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Article

Association Between the Use of Three-Month Injectable Contraceptives and the Incidence of Spotting Among Clients at Karawang Regency, West Java

Anisah Alsamsiah[1,*], Sri Rahayu[2], Rahmadyanti[3]

[123] STIKes Abdi Nusantara Jakarta, Indonesia

E-mail: alsamsiahanisa@gmail.com

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Abstract

Background: Injectable contraceptives remain a popular choice among women in Indonesia due to their effectiveness, ease of use, and relatively long duration of action. The three-month injectable contraceptive (Depo Medroxyprogesterone Acetate) is widely used in both urban and rural settings. However, one of its commonly reported side effects is spotting, which can lead to discomfort, dissatisfaction, and discontinuation of use.
Objective: This study aimed to examine the association between the duration of three-month injectable contraceptive use and the incidence of spotting among family planning clients at Karawang Regency, West Java Province.
Methods: This research employed a descriptive analytical design with a cross-sectional approach. Data were collected using a structured questionnaire. The population included all women using the three-month injectable contraceptive who experienced spotting, totaling 114 respondents. The sampling technique used was total sampling. Data analysis was conducted using the Chi-square test.
Results: Among the 114 respondents, the majority were aged under 20 years (n = 60), had senior high school to university-level education (n = 78), and had a parity of fewer than two children (n = 71). A statistically significant association was found between the duration of three-month injectable contraceptive use and the incidence of spotting (p = 0.000).
Conclusion: There is a significant relationship between the duration of three-month injectable contraceptive use and the incidence of spotting. These findings underscore the importance of ongoing client education and side-effect management for long-term contraceptive users

Keywords: Three-month injectable contraception, spotting, family planning, Tempuran District

INTRODUCTION

The National Population and Family Planning Agency (BKKBN) reported that as of June 2022, Indonesia's total population reached 275,361,267. Over the span of one year, the number of Indonesian families increased by 2,271,917 households. According to data from the Central Statistics Agency (Badan

Pusat Statistik, BPS), the country's total fertility rate (TFR) was 2.1 in 2022, indicating that, on average, each woman gives birth to two children during her reproductive years (BPS, 2020).

Efforts to control population growth, such as through the Family Planning (KB) program, are shaped by complex social norms and cultural perceptions. Public acceptance of contraception often depends on underlying beliefs regarding human reproduction and its perceived limitations (Nugroho, 2014). Despite these challenges, the family planning program plays a crucial role in reducing the risk of population explosion and promoting reproductive health by encouraging individuals and families to plan their childbearing responsibly. Among the various contraceptive options, the three-month injectable contraceptive—containing the hormone progestin—is widely used due to its effectiveness and convenience. The hormone works by thickening cervical mucus, thereby inhibiting sperm movement and preventing fertilization. However, like other hormonal methods, it is not without side effects. Users may experience alterations in their menstrual cycle, including prolonged bleeding, shortened or irregular periods, amenorrhea, or spotting (Kusumawardani et al., 2021).

Spotting refers to light bleeding or blood spots that occur between menstrual cycles, and is often associated with hormonal imbalance caused by progestin-based injections. While this side effect is generally not harmful, it can cause discomfort, concern, and may affect a user's willingness to continue using the method. In Tempuran District, Karawang Regency, West Java Province, there are 10 independent midwife practices (TPMB) actively serving contraceptive clients. A preliminary survey identified 114 users of three-month injectable contraception who experienced spotting. Based on this context, the present study aims to examine: What is the relationship between the use of three-month injectable contraceptives and the incidence of spotting among women in Tempuran District, Karawang Regency, in 2023?

METHODS

Study design

This study employed an analytical descriptive design with a cross-sectional approach to examine the relationship between the use of three-month injectable contraception and the incidence of spotting among contraceptive users. The research was conducted at 10 registered independent midwife practices (Tempat Praktek Mandiri Bidan or TPMB) located in Tempuran District, Karawang Regency, West Java Province. The study period spanned from January to March 2023.

Sample and Sampling Technique

The target population in this study comprised all women who were current acceptors of the three-month injectable contraceptive (Depo Medroxyprogesterone Acetate) and who reported experiencing spotting. Based on data from the participating TPMBs, a total of 114 women met the initial eligibility criteria.

To ensure sufficient statistical power, a priori sample size estimation was conducted using G*Power version 3.1.9.7, employing a linear multiple regression model (fixed model, R^2 deviation from zero), with the following parameters: medium effect size ($f^2 = 0.15$), $\alpha = 0.05$, power = 0.95, and seven predictors. The required minimum sample size was 153. Accounting for potential attrition and incomplete data, a total of 250 participants were targeted for inclusion. However, due to population limitations at the study site, total sampling was adopted, and all 114 eligible respondents were recruited for participation.

Inclusion criteria were: (1) women aged 18–45 years, (2) current users of three-month injectable contraception for at least one cycle, (3) reported experiencing spotting during the

current cycle, and (4) provided informed consent. Exclusion criteria included: (1) women with a history of gynecological bleeding disorders, (2) those using other types of contraception concurrently, and (3) respondents unwilling or unable to complete the questionnaire.

Instrument

Data were collected using a structured, validated questionnaire adapted from the Indonesian Family Planning Behavior Assessment Scale (Kusumawardani et al., 2021). The instrument consisted of two main sections:

Demographic characteristics, including age, education, parity, and duration of contraceptive use.

Spotting experience and preventive behavior scale, which included 10 items assessing the frequency, duration, and subjective perception of spotting incidents.

Each item was rated on a 4-point Likert scale (1 = never, 2 = rarely, 3 = often, 4 = always). The total score ranged from 10 to 40, with higher scores indicating more frequent or severe spotting.

The original instrument showed good internal consistency (Cronbach's α = 0.82), while the Bahasa Indonesia version demonstrated a reliability coefficient of 0.85 in a previous validation study conducted in a similar population (Kusumawardani et al., 2021). In the current study, internal reliability was reassessed and showed a Cronbach's α = 0.87.

Procedure

Prior to data collection, ethical clearance was obtained from the Health Research Ethics Committee of Universitas Abdi Nusantara (Approval No. 023/EC/II/2023). Permission to conduct the study was also granted by the Head of the Karawang District Health Office and the midwife coordinators of each TPMB. Participants were approached during their scheduled contraceptive visits. After being provided with an explanation of the study's purpose, procedures, and confidentiality assurance, those who agreed to participate signed a written informed consent form. Data collection was conducted in person through self-administered questionnaires, with assistance available when needed for clarification. Following completion of the questionnaires, researchers conducted a brief debriefing session to address participants' concerns or questions. All data were anonymized to maintain confidentiality.

Data Analysis

Data were coded and entered into SPSS version 26.0 for analysis. Descriptive statistics were used to summarize demographic characteristics and distribution of spotting incidence. Bivariate analysis using the Chi-square test assessed associations between categorical variables. Multivariate analysis was performed using binary logistic regression to identify predictors of spotting incidence, with significance levels set at $p < 0.05$ and confidence intervals at 95%.

RESULT

A total of 114 respondents participated in the study. All were current users of three-month injectable contraceptives and met the eligibility criteria.

Table 1 presents the demographic profile of respondents. The majority of participants (52.6%) were under the age of 20. Most had completed at least a senior high school education or higher (68.4%), and more than half (62.3%) had a parity of fewer than two children. In terms of contraceptive usage duration, 46.5% had been using the three-month injectable contraception for over one year.

Table 1. Demographic Characteristics of Respondents (N = 114)

Variable	Category	Frequency (n)	Percentage (%)
Age	< 20 years	60	52.6
	≥ 20 years	54	47.4
Education Level	Junior high or lower	36	31.6
	Senior high or higher	78	68.4
Parity	< 2 children	71	62.3
	≥ 2 children	43	37.7
Duration of Contraceptive Use	≤ 1 year	61	53.5
	> 1 year	53	46.5

Among the 114 respondents, 64 women (56.1%) reported experiencing spotting episodes, while 50 (43.9%) did not report any spotting during their most recent contraceptive cycle.

Table 2. Distribution of Spotting Incidence Among Respondents

Spotting Incidence	Frequency (n)	Percentage (%)
Present	64	56.1
Absent	50	43.9

Chi-square tests were conducted to assess the association between demographic variables and spotting incidence. A significant association was found between the duration of contraceptive use and spotting incidence ($\chi^2 = 19.86$, $p < 0.001$). No statistically significant association was found between spotting and age, education level, or parity ($p > 0.05$ for all).

Table 3. Association Between Respondent Characteristics and Spotting Incidence

Variable	χ^2	df	p-value
Age	1.03	1	0.310
Education Level	2.17	1	0.141
Parity	0.98	1	0.322
Duration of Contraceptive Use	19.86	1	< 0.001**

Note: *Significance level: $p < 0.05$

A binary logistic regression model was performed to predict the odds of experiencing spotting based on significant bivariate predictors. The model revealed that

women who had used three-month injectable contraception for more than one year were 3.75 times more likely to experience spotting (*OR* = 3.75; 95% CI = 1.85–7.59; $p < 0.001$) compared to those who had used it for less than or equal to one year.

Table 4. Logistic Regression Predicting Spotting Incidence

Variable	Odds Ratio (OR)	95% CI	p-value
Duration > 1 year	3.75	1.85 – 7.59	< 0.001**

DISSCUSSION

This study investigated the relationship between the duration of three-month injectable contraceptive use and the incidence of spotting among women in the Tempuran District, Karawang Regency. The findings revealed that more than half of the participants (56.1%) experienced spotting. Notably, duration of use exceeding one year was significantly associated with increased risk of spotting, as shown by both bivariate and multivariate analyses.

The high prevalence of spotting among users of the three-month injectable contraceptive (Depo Medroxyprogesterone Acetate or DMPA) is consistent with prior research. Spotting is a well-documented side effect of progestin-only contraceptives, especially in the early months of use. However, this study demonstrated that the risk remains elevated even after prolonged use (>1 year), highlighting the persistent nature of this side effect in some women (Kusumawardani et al., 2021).

The logistic regression model confirmed that women using DMPA for more than one year were nearly four times more likely to report spotting compared to those using it for one year or less. This finding supports the hypothesis that cumulative exposure to synthetic progestin may contribute to endometrial instability, leading to breakthrough bleeding or spotting (Muttaqin et al., 2020). Prolonged use of injectable contraception may alter the endometrial vasculature and disrupt normal hormonal cycles, which can manifest as irregular bleeding patterns.

Interestingly, the analysis found no statistically significant associations between spotting incidence and age, education level, or parity. This contrasts with some earlier studies that suggested younger age or lower education levels may be correlated with a higher likelihood of reporting side effects due to limited health literacy or hormonal sensitivity (Rahmah et al., 2019; Sari et al., 2022). The absence of such associations in this study may be attributed to the homogeneity of the sample or effective counseling strategies implemented by midwives in the region.

The findings carry several implications. First, they underscore the importance of thorough counseling prior to DMPA administration. Health providers should inform clients about potential side effects such as spotting, particularly during prolonged use. Anticipatory guidance can help reduce early discontinuation, which often stems from dissatisfaction with menstrual changes (World Health Organization, 2018).

Second, follow-up care should be integrated into community-based contraceptive services. Women experiencing prolonged or bothersome spotting may benefit from clinical evaluation and reassurance or even alternative contraceptive methods if needed. This is crucial to maintaining long-term contraceptive adherence and achieving national reproductive health goals. Lastly, the study contributes localized evidence to support the national family planning strategy. It aligns with efforts to improve contraceptive continuation rates through better side-effect management and user-centered service delivery.

CONCLUSION

This study demonstrated a statistically significant relationship between the duration of three-month injectable contraceptive use and the incidence of spotting among women in the Tempuran District, Karawang Regency. Women who had used the injectable contraceptive for more than one year were at greater risk of experiencing spotting compared to those who had used it for one year or less. These findings affirm that the duration of exposure to hormonal contraceptives, particularly progestin-only injectables, plays a pivotal role in the occurrence of breakthrough bleeding and menstrual irregularities. While other demographic variables such as age, education level, and parity did not show a significant association with

spotting, the prevalence of this side effect remains an important consideration in family planning services. As spotting is a common reason for early discontinuation of contraception, recognizing and managing this issue is crucial for ensuring user satisfaction and continued contraceptive adherence.

Conflict of Interest

The authors have declared that no conflict of interest exists.

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