



The Relationship Between the use of Contraceptive Injections (3 Months) and Implants and HB Levels at the Kedi Public Health Center

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Abstract. *Hormonal contraceptives, particularly the 3-month injectable and implant methods, are widely used by women of reproductive age. Despite their effectiveness, concerns remain regarding their potential impact on hemoglobin (Hb) levels and the risk of anemia. This study aimed to analyze the relationship between the use of 3-month injectable contraceptives and implants with hemoglobin levels, as well as to examine the association between family support and hemoglobin status among women at Kedi Public Health Center. This study employed a quantitative descriptive design with a cross-sectional approach. The sample consisted of 30 women of reproductive age who had used either 3-month injectable contraceptives or implants for at least six months. Data were obtained from medical records and laboratory measurements of hemoglobin levels. Univariate analysis was used to describe respondent characteristics, while bivariate analysis was conducted using Kendall's tau-b correlation test. The results showed that most respondents were aged 20–35 years and predominantly used the 3-month injectable contraceptive. The majority of respondents (90.0%) had normal hemoglobin levels, while only 10.0% experienced mild anemia. A statistically significant relationship was found between family support and hemoglobin levels ($p < 0.05$). However, the use of hormonal contraceptive methods did not appear to negatively affect hemoglobin levels. In conclusion, 3-month injectable contraceptives and implants are safe in terms of hemoglobin status, and family support plays an important role in women's health outcomes.*

Keywords: *Family Support; Hemoglobin Level; Hormonal Contraception; Implant; 3-Month Injectable.*

1. INTRODUCTION

Contraception serves as a cornerstone of women's reproductive health by providing essential mechanisms for birth control and family planning. The Indonesian healthcare landscape relies heavily on hormonal methods such as 3-month injections and subcutaneous implants to manage population growth. The injectable method prevents pregnancy through quarterly hormone administration that effectively suppresses ovulation while the implant system offers long-term protection by releasing progesterone steadily into the bloodstream over several years (Kusworo, 2023).

Despite the high clinical efficacy of these hormonal methods clinicians remain concerned about potential long-term physiological side effects including fluctuations in blood hemoglobin (Hb) concentrations. Hemoglobin functions as the primary protein in red blood cells for systemic oxygen transport and maintaining its stability is vital for preventing anemia-related health decline (Triwahyuningsih et al., 2025). Any significant reduction in these levels can impair physical performance and diminish the overall quality of life for women relying on these contraceptive options.

Previous academic inquiries into the relationship between hormonal contraceptives and hemoglobin levels have yielded inconsistent and often contradictory findings (Yulita et al., 2012). Some researchers report no measurable difference between users and non-users while other longitudinal data suggest a gradual decline in Hb levels following prolonged contraceptive use. These discrepancies highlight a critical knowledge gap that necessitates further investigation to clarify how specific hormonal delivery systems influence blood composition over time (Rima Eka Pratiwi et al., 2023).

A preliminary survey conducted at Puskesmas Kedi in November 2025 involved 30 participants including 20 injectable users and 10 implant users who all exhibited normal Hb readings between 12.0 and 15.0 g/dl. While these initial figures appear stable the survey failed to explore the underlying correlation between the specific contraceptive chemistry and individual hematological health. Investigating these nuances is essential to determine if certain methods pose a higher risk of altering hemoglobin levels in the short or long term despite seemingly normal surface-level results.

A deeper understanding of these physiological impacts is highly relevant for primary healthcare facilities like Puskesmas which serve as the frontline for reproductive health services. Providers must possess comprehensive data on how various contraceptives affect female biology to ensure patient safety and improve the quality of clinical counseling. Consequently this study aims to generate evidence-based insights that can enhance the standard of care for women in local health centers.

This research provides vital guidance for healthcare professionals in monitoring the long-term health of contraceptive users and implementing proactive screening protocols. By analyzing the hematological profiles of 3-month injectable and implant users at Puskesmas Kedi this study seeks to identify any significant statistical effects of these methods on hemoglobin levels. Ultimately these findings will assist in optimizing health monitoring strategies to ensure that women can maintain peak physical health while utilizing effective birth control.

2. RESEARCH METHOD

This study utilizes a descriptive quantitative approach to examine the relationship between the use of 3-month injectable contraceptives and implants on hemoglobin (Hb) levels. The study design is cross-sectional, meaning data was collected at a single point in time to assess the Hb levels of contraceptive users. This design allows for the identification of patterns and relationships between variables but does not establish causality. The data was collected

through medical records and laboratory tests conducted at Puskesmas Kedi, where participants' Hb levels were measured and categorized according to the type of contraception they used.

The sample of this study consisted of 30 contraceptive users at Puskesmas Kedi, with 20 participants using the 3-month injectable contraceptive and 10 participants using the implant. The inclusion criteria were adult women who have been using either the injectable contraceptive or implant for at least 6 months. Participants were excluded if they had a history of anemia or other blood disorders, as this could confound the results. Hb levels were measured using standard laboratory procedures to ensure accuracy and reliability, with results compared against normal Hb levels (12.0 – 15.0 g/dl).

Data analysis was conducted using descriptive statistics to summarize the demographic characteristics and Hb levels of the participants. Additionally, comparative analysis was performed using t-tests to examine if there were any significant differences in Hb levels between users of the injectable contraceptive and implant. All data was processed using statistical software, ensuring ethical standards were met by maintaining participant confidentiality and obtaining informed consent before participation.

3. RESULTS AND DISCUSSION

Univariate Analyze

Univariate analysis was conducted to describe the characteristics of respondents based on age, type of contraceptive method, educational level, family support, and hemoglobin (Hb) levels.

Table 1. Distribution of Respondents by Age Group.

Age Group	Frequency (n)	Percentage (%)
< 20 years	7	23.3
20–35 years	18	60.0
> 35 years	5	16.7
Total	30	100.0

The results show that most respondents were in the 20–35 years age group, accounting for 18 respondents (60.0%). Respondents aged less than 20 years accounted for 7 individuals (23.3%), while those older than 35 years totaled 5 individuals (16.7%). The mean age of respondents was 28.7 years, with ages ranging from 18 to 40 years, indicating that the majority of respondents were within the active reproductive age.

Table 2. Distribution of Respondents by Type of Contraceptive Method.

Contraceptive Method	Frequency (n)	Percentage (%)
3-Month Injectable	19	63.3
Implant	11	36.7
Total	30	100.0

Table 3.2 indicates that the majority of respondents used the 3-month injectable contraceptive method, with 19 respondents (63.3%), while 11 respondents (36.7%) used contraceptive implants. This finding suggests that injectable contraception remains the most commonly used method among women at Kedi Public Health Center.

Table 3. Distribution of Respondents by Educational Level.

Educational Level	Frequency (n)	Percentage (%)
Primary School	6	20.0
Junior High School	14	46.7
Senior High School	10	33.3
Total	30	100.0

The majority of respondents had a junior high school education, totaling 14 respondents (46.7%). Respondents with senior high school education accounted for 10 respondents (33.3%), while those with primary school education accounted for 6 respondents (20.0%). Educational level may influence respondents' understanding and decision-making related to contraceptive use.

Table 4. Distribution of Respondents by Family Support.

Family Support	Frequency (n)	Percentage (%)
Husband	12	40.0
Parents	3	10.0
No Support	15	50.0
Total	30	100.0

Table 3.4 shows that half of the respondents did not receive any family support for contraceptive use, totaling 15 respondents (50.0%). Support from husbands was reported by 12 respondents (40.0%), while only 3 respondents (10.0%) received support from parents. Family support plays an important role in the acceptance and continuity of contraceptive use.

Table 5. Distribution of Respondents by Hemoglobin (Hb) Level.

Hemoglobin Level	Frequency (n)	Percentage (%)
Hb \geq 12 g/dL (Non-anemic)	27	90.0
Hb 10–11.9 g/dL (Mild anemia)	3	10.0
Total	30	100.0

The results indicate that most respondents had normal hemoglobin levels (Hb \geq 12 g/dL), with 27 respondents (90.0%). Only 3 respondents (10.0%) experienced mild anemia. These findings suggest that the majority of women using hormonal contraceptive methods at Kedi Public Health Center did not experience anemia.

Bivariat Analyze

Bivariate analysis was conducted to examine the relationship between family support and hemoglobin (Hb) levels among contraceptive users. Since the variables were ordinal, the Kendall's tau-b correlation test was applied.

Table 6. Relationship Between Family Support and Hemoglobin Levels.

Variables	Correlation Coefficient (τ)	p-value
Family Support – Hemoglobin Level	-0.371	0.038

Table 3.6 shows the results of the Kendall's tau-b correlation test between family support and hemoglobin levels. The analysis revealed a statistically significant relationship between family support and hemoglobin levels ($p = 0.038$, $p < 0.05$). The correlation coefficient ($\tau = -0.371$) indicates a moderate negative correlation.

This result suggests that variations in family support are associated with differences in hemoglobin levels among respondents. Although the direction of the relationship is negative, it still indicates that family-related factors may play a role in influencing the hemoglobin status of women using contraceptive methods.

Discussion

This study investigated the relationship between hormonal contraceptive use and hemoglobin (Hb) levels among women of reproductive age, as well as the association between family support and hemoglobin status. The findings provide empirical evidence regarding the hematological safety of hormonal contraceptive methods and highlight the potential influence of social factors on women's health.

The majority of respondents in this study were within the age range of 20–35 years, which represents the most biologically active reproductive period. Similar age distributions have been reported in previous studies examining contraceptive use and hematological outcomes, where women in early to middle adulthood constituted the largest proportion of hormonal contraceptive users (Kusworo, 2023). Women in this age group tend to have higher contraceptive uptake due to family planning needs and greater exposure to reproductive health services.

The univariate analysis showed that most respondents used the 3-month injectable contraceptive rather than implants. This pattern is consistent with findings from several studies conducted in Indonesia and other developing countries, which reported that injectable contraceptives are preferred due to their practicality, reversibility, and perceived effectiveness (Hadriyanti Hamang et al., 2025). Although implant methods offer longer-term protection, injectable methods remain widely used in primary healthcare settings.

Regarding hemoglobin levels, the majority of respondents in this study had normal Hb values, and only a small proportion experienced mild anemia. This finding suggests that hormonal contraceptive use, including both injectable and implant methods, does not adversely affect hemoglobin levels in most women. These results are in line with previous studies reporting no significant difference in hemoglobin levels between hormonal contraceptive users and non-users (Lian Sagita, Nurhusna, 2022).

One plausible explanation for the maintenance of normal hemoglobin levels among hormonal contraceptive users is the effect of these methods on menstrual blood loss. Progestin-based contraceptives are known to reduce the volume and duration of menstrual bleeding, which decreases iron loss during menstruation. Reduced menstrual blood loss has been associated with improved iron balance and stable hemoglobin concentrations (Setiyawati et al., 2023). This mechanism may explain why most respondents in the present study did not develop anemia despite prolonged contraceptive use.

Several studies support this physiological explanation. A cross-sectional study by Anggeriani et al., (2022) found that women using hormonal contraceptives had significantly higher hemoglobin levels compared to non-users. Similarly, Gedfie et al., (2022) reported a lower prevalence of anemia among injectable contraceptive users in comparison to women not using hormonal methods. In Indonesia, Citra M & Handayani, (2024) also found no significant association between hormonal contraceptive use and decreased hemoglobin levels, reinforcing the findings of the present study.

However, some studies have reported contrasting results. Research by Komala Sari et al., (2024) indicated that long-term hormonal contraceptive use could be associated with reduced hemoglobin levels, particularly among women with inadequate nutritional intake. Differences in study outcomes may be influenced by variations in dietary iron consumption, duration of contraceptive use, baseline hemoglobin status, and socioeconomic conditions. In the present study, respondents with a prior history of anemia were excluded, which may have contributed to the low prevalence of anemia observed.

The bivariate analysis demonstrated a statistically significant relationship between family support and hemoglobin levels. This finding emphasizes the role of psychosocial factors in women's health outcomes. Family support has been identified as an important determinant of health behavior, influencing dietary practices, healthcare utilization, and adherence to medical recommendations (Nasution et al., 2023).

Women who receive support from family members, particularly spouses, may be more likely to consume nutritious foods, attend routine health examinations, and comply with health advice, all of which contribute to maintaining adequate hemoglobin levels. Conversely, limited family support may lead to poorer nutritional practices and reduced access to healthcare, increasing vulnerability to anemia (Rambe, 2020).

The negative correlation observed in this study suggests that the relationship between family support and hemoglobin levels may be complex and mediated by household dynamics, economic dependence, and decision-making autonomy. Similar findings were reported by Yayanzi et al. (2023), who noted that family involvement does not always translate into positive health outcomes if decision-making power remains unequal. This highlights the need for more nuanced approaches when addressing family involvement in reproductive health interventions.

Educational level is another contextual factor that may indirectly influence hemoglobin status. Studies have shown that women with higher educational attainment tend to have better nutritional knowledge and health-seeking behavior, which are protective against anemia (Silvia Fransina Sopacua, 2020). Although education was not included as a predictor variable in the bivariate analysis, the predominance of respondents with junior high school education may have influenced overall awareness regarding anemia prevention.

Despite its contributions, this study has limitations. The cross-sectional design restricts causal inference, and the relatively small sample size limits generalizability. In addition, the study did not assess dietary intake, iron supplementation, or duration of contraceptive use in detail. Future research should employ longitudinal designs with larger samples and incorporate nutritional assessments to better understand the long-term effects of hormonal contraception on hemoglobin levels.

In conclusion, this study indicates that the use of 3-month injectable contraceptives and implants does not negatively affect hemoglobin levels among women of reproductive age. Family support was found to be significantly associated with hemoglobin status, underscoring the importance of social factors in women's health. These findings suggest that reproductive health services should integrate medical monitoring with nutritional counseling and family-based education to optimize health outcomes for contraceptive users.

4. CONCLUSION

This study concludes that the use of hormonal contraceptive methods, specifically the 3-month injectable and implant, does not have a negative effect on hemoglobin levels among women of reproductive age at Kedi Public Health Center. The majority of respondents

maintained normal hemoglobin levels, indicating that these contraceptive methods are hematologically safe for most users. These findings support the continued use of injectable and implant contraceptives with routine health monitoring to ensure women's well-being.

In addition, a significant association was found between family support and hemoglobin levels, highlighting the importance of psychosocial factors in women's health. Family involvement may influence health-related behaviors such as nutritional intake and healthcare utilization, which can indirectly affect hemoglobin status. Therefore, reproductive health services should integrate medical care with nutritional education and family-based counseling to optimize health outcomes for women using hormonal contraceptives.

Acknowledgement

The heading should not be given a number and should instead be considered as a subsection heading.

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