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RESEARCH ARTICLE
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EVALUATING THE FEASIBILITY OF INJECTABLE DEPOT MEDROXYPROGESTERONE ACETATE AS CONTRACEPTION IN A TERTIARY CARE

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ABSTRACT

Background: Injectable depot medroxyprogesterone acetate (DMPA) is a long-acting, reversible, progestin-only contraceptive that offers an effective spacing option for women seeking a user-independent method. Its feasibility in routine clinical settings depends on acceptance, continuation, safety, and user satisfaction.

Objectives: To evaluate the feasibility of injectable DMPA as a contraceptive method in terms of acceptance, continuation, side effects, and overall safety among women attending a tertiary care center.

Methods: A Prospective and retrospective observational study was conducted at the School of Medical Sciences and Research, Sharda University, from January 2024 to December 2025. A total of 100 women aged 18–45 years opting for injectable contraception were enrolled. Participants received depot medroxyprogesterone acetate and were followed up at scheduled intervals. Data on demographic characteristics, continuation rates, menstrual pattern changes, adverse effects, and weight changes were collected. Statistical analysis was performed using SPSS version 27.0 and GraphPad Prism version 5. Descriptive statistics were used, and appropriate inferential tests were applied, with a p-value ≤ 0.05 considered statistically significant.

Results: All participants accepted DMPA at initiation. Continuation rates were 86% at 3 months and 72% at 6 months. Menstrual irregularities were the most common side effects, with amenorrhea observed in 39% and irregular bleeding in 40% of participants at 6 months ($p < 0.001$). A modest but statistically significant increase in mean body weight was noted ($p = 0.032$). No serious adverse events were reported. Younger women demonstrated significantly higher continuation rates compared to older women.

Conclusion: Injectable DMPA is a feasible, safe, and acceptable contraceptive method with satisfactory continuation rates. Adequate counseling and follow-up are essential to optimize adherence and user satisfaction.

Keywords: Depot medroxyprogesterone acetate; Injectable contraception; Feasibility study; Menstrual irregularities; Continuation rate; Family planning

INTRODUCTION

Depot medroxyprogesterone acetate (DMPA) — administered either intramuscularly (DMPA-IM) or subcutaneously (DMPA-SC) every 12–13 weeks — remains one of the most widely used long-acting, reversible progestin-only contraceptives globally and is particularly important where access to frequent clinic visits or implant/IUD services is limited. DMPA's contraceptive effect is mediated primarily by suppression of ovulation and thickening of cervical mucus, producing very low typical-use pregnancy rates when injections are received on schedule, and international guidance classifies progestin-only injectables as an appropriate option for the vast majority of women when contraindications are absent. Despite its proven efficacy, DMPA's feasibility as a programmatic option depends on multiple interacting domains: safety and tolerability (notably altered bleeding patterns and weight changes), acceptability to users and communities, health-system logistics (supply chain, trained providers, or the possibility of self-administration), and policy/regulatory alignment with national family-planning programs. Evidence accumulated in the last decade indicates therapeutic equivalence between DMPA-IM and DMPA-SC in preventing pregnancy while DMPA-SC expands delivery options because it can be given with smaller needles and—importantly—enables safe self-administration after brief training, thereby decentralizing access and reducing clinic visit burden [1,2,3]. Programmatic studies and implementation briefs from a range of settings report that DMPA-SC self-injection increases continuation and user autonomy, particularly among younger and hard-to-reach populations, but also highlight persistent barriers such as commodity availability, provider counseling skills, and client concerns about inject-site reactions and bleeding changes [4,5,6]. Safety signals most often associated with DMPA use include menstrual irregularities (oligomenorrhea or amenorrhea) and modest weight gain in some users; while many women find amenorrhea acceptable or even desirable, unpredictable bleeding is a common reason for early discontinuation and must be anticipated in counseling and follow-up planning [7,8]. From a health-systems perspective, DMPA's three-monthly schedule confers logistical advantages—fewer total clinic encounters per user-year compared with shorter-acting methods—yet sustained feasibility requires predictable procurement, cold-chain-independent storage, clear task-sharing policies for community health workers, and training programs enabling safe self-care where appropriate [9]. Country-level assessments, including recent program evaluations from India and other low- and middle-income settings, emphasize that successful scale-up rests not only on clinical equivalence but on demand-generation, addressing myths about fertility and weight, and integrating DMPA-SC into existing contraceptive counseling flows so clients can make informed choices among injectables, implants, IUDs and permanent methods [5,10]. In summary, while the biomedical profile of DMPA supports its continued role as an effective contraceptive, the question of feasibility is inherently multidisciplinary: it requires pairing high-quality evidence on safety and efficacy with attentive implementation strategies that reduce access barriers, strengthen counseling on expected side effects, and ensure sustainable supply and policy environments — all of which determine whether DMPA (and particularly DMPA-SC and self-administration models) will deliver contraceptive choice, continuation, and reproductive autonomy at scale.

MATERIALS AND METHODS

Study Design

- Prospective and retrospective, observational study evaluating the feasibility of injectable depot medroxyprogesterone acetate (DMPA) as a contraceptive method.

Study Setting

- Conducted at the School of Medical Sciences and Research, Sharda University, Greater Noida, Uttar Pradesh, India.

Study Period
- January 2024 to December 2025.

Study Population
- Women of reproductive age attending the outpatient departments/family planning clinics of the institution and opting for injectable contraception.

Sample Size
- Total sample size: **100 participants**.

Sampling Method
- Consecutive sampling of eligible participants fulfilling inclusion criteria during the study period until the desired sample size was achieved.

Inclusion Criteria
- Women aged 18–45 years.
- Willing to use injectable DMPA as a contraceptive method.
- Provided informed written consent.
- Eligible for progestin-only injectable contraception as per standard medical eligibility criteria.

Exclusion Criteria
- Known hypersensitivity to medroxyprogesterone acetate.
- Current pregnancy or suspicion of pregnancy.
- Undiagnosed abnormal genital bleeding.
- Known or suspected breast malignancy.
- Severe liver disease or other contraindications to DMPA use.

Statistical Analysis

Data were initially entered into a Microsoft Excel spreadsheet and subsequently analyzed using SPSS software (version 27.0; SPSS Inc., Chicago, IL, USA) and GraphPad Prism (version 5). Numerical variables were summarized as mean ± standard deviation (SD), while categorical variables were expressed as frequencies and percentages. Comparisons between independent groups were performed using the two-sample (independent) *t*-test, whereas paired *t*-tests were applied for analysis of correlated or repeated measurements within the same subjects. Associations between categorical variables were assessed using the Chi-square test, with Fisher's exact test employed when expected cell counts were small. All statistical tests were two-tailed, and a p-value ≤ 0.05 was considered statistically significant.

RESULT

Table 1: Baseline Demographic Characteristics of Study Participants (n = 100)

Variable	Mean ± SD / n (%)
Age (years)	27.8 ± 4.6
Age group 18–25	38 (38%)
Age group 26–35	49 (49%)
Age group >35	13 (13%)
Parity ≤1	42 (42%)
Parity ≥2	58 (58%)
Urban residence	61 (61%)
Rural residence	39 (39%)
Previous contraceptive use	54 (54%)

Table 2: Acceptance and Continuation Rate of DMPA Over Follow-up

Outcome	Number (%)
Accepted DMPA at baseline	100 (100%)
Continued at 3 months	86 (86%)
Continued at 6 months	72 (72%)
Discontinued by 6 months	28 (28%)

Table 3: Comparison of Continuation Rate by Age Group

Age Group	Continued (n=72)	Discontinued (n=28)	*P* value
≤30 years (n=57)	45 (78.9%)	12 (21.1%)	0.041
>30 years (n=43)	27 (62.8%)	16 (37.2%)	

Table 4: Menstrual Pattern Changes Following DMPA Use

Menstrual Pattern	Baseline n (%)	At 6 months n (%)	*P* value
Regular cycles	82 (82%)	21 (21%)	<0.001
Amenorrhea	0 (0%)	39 (39%)	
Irregular bleeding	18 (18%)	40 (40%)	

Table 5: Adverse Effects Reported During Follow-up

Adverse Effect	Number (%)
Weight gain	26 (26%)
Headache	18 (18%)
Injection site pain	14 (14%)
Mood changes	11 (11%)
No side effects	39 (39%)

Table 6: Comparison of Mean Weight Before and After DMPA Use

Parameter	Mean ± SD (kg)	*P* value
Baseline weight	56.2 ± 7.4	0.032
Weight at 6 months	57.8 ± 7.6	

Figure 1: Acceptance and Continuation Rate of DMPA Over Follow-up

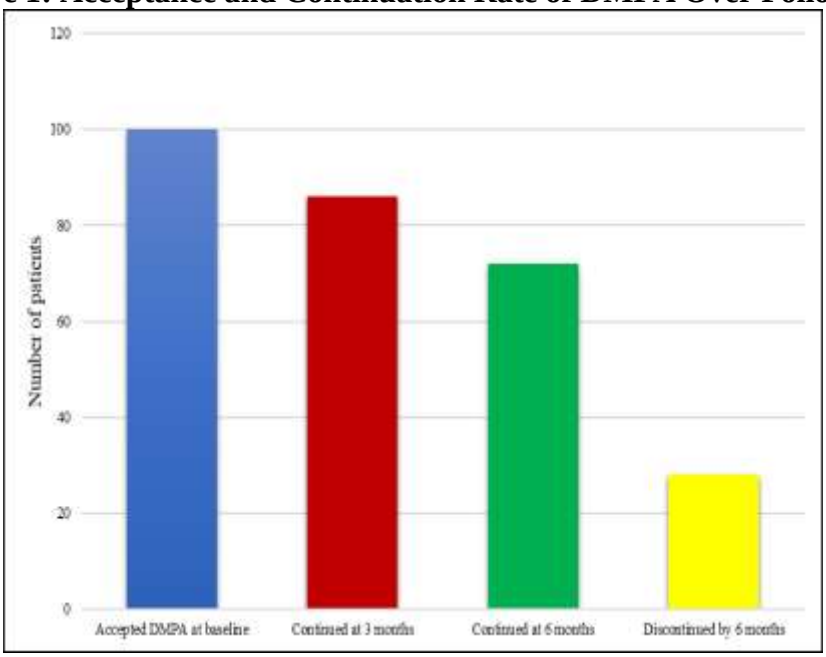
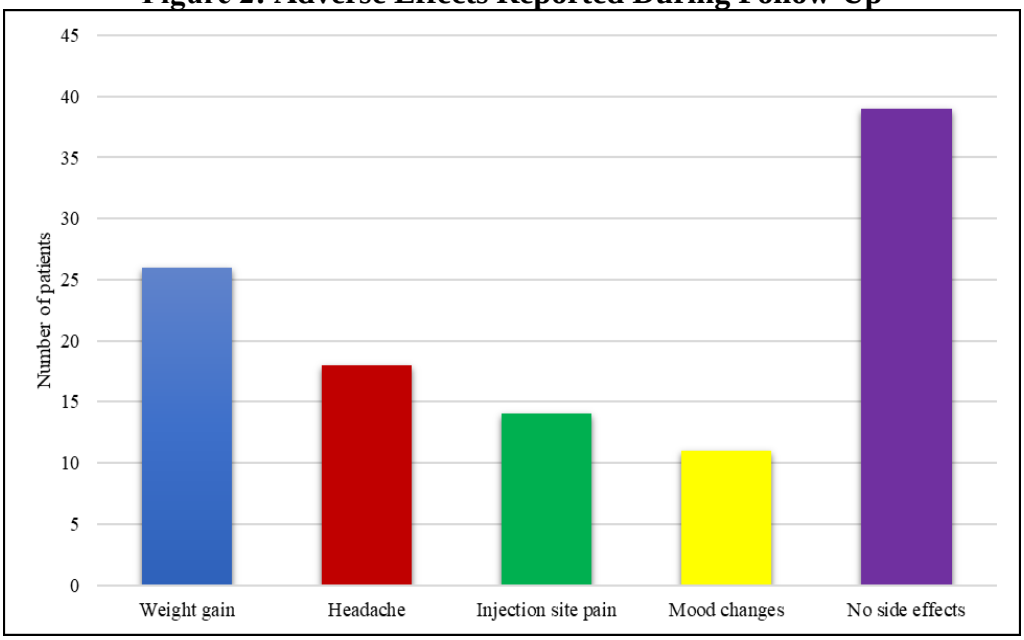


Figure 2: Adverse Effects Reported During Follow-Up



A total of 100 women were enrolled in the study to evaluate the feasibility of injectable depot medroxyprogesterone acetate (DMPA) as a contraceptive method. The mean age of the participants was 27.8 ± 4.6 years, with the majority belonging to the 26–35-year age group (49%). More than half of the participants were multiparous (58%), and a greater proportion resided in urban areas (61%). Previous use of any contraceptive method was reported by 54% of women at baseline.

All enrolled participants accepted DMPA at initiation. The continuation rate at 3 months was 86%, which declined to 72% at 6 months, resulting in an overall discontinuation rate of 28% during the follow-up period. Younger women (≤30 years) demonstrated a significantly higher continuation rate compared to women aged more than 30 years (78.9% vs. 62.8%), and this difference was statistically significant ($p = 0.041$).

Menstrual pattern changes were commonly observed following DMPA use. While 82% of participants reported regular menstrual cycles at baseline, only 21% continued to have regular cycles at 6 months. Amenorrhea developed in 39% of women, and irregular bleeding was reported by 40% at follow-up. The change in menstrual patterns from baseline to 6 months was statistically significant ($p < 0.001$).

Adverse effects were reported by 61% of participants, with weight gain being the most frequent complaint (26%), followed by headache (18%), injection-site pain (14%), and mood changes (11%). No serious adverse events were documented during the study period. The mean body weight increased from 56.2 ± 7.4 kg at baseline to 57.8 ± 7.6 kg at 6 months, and this increase was statistically significant ($p = 0.032$).

Overall, injectable DMPA was well accepted and demonstrated satisfactory continuation rates, with manageable side effects. The findings indicate that DMPA is a feasible and effective contraceptive option among women attending a tertiary care center, provided adequate counseling and follow-up are ensured.

DISCUSSION

The present study evaluated the feasibility of injectable depot medroxyprogesterone acetate (DMPA) as a contraceptive method among women attending a tertiary care center and demonstrated high initial acceptance with satisfactory continuation rates and an acceptable safety profile. All eligible women in the study opted for DMPA at baseline, reflecting good acceptance when adequate counseling and access are ensured. This finding supports the growing evidence that injectable contraceptives remain an important component of the contraceptive method mix, particularly for women seeking a long-acting, reversible, and user-independent option.

In the current study, the continuation rate declined from 86% at 3 months to 72% at 6 months. These findings are comparable to the study by **Sharma et al.** conducted in North India, which reported a 6-month continuation rate of approximately 70% among DMPA users, with discontinuation largely attributed to menstrual irregularities and fear of side effects [11]. Similarly, **Sethi et al.** observed continuation rates of 68–75% at 6 months in a hospital-based cohort, emphasizing that early follow-up and reinforcement counseling significantly improved compliance [12]. The slightly higher continuation observed in younger women in the present study is consistent with findings by **Khan et al.**, who reported better continuation among women below 30 years of age, possibly due to greater adaptability to menstrual changes and stronger motivation for spacing pregnancies [13].

Menstrual disturbances were the most common side effects encountered in this study, with amenorrhea and irregular bleeding observed in 39% and 40% of participants, respectively, at 6 months. This pattern closely mirrors observations by **Bhatia et al.**, who documented amenorrhea rates of 35–45% after 6 months of DMPA use and identified it as both a cause for discontinuation and, paradoxically, a reason for satisfaction among some users [14]. International data from **Hubacher et al.** also report that altered bleeding patterns are the predominant reason for discontinuation during the first year of DMPA use, underscoring the importance of anticipatory counseling [15].

Weight gain was reported by 26% of participants in the present study, with a statistically significant but clinically modest increase in mean body weight. This aligns with findings by **Berenson and Rahman**, who demonstrated an average weight gain of 1–2 kg within the first year of DMPA use, particularly among younger and overweight women [16]. However, other studies, including **Bonny et al.**, have suggested that perceived weight gain may contribute more to discontinuation than objectively measured changes, highlighting the role of counseling and reassurance [17].

No serious adverse events were observed in the current study, reinforcing the safety profile of DMPA when used in appropriately selected women. This observation is in agreement with large cohort studies and WHO reports that have consistently demonstrated the safety of progestin-only injectables, even in settings with limited resources [18]. The overall feasibility of DMPA use observed in this study is comparable to community-based studies from low- and middle-income countries, such as the evaluation by **Jain et al.**, which emphasized that health-system factors, provider training, and follow-up mechanisms are as critical as individual-level factors in determining success [19].

In comparison with similar studies, the findings of the present study reaffirm that injectable DMPA is a feasible, acceptable, and effective contraceptive option when integrated into routine family planning services. Adequate pre-injection counseling regarding expected menstrual changes, proactive follow-up, and addressing myths related to weight gain and fertility return are essential to improve continuation rates. These measures are particularly relevant in the Indian context, where injectable contraceptives are increasingly being promoted to expand contraceptive choice and reduce unmet need for spacing methods [20].

CONCLUSION

The findings of the present study indicate that injectable depot medroxyprogesterone acetate (DMPA) is a feasible, acceptable, and effective contraceptive option among women attending a tertiary care center. Universal acceptance at initiation and satisfactory continuation rates over follow-up reflect good user acceptance when appropriate counseling and access are ensured. Menstrual irregularities and amenorrhea were the most commonly observed side effects, while weight gain was modest and clinically acceptable, with no serious adverse events reported. Younger age was associated with better continuation, highlighting the importance of targeted counseling for older women. Overall, DMPA demonstrated a favorable safety profile and high contraceptive utility. Strengthening pre-injection counseling, addressing concerns regarding bleeding patterns and weight changes, and ensuring regular follow-up can further enhance continuation and satisfaction. The study supports the integration of injectable DMPA into routine family planning services as a reliable spacing method, contributing to expanded contraceptive choice and reduction of unmet need.

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