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Association between duration of depo medroxyprogesterone acetate (DMPA) use and weight gain among contraceptive acceptors

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Abstract

Background: Weight gain is one of the commonly reported concerns among users of the three-month injectable contraceptive Depo Medroxyprogesterone Acetate (DMPA). The duration of DMPA use may be associated with changes in body weight.

Purpose: This study aimed to determine the association between the duration of DMPA contraceptive use and weight gain among contraceptive acceptors.

Method: This study employed an analytical observational design with a cross-sectional approach. The study population consisted of 150 DMPA contraceptive acceptors registered at the Devi Yulianti Midwife Independent Practice, South Lampung. Total sampling was used, resulting in 150 respondents. Data were obtained from family planning registration records and medical records using an observation sheet. Data were analyzed using univariate analysis and the Chi-Square test, with a significance level of $\alpha = 0.05$. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated to describe the magnitude of the association.

Results: Most respondents had used DMPA for 1–2 years (96; 64.0%), while 54 (36.0%) had used DMPA for more than 2 years. Overall, 130 respondents (86.7%) experienced weight gain. A significant association was found between the duration of DMPA use and weight gain ($p = 0.009$), with an OR of 6.000 (95% CI: 1.336–26.955).

Conclusion: The duration of DMPA use was significantly associated with weight gain among contraceptive acceptors. Respondents who had used DMPA for more than two years had higher odds of experiencing weight gain than those who had used DMPA for 1–2 years.

Suggestion: DMPA acceptors should monitor their body weight regularly and maintain a balanced diet and adequate physical activity. Healthcare providers should provide appropriate counseling regarding possible changes in body weight during DMPA use.

Keywords: Contraceptive Acceptors; DMPA; Weight Gain.

INTRODUCTION

Family planning is an important component of reproductive health services because it enables couples of reproductive age to regulate the number and spacing of births. The selection of contraceptive methods should consider effectiveness, acceptability, convenience, and possible adverse effects. Hormonal contraceptives are among the methods commonly selected by women of reproductive age because of their effectiveness and practicality (World Health Organization, 2022; Putri & Nikmah, 2021). Depo Medroxy Progesterone Acetate (DMPA) is a three-month injectable contraceptive containing progestin and is administered intramuscularly at regular

intervals. DMPA prevents pregnancy primarily by suppressing ovulation and producing changes in cervical mucus and the endometrium. Its practical administration and high contraceptive effectiveness make DMPA an important option for family planning acceptors (Hartanto, 2004; Jitowiyono & Rouf, 2019).

Despite its effectiveness, DMPA may cause several adverse effects, including menstrual disturbances and changes in body weight. Changes in body weight are important to consider because they may affect acceptors' comfort and continuation of contraceptive use. Previous studies have reported an association between DMPA use and increased body

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weight, particularly among users with longer durations of use (Handayani, 2024; Roza & Atzmardina, 2019; Yulivantina & Agustiani, 2024). The potential increase in body weight among DMPA users may be related to the physiological effects of progesterone. Prolonged exposure to progesterone may affect appetite regulation, energy metabolism, and fat deposition. Increased energy intake that is not balanced by adequate physical activity may subsequently contribute to an increase in body weight (Mas'udah et al., 2021; Raidanti & Wahidin, 2021).

The association between DMPA use and weight gain is clinically relevant because body weight is influenced by multiple factors, including age, dietary patterns, physical activity, metabolic characteristics, and reproductive history. Therefore, the duration of DMPA use needs to be considered together with individual characteristics when assessing changes in body weight (Husain et al., 2024; Rizki & Hamdan, 2026).

RESEARCH METHOD

This study used a quantitative analytical observational design with a cross-sectional approach. The independent variable was the duration of DMPA contraceptive use, while the dependent variable was weight gain among DMPA contraceptive acceptors.

The study was conducted from March to April 2026 at the Devi Yulianti Midwife Independent Practice, Tanjung Rejo 1, Natar Village, Natar District, South Lampung, Lampung Province. The study population consisted of 150 DMPA contraceptive

acceptors registered at the study site. Because the population was manageable and all eligible respondents were included, total sampling was used, resulting in a sample of 150 respondents.

Data were obtained from secondary records, including the family planning registration book and medical records. Data were collected using an observation sheet containing respondent characteristics, including age, parity, height, duration of DMPA use, and body weight before and after DMPA use.

The duration of DMPA use was categorized into two groups: 1–2 years and more than 2 years. Weight gain was categorized as an increase of more than 1 kg, whereas respondents with an increase of less than 1 kg were categorized as having no weight gain.

Data processing consisted of editing, coding, data entry, processing, and cleaning. Univariate analysis was conducted to describe the distribution of respondent characteristics, duration of DMPA use, and weight gain. Bivariate analysis was performed using the Chi-Square test to determine the association between duration of DMPA use and weight gain. Statistical significance was determined at $\alpha = 0.05$. Odds ratios (ORs) with 95% confidence intervals (CIs) were presented to describe the magnitude of the association.

This study received ethical approval from the Health Research Ethics Committee of Malahayati University, Bandar Lampung, on April 8, 2026, under reference number 5255/EC/KEP-UNMAL/IV/2026.

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RESEARCH RESULT

Tabel Characteristics of Respondents (N=150)

Variable	Results	p-value	OR (95% CI)
Age (Mean±SD) (Years) (Range)	(35.8 ± 7.4) (8-52)		
< 20	3/2.0		
20-35	86/57.3		
> 35	61/40.7		
Parity (n%)			
1	29/19.3		
2	81/54.0		
3	40/26.7		
Duration of DMPA Use (n%)		0.009	6.000 (1.336-26.955)
1-2 years	96/64.0		
>2 years	54/36.0		
Weight Gain (n%)			
Increased	130/86.7		
Not increased	20/13.3		

The majority of respondents were aged 20–35 years, with 86/57.3% of respondents in this age group, while 61/40.7% were aged >35 years and 3/2.0% were aged <20 years. The mean age of respondents was approximately 35.8 ± 7.4 years, with a range of 18–52 years. Regarding parity, most respondents had parity 2 (81/54.0%), followed by parity 3 (40/26.7%) and parity 1 (29/19.3%). Most respondents had used DMPA for 1–2 years (96/64.0%), while 54/36.0% had used it for >2 years. Duration of DMPA use was significantly associated with weight gain (p=0.009; OR=6.000; 95% CI: 1.336–26.955). Overall, 130/86.7% of respondents experienced weight gain, whereas 20/13.3% did not experience weight gain.

DISCUSSION

Among the 150 respondents, most were aged 20–35 years (86; 57.3%), followed by those aged >35 years (61; 40.7%). The predominance of women aged 20–35 years indicates that most DMPA users were in their active reproductive years, when the need for effective contraception remains high. DMPA is commonly selected because of its effectiveness and convenient three-month administration.

Age may theoretically contribute to changes in body weight. With increasing age, muscle mass tends to decline while fat mass increases, accompanied by a reduction in basal metabolic rate. These changes can reduce energy expenditure and increase the tendency for fat accumulation (Primiastuti et al., 2025). However, age was included only as a descriptive characteristic in this study and was not statistically analyzed in relation to weight gain. Therefore, this study cannot establish an association between age and weight gain among DMPA users.

Most respondents had a parity of 2 (81; 54.0%), followed by parity 3 (40; 26.7%) and parity 1 (29; 19.3%). This finding is consistent with another study who reported that 51.9% of DMPA users had a parity of 2 (Husain et al., 2024). And who found that 55.4% had two to three children. The predominance of women with two children may reflect the use of contraception to prevent further pregnancies after achieving the desired family size (Yulivantina & Agustiani, 2024).

Parity may also theoretically influence body weight because repeated pregnancies can contribute to the accumulation of body fat, particularly when pre-pregnancy weight is not fully regained after delivery

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(Pakpahan, 2022). Another study reported that multiparous women may have a higher BMI than primiparous women, potentially due to metabolic changes, reduced physical activity, and accumulated fat reserves. Nevertheless, parity was not statistically analyzed in this study; therefore, its relationship with weight gain among DMPA users cannot be established (Bryllianna et al., 2026).

Of the 150 respondents, 96 (64.0%) had used DMPA for 1–2 years, while 54 (36.0%) had used it for more than 2 years. This distribution is similar to findings in which 65.2% of DMPA users had used the method for 1–2 years (Yusuf et al. (2020). Another research also reported that 61.5% of injectable contraceptive users had used DMPA for 1–2 years. The relatively high proportion of users in this duration category may reflect the convenience and effectiveness of DMPA, which requires administration only every three months (Yulivantina & Agustiani, 2024).

DMPA contains 150 mg of depot medroxyprogesterone acetate, a synthetic progesterone administered every 12 weeks. In addition to suppressing ovulation, progesterone exposure may influence appetite and metabolic processes (Dwiputri, 2024). DMPA use may stimulate appetite, long-term exposure may affect carbohydrate and fat metabolism and increase adipose tissue deposition. further reported that weight gain may increase with longer DMPA use. Thus, duration of use is an important factor to consider when assessing potential weight changes among DMPA users (Mas'udah et al., 2021; Raidanti & Wahidin, 2021; Husain et al., 2024).

Weight gain among DMPA users may be related to the effects of exogenous progesterone on appetite, fluid retention, and fat metabolism. Increased appetite may lead to greater energy intake, while changes in carbohydrate and fat metabolism may promote fat accumulation (Wahyuni et al., 2022; Pakpahan, 2022). Further suggested that prolonged exposure to exogenous progesterone may affect insulin sensitivity and energy storage (Bryllianna et al., 2026).

However, not all respondents experienced weight gain, indicating that the response to DMPA varies between individuals. Weight changes may also be influenced by diet, physical activity, nutritional status, metabolism, genetics, and individual hormonal

responses (Sitorus, 2023). Therefore, DMPA use should be considered one of several factors that may contribute to changes in body weight rather than the sole determinant.

The analysis showed that among respondents who had used DMPA for 1–2 years, 78 (52.0%) experienced weight gain and 18 (12.0%) did not. Among those who had used DMPA for more than 2 years, 52 (34.7%) experienced weight gain and 2 (1.3%) did not. The chi-square test showed a significant association between duration of DMPA use and weight gain ($p=0.009$). The odds ratio was 6.000 (95% CI: 1.336–26.955), indicating that respondents who had used DMPA for more than two years had higher odds of experiencing weight gain than those who had used it for 1–2 years.

This finding is consistent with another study who reported a significant relationship between DMPA duration and weight gain ($p=0.021$) (Roza and Atzmardina, 2019). and another study who also found a significant association ($p=0.013$). The findings support the possibility that longer exposure to exogenous progesterone may contribute to weight gain through increased appetite, fluid retention, changes in fat metabolism, and increased fat deposition (Bryllianna et al., 2026; Varney's Midwifery, cited in Pakpahan, 2022)

Nevertheless, the association should not be interpreted as meaning that prolonged DMPA use inevitably causes weight gain. Two respondents who had used DMPA for more than two years did not experience weight gain, demonstrating individual variation in response. Factors such as diet, physical activity, baseline nutritional status, metabolic characteristics, and genetic factors may also influence weight changes. Therefore, counseling for DMPA users should include information about the possibility of weight gain as well as recommendations for balanced nutrition, regular physical activity, and periodic weight monitoring.

CONCLUSION

It is known that 96 (64.0%) respondents had used DMPA contraceptives for 1–2 years, while 54 (36.0%) respondents had used DMPA contraceptives for more than 2 years. A total of 130 (86.7%) respondents experienced weight gain, while 20 (13.3%) respondents did not experience weight gain. The

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results of the Chi-Square test showed a significant relationship between the duration of DMPA contraceptive use and weight gain among family planning acceptors at PMB Devi Yulianti, S.ST, South Lampung, in 2026, with a p-value of 0.009 (<0.05) and an Odds Ratio of 6.000 (95% CI: 1.336–26.955).

SUGGESTION

It is expected that DMPA contraceptive acceptors will regularly monitor their body weight during contraceptive use and maintain a balanced diet and adequate physical activity. Health workers are also expected to provide counseling regarding the possible effects of DMPA use on body weight and encourage regular monitoring so that changes in body weight can be identified and managed appropriately.

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