9% have negative attitude about the user's safety of promotion of implants. It is more on the positive side than the study done in Uganda about implants where 70% women believed that they will not use implants due to fear of side effects and fear of partner.[14]

Only 12 participants in our study were implant users and 4 of them experienced irregular menstrual cycle and 2 complained of pain in back and abdomen. Many of the participants of the Ethiopia study too discontinued the implant contraceptive method due to irregular uterine bleeding.[13] The ICMR study on implants also cited menstrual changes and heavy prolonged bleeding as the most common reason of discontinuation of its use.[10]

Acceptance of contraceptive implants can be studied by this pictorial representation which clearly states that out of the 125 people aware about any contraceptive method, only 34 are aware about contraceptive implants. Only 12 of those 34 are using implants for contraception.

There is a significant association between the religion and awareness about contraceptive implants. It is concordant to study done by Srikanthan et al, which highlights the

effect of religion on contraceptive practices.[15] A significant association was also found between education of the woman and awareness about contraceptive implant.

The Ethiopian study also found that mothers who attended primary school had 2.580 times more positive attitude towards implant usage than those who were illiterate.[13] Gravidity of the woman was also significantly associated with awareness which was once again similar to the Ethiopian study results.[13] Age of the participant was not found to be significantly associated with their awareness regarding implants.

The limitations of our study were bias involved in data collection i.e. selection bias, recall bias and surveyor's bias. The sample size was limited and there is limited generalizability.

CONCLUSION

To conclude, the acceptance of implants is good among those who are aware. But the awareness is very poor. Hence, the knowledge of people-clients regarding contraception, specifically implants, must be increased to improve the overall attitude and practice of contraceptive implants. Education, religion and gravidity are significantly associated with awareness about implants. Since contraception is an essential pillar of attaining good reproductive health of the females, all efforts must be made by the stakeholders to improve the current scenario.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Bansode OM, Sarao MS, Cooper DB. Contraception. StatPearls Publishing. 2021.
2. Office of Communications. What are the different types of contraception. 2017. Available at: https://www.nichd.nih.gov. Accessed on 18 November 2024.
3. World Family Planning 2022 Meeting the changing needs for family planning: Contraceptive use by age and method. Available at: https://www.un.org/development/desa/pd/sites/www. Accessed on 21 September 2024.
4. Cleveland clinic birth control implant: how it works, side effects and benefits. Cleveland Clinic. 2022. Available at: https://my.clevelandclinic.org. Accessed on 23 September 2024.
5. Palomba S, Falbo A, Di Cello A, Materazzo C, Zullo F. Nexplanon: the new implant for long-term contraception. A comprehensive descriptive review. Gynecological Endocrinology. 2012;28(9):710-21.
6. Reed S, Do Minh T, Lange JA, Koro C, Fox M, Heinemann K. Real world data on Nexplanon® procedure-related events: final results from the Nexplanon Observational Risk Assessment study (NORA). Contraception. 2019;100(1):31-6.
7. Contraceptive Implant Placement: Background, Indications, Contraindications. Medicine. 2023. Available at. https://emedicine.medscape. Accessed on 27 November 2024.
8. Rocca ML, Palumbo AR, Visconti F, Di Carlo C. Safety and benefits of contraceptives implants: a systematic review. Pharmaceuticals. 2021 14(6):548.
9. Health technology assessment of long-acting reversible contraceptives in India. 2022. Available at: https://htain.dhr.gov.in/images. Accessed on 25 September 2024.
10. Subdermal contraceptive implant Reference Manual for (Single Rod). 2023. Available at: https://nhm.karnataka.gov.in/storage. Accessed on 21 September 2024.
11. Alkalash SH, Alessi SM, Alrizqi AA, Alamri AA, Al Kenani A, Alrizqi HA, et al. Knowledge on, attitude toward, and practice of contraceptive methods among females of reproductive age in Al-Qunfudah Governorate, Saudi Arabia. Cureus. 2023;15(3):34.
12. Sekhar MA, Edward S, Grace A, Sushmitha G, Priscilla SE. Contraceptive behaviors and awareness in an urban slum community of south India. Asian Pacific J of Reprod. 2024;13(4):160-8.
13. Tegegne KT, Teferi G, Wudu TK, Abinew Y, Tegegne ET, Tessema MK. Knowledge, Attitude, Practice and Associated Factors of Implant Use in Women, Ethiopia. BioMed Research International. 2024 Feb 22 [cited 2024 Mar 28];2024:e9978336. Available at: https://www.hindawi.com. Accessed on 25 September 2024.
14. View of Knowledge, Attitude and Practices towards Utilization of Implants among women aged 15-45 years attending Bunapongo Health Centre III, Mbale District. A Crosssection Study. Available at: https://sjhresearchafrica.org/index. Accessed on 21 Septembver 2024.
15. Srikanthan A, Reid RL. Religious and cultural influences on contraception. Journal of obstetrics and gynaecology Canada. 2008;30(2):129-37.

Cite this article as: Vachhani SA, Parikh TB, Shah DH, Shah DS, Vekariya NP, Vaishnav GD, et al. A cross-sectional study to assess the knowledge, attitude and practice of contraceptive implants at tertiary care hospital in Ahmedabad, Gujarat. Int J Reprod Contracept Obstet Gynecol 2025;14:869-74.