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Original Research Article

Study of compliance of depot medroxy progesterone acetate in contraception in a tertiary care hospital

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ABSTRACT

Background: This study aimed to evaluate the compliance and continuity of depot medroxyprogesterone acetate (DMPA) as a contraceptive method and assess its side effects among women at a tertiary care institution.
Methods: This prospective observational study was conducted in the obstetrics and gynecology department of a metropolitan teaching hospital, including 45 women aged 20-45 seeking temporary contraception with DMPA.
Results: The majority of participants were aged 25-30 years (40%) and had a parity of two (44.4%). All participants received at least one dose, with 75.5% receiving a second dose and 42.2% completing three doses. Side effects following the first dose were observed in 24.3% of women, mainly irregular bleeding (11.1%), along with amenorrhea, weight gain, and headaches (4.4% each). Adverse effects increased to 50% in the second dose, with irregular bleeding affecting 26.4%, and 47.4% reported side effects after the third dose, primarily weight gain (21.1%) and amenorrhea (15.7%). The timing of administration showed that 36% of participants received DMPA post-abortion, 31.1% post-menstrual, and 27% transitioned from other contraceptives. Side effects peaked with the second dose, while the continuity rate declined from 75.5% after the first dose to 39% after the third.
Conclusions: Despite side effects contributing to decreased continuity, DMPA remains a viable contraceptive option with proper counselling and follow-up. Further research is recommended to explore outcomes in women continuing beyond three doses for better insights into long-term compliance and side-effect management.

Keywords: Depot medroxyprogesterone acetate, Contraceptive compliance, Side effect

INTRODUCTION

The use of safe and effective contraception is crucial in India, a country with one of the largest and fastest-growing populations in the world.[1] Despite government efforts to reduce the birth rate through various initiatives, a lack of awareness and knowledge about contraception continues to pose challenges, contributing to the limited success of these measures. The contraceptive prevalence rate in India is currently 54.8%.[2] According to National Family Health Survey (NFHS-3), approximately 30% of fertility in India was classified as unwanted, highlighting a significant gap between the demand for and availability of family planning measures. The overall unmet need for contraception in India is about 13%, particularly high among women aged 15-19 and those aged 20-24, with 15% of women needing contraception for spacing and over 6% for limiting births.[3]

Increasing consistent use of effective contraception is the most efficient way to reduce unintended pregnancies. Although contraceptive methods are widely available and

cost-effective, a lack of awareness and understanding persists. Additionally, long-term and continuous use of contraceptives is not accepted in certain communities. Long-term contraceptive options, such as an injection every three months, can improve compliance and reduce side effects, making them more acceptable.[4,5]

Depot medroxyprogesterone acetate (DMPA) is a progestin-only contraceptive method administered via a 3-monthly intramuscular injection, delivering 150 mg of Medroxyprogesterone Acetate in a microcrystalline suspension to delay hormone absorption post-injection. DMPA offers long-acting, effective, and reversible contraception, with a typical failure rate of 0.3 per 100 woman-years, comparable to implantable contraceptives, copper intrauterine devices (IUDs), or surgical sterilization.[6,7] DMPA is often preferred by women who find it challenging to remember daily oral contraceptive pills (OCPs) or who prefer not to use an IUD. Concerns about early postpartum administration of DMPA include potential impacts on infant safety, inhibition of lactation, and maternal metabolism; however, studies indicate that these concerns are generally unsupported.[8,9]

Self-administration of subcutaneous DMPA (DMPA-s.c.) has been found to be feasible, acceptable, and effective. A randomized trial with 137 women comparing self-administration to clinic administration confirmed its therapeutic efficacy through measurements of trough serum concentrations.[10] Additionally, progestin-only contraceptives do not negatively affect lactation; in fact, they may enhance the quality and duration of breastfeeding. Thus, DMPA is a suitable contraceptive choice for lactating women.[11]

Providing contraceptive advice is essential for promoting community health. An ideal contraceptive should align with an individual's personal, social, and medical needs. This study aims to raise awareness about the use of DMPA among women and to build confidence in its use among healthcare practitioners.

Aims and objectives

The compliance of DMPA as a contraceptive in a tertiary care institution was evaluated by assessing the continuity rate and analysing the side effects.

METHODS

This study was an observational study with both retrospective and prospective components, conducted at TNMC and BYL Nair Hospital, Mumbai, from October 2018 to September 2019.

Selection criteria

The study included women aged 20–45 years who sought temporary contraception for birth spacing or to postpone permanent sterilization. Participants included those who were postpartum and breastfeeding for over six weeks, post-abortion women, or women in days 1–7 of their menstrual cycle. Exclusion criteria included those desiring a rapid return of fertility, blood pressure above 160/100 mmHg, unexplained vaginal bleeding, diabetes of more than 20 years, known or suspected breast cancer, severe coagulation disorders, and chronic liver disease.

Procedure

Participants received injections of DMPA 150 mg intramuscularly in the upper lateral gluteal region, administered using a 23–24-gauge needle, as per guidelines issued by the Family Planning Division. The injections were scheduled within 5 days of menstruation for menstruating women, within 7 days post-abortion, and at 6 weeks postpartum for recently delivered women. Follow-up visits were conducted every 3 months over a total duration of 9 months.

During each follow-up visit, changes in health status and menstrual patterns were monitored, alongside physical examinations to measure weight and blood pressure. Additional investigations were performed as required, including blood sugar testing in diabetic participants and hemoglobin level assessments in anemic patients.

Ethical approval

Ethics committee approval was obtained prior to the commencement of the study. The study began after receiving approval from the Ethics Committee for Academic Research (ECARP) of the institution. It adhered to the Helsinki Guidelines (2008), National Guidelines for Research in Human Subjects (2006) 13, and Indian GCP Guidelines.[12-14]

Statistical analysis

Data were entered into Microsoft excel and analysed using statistical package for the social sciences (SPSS) software version 26. Descriptive statistics were applied, and the results were presented using tables, graphs, and bar diagrams. Qualitative data were expressed as frequencies and percentages and analysed using the Chi-square test, while quantitative data were presented as means and standard deviations and compared using the t-test. A p value of <0.05 was considered statistically significant.

RESULTS

Among the participants, 11.5% (5 women each) were in the age ranges of 20-25 years and 40-45 years. The majority, 40% (18 women), were aged between 25-30 years, while 24.4% (11 women) were between 30-35 years.

In terms of parity, 26.6% (12 women) were primigravida, 44.4% (20 women) had a parity of 2, and 26.6% (13 women) had a parity of 3 or more (Table 1).

Following the first dose of DMPA, 24.3% (11 women) reported experiencing adverse effects, with irregular bleeding being the most common (11.1%, or 5 women). Other reported side effects included amenorrhea, weight gain, and headache, each occurring in 4.4% of cases. These side effects led some women to discontinue DMPA.

Among the 34 women who received a second dose, the most frequently reported adverse effect was irregular bleeding, affecting 26.4% (9 women). Amenorrhea was noted in 11.7% of the women, while 5.8% experienced weight gain and headaches. For the 19 women who completed all three doses, the most common adverse effect was weight gain (21.1%), followed by amenorrhea (15.7%) and irregular bleeding (10.5%). Overall, 47.4% of women who received all three doses reported some adverse effects.

All 45 women received at least one dose of DMPA; 75.5% (34 women) received two doses, while only 42.2% (19 women) completed all three doses.

Table 1: Age distribution, number of doses received and contraceptive usage amongst study population.

Variables	Number	Percentage (%)
Age distribution (years)		
Less than 20	0	0
20 to 25	5	11.10
25 to 30	18	40
30 to 35	6	13.30
35 to 40	11	24.40
40 to 45	5	11.10
Number of doses received		
Only one dose	45	100
Two doses	34	75.50
Three doses	19	42.20
Contraceptive usage		
Lactational amenorrhea	5	11.10
Oral contraceptives	5	11.10
Barrier methods	15	33.30
None	20	44.40
Total	45	100

Table 2: Adverse effect after 1st, 2nd and 3rd doses amongst study population.

Adverse effect	After 1st dose (%)	After 2nd dose (%)	After 3rd dose (%)	Total
Amenorrhea	2 (4.4%)	4 (11.7%)	3 (15.7%)	9
Weight gain	2 (4.4%)	2 (5.8%)	4 (21.1%)	8
Headache	2 (4.4%)	2 (5.8%)	0 (0%)	4
Irregular bleeding	5 (11.1%)	9 (26.4%)	2 (10.5%)	16
Total	11 (24.4%)	17 (50%)	9 (47.3%)	37

Table 3: Continuity rate of DMPA injection amongst study population.

Continuity rate of DMPA injection	Number	Percentage (%)
After one dose	34	75.50
After two doses	15	44.10
After three doses	6	39
Total adverse effects	37	100

The study also analysed the timing of DMPA administration. The most common timing was post-abortion, within 7 days after an abortion, accounting for 36% of cases. Post-menstrual administration was the second most common (31.1%), followed by 27% of women who switched to DMPA from another regular contraceptive method, and 6.7% who received DMPA postpartum.

The methods of contraception used by the women prior to DMPA were also evaluated. Among the 45 participants, 11.1% (5 women) had relied on lactational amenorrhea and oral contraceptives, 33% used barrier methods, and 44.4% (20 women) did not use any contraceptive method.

Amenorrhea was the predominant complaint after the second dose, while weight gain was most common after the third dose. Headaches were reported after the first and second doses but were absent with the third dose. Irregular bleeding was the most frequent overall complaint, with the highest incidence after the second dose, followed by the first and third doses. The overall incidence of adverse events was highest after the second dose (50%), followed by the third (47.3%) and the first (24.4%) (Table2).

Lastly, Table 3 presents the continuity rates for DMPA use after each dose. The continuity rate was highest after the first dose at 75.5%, then decreased to 44.1% after the second dose, and further declined to 39% after the third dose.

DISCUSSION

This prospective observational study was conducted at a tertiary institute in a metropolitan city. The primary objective was to assess the continuity rate of DMPA injections and analyze the adverse effects along with their frequency based on the number of doses administered. A total of 45 women participated in the study, and adverse effects were monitored after obtaining written informed consent.

Age distribution

In our study, the most common age group was 25–30 years, accounting for 40% of the participants, followed by the 35–40 years age group, which constituted 24.4%. Notably, there were no participants under the age of 20. Most women attending the family planning outpatient department (OPD) belonged to the 25–30 years age group, as they were more receptive and compliant to family planning counselling. 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.[15]

Parity distribution

In our study, 44.4% of women who received DMPA had a parity of two, 26.6% had a parity of three or more, and 26.7% were primiparous. The largest group seeking contraception consisted of women who had completed their desired family size. 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.[15]

Distribution according to doses received

All participants (100%) received the first dose of DMPA. However, the continuation rate declined with subsequent doses, with 75.5% of participants receiving the second dose and only 42.2% receiving the third dose. This decline in continuation rates could be attributed to factors such as loss to follow-up, distance from the hospital, and adverse effects leading to discontinuation. Detailed information regarding the adverse effects is provided below.

Adverse effects

After the first dose

Following the first dose of DMPA, 24.3% of participants experienced adverse effects, with irregular bleeding being the most common, reported by 11.1% of the women. Other side effects, such as headache, weight gain, and amenorrhea, were each reported by 4.4% of participants.

After the second dose

Among the 34 women who received a second dose of DMPA, 50% experienced adverse effects. The most frequently reported was irregular bleeding (26.4%), followed by amenorrhea (11.7%), headache (5.8%), and weight gain (5.8%).

After the third dose

Of the 19 women who received the third dose, 47.3% reported adverse effects. The most common was weight gain (21.1%), followed by amenorrhea (15.7%) and irregular bleeding (10.5%).

Overall adverse effects

The incidence of adverse effects was highest after the second dose, with 50% of participants reporting side effects, followed by the third dose (47.3%) and the first dose (24.4%). Irregular bleeding was the most common adverse effect observed in our study, followed by amenorrhea, weight gain, and headache.

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%).[15] Another study by Paul et al identified menstrual disturbances and weight gain as the most common side effects, along with headaches, tiredness, rash, nausea, breast enlargement, and acne. They also reported a 1.6% discontinuation rate due to contraceptive failure, which was not observed in our study.[16]

Continuity rate analysis

The continuity rate in our study was calculated as the percentage of women continuing DMPA use after each dose. The rates were 75.5% after the first dose, 44.1% after the second dose, and 39% after the third dose.

In the study by Fonseca et al, the continuation rates were 73% after the first dose, 59% after the second dose, and 41% after the third dose. Their study also provided data for the fourth and fifth doses, showing continuation rates of 31.5% and 29%, respectively.[15]

Limitations

A limitation of this study was the lack of follow-up for women who received more than three doses. Future research could explore outcomes for those continuing with additional doses.

CONCLUSION

Our study highlights that while DMPA is an effective long-acting contraceptive option, its continuation rate declines with subsequent doses due to adverse effects, which increase in frequency after the second dose. Irregular bleeding was the most common side effect after the first and second doses, while weight gain was predominant after the third dose.

The findings underscore the importance of proper counselling and regular follow-ups to address these side

effects, improve adherence, and ensure better outcomes. This study advances understanding by emphasizing the need for tailored strategies to enhance user satisfaction and continuity, thereby optimizing the benefits of DMPA as a contraceptive choice.

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REFERENCES

1. Finer LB, Zolna MR. Unintended pregnancy in the United States: incidence and disparities, 2006. Contraception. 2011;84:478-85.
2. International Institute for Population Sciences (IIPS), 2010. District Level Household and Facility Survey (DLHS-3), 2007-08: India. Mumbai: IIPS. Available at: https://www.scirp.org/reference/referencespapers?referenceid=189686. Accessed on 28 November 2024.
3. Ventura SJ, Abma JC, Mosher WD, Henshaw SK. Estimated pregnancy rates for the United States, 1990-2005: an update. Natl Vital Stat Rep. 2009;58:1-14.
4. Lindberg L, Santelli J, Desai S. Understanding the decline in adolescent fertility in the United States, 2007–2012. J Adolesc Health. 2016;59(5):577-83.
5. Singh P, Rupa C, Ushma, Yadav P. Study of Effectiveness of DMPA in Postpartum and Postabortal Period. OSR J Dental Med Sci. 2015;14(2):74-8.
6. Westoff C. Depot medroxyprogesterone acetate injection: a highly effective contraception with proven long term safety. Contraception. 2011;68(2):75-87.
7. Trussell J, Kost K. Contraceptive failure in the United States: A critical review of the literature. Stud Fam Plann. 1987:18(5):237-83.
8. Brownell E, Fernandez I, Howard C, Fisher S, Ternullo S, Buckley R, et al. A Systematic Review of Early Postpartum Medroxyprogesterone Receipt and Early Breastfeeding Cessation: Evaluating the Methodological Rigor of the Evidence. Breastfeed Med. 2012;7(1):10-8.
9. Rodriguez M, Kaunitz A. An evidence-based approach to postpartum use of depot medroxyprogesterone acetate in breastfeeding women. Contraception. 2009;80(1):4-6.
10. Beasley A, White KO, Cremers S, Westhoff C. Randomized clinical trial of self-versus clinical administration of subcutaneous depot medroxyprogesterone acetate. Contraception. 2014;89:352-6.
11. Peipert JF, Zhao Q, Allsworth JE, Petrosky E, Madden T, Eisenberg D, et al. Continuation and satisfaction of reversible contraception. Obstet Gynecol. 2011;117:1105-13.
12. World Medical Association. WMA Declaration of Helsinki - Ethical Principles for Medical Research Involving Human Subjects. Available at: http://www.wma.net/en/ publications/10policies/b3/. Accessed on 28 November 2024.
13. Indian Council of Medical Research. Ethical Guidelines for Biomedical Research on Human participants. 2006. Available at: http://icmr.nic.in/ethical_ guidelines.pdf. Accessed on 28 November 2024.
14. Central Drugs Standards Control Organization. Guidance for Industry on submission of Clinical Trial application for evaluating safety and efficacy. Available at: www.cdsco.inc.in/CDSCO- Guidance For Industry.pdf. Accessed on 28 November 2024.
15. Fonseca M, Deshmukh PY, Kharat D. DMPA: acceptance and compliance in a tertiary care hospital in Mumbai, India. Int J Reprod Contracept Obstet Gynecol. 2017;6:3879-81.
16. Paul C, Skegg D, Williams S. Depot medroxyprogesterone acetate. Contraception. 1997;56(4):209-14.

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