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Original Research Article

Influence of educational status on compliance and psychological outcomes of injectable contraceptive use among postpartum mothers

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ABSTRACT

Background: Injectable depot Medroxyprogesterone acetate (DMPA) is a progestogen-only contraceptive widely used in the postpartum period. Despite its efficacy, there is limited regional data on compliance patterns and psychological impacts associated with its use among postpartum women in Eastern India. The objectives were to assess the clinical and biochemical adverse drug reactions of DMPA, analyze compliance levels in relation to educational status and evaluate psychological outcomes using the CES-D depression scale in postpartum mothers.
Methods: This cross-sectional observational study included 107 postpartum women attending the Antara Clinic under the Department of Community Medicine, Medical College, Kolkata. Inclusion criteria were women aged 18–45 years who received at least one DMPA injection within the past year. Compliance was determined through DMPA card review. Depression was evaluated using the CES-D scale and lipid profiles were analyzed.
Results: The mean age of participants was 27.14±4.28 years. Of the total, 50% had received their first injection, 36% the second, and 15% three or more. ADRs were reported in 91% of participants, predominantly menstrual abnormalities (64%), weight gain (40%), and headache (10%). Amenorrhea was more common among ≥3 injection recipients (43%). Compliance was observed in 56% of participants and was significantly associated with educational status; 83% of those with secondary or higher education showed good compliance ($p<0.001$; OR=18.5). Discontinuation was most commonly due to irregular spotting (30%). Depression scores (CES-D≥16) were significantly higher in those receiving ≥3 injections (81%) ($p=0.001$; OR=7.616).
Conclusion: The study highlights a significant association between educational status and compliance with DMPA use. Pre-treatment counselling, especially for women with lower educational levels, is crucial to improving adherence and managing adverse outcomes.

Keywords: Depot medroxyprogesterone acetate, Postpartum women, Injectable contraceptive, Compliance, Educational status, CES-D score

INTRODUCTION

India, the world's second most populous country, is home to over 1.36 billion people nearly 17.5% of the global population despite covering only 2.4% of the world's land area.[1] Such demographic pressure makes family planning a cornerstone of national health policy, as it reduces unintended pregnancies and improves maternal and child

survival outcomes.[2,3] Injectable contraceptives, particularly depot Medroxyprogesterone acetate (DMPA), have emerged as a vital option in the postpartum period because of their high efficacy, long duration of action, and convenience.[4] Administered once every three months, DMPA primarily acts by suppressing ovulation, thickening cervical mucus, and inducing endometrial atrophy.[5,6] Unlike combined hormonal contraceptives, it is considered safe during lactation as it does not alter breast milk production or composition.[7-9] In addition, DMPA provides non-contraceptive benefits such as reduction in menstrual blood loss, decreased risk of endometrial cancer, and relief of endometriosis-related symptoms.[10-12]

Despite these advantages, contraceptive needs during the postpartum period remain unmet for many Indian women. National data suggest that nearly one in five pregnancies occur during lactation, largely due to delayed or inconsistent adoption of contraception.[13] Closely spaced pregnancies, particularly those with birth intervals shorter than three years, are associated with significantly higher maternal and neonatal morbidity and mortality.[14,15] This makes timely adoption of postpartum contraception not only a reproductive choice but also a public health imperative in India.

However, women's contraceptive use and continuation patterns are influenced by multiple factors, including socio-demographic status, cultural norms, and access to information.[16,17] Among these, educational status has a particularly decisive role. Women with higher education are more likely to initiate long-acting methods such as DMPA, continue them for longer durations, and demonstrate greater resilience in managing side effects compared with less-educated women.[18-20] Education influences not just awareness, but also interpretation: for example, irregular bleeding may be perceived as a tolerable side effect by an educated woman, whereas a woman with limited education may view it as a serious health concern, leading to early discontinuation.

Counselling and follow-up further strengthen compliance, reducing discontinuation and improving psychological adaptation to contraceptive use.[21,22] Yet, while several studies have examined the role of education in contraceptive uptake, fewer have explored how it affects psychological outcomes such as anxiety, satisfaction, and confidence in method continuation.[23-25]

Against this background, the present study investigates the influence of educational status on compliance and psychological outcomes among postpartum women using injectable contraceptives. By linking educational attainment with method continuation and psychological adaptation, the study aims to provide insights that may help tailor family planning interventions to the socio-educational realities of Indian women.

The aims and objectives of the study were to assess the level of compliance with DMPA among postpartum women, examine the association between educational status and contraceptive compliance among DMPA recipients, evaluate psychological outcomes using the Center for Epidemiologic Studies Depression (CES-D) scale among women receiving DMPA and to explore trends in contraceptive continuation and discontinuation based on injection frequency and sociodemographic characteristics.

METHODS

This was a cross-sectional observational study conducted over 18 months (February 2019 to July 2020) at the Antara Clinic under the Department of Community Medicine, in collaboration with the Department of Pharmacology, Medical College, Kolkata. Postpartum women who had received at least one injection of DMPA within the past year were recruited from the outpatient department on fixed days (Mondays and Thursdays) during the study period.

Inclusion criteria

Inclusion criteria were postpartum women aged 18–45 years, having received DMPA as contraception within the last one year, non-pregnant at time of recruitment, and who provided valid informed consent.

Exclusion criteria

Exclusion criteria included unexplained vaginal bleeding, current use of other contraceptive methods, pre-existing chronic illnesses, critical illness requiring hospital admission, or known gynecological disorders.

A total of 107 eligible participants were enrolled through consecutive sampling. Data were collected using a structured case record form and included demographic details, anthropometric measurements (weight, height, waist-hip ratio), and clinical history. Compliance with DMPA was evaluated using injection records. Psychological assessment was done using the Center for Epidemiologic Studies Depression (CES-D) scale.

Ethical clearance was obtained from the Institutional Ethics Committee, Medical College Kolkata (Ref: MC/KOL/IEC/NON-SPON/11/01-2019 dated 16.01.2019). Written informed consent was obtained from all participants.

Statistical analysis

Data were entered in Microsoft Excel and analyzed using SPSS. Descriptive statistics were expressed as mean±standard deviation, percentages, or proportions.

Associations were tested using Chi-square test, and odds ratios with 95% confidence intervals were calculated. A p value <0.05 was considered statistically significant.

RESULTS

A total of 107 postpartum women receiving DMPA were included in the study.

Figure 1 shows pie chart showing the age distribution among the participants.

Weight summary

The participants' weight ranged from 46 to 90 kg, with a mean weight of 64.7±9.6 kg (Figure 2).

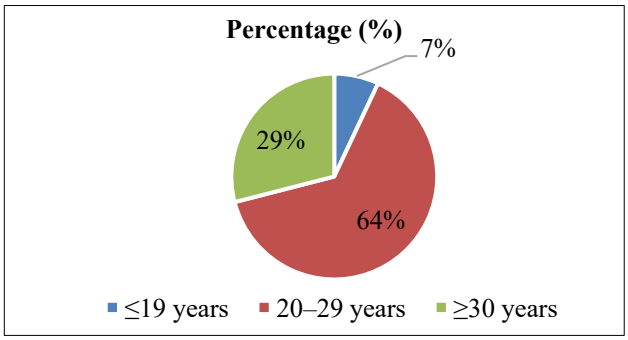

Figure 1: Pie chart showing the age distribution among the participants.

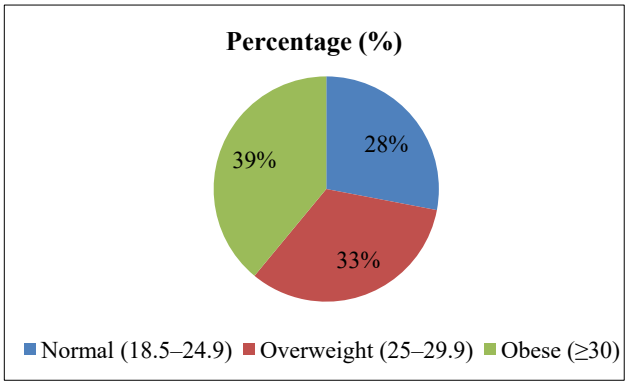

Figure 2: Pie chart showing distribution of participants based on BMI.

Distribution of participants by number of injections received

Half of the participants (50%) had received their 1st injection, while 36% had taken the 2nd injection. Only 15% of the women had received three or more injections, showing most were early users (Figure 3).

Compliance and educational status

Out of 107 participants, 56% were found to be compliant with DMPA usage. A statistically significant association was observed between educational status and compliance (χ^2=41.206, p=0.000). Women with secondary education or above ("good education") were 18.5 times more likely to be compliant with DMPA compared to those with lower educational status ("average education"), with an odds ratio of 18.500 (Figure 4).

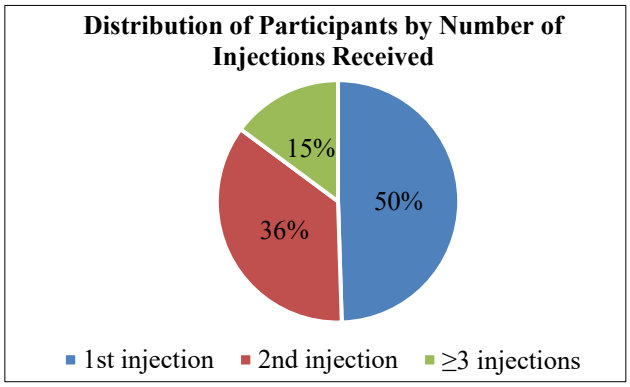

Figure 3: Pie chart showing distribution of participants by number of injections received.

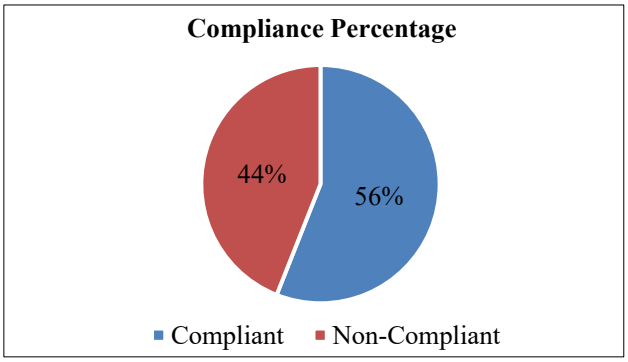

Figure 4: Pie chart showing compliance percentages with DMPA usage.

Figure 5 shows association between educational status and compliance with DMPA use among postpartum women.

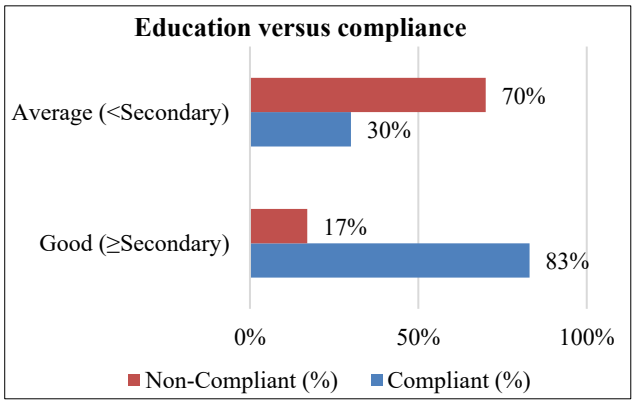

Figure 5: Bar chart showing association between educational status and compliance with DMPA use among postpartum women.

Reasons for discontinuation

Among the study participants, 30% reported discontinuing DMPA. The most common reason cited was irregular

spotting per vagina (30%), followed by desire for conception (19%) and prolonged bleeding days >10 days (16%) (Figure 6).

Depression scores and injection frequency

Depression was assessed using the CES-D scale, with a score ≥16 indicating depressive symptoms. Among recipients of ≥3 DMPA injections, 81% had CES-D scores ≥16.

This association was statistically significant (χ^2=11.236, p=0.001), with an odds ratio of 7.616, indicating a significantly higher probability of depressive symptoms in those receiving more than two injections (Figure 7).

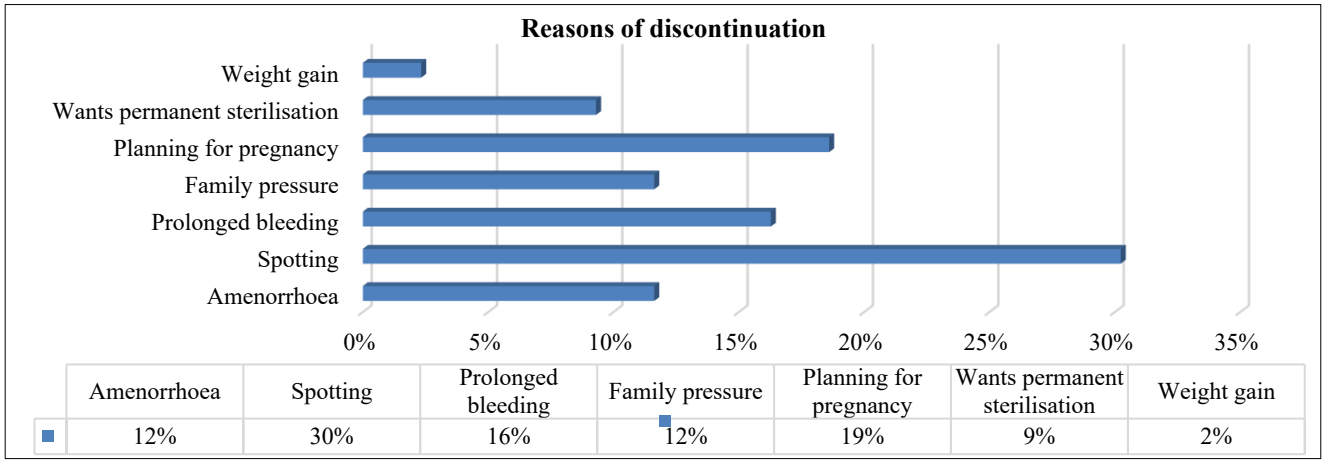

Figure 6: Bar diagram showing distribution of reasons for discontinuation of DMPA among postpartum women.

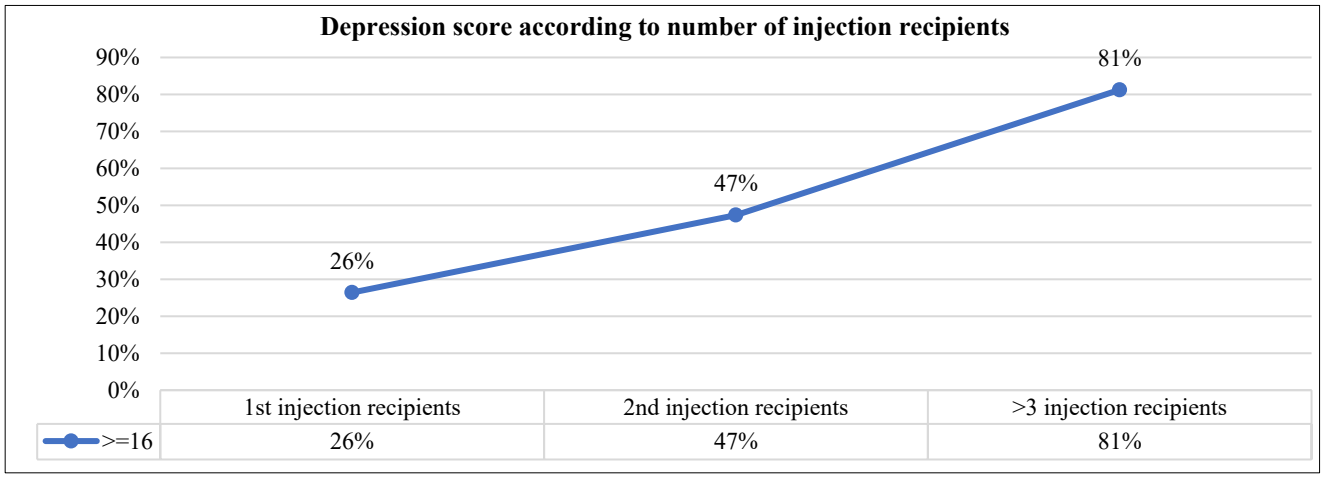

Figure 7: Line diagram showing percentage of depression among women with DMPA usage.

DISCUSSION

This study demonstrates that educational status is a strong determinant of compliance with DMPA use among postpartum women. Women with secondary education or higher were found to be over 18 times more likely to adhere to the injection schedule compared with their less-educated counterparts. This reinforces evidence from India and Nigeria, where maternal education has consistently been linked to contraceptive initiation and sustained use.[21,22] Globally, education enhances health literacy, strengthens health-seeking behaviors, and improves women's ability to interpret and manage side effects, thereby promoting continuation.[1,6] From a programmatic perspective, this suggests that interventions to promote contraceptive uptake should not only improve access but also address educational disparities.

In our study, overall compliance with DMPA was 56%. This finding is consistent with earlier reports from India and sub-Saharan Africa, where adherence ranged between 50–65%.[2,9] However, the moderate level of compliance indicates that nearly half of eligible women discontinue or miss doses. Factors such as service readiness, counseling quality, and follow-up support play a critical role in sustaining adherence. During the COVID-19 pandemic, for example, disruptions in health service delivery led to declines in contraceptive continuation.[8] This highlights the need for innovative approaches, including digital reminder

systems and community-based follow-up, to strengthen continuity of care.[17]

Discontinuation in our cohort was 30%, most commonly due to irregular spotting, prolonged bleeding, and planning for pregnancy. These reasons mirror global findings, where menstrual disturbances remain the leading cause of DMPA discontinuation.[2,23,25] Similar studies from Brazil and Uganda have shown that anticipatory counseling on expected bleeding changes can significantly reduce early discontinuation.[4,9] In line with WHO and UNFPA recommendations, routine counseling should emphasize that such side effects are generally benign and manageable.[19,20] Our findings reinforce the importance of structured counseling protocols as an integral part of contraceptive service delivery.

An additional dimension explored in this study is the psychological impact of DMPA. We found that 81% of women who received three or more injections had CES-D scores ≥16, with a significant association between prolonged use and depressive symptoms. Evidence on this association remains mixed. Some studies suggest that progestin-only contraceptives may increase the risk of depressive symptoms, particularly in the postpartum period, whereas systematic reviews have reported protective effects in women with pre-existing vulnerabilities.[5] Research on young mothers has also linked DMPA use to depressive symptom scores.[24] These findings underscore the importance of counseling and regular psychological screening. Given that maternal mental health is increasingly recognized as central to postpartum well-being and contraceptive satisfaction, integrating mental health assessment into contraceptive follow-up visits may enhance both safety and acceptability.[16,18]

Taken together, three programmatic implications emerge from our findings. First, educational interventions should be prioritized, as improving women's knowledge and health literacy can substantially increase compliance. Second, anticipatory counseling on bleeding patterns must become standard practice to reduce discontinuation. Third, routine mental health screening should be integrated into contraceptive programs to identify and support women at risk of psychological distress. These strategies, aligned with World Health Organization (WHO) recommendations, have the potential to improve both acceptance and long-term continuation of injectable contraception in postpartum women.[19,25]

CONCLUSION

Educational status significantly influences compliance with DMPA among postpartum women, with higher education associated with better adherence. Menstrual changes and psychological symptoms, particularly with prolonged use, impact continuation. Effective counseling and regular follow-up are essential to improve acceptance and sustained use of injectable contraception.

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

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