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Study on Side Effects among Three-Month Injectable Contraceptive Users in Kupang, Indonesia

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ABSTRACT

Introduction: Three-month injectable contraception (*Depot Medroxyprogesterone Acetate/DMPA*) is one of the most widely used hormonal contraceptive methods in Indonesia, including in the working area of Puskesmas Sikumana, Kupang City, although its use is often accompanied by various side effects. A preliminary study of 10 acceptors found that 40% experienced menstrual disturbances, 30% experienced weight gain, 20% experienced vaginal discharge, and 10% experienced headaches.

Objective: This study aimed to describe the occurrence of side effects among three-month injectable contraceptive acceptors at Puskesmas Sikumana, Kupang City.

Methods: This is a quantitative, descriptive study using a cross-sectional approach. The study population consisted of all three-month injectable contraceptive acceptors registered between January and December 2025, totaling 47 people, all of whom were included as the sample through total sampling. Data were collected using a questionnaire, analyzed univariately, and presented as frequency distributions.

Results: Of the 47 respondents, the majority experienced menstrual disturbances (39 people, 83.0%), weight gain (34 people, 72.3%), headaches (29 people, 61.7%), and vaginal discharge (26 people, 55.3%). The most commonly experienced side effect was menstrual disturbance, reflecting the direct effect of the progesterone hormone in DMPA on the menstrual cycle.

Conclusions: the majority of three-month injectable contraceptive acceptors at Puskesmas Sikumana experienced side effects in various forms, so health workers are encouraged to strengthen comprehensive counseling and periodic monitoring in order to detect and address complaints as early as possible.

Keywords: DMPA; headache; menstrual disturbance; vaginal discharge; weight gain

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INTRODUCTION

Population growth is one of the global challenges facing the world today, alongside global warming, economic hardship, food insecurity, and declining public health. To help prevent overpopulation, governments need to strengthen efforts to reduce birth rates. In Indonesia, this effort is carried out through the Family Planning (KB) program, coordinated by the National Population and Family Planning Board (BKKBN), which encourages all stakeholders to help control population growth through the use of contraceptive methods (Djauharoh, 2023).

Family planning is a key strategy for reducing maternal mortality, particularly among mothers with the so-called "4-Too" risk profile: too young (under 20 years), too many births, too closely spaced pregnancies, and too old (over 35 years) at childbirth. Beyond mortality reduction, the program also aims to improve family welfare by providing information, education, and options for planning the timing, number, and spacing of children.

According to national health statistics, Indonesia's population reached approximately 284.4 million people by June 2025, with an annual growth rate of around 1.09% between 2020 and 2025. The proportion of women aged 15–49 years using contraception nationally reached 56.26%, while the modern contraceptive prevalence rate (mCPR) stood at 63.41% in 2024 (BKKBN, 2024). East Nusa Tenggara (NTT) province, however, ranked 30th of 33 provinces, with a comparatively low contraceptive prevalence of 40.76% among active acceptors (Badan Pusat Statistik Provinsi Nusa Tenggara Timur, 2024). Within Kupang City, injectable contraception is the most widely used method, and at Puskesmas Sikumana specifically, the number of active acceptors reached 210 in 2024, with 47 new three-month injectable contraceptive acceptors recorded between January and December 2025 (Badan Pusat Statistik Kota Kupang, 2024).

A preliminary survey conducted at Puskesmas Sikumana among 10 acceptors of three-month injectable contraception found that 4 people (40%) experienced menstrual disturbances, 3 people (30%) experienced weight gain, 2 people (20%) experienced vaginal discharge, and 1 person (10%) experienced headaches. These findings indicate that a substantial proportion of acceptors experience a range of side effects, which motivated the present study on the occurrence of side effects among three-month injectable contraceptive acceptors at Puskesmas Sikumana, Kupang City.

Among the possible side effects, menstrual pattern disturbance particularly irregular, frequent, or prolonged bleeding has the greatest impact on quality of life and continuation of use. This disturbance often appears during the early months of use and can cause physical discomfort, anxiety, and disruption of daily activities, making it a leading reason for discontinuation. Other complaints, such as weight gain, headache, and nausea, may also affect users' comfort and confidence. Although some of these effects tend to improve over time, they persist in certain users and may reduce satisfaction with, and adherence to, this contraceptive method. Adequate counseling from the outset is therefore essential so that acceptors understand the possible side effects, hold realistic expectations, and remain motivated to continue use when the benefits outweigh the discomfort experienced (Maria, 2020). This study aimed to describe the occurrence of side effects menstrual disturbance, weight change, headache, and vaginal discharge among three-month injectable contraceptive acceptors at Puskesmas Sikumana, Kupang City.

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MATERIALS AND METHODS

This study used a quantitative, descriptive design with a cross-sectional approach, describing the occurrence of side effects among three-month injectable contraceptive acceptors at Puskesmas Sikumana, Kupang City, at a single point in time.

The study population comprised all three-month injectable contraceptive acceptors registered at Puskesmas Sikumana between January and December 2025, totaling 47 people. A total sampling technique was applied, in which the entire population served as the study sample. Inclusion criteria were: acceptors of three-month injectable contraception at Puskesmas Sikumana, willingness to participate and sign an informed consent form, and attendance for an injection visit at the facility. Exclusion criteria were: acceptors who did not attend injection visits regularly, were unwilling to participate, or were absent during the data collection period.

The study was conducted at Puskesmas Sikumana, Maulafa Subdistrict, Kupang City, East Nusa Tenggara, from 5 to 26 May 2026. Data were collected using a structured questionnaire covering respondent characteristics and the occurrence of four side effects: menstrual disturbance, weight change, headache, and vaginal discharge. Primary data were obtained directly from respondents after institutional permits were secured from Universitas Citra Bangsa and Puskesmas Sikumana, and after respondents provided informed consent. Collected data were processed through editing, coding, entry, cleaning, and tabulation prior to analysis (Notoatmodjo, 2018).

Data were analyzed univariately to describe each variable through frequency distribution and percentage, using the formula $P = (f/N) \times 100\%$, where P is the percentage of respondents in a given category, f is the number of respondents in that category, and N is the total number of respondents. The study was conducted in accordance with the ethical principles of respect for human dignity, beneficence, non-maleficence, and justice, and ethical clearance was obtained from the relevant institutional review body prior to data collection.

RESULTS

Puskesmas Sikumana is a primary healthcare center located on Jln. Oebonik 1 No. 4, Sikumana Village, Maulafa Subdistrict, Kupang City, East Nusa Tenggara. The facility delivers integrated primary care through a cluster-based service system in accordance with Ministry of Health Regulation No. 19 of 2024 on the Administration of Community Health Centers, and is staffed by 147 personnel, including 47 midwives.

Table 1. Distribution of Respondents by Age Category (N = 47)

Age Category	f	Percentage (%)
< 20 years	1	2.1
20–35 years	44	93.6
> 35 years	2	4.3
Total	47	100.0

Source: primary data, May 2026

Table 1 shows that most respondents (44 people, 93.6%) were aged 20–35 years, followed by those aged over 35 years (2 people, 4.3%) and those under 20 years (1 person, 2.1%).

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Table 2. Distribution of Respondents by Side Effects Experienced among Three-Month Injectable Contraceptive Acceptors at Puskesmas Sikumana (N = 47)

Side Effect	f	Percentage (%)
Menstrual disturbance – Yes	39	83.0
Menstrual disturbance – No	8	17.0
Weight gain – Yes	34	72.3
Weight stable – No change	7	14.9
Weight decreased	6	12.8
Headache – Yes	29	61.7
Headache – No	18	38.3
Vaginal discharge – Yes	26	55.3
Vaginal discharge – No	21	44.7

Source: primary data, May 2026

Table 2 shows that among the 47 respondents, menstrual disturbance was the most frequently reported side effect (39 people, 83.0%), followed by weight gain (34 people, 72.3%), headache (29 people, 61.7%), and vaginal discharge (26 people, 55.3%). For body weight specifically, 34 respondents (72.3%) reported an increase, 7 (14.9%) reported no change, and 6 (12.8%) reported a decrease.

DISCUSSION

Menstrual Disturbance

The majority of respondents (83.0%) experienced menstrual disturbance, presenting as amenorrhea, menorrhagia, metrorrhagia, or spotting. This is the most commonly reported side effect of DMPA and reflects its underlying mechanism: the progestin suppresses gonadotropin-releasing hormone (GnRH) secretion from the hypothalamus, which in turn reduces follicle-stimulating hormone (FSH) and luteinizing hormone (LH) release, preventing the LH surge required for ovulation. Reduced endogenous estrogen limits endometrial proliferation, while the direct progestogenic effect promotes incomplete secretory transformation, glandular atrophy, and reduced endometrial vascularization changes that manifest clinically as irregular spotting and, with prolonged use, secondary amenorrhea (Husaidah et al., 2023; Fransisca et al., 2023).

These findings are consistent with previous studies reporting menstrual disturbance as the leading complaint among DMPA users (Susilowati, 2023; Hidayanti, 2024), and with case reports identifying irregular bleeding as the primary reason acceptors seek consultation with health workers (Salsabilla et al., 2024). Because this disturbance is an almost inevitable physiological consequence of DMPA's mechanism of action, comprehensive pre- and post-injection counseling at Puskesmas Sikumana is essential to help acceptors anticipate this effect and avoid discontinuing contraception due to unaddressed concern.

Weight Change

Weight gain was reported by 72.3% of respondents, making it the second most common side effect after menstrual disturbance. This is attributable to the effect of synthetic progesterone on appetite regulation and lipid metabolism: DMPA increases neuropeptide Y expression and blunts leptin signaling in the hypothalamus, promotes lipoprotein lipase activity in adipose tissue, and induces mild fluid retention through a weak mineralocorticoid effect, while reduced endogenous estrogen lowers the basal metabolic rate (Nuari et al., 2024; Tamia & Fauziah, 2025).

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These results align with previous research showing progressive weight gain among DMPA users over time (Tamia & Fauziah, 2025; Juniastuti et al., 2023). Notably, 12.8% of respondents reported weight loss, suggesting that individual factors diet, physical activity, and baseline metabolic rate also shape the metabolic response to DMPA. Nutrition and physical activity counseling should therefore be integrated into routine three-month injectable contraception services at Puskesmas Sikumana to help prevent obesity and related complications.

Headache

More than half of respondents (61.7%) reported headache, the third most common side effect after menstrual disturbance and weight gain. This complaint is linked to DMPA-induced suppression of endogenous estrogen, which reduces serotonergic activity via 5-HT2A receptors in the dorsal raphe nucleus, promoting intracranial vasodilation and activation of the trigemino-vascular pathway; concurrent fluid retention and prostaglandin imbalance may further contribute to cerebral vasospasm and vasodilation (Wardani et al., 2023; Wuri, 2023).

This finding is broadly consistent with prior studies reporting headache among three-month injectable contraceptive acceptors, although prevalence varies depending on individual neurovascular sensitivity and history of migraine. Because the mechanism operates indirectly through hormonal fluctuation rather than a direct reproductive-organ effect, not all acceptors experience it with the same intensity. Health workers should equip acceptors with simple self-management strategies adequate rest, hydration, and appropriate analgesic use and refer those with severe or recurrent headache for further medical evaluation.

Vaginal Discharge

Vaginal discharge was reported by 55.3% of respondents, the least frequent of the four side effects examined, though still affecting more than half of acceptors. Suppression of endogenous estrogen reduces glycogen availability in the vaginal epithelium, limiting Lactobacillus-mediated lactic acid production and raising vaginal pH, which weakens the natural defense against pathogenic organisms; progesterone additionally thickens cervical mucus, which can compound the discharge (Sugiyanti, 2023; Andriani et al., 2022; Pratiwi & Rahmawati, 2022).

Because this side effect depends not only on hormonal change but also on individual factors such as genital hygiene and immune status, its lower prevalence relative to menstrual disturbance and weight gain is consistent with the literature. Acceptors should be counseled on genital hygiene and advised to seek prompt evaluation if discharge is accompanied by malodor, greenish discoloration, or marked itching, which may indicate infection requiring further management.

This study is limited by its descriptive cross-sectional design, which cannot establish causal relationships between three-month injectable contraceptive use and the side effects reported; by reliance on questionnaire and interview data, which may be subject to recall bias; and by its exclusion of potentially influential factors such as duration of use, parity, age, and nutritional status.

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CONCLUSIONS

Among 47 three-month injectable contraceptive acceptors at Puskesmas Sikumana, Kupang City, the majority experienced menstrual disturbance (83.0%), weight gain (72.3%), headache (61.7%), and vaginal discharge (55.3%), reflecting the combined hormonal effects of DMPA on the reproductive, metabolic, neurovascular, and vaginal systems. Menstrual disturbance was the most prevalent and physiologically the most direct consequence of DMPA's suppression of the hypothalamic-pituitary-ovarian axis.

Health workers at Puskesmas Sikumana, particularly midwives, are encouraged to strengthen comprehensive pre-service counseling on the possible side effects of three-month injectable contraception, to schedule regular follow-up visits for early detection of complaints requiring further management, and to make information, education, and communication materials available at the point of service. Acceptors are encouraged to actively engage in counseling and to report complaints promptly so that appropriate management can be provided. Future research should employ analytic or comparative designs across a broader range of facilities to examine the factors associated with these side effects in greater depth.

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Availability of Data and Materials

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Authors' Contributions

LNDC was solely responsible for the conception and design of the study, data collection, data analysis and interpretation, and drafting and final approval of the manuscript.

Conflict of Interest

The author declares no conflict of interest related to this study.

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