

# Analysis of Long-acting Injectable Contraceptive (DMPA), Demographic, Acceptance and Future Prospects- A Seven-Year Study

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## ABSTRACT

**Background:** Injectable contraceptives over the world, there are no 100% effective and safe birth control techniques. Most procedures include side effects that aren't life-threatening but rather annoying. Injectable contraceptives are used to prevent pregnancy. Aim of the study was the analysis of long-acting injectable contraceptives (DMPA), demographics, acceptance and prospects.

**Method:** A retrospective study was conducted in the Department of Obstetrics and Gynecology, King George's Medical University, Lucknow, India. Women who were chosen DMPA were included in this study aged 15-45 and above. A total of 1320 women participants were included in this study. After counseling injection DMPA 150 mg intramuscular was given.

**Result:** 582 (44.09%) reproductive-aged women in the present study were from the age group of 25 to 35 years. Of the Antra participants were illiterate (41.66%), 35.83% were literate and 22.5% were highly literate. Important sources of information and guidance for DMPA were doctors and HCWs. Maximum dropout rates were after 1<sup>st</sup> and 2<sup>nd</sup> dose. The most common side effect was menstrual irregularity (42.65%), 3.86% had nausea and vomiting, 1.74% had weight gain, 2.72 had any other side effects and 6.90 % DMPA users had Blood pressure complaints; long-acting participants were 772(58.48%).

**Conclusion:** Injectable contraception should be advertised legitimately through social marketing, and front-line health practitioners should encourage women to use it by giving accurate information. However, there is a requirement to design a uniform procedure. Counseling methods, ASHA and ANM training and health system improvement are also required.

**Key-words:** Injectable contraception, Reproductive women, Counseling, Menstrual irregularity, Intramuscular

## INTRODUCTION

Effective and safe methods of contraception are necessary in India, where the population growth rate is among the highest in the world <sup>[1]</sup>. For decades, injectable contraception has been a staple of worldwide family planning efforts.

Currently, approximately 40 million women use injectable contraception to avoid pregnancy all over the world <sup>[2]</sup>. In 1952, India was the first global country to establish a national family planning policy to reduce the birth rate to levels required for population stabilization. NFHS-3 statistics, India's total contraceptive prevalence rate (CRP) among married women is expected to be 56.3% <sup>[3, 4]</sup>. This is lower than neighboring nations such as Sri Lanka, which have CRPs of 65.6% and 68.4%, respectively <sup>[5]</sup>.

According to the National Family Health Survey 3 (NFHS-3), there is a 13% unmet contraceptive demand, with half of that need being for spacing methods <sup>[6]</sup>. Women aged 15-19 and 20-24 years' experience a considerable unmet demand, with 15% needing support and above 6%

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for limiting.<sup>[7]</sup> Injectable contraceptives over the world, there is no 100% effective and safe birth control technique. Most procedures include side effects that aren't life-threatening but rather annoying. Injectable contraceptives are used to prevent pregnancy while also providing women with convenience, privacy and adequate protection. Women in 130 countries utilize DMPA<sup>[8]</sup>. DMPA is a progestin only contraceptive technique. The monthly intramuscular injectables offer 150 mg of medroxyprogesterone acetate in a microcrystalline suspension form that prevents the form from being absorbed immediately after injection. It's a reversible, long-acting contraceptive<sup>[9]</sup>. It is accepted by women who are unable to have an IUD implanted. Theoretical issues with early postpartum PMPA therapy include baby safety, premature breastfeeding suspension and metabolic consequences on the mother. According to some previous studies, the effect of DMPA on infant health and lactation is unfounded<sup>[10-12]</sup>. The safety and effectiveness of DMPA available under the brand name "Antra" (in the Government of India supply) has led to its inclusion in the basket of family planning options, allowing clients to access a safe, effective, hassle-free method with complete confidentiality that is also available at no cost in public health facilities across India<sup>[13]</sup>. Contraceptive guidance is an essential part of maintaining community health. The optimal contraceptive should meet a person's personal, societal and medical requirements. Family planning acceptability is influenced by socioeconomic and educational characteristics<sup>[11]</sup>. With the brief knowledge of the previous studies, the present study aims to analyze the long-acting injectable contraceptive demographic, acceptance and prospects.

## MATERIALS AND METHODS

**Place of study-** This seven-year (2015-2021) retrospective study was conducted in the Department of Obstetrics and Gynecology, King George's Medical University, Lucknow, India. The study was carried out among women in the reproductive-aged group. Women who were chosen DMPA were included in this study aged 15-45 and above. One thousand three hundred twenty women participants were included in this study after a counseling injection of DMPA 150 mg intramuscular was given.

**Inclusion Criteria-** Women chosen for DMPA were included in this study, aged 15-45 and above.

**Exclusion Criteria-** We excluded the women unwilling to participate in this study.

**Methodology-** Patients who met the criteria for DMPA injection in our study received counseling about the medication's frequency, mode of administration, adverse effects, changes in menstrual patterns and minor ailments including mood swings and weight gain. Patients received counseling regarding the possibility of fertility after stopping treatment. After getting written informed consent we enrolled all participants. 150mg DMPA injection provided by our Institute. The intramuscular injection was administered in the gluteal region while adhering to all aseptic procedures. The injection was given carefully to make sure it happened during the first week of menstruation, right after the abortion, or between 40-45 days after the postpartum. No backup form of contraception was recommended to the patients when the injection was administered during the first week of menstruation. The backup method or (condom) for the first seven days following the injection was indicated when it was administered after seven days of the menstrual cycle. Before receiving the next injectable dose, the participant was recommended to take a urine pregnancy test to rule out pregnancy if she hadn't followed up on the scheduled date and had a history of amenorrhea. The record was mentioned in the register.

**Statistical Analysis-** Statistical analysis was performed using version 22 of the statistical package for social sciences (SPSS 22, IBM, Chicago, USA). Categorical data were expressed as frequencies and percentages.

## RESULTS

In this retrospective study, 1320 women of reproductive age were enrolled in 2015-2021. Table 1 shows female participants of different age groups using Antra (DMPA). Most of the women, 582 (44.09%), who participated in the present study were from the age group of 25 to 35 years and fewer participants were from the age group of 45 and above (2.57%). Many women in the reproductive age group attend the family planning outdoor patient department.

**Table 1:** Distribution of Age among Antra users.

Age Group (in years)	No. of Doses (n=1320)	Percentage (%)
15 – 25	502	38.03
25 – 35	582	44.09
35 – 45	202	15.30
45 +	34	2.57

In Table 2, participants were distributed based on their religion and educational status. Most Antra participants were illiterate(41.66%), 35.83% were literate and 22.5% were highly literate. Most Hindus and Muslims represented more or less equal (50.91% vs 48.57%) and

7% other religions from 2015-2021. However, in 2015, more Hindu participants than Muslims enrolled. More Antra participants were recruited in 2019 than in other years (total 320 (24.24%), 12.72% Hindu vs12.19 Muslim).

**Table 2:** Distribution of Antra (DMPA) users based on Educational Status and Religion

	Yearly distribution of Participants (n=1320)							Total (%)
	2015	2016	2017	2018	2019	2020	2021	
Education Status								
Illiterate	20	27	82	90	151	79	101	550 (41.66%)
Literate (up to 10th standard)	25	27	50	93	120	78	80	473 (35.83%)
Highly literate (above 10 <sup>th</sup> std)	25	13	34	65	59	41	60	297 (22.5%)
Total (%)	70 (5.30)	67 (5.07)	166 (12.5)	248 (18.78)	330 (25)	198 (15)	241 (18.25)	1320 (100)
Religion								
Hindu (%)	40 (3.03)	37 (2.80)	79 (5.98)	124 (9.39)	168 (12.72)	98 (7.42)	126 (9.54)	672 (50.91)
Muslim (%)	28 (2.12)	30 (2.27)	84 (6.36)	123 (9.31)	161 (12.19)	100 (7.57)	115 (8.71)	641 (48.57)
Others (%)	2 (0.15)	0	3 (0.22)	1 (0.07)	1 (0.07)	0	0	7 (0.54)

In Table 3, it was observed that most Antra participants were from the source of doctors and HCW (91.74%),

7.12% by self and fewer participants (1,13 %) from media.

**Table 3:** Distribution of study subjects using injectable contraceptive Antra according to source of information

Source of information Counseled By	Year-wise distribution of participants (n=1320)							Total (%)
	2015	2016	2017	2018	2019	2020	2021	
Self	12	17	15	10	26	7	7	94 (7.12)
Doctors & Health Care Workers (HCW)	56	50	150	235	300	190	230	1211 (91.74)
Media	2	0	1	3	4	1	4	15 (1.13)

Table 4 shows the number of doses and discontinuation rate of Antra participants; 1320 (72.29 %) doses were given in 1st dose. After 1<sup>st</sup> injection, most of the female lost their follow-up. After 1<sup>st</sup> dose, the number of

participants and doses were decreased dose by dose. In the 6<sup>th</sup> dose, only 0.83% of participants took the Antra dose. Maximum dropout rates were after 1<sup>st</sup> and 2<sup>nd</sup> dose.

**Table 4:** Distribution of doses among Antra (DMPA) participants from 2015-2021

Dose no.	Years (n=1805)							Total (%)
	2015	2016	2017	2018	2019	2020	2021	
1 <sup>st</sup>	70	67	166	248	330	198	241	1320(72.29)
2 <sup>nd</sup>	42	34	30	52	48	22	30	258(14.29)
3 <sup>rd</sup>	20	10	18	31	22	9	15	125(6.92)
4 <sup>th</sup>	7	3	10	12	17	5	5	59(3.26)
5 <sup>th</sup>	5	4	2	5	7	2	3	28(1.55)
6 <sup>th</sup>	3	2	2	2	2	2	2	15(0.83)
Total (%)	147 (8.14)	120 (6.64)	228 (12.63)	350 (19.39)	426 (23.18)	238 (13.18)	296 (16.39)	1805 (100)

In Table 5, menstrual irregularity was the most common side-effect, which was seen in 563(42.65%) Antra participants; 51(3.86%) had nausea and vomiting, 23(1.74%) had weight gain, 12(0.90) had Blood pressure

complain, 635(48.10%) has no any side effect and 36(2.72%) had any other side effects. 635(48.10%) participants had no side effects.

**Table 5:** Distribution of study subjects according to Side effects among Antra (DMPA) users

Side Effects	No. of Patients (n=1320)	Percentage (%)
Nausea, Vomiting	51	3.86
Weight-gain	23	1.74
Blood Pressure	12	0.90
Menstrual Irregularity	563	42.65
Any Other	36	2.72
No side effects	635	48.10

Table 6 shows the positive points related to Antra participants. The majority of cases were private and accessible (1000(75.75%) and 933(75.23%), respectively). Long-acting participants were 772(58.48%).

**Table 6:** Distribution of positive points among Antra Participants

Positive Points	No. of Patients (n=1320)	Percentage (%)
Safety	800	60.60
Privacy	1000	75.75
Ease	933	75.23
Long-acting	772	58.48

## DISCUSSION

The Government of India is making DMPA, a family planning technique, widely available without any charge in public health facilities. Because of its safety and efficacy, DMPA is widely acceptable as a family planning strategy in Western nations<sup>[13]</sup>. Injectable contraception is used by 3.5% of women globally. It is 15% in Sri Lanka, 10% in Nepal, 7% in Bangladesh, 5.9 % in Bhutan and 2.7% in Pakistan, although DMPA is now used by 0.1% nationwide<sup>[14,15]</sup>. DMPA is a long-acting injectable contraception that prevents ovulation by blocking pituitary gonadotropins. Since 1994, it has been used in the country's private sector as an effective, safe and

convenient approach for birth spacing <sup>[16]</sup>. According to NHF-III, 56.8% of Indians currently utilize any contemporary type of family planning. In a survey performed in Kolkata, 45.83% of women said they used contraception. Another research in a Delhi slum found that 34.6% of the participants were drug users <sup>[17]</sup>.

In this study, 44.09% of women 25 to 35 used DMPA from 2015-2021, and most of the participants were illiterate. About 41.66% of the total participants and 22.5 % were highly literate. In a previous study by Gupta *et al.* <sup>[18]</sup> 2020, one-third of the participants belonged to the 26-30 age group. Two-fifths of participants (43.5%) were illiterate and only one-tenth of the participants were graduates or diplomas or above. Similarly, most studies found that eligible couples aged 26-33 years old used the most effective contraception, DMPA <sup>[19-22]</sup>.

In this study, most Hindus and Muslims represented more or less equal (50.91% vs 48.57%) and 7% other religions from 2015-2021. However, in 2015, more Hindu participants than Muslims enrolled. More Antra participants were recruited in 2019 than in different years. In a previous study by Gupta *et al.* 2020, 82.3% of the participants were Muslim <sup>[18]</sup>.

In the current study, the most essential information and guidance sources for DMPA were doctors and HCWs. Similarly, in a survey by Takikar *et al.* <sup>[20]</sup> and Gupta *et al.* <sup>[20]</sup>, doctors preferred the most information about injectable DMPA concentration. After 1<sup>st</sup> injection (72.29%), most females lost their follow-up. After 1<sup>st</sup> dose, the number of participants and doses were decreased dose by dose. In 6<sup>th</sup> dose, only 0.83% of participants took the Anta dose. Maximum dropout rates were after 1<sup>st</sup> and 2<sup>nd</sup> doses. In a previous study, half of the individuals stopped taking DMPA and did not return for the second dosage <sup>[18]</sup>. DMPA dropout rates have been reported to be between 42.5-70% in several studies <sup>[23]</sup>. The majority of withdrawals occurred after the first and second injections when menstrual abnormalities were at their most severe. Irregular vaginal spotting, amenorrhea and the spouse's opposition to the injection were all significant causes of cessation <sup>[23]</sup>.

The present study's most common side effect was menstrual irregularity (42.65%). 3.86% had nausea and vomiting, 1.74% had weight gain, 2.72 had any other side effects and 6.90 % of DMPA users had Blood pressure complaints. Previously, more than four-fifths of the users experienced adverse side effects, with vaginal irregular,

weight gain and amenorrhea being the most prevalent <sup>[18]</sup>. Several additional studies have found comparable adverse effects, as well as benefits of DMPA usage, such as insignificant influence on blood pressure in postpartum women and no effect on breastfeeding <sup>[24-27]</sup>. Because of its menstrual side effects, DMPA compliance is a problem <sup>[20]</sup>. In a study by Gahlot *et al.* <sup>[16]</sup> the most common adverse effect was ammenorrhoea (68.18%), followed by spotting per vaginum (18.8%), Kaushal *et al.* <sup>[28]</sup> and United Nations Population Fund *et al.* <sup>[29]</sup> found irregular bleeding and disturbance of the menstrual cycle in 60-80% of women in their studies.

In the present study, long-acting participants comprised 772(58.48%). Patient information is perhaps the most crucial problem surrounding the usage of DMPA. Because of the change in the menstrual cycle, injectable contraceptives are connected with lots of fear and misinformation, which naturally makes potential users nervous and predisposed against them <sup>[7]</sup>. Because most patients experience menstrual changes, pre-administration counseling is an important technique for reducing attrition. This can be mitigated if competent counseling is provided from the outset. For carefully selected individuals, DMPA should be regarded as a highly effective, safe and easy contraceptive alternative. Lactation is not harmed by progestin-only contraception and it may even improve the quality o and length of lactation. As a result, DMPA is a viable contraceptive choice for breastfeeding women <sup>[8]</sup>. According to Fonseca *et al.* <sup>[30]</sup> and AICOG <sup>[31]</sup>, Injection DMPA, along with IUCD and other forms of contraception such as condoms and OC tablets, should be made freely available. Choose reversible contraceptive techniques. DMPA is a very effective hormonal contraception with a low failure rate when administered every 12 calendar weeks. It should be provided as a first-line technique for all women who want to use reversible contraception.

## CONCLUSIONS

It is important to educate women about their right to self-protection, i.e., to care for their health. Good counseling methods and clinical work require time since these women must be educated and economically self-sufficient. We can undoubtedly achieve our aim of population stability if we work as a team and provide door-to-door counseling and assistance to people of all castes, religions, and socioeconomic statuses. DMPA is a

long-acting injectable contraception that is safe, effective and reversible, yet it is often overlooked. When DMPA is included in a package of contraceptives and the injections are free, acceptability is highest, but free treatments cannot sustain sustained acceptance. Once a widely used contraceptive becomes freely available in the public sector, Indian women will be able to pick from a variety of options. However, there is a requirement to design a uniform procedure. Counseling methods, ASHA and ANM training and health system improvement are also required.

#### LIMITATION

The limitation of the study is that we focus on only single health centre data, so a multicentric study is needed. A suitable, improved program should be needed to accept and remove barriers to DMPA use. Further studies are needed with proper follow-up with details of discontinued regions.

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