

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20261614>

## Original Research Article

# Injectable contraceptive medroxyprogesterone acetate: utilization and experiences among currently married women residing in tea gardens of a block in Darjeeling district, West Bengal, India

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**Received:** 31 March 2026

**Accepted:** 04 May 2026

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## ABSTRACT

**Background:** India has included injectable medroxyprogesterone acetate (MPA) into the Antara Programme to address its high efficacy, though adherence remains a concern. This study assessed the utilization patterns and experiences of currently married women using injectable MPA in tea gardens of Darjeeling district, West Bengal.

**Methods:** A community-based cross-sectional study was conducted from October 2023 to September 2024 in all tea gardens of Naxalbari block. Complete enumeration included 127 currently married women aged 15–49 years who had received at least one MPA dose in the previous year from sub-centres. Participants were eligible for up to four doses annually. Data were collected through face-to-face interviews using a pre-designed, pre-tested schedule after informed consent, and analyzed using descriptive statistics.

**Results:** Most participants were aged 21–25 years (34.6%), with a mean age of 26.7±5.8 years, and 50.3% were primiparous. Injectable MPA was the first contraceptive for 55.9% of women, and 95.3% received information from ASHA workers. All women received the first dose, while 84, 75, and 23 received the second, third, and fourth doses, respectively. Side effects were reported by 100, 64, 60, and 19 women after successive doses. Overall, 81.9% discontinued use mainly due to side effects, predominantly amenorrhea. No pregnancies were reported within the three-month effective period after any dose.

**Conclusions:** Injectable MPA is an effective contraceptive, often used as a first method by young women. ASHA workers facilitate its uptake, but side effects especially amenorrhea is the primary cause for discontinuation.

**Keywords:** Contraceptive, Medroxyprogesterone acetate, Side effects, Amenorrhea

## INTRODUCTION

India remains one of the world's most populous nations, representing a substantial share of the global population. In April 2023, it matched and then surpassed China to become the world's most populous country.<sup>1</sup> In 2017, the government introduced injectable medroxy progesterone acetate (MPA) as an additional contraceptive method based on global evidence and practice.<sup>2</sup>

Injection MPA is an effective, long acting and reversible contraceptive method for women including lactating mothers as well as post-abortion patients.<sup>3</sup> This method is convenient and easy to use, as it does not require daily administration. Each injection provides protection for three months, with a grace period of four weeks, and fertility typically returns within 7–10 months after the last injection.<sup>4</sup> Injectable MPA is widely used globally and is the fourth most prevalent contraceptive method worldwide.<sup>5</sup>

In 2019, the programme was launched in the Naxalbari block of Darjeeling district, West Bengal. According to the National Family Health Survey-5 (NFHS-5), the current use of injectable contraceptive among currently married women in Darjeeling district is 1.4%, which is higher than the national facts of 0.6%.<sup>6,7</sup> Although the utilization of injectable contraceptive remains low among currently married women, it is comparatively higher in Darjeeling district than that observed in India. To explore the utilization of injectable MPA contraceptive, this community-based study was undertaken in the tea garden areas of Naxalbari block of Darjeeling district, West Bengal to assess the utilization patterns and experiences of injectable MPA contraceptive among currently married women residing in the area.

## METHODS

### *Study design, study area, and study population*

A community-based descriptive study with cross-sectional design was conducted over twelve months, from October 2023 to September 2024, in the tea gardens of Naxalbari block in Darjeeling district, West Bengal, India. Darjeeling is the northernmost district of West Bengal in eastern India, located in the foothills of the Himalayas. The study participants were currently married women (aged 15-49 years) residing in the study area, who had taken at least one dose of the injectable contraceptive MPA during the reference period of one year (April 2022 to March 2023) at the public health facilities of the Naxalbari block. A maximum of four doses of this injection may be administered to each participant over the course of one year.

Women who had previously been registered as MPA beneficiaries but were re-enrolled as new beneficiaries after dropout, identified during record review. Those unavailable at home even after three visits at seven-day intervals were excluded from the study.

### *Sampling*

The Naxalbari block of Darjeeling district was purposively selected as it serves as the rural field practice area under The Department of Community Medicine, North Bengal Medical College and Hospital, Darjeeling. All twelve tea gardens in the block, as per records of the local tea gardens' association, were included in the study. The block comprises fifteen sub-centres, one primary health care centre, and one rural hospital. It was observed that among all currently married women in the study area, there were 135 registered beneficiaries of the injectable contraceptive MPA, and all the beneficiaries had received the injection at their respective sub-centres only. Complete enumeration of currently married women who had taken at least one dose of injectable MPA in the study area during the reference period was undertaken.

At the sub-centres, records were reviewed, and it was found that 136 beneficiaries were registered. Among them, six women were already registered MPA beneficiaries who had been enrolled again as new beneficiaries after drop-out. After excluding these six repeated registrations, home visits were conducted for 129 MPA beneficiaries. Among them, two were not available at home even after three repeated home visits made at a gap of seven days, and they were also excluded from the study. Consequently, the final sample size achieved was 127.

### *Data collection*

After obtaining the necessary approval from the authorities, all the beneficiaries were line-listed according to the respective sub-centres. Home visits of beneficiaries were conducted by the researcher with the assistance of ASHA workers from the respective areas. Informed consent was obtained from the study participants, following which face-to-face interviews were conducted using a pre-designed, pre-tested schedule that consisted of socio-demographic characteristics, obstetric and contraceptive details, and information regarding MPA utilization and related experiences. Data were collected while ensuring privacy, confidentiality, and anonymity.

Socio-demographic variables included age (in completed years), religion (Hinduism, Christianity or Islam), caste (general, scheduled caste, scheduled tribes or other backward class), education level (illiterate, up to primary school/ middle school/high school or higher secondary and above), occupation (homemaker or working), and family type (nuclear or joint). Obstetric and contraceptive details regarding age at first pregnancy (in completed years), parity (primipara or multipara), and prior use of any other contraceptive before MPA and its type.

MPA utilization and related experiences has firsthand source of information or guidance for choosing MPA, availability of MPA card with beneficiary (available or not available), doses received during reference period (1st, 2nd, 3rd or 4th), side effects following injection MPA (after the 1st, 2nd, 3rd or 4th dose), types of side effects experienced following different doses of MPA (amenorrhea, scanty periods, prolonged bleeding, irregular bleeding, heavy bleeding, headache or weight gain), MPA drop-out status (yes or no), reasons for drop-out, use of alternate contraceptive method after drop-out (yes or no), and the type of alternate contraceptive method used.

### *Statistical analysis*

Descriptive statistics including mean, standard deviation, and percentages were used. The data were presented in tables, bar charts, and pie diagrams. Data analysis was performed using IBM statistical package for the social sciences (SPSS) version 20 (Armonk, New York, USA, IBM).

**Operational definitions***Currently married woman*

Women of age 15 to 49 years, married and living with her husband from last one year.

*Pregnancy after MPA dose*

Pregnancy occurred within three months of the administration of the MPA injection, which was given seven days after the menstrual cycle, with condom use as backup.

*MPA drop-out*

An MPA beneficiary who does not receive the next injection MPA after the grace period of 4 weeks is over and more than 4 months have passed since she took her last injection.

*Amenorrhea*

Absence of menstruation for 6 months in a female who had previously regular menses or absence for at least three previous cycles in a woman with previous irregular cycles.

*Irregular bleeding*

Acyclic bleeding from the uterus and amount of bleeding is variable.

*Heavy bleeding*

Cyclic bleeding at normal interval, bleeding twice than usual.

*Scanty periods*

Menstrual bleeding is unduly less and last for less than 2 days.

*Prolonged bleeding*

Bleeding longer than 8 days or twice than usual.

**RESULTS*****Socio-demographic characteristics***

Among the 127 MPA beneficiaries, most of them, 44 (34.6%), were in (21 to 25 years) age group with a mean age of 26.7±5.8 years and age range of 18 to 39 years. The majority of study participants followed Hinduism 93 (73.3%), just over half of them belonged to Scheduled Tribe 66 (51.9%), and approximately one-third of the study participants had studied up to high school 37 (29.2%). More than three-fourths study participants were

homemakers 96 (75.6%) and 65 (51.2%) lived in a joint family (Table 1).

***Obstetrics and contraceptive details***

Nearly three-fourths of the study participants 94 (74.0%) became pregnant at the age of ≥20 years with mean age of first pregnancy was 20.1±3.6 years and age range of 13 to 28 years. Most of them 64 (50.3%) were primipara and 120 (94.5%) had no history of abortion/medical termination of pregnancy (MTP). More than half of the study participants 71 (55.9%) had never used any other contraceptive before choosing injection MPA as they opted for and used injectable MPA as their first choice of contraceptive method for family planning (Table 2).

**Table 1: Socio-demographic characteristics of MPA beneficiaries (n=127).**

Socio-demographic characteristics		N (%)
Age (in completed years)	≤20	18 (14.2)
	21 to 25	44 (34.6)
	26 to 30	32 (25.2)
	31 to 35	18 (14.2)
	≥36	15 (11.8)
Religion	Hinduism	93 (73.3)
	Christianity	26 (20.4)
	Islam	08 (06.3)
Caste	General	21 (16.5)
	Scheduled caste	32 (25.3)
	Scheduled tribe	66 (51.9)
	Other backward caste	08 (06.3)
Education level	Illiterate	20 (15.7)
	Upto primary school	21 (16.5)
	Upto middle school	26 (20.5)
	Upto high school	37 (29.2)
	Higher secondary and above	23 (18.1)
Occupation	Homemaker	96 (75.6)
	Unskilled worker	31 (24.4)
	Family type	
	Nuclear	62 (48.8)
	Joint	65 (51.2)
	Total	127 (100.0)

***MPA utilization and related experiences***

All 127 study participants received their first dose of injectable MPA at the sub-centre in their respective areas. A large majority of the MPA beneficiaries 121 (95.3%), obtained information about MPA from the ASHA worker in their area for choosing MPA as contraceptive method. Nearly half of the beneficiaries 62 (48.8%) did not have an MPA card with them (Table 3). Among these beneficiaries, almost three-quarters of them 46 (74.2%), reported that they were not given an MPA card by the service providers at the time of injection administration and 16 (25.8%) had lost their given MPA cards.

**Table 2: Obstetrics and contraceptive details of MPA beneficiaries (n=127).**

Obstetrics details		N (%)
Age at 1 <sup>st</sup> pregnancy (in completed years)	<15	03 (02.4)
	15 to 19	30 (23.6)
	≥20	94 (74.0)
Parity	Primipara	64 (50.3)
	Multipara	63 (49.7)
H/o using any other contraceptive before MPA	Yes	56 (44.1)
	No	71 (55.9)
<b>Total</b>		<b>127 (100.0)</b>

**Table 3: Injection MPA utilization and related experiences.**

Injection MPA utilization		N (%)
Firsthand source of information or guidance for MPA* (n=127)	ASHA worker	121 (95.3)
	ANM at sub-centre	13 (10.2)
	Other MPA users	05 (03.9)
	MPA card with beneficiary (n=127)	
	Available	65 (51.2)
	Not available	62 (48.8)
Dose received during reference period* (n=127)	1 <sup>st</sup>	127 (100)
	2 <sup>nd</sup>	84 (66.1)
	3 <sup>rd</sup>	75 (59.1)
	4 <sup>th</sup>	23 (18.1)
	Drop-out (n=127)	
	Yes	104 (81.9)
	No	23 (18.1)
Reasons for drop-out* (n=104)	Adverse effects	79 (75.9)
	Out of station during scheduled dose	04 (03.8)
	Inj. MPA unavailable at sub-centre	31 (29.8)
	Planning for pregnancy	05 (04.8)
	No reminder for dose	02 (01.9)

\*Multiple responses, MPA: medroxyprogesterone acetate

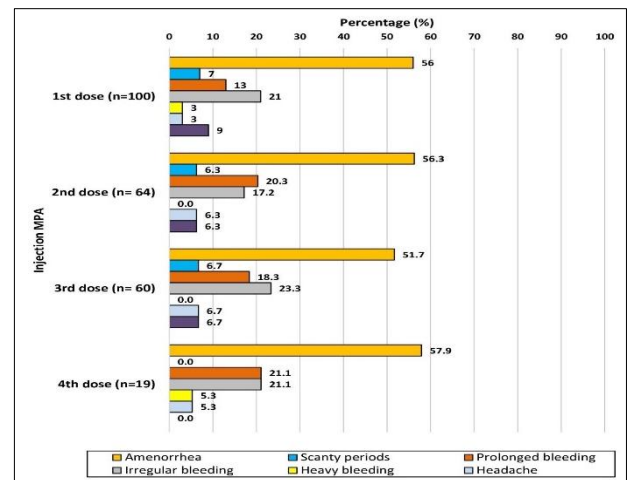
In this study, 127 beneficiaries had taken the first dose of injection MPA, 84 received the second dose, 75 the third dose, and 23 the fourth dose. Of these, 100, 64, 60 and 19 study participants respectively, experienced side effects after receiving the MPA dose (Table 4).

Over four-fifths of the MPA beneficiaries 81.9% (104/127) were dropouts, while 18.1% (23/127) had taken subsequent MPA doses on scheduled time. The most common reason for drop-out was the side effects experienced after the injection, reported by 75.9% (79/104) of drop-outs. Other reasons included unavailability of injection MPA at the sub-centre 29.8% (31/104), followed by study participants were planning for pregnancy 4.8% (5/104), being out of station during scheduled dose 3.8% (4/104), and lack of a reminder for the scheduled dose 1.9% (2/104) (Table 3).

**Table 4: Adverse effects following different doses of MPA.**

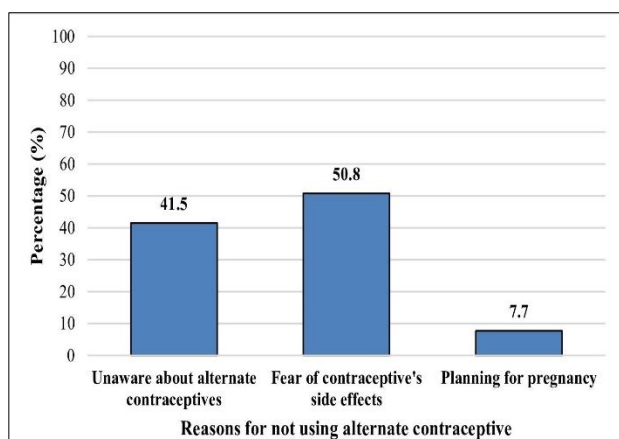
MPA dose	Number of beneficiaries taken*, N (%)	Adverse effects experienced*, N (%)
1 <sup>st</sup>	127 (100)	100 (78.7)
2 <sup>nd</sup>	84 (66.1)	64 (76.2)
3 <sup>rd</sup>	75 (59.1)	60 (80.0)
4 <sup>th</sup>	23 (18.1)	19 (82.6)

Amenorrhea was the most frequently reported side effect across all doses, affecting 56% of participants after the first dose, 56.3% after the second, 51.7% after the third, and 57.9% after the fourth dose. Other menstrual changes were also common, with irregular bleeding reported in 21.0%, 17.2%, 23.3%, and 21.1% of beneficiaries after the first through fourth doses, respectively, and prolonged bleeding in 13.0%, 20.3%, 18.3%, and 21.1%, respectively. Non-menstrual side effects were less frequent across all doses, including weight gain 9% after the first dose, decreasing to 6.3% and 6.7% after the second and third doses, respectively, and not reported after the fourth dose and headaches ranging from 3% to 6.7%. Heavy bleeding was infrequently reported and occurred only after the first and fourth doses (3% and 5.3%, respectively) (Figure 1).

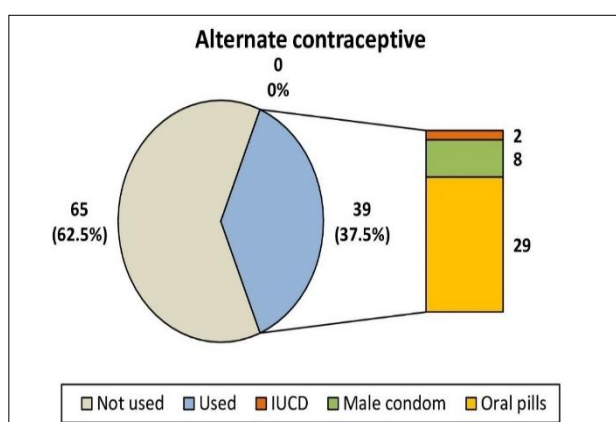


**Figure 1: Adverse effects following different doses of MPA.**

Among the 104 MPA drop-outs, nearly two-thirds of them 62.5% (65/104) had not used any alternate contraceptive method after drop-out, and 37.5% (39/104) had used an alternate contraceptive method. The most common reason for not using any other contraceptive was the fear of side effects of contraceptive reported by 50.8% (33/65), followed by lack of awareness of alternative contraceptive methods (41.5%, 27/65), and (7.7%, 5/65) reported planning for pregnancy (Figure 2). Among the 39 users, 74.3% (29/39) had taken oral pills, 20.5% (8/39) reported condom use by male partner, and 5.1% (2/39) had used IUCD as an alternate contraceptive method (Figure 3).



**Figure 2: Reasons for not using alternate contraceptive.**



**Figure 3: Alternate contraceptive used among MPA drop-outs (n=104).**

The present study revealed that among all 127 MPA beneficiaries, no pregnancy was reported within the effective period of three months after taking any MPA dose.

## DISCUSSION

### *Socio-demographic characteristics*

In this community-based study, 44 (34.6%) of the MPA beneficiaries were between 21 to 25 years of age. The mean age of study participants was  $26.7 \pm 5.8$  years, the minimum age of 18 years and maximum being 39 years. These findings are consistent with studies conducted across India. In Karnataka, 48.5% of beneficiaries belonged to 21-25 years age group; the mean age of  $25.18 \pm 4.2$  years (range: 19 to 40 years).<sup>8</sup> Similarly, in Maharashtra, 53.3% of beneficiaries were in 21 to 25 years age group, with mean age  $24.48 \pm 3.4$  years.<sup>9</sup> However, in New Delhi, the mean age of the beneficiaries was  $28.44 \pm 4.73$  years.<sup>10</sup>

The majority of MPA beneficiaries 66 (51.9%) belongs to the Scheduled Tribe. This may be attributed to the study

area being predominantly composed of farmlands, tea estates, forests, and small villages, where a large proportion of the tribal population resides. Regarding educational status, 37 (29.2%) of study participants attained their education up to high school level. Similar observation has been documented in Tamil Nadu; 87.5% beneficiaries had completed higher secondary education.<sup>11</sup> In Uttarakhand, 52% of MPA beneficiaries were educated beyond high school, while in Delhi, 66.4% were educated up to high school and above.<sup>10,12</sup> Whereas in Southern Haryana 43.5% of beneficiaries were illiterate.<sup>13</sup>

The majority of the MPA beneficiaries 75.6% were homemakers. Similar results have been reported across India; in Southern Haryana, 90.3% and in Tamil Nadu, all study participants, were homemakers.<sup>13,11</sup> Furthermore, in the present study, 51.2% of the beneficiaries lived in joint families, which is comparable to findings from Southern Haryana (58.1%).<sup>13</sup>

### *Obstetrics and contraceptive details*

This study found that 94 (74%) of MPA beneficiaries conceived at the age of  $\geq 20$  years. The mean age at first pregnancy was  $20.1 \pm 3.6$  years, with the youngest age at first pregnancy being 13 years. As the study area is predominantly tribal, the continued practice of early teenage marriage may account for the occurrence of pregnancies at a younger age.

Injectable MPA was not used as a contraceptive method by any nulliparous women. Similar observations have been documented in Mumbai, Maharashtra.<sup>14</sup> The majority of the MPA beneficiaries, 64 (50.3%) were primiparous, which is comparable to findings from studies conducted in Karnataka (64.3%), Maharashtra (46.7%), Uttarakhand (51%).<sup>8,9,12</sup> In contrast, another study from Maharashtra along with a study from Gujarat, reported a higher proportion of multiparous women.<sup>3,14</sup>

The majority of the MPA beneficiaries 71 (55.9%) opted and used inj. MPA as their first contraceptive method for family planning. This is consistent with studies conducted in Uttarakhand (44%), and Southern Haryana (77.4%).<sup>12,13</sup>

### *MPA utilization and experiences*

The findings revealed that almost all MPA beneficiaries 121 (95.3%) chose the injectable MPA as contraceptive method after receiving information about it from ASHA workers at their respective sub-centres. In contrast, studies from Karnataka and southern Haryana reported that awareness was mainly provided by doctors (54.8%) and other health workers (79.8%), respectively.<sup>8,13</sup>

These differences may be attributed to the fact that the other studies were institution-based, whereas the present community-based study reflects ground-level service delivery realities.

Nearly half of the MPA beneficiaries (48.8%) did not have their MPA card available with them. Out of which majority of them 74.2% did not received their MPA card from the health care provider of their respective sub-centres at the time of MPA administration. Providers may not fully recognize the importance of the MPA card for follow-up, and continuity of care.

In this study, 127 beneficiaries who received the first MPA dose, 43 (33.9%) missed the second dose. Dropout continued with 9 (10.7%) after the second dose and 52 (69.3%) after the third dose. The majority 104 (81.9%) of the beneficiaries discontinued injection MPA. Similar findings observed in Uttar Pradesh 73.3% and Southern Haryana 54.8%.<sup>13,15</sup>

The most common reason for drop-out was side effects 79 (75.9%) after taking any MPA dose. These findings are consistent with reports from Karnataka, Maharashtra, Tamil Nadu, Uttar Pradesh and Rajasthan.<sup>8,9,11,16</sup> The overall, most common adverse effect experienced by MPA beneficiary after taking MPA dose was amenorrhea. This finding is concordant with observations reported from Tamil Nadu, Uttarakhand, Odisha, and Madhya Pradesh.<sup>9,12,17,18</sup> In other studies, from Maharashtra and Uttar Pradesh most common side effect noted was irregular bleeding. No MPA beneficiaries became pregnant after receiving any dose of MPA. Consistent results have been reported in studies conducted in Maharashtra, New Delhi, Uttarakhand, Uttar Pradesh.<sup>9,10,12,15</sup>

Among the MPA drop-outs, 65 (62.5%) did not use any alternative contraceptive method, as majority 50.8% (33/65) had persistent fear related to side effects of contraceptive. Perhaps, not having a good experience with MPA, beneficiaries may perceive that all contraceptive methods have side effects and therefore prefer not to use any method. The beneficiaries who had used any alternate contraceptive method, the majority 29/39 (74.4%) opted for oral pills, as they are considered easy to take and do not require male partner cooperation.

### Limitations

A limitation of the present study is that the information collected was based on past events, which may have introduced recall bias.

### CONCLUSION

Injectable contraceptive MPA is effective and widely accepted among early reproductive age women as their first family planning method. ASHA workers play a vital role in its promotion. Side effects of the injectable contraceptive are the main cause for dropout, with amenorrhea being the most common. Maintenance of MPA cards and proper management of side effects is essential to ensure better compliance of this contraceptive and other method.

### ACKNOWLEDGEMENTS

Authors would like to thank the block health officials for permitting to conduct the study at their block and also the study participants for their valuable support.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Sullar KS, Tirkey L, Ishore K. Injectable contraceptive medroxyprogesterone acetate: utilization and experiences among currently married women residing in tea gardens of a block in Darjeeling district, West Bengal, India. *Int J Reprod Contracept Obstet Gynecol* 2026;15:2084-90.