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EXPERIENCE WITH SUBCUTANEOUS MEDROXYPROGESTERONE ACETATE FOR CONTRACEPTION: COMPLIANCE, CONTINUATION AND DETERMINANTS OF METHOD USE IN A TERTIARY CARE CENTRE IN INDIA

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ABSTRACT

Background: Injectable contraception is an important method of preventing unintended pregnancy, particularly in settings where access to long-acting reversible contraception may be limited. Depot medroxyprogesterone acetate administered subcutaneously (DMPA-SC/MPA-SC) is a three-monthly injectable progestin-only contraceptive that can potentially increase contraceptive accessibility and reduce the need for repeated visits to a healthcare facility. However, menstrual disturbances and concerns regarding adverse effects may influence acceptability and continuation. **Objective:** To assess the demographic and clinical characteristics, compliance/continuation and adverse effects associated with subcutaneous medroxyprogesterone acetate among women attending a tertiary-care centre in India. **Materials and Methods:** A retrospective observational study was conducted in the Department of Obstetrics and Gynaecology, Family Planning Unit of a tertiary-care hospital in India over a period of 24 months. Women of reproductive age who opted for MPA-SC for contraception and fulfilled the eligibility criteria were enrolled. Participants were counselled regarding the mechanism of action, effectiveness, expected menstrual changes, possible adverse effects, injection schedule, and follow-up. Compliance was assessed by timely receipt of subsequent injections at the recommended three-monthly interval. Reasons for discontinuation and adverse effects were documented. **Results:** A total of 283 women were enrolled for 1st dose between April 2024 to March 2025. They were followed up for 12 months (till Febuary 2026) to study the continuation rate. The mean age of participants was 29.6 ± 7.1 years. Majority of the clients initiated injection MPA-SC in the interval period (55.47%). The continuation/compliance rate at 3, 6, 9 and 12 months was 49.11%, 32.86 %, 19.08%, 11.66% respectively. The most frequently reported adverse effect was menstrual irregularity, amenorrhoea, weight gain etc. No pregnancy was reported. **Conclusion:** MPA-SC appears to be an acceptable and effective contraceptive option for appropriately counselled women. Menstrual irregularities constitute an important cause of concern and discontinuation. Adequate pre-injection counselling, anticipatory guidance regarding expected bleeding changes, reminder systems, and convenient follow-up may improve compliance and continuation.

KEYWORDS : MPA-SC; DMPA-SC; Injectable Contraception; Acceptability; Compliance; Continuation; Menstrual Irregularity; Family Planning; India.

INTRODUCTION

India was the first country in the world to launch a family planning programme in 1952 with the aim to control its population.[1] Currently India has become the most populous country of the world surpassing China. Estimated population of India is approximately 1.47 billion, contributing nearly 17.8% of global population.[2] According to NFHS-5 ,the overall contraceptive prevalence rate in India is 66.7% for married women aged 15-49yrs.[3] Effective contraception reduces unintended pregnancy and its associated maternal and social consequences. Despite the availability of several contraceptive methods for spacing, continuation is strongly influenced by accessibility, convenience, adverse effects, cultural factors, partner preferences, and the quality of counselling received.

Depot medroxyprogesterone acetate (DMPA) is a highly effective progestin-only injectable contraceptive. The subcutaneous formulation, DMPA-SC, contains 104 mg of medroxyprogesterone acetate and is administered at approximately three-monthly intervals. Its subcutaneous route and prefilled uniject injection system make it potentially convenient for both healthcare-provider administration and, in settings where permitted for self-administration. According to WHO, women aged 18 to 45 years, there should be no restriction on the use of DMPA injection including the duration of use (MEC category 1)[4]

The World Health Organization recommends self-administered DMPA-SC as an additional approach to injectable contraception because evidence indicates improved continuation compared with provider administration.

A systematic review and meta-analysis involving 3,851 participants found that self-administration of DMPA-SC was associated with higher contraceptive continuation than provider-administered injectable contraception. In randomized trials, continuation was approximately 27% higher with self-administration (RR 1.27, 95% CI 1.16–1.39). Pregnancy rates did not differ significantly between administration approaches.[5]

In India, injectable contraception has been incorporated into the public-sector contraceptive basket. An Indian tertiary-care study involving 483 women using injectable MPA reported that

74.3% of participants were pleased with the method and that the overall continuation rate was 67.7%. Menstrual irregularity was the most frequently reported adverse effect.[6]

Despite these encouraging findings, continuation of injectable contraception may be affected by misconceptions and inadequate counselling regarding menstrual changes. Women may discontinue treatment because of irregular bleeding or amenorrhoea despite these effects being expected pharmacological consequences of progestin administration.

The present study was therefore undertaken to evaluate the acceptability and compliance of MPA-SC among women attending a tertiary-care centre in India and to identify factors associated with continuation and discontinuation.

Aim and Objectives

To study the compliance of subcutaneous medroxy-progesterone acetate as a contraceptive method among women attending a tertiary-care centre in India.

MATERIALS AND METHODS

Study Design: A retrospective observational study was conducted in the Department of Obstetrics and Gynaecology/ Family Planning Clinic of Kasturba Hospital, Delhi, India.
Study Period: The study was conducted from April 2024 to Febuary2026.
Study Population: The study participants were those attending family planning clinic and enrolled for injection SC MPA following due protocol under Antara program.

Inclusion Criteria

- If they were of reproductive age (15-49 years).
- Desired temporary contraception.
- Chose MPA-SC after contraceptive counselling.
- Fulfilled standard medical eligibility criteria for progestin-only injectable contraception.
- Were willing to participate in follow-up.
- Provided written informed consent.

Exclusion Criteria

- Were pregnant at the time of initiation.
- Had contraindications to progestin-only injectable contraception.
- Were unwilling to participate in follow-up.
- Had a medical condition requiring an alternative contraceptive strategy.
- Were unable to provide informed consent.

Study Procedure

After detailed contraceptive counselling, eligible participants received MPA-SC according to the institutional protocol. Counselling included mechanism of contraceptive action of MPA-SC, expected contraceptive effectiveness, injection interval, expected menstrual changes, possibility of amenorrhoea, irregular or prolonged bleeding, possible weight changes, delayed return of fertility following discontinuation, importance of timely repeat injections, symptoms requiring medical consultation.

During enrolment, name, client's age and address, telephone number, number of living children, last child birth, initial body weight, blood pressure, any significant medical history, type of MPA administered (IM/SC), date of initiation were recorded in the Facility Register by dedicated health workers under Antara programme. A MPA card was provided to all of them which clearly mentioned the dates of subsequent injections. If any of the participants did not turn up for next injection, they were contacted through telephone/SMS/WhatsApp messages. If any of the clients failed to return within 4 weeks grace period, they were labelled as defaulters. Reasons for discontinuation were also enquired and recorded.

During subsequent visits, women were inquired about any side effects, willingness to continue, weight changes and any other complaints. Their weight in kg, blood pressure LMP were also recorded. All the data collected was then compiled in Microsoft excel sheet and statistically analysed.

RESULTS

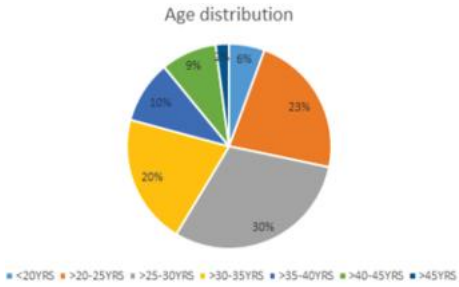


Figure 1. Age Distribution

A total of 283 women were enrolled in our family planning unit between April 2025 to March 2025.The mean age of participants was 29.6 ±7.1 years with the majority belonging to the 25-30 yrs age group.

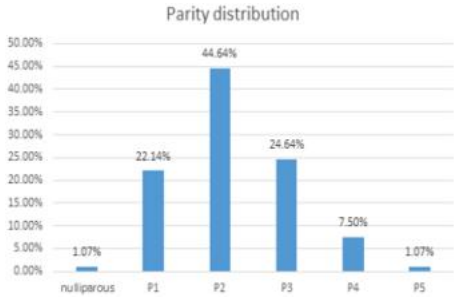


Figure 2: Parity Distribution

The mean parity was 2.18. Majority of participants i.e. 125(44.64%) out of 283 were parity 2.

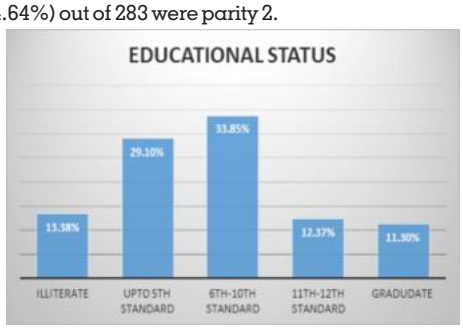


Figure 3: Educational Status

Out of 283 participants, majority i.e. 96(33.8%) were educated up to 10th standard whereas 38(13.38%) were illiterate.

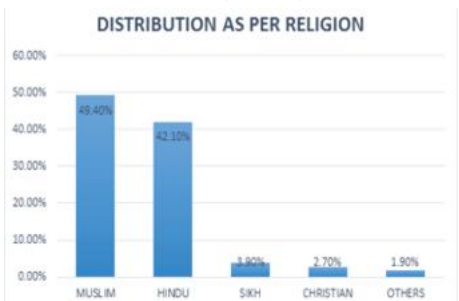


Figure 4: Religious Distribution of Participants

Out of 283 participants majority i.e 140/283 (49.4%) were from Muslim community followed by Hindu 119/283 (42.10%). This may reflect the demographic of the population catered by our hospital

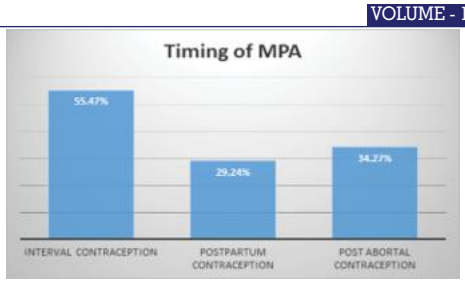


Figure 5. Timing of Initiation of MPA

MPA was started as Interval contraception in 157 (55.47%) out of 283 participants. Whereas 97(34.27%) initiated it in post-abortion and 29(29.24%) in postpartum period.

Compliance and Continuation

Table 1: Continuation of MPA

No. of Repeat Injection	No. of Women Returning (n=283)	Percentage
First repeat injection	139	49.11%
Second repeat injection	93	32.86%
Third repeat injection	54	19.08%
12-month continuation	33	11.66%

So, continuation rate decreased with time. It was less among those who accepted after medical termination of pregnancy, as they seemed to be less motivated and became defaulters. Sometimes single dose MPA was advised as post-abortal family planning (PAFP) to achieve the reproductive goal of the couple.

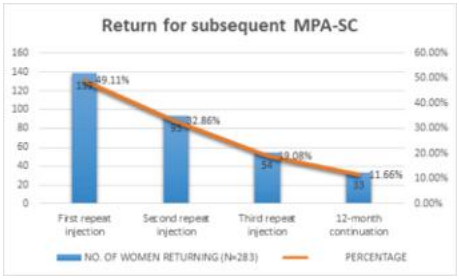


Figure 6: Return for Subsequent MPA-SC Injections

Adverse Effects:

The most commonly reported adverse effect (as perceived by clients) was menstrual irregularity, followed by amenorrhoea, weight gain, headache, and injection-site reaction.

Table 2: Adverse Effects of MPA

Adverse effect	At 3 months (n=139)	At 6 months (n=93)	At 9 months (n=54)	At 12 months (n=33)
No complaints	8.60%	18.52%	21.21%	15%
Menstrual irregularity	50.53%	33.33%	21.21%	55%
Amenorrhea	11.82%	37.04%	45.45%	10%
Prolonged bleeding	9.67%	3.70%	3.03%	10%
Weight gain	6.45%	3.70%	3.03%	5%
Headache	5.37%	1.85%	3.03%	5%
Abdominal pain	4.30%	1.85%	3.03%	0%
Injection-site pain	3.22%	0.00%	0.00%	0%

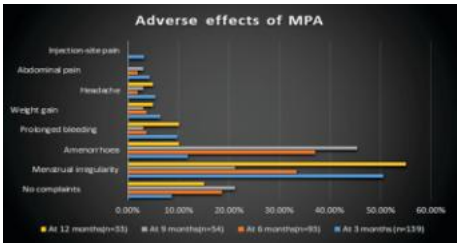


Figure 7: Adverse Effects of MPA (Women's Perception)

Changes in menstrual pattern that is menstrual irregularity and amenorrhea perceived as the most common adverse effect by MPA users although it is the most common pharmacological effect of hormone medroxyprogesterone acetate. Menstrual irregularity also constitutes the most common cause of discontinuation. Proper pre-injection counselling may alleviate anxiety and concern, and therefore may improve continuation rate/compliance.

DISCUSSION

The present study was undertaken to assess demographic characteristics and compliance of MPA-SC in women attending a tertiary-care centre in India. The findings demonstrate that injectable contraception is influenced not only by contraceptive efficacy but also by convenience, menstrual changes, counselling, and the woman's perception of adverse effects.

Mean age in our study was 29.6 ± 7.1 years which is comparable to the study done by Agrawal et al (mean age 28.44 + 4.73 years).[6] In a study conducted at BYL Nair Hospital, Mumbai from October 2018 to September 2019, most common age group was 25-30 years (40%).[7] Similarly, a study by Fonseca et al reported that 53.6% of women seeking family planning services were in the 26-30 years age group.[8] Findings in 2019 Ethiopian Mini demographic study and Health survey shows 41% of clients who use modern contraceptives like injectables, implants, OCP and IUCD are in the 25-29 years age group.[9]

In our study, 44.64% of women who received MPA-SC had a parity of two, 24.64% had a parity of three. So, the largest group seeking contraception consisted of women who had completed their desired family size. This is similar to Indian studies done by Agrawal S et al in New Delhi and Kaushal N et al in Mumbai where average parity was two.[6,7] Similar findings were observed in the study by Fonseca et al where 44% of women had a parity of two and 34% had a parity of three or more.[8]

In our study, only 13.38% were illiterate while the rest (86.62%) were literate. This figure corresponds to the current literacy rate among women in Delhi. Hence no significant influence of literacy on acceptance of MPA-SC was found in our study. Similar findings in Ethiopian study shows that the level of education does not affect acceptance of contraception.[9]

The study population of 283 participants included 140 Muslims (49.4%), 119 Hindus (42.1%), 11 Sikh (3.9%) and 8 Christians (2.9%), This corresponds to the religious distribution of a similar study regarding acceptance of PPIUCD done in our hospital in 2025.[10]

Timing of starting MPA-SC injection was interval in 157 (55.47%), post abortal in 97 (34.27%) and postnatal in 29 (29.24%). These findings were comparable to a similar study done at New Delhi, India in 2021. A study done by Agrawal et al at Lady Hardinge Medical College showed that injection MPA was initiated in interval period in 304 women (63.3%), post-abortal in 124 (25.8%) and post-natal in 52 (10.8%).[6] In a similar study done by Kaushal et al at BYL Nair Hospital, Mumbai, india shows that 36% of the participants were post-abortal, 31.1% post-menstrual (interval) and 27% transitioned from other contraceptive (again interval).[7]

Compliance/ Return for subsequent MPA-SC injections rate declined with subsequent doses in our study with only 49.11% of participants receiving the second dose, 32.86% receiving the third dose, 19.08% receiving the fourth dose and only 11.66% receiving the fifth dose. These findings were lower than those reported in previous studies. In a study done by Kaushal N. et al in 2025 in Mumbai, continuation rates were 75.5%, 44.1% and 39% after first, second and third doses

respectively.[7] In a study done by Fonseca et al, the continuation rates were 73%, 59% and 41% after first, second and third doses respectively. Their study also provided data for the fourth and fifth dose showing continuation rates of 31.5% and 29% respectively.[8] In a study done by Lei W et al in 1996 to find out effect of pretreatment counselling on discontinuation rates in Chinese women given DMPA injection. It was found that 12 month termination rate was 11% and 42% respectively ($P < 0.0001$) in women who received detailed structured pretreatment and ongoing counselling compared to those who received routine counselling [11]. Very low continuation rate in present study may be attributed to factors such as loss of follow-up, distance from the hospital specifically in case of migrants who came to Delhi for delivery and MTP and later returned to their native place of residence. Also single dose injection MPA is preferred as PAFP to achieve reproductive goal of the couples (who want to conceive after 6 months).

Timing of injection may also influence continuation rate. In a study conducted by Agrawal S et al at New Delhi, India 92.3% (48/52) postnatal women who received injection DMPA continued with it as compared to average continuation rate of 67.7%.[6] Another study done by Krishna et al also reported a higher continuation rate (60%) in postpartum women as compared to 24% in post-abortal group.[12] Lavanya et al also found a higher continuation rate of 67.3% when injection MPA was given postpartum versus an average continuation rate of 57.5%. [13] It can be postulated from the above data that acceptance and continuation rates are higher in postnatal women as compared to the other group of acceptors (may be due to masking of menstrual irregularities by lactational amenorrhea). In a similar study done by B Archer et al done in 1997 showed that approximately one-third of DMPA acceptors discontinue use by the end of first year and half discontinue by the end of second year primarily because of side effects.[14] Menstrual irregularity was the most common adverse effect as perceived by patients in our study which were found to be 50.53%, 33.33%, 21.21% on first, second and third visits respectively. Amenorrhea becomes more frequent in patients with repeat injections. A similar study by Fonseca et al found that the primary adverse effects were irregular bleeding (63%), weight gain (18.5%), headache (8.5%), and amenorrhea (4.5%).[8] These findings corroborate with the study conducted by Agrawal et al in Delhi, where menstrual irregularity was the most common side effect observed in 48.5% women.[6] In a similar study done by Kaushal et al in Mumbai, side effects following the first dose were observed in 24.3% women, mainly irregular bleeding (11.1%) along with amenorrhea, weight gain and headache (4.4% each). Adverse effects increased to 50% in second dose with irregular bleeding, affecting 26.4% and 47.4% reported side effects after third dose, primarily weight gain (21.1%) and amenorrhea (15.7%).[7] Lavanya et al reported that the discontinuation rate after 1-2 injections was 43%, the most common reason being irregular bleeding. Women found it useful for short term contraception (3-6 months) prior to opting for sterilization.[13] Another study by Paul et al identified menstrual disturbances and weight gain as the most common side effects.[16] In a Mexican study which compares properly counselled and control groups, most common reason for discontinuation of injection DMPA were menstrual changes (8.6% and 32% respectively).[17] So, it can be concluded that detailed structured pretreatment counselling about hormonal side effects can improve compliance as compared to routine counselling.

CONCLUSION

MPA-SC is an effective method of contraception which has high acceptibility among women who need a temporary method of contraception for spacing. Its continuation rate declines with subsequent doses due to adverse effects. Menstrual irregularity is the most common side effect as perceived by clients. But proper counselling and regular follow up may improve compliance and ensure better outcome.

Strengths and Limitations of the Study

Strengths

- Large sample size
- Real-world tertiary care data
- Comprehensive outcome assessment

Limitations

- Low follow-up rate
- Retrospective design
- Single-centre study

Declaration

- **Ethical Approval:** Ethical approval was not formally obtained as the study was retrospective, observational, based on anonymized hospital records in which no individual could be identified. As data was irreversibly anonymized and no additional contact with participants were involved formal ethics committee approval was not sought; however, all data were handled with strict confidentiality and used solely for the purpose of this research
- **Conflict of Interest:** The authors declare no conflict of interest
- **Funding:** No funding was received for this study
- **Disclaimer:** Open AI has been used to make tables, graphs and editing. However all data, material, methods and observation are same as original

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