


The Relationship Between the Duration of 3-Month Injectable Hormonal Contraceptive Use and Blood Pressure in Women of Childbearing Age at the Siti Nur Faizah PMB, Jember Regency

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Article Info	ABSTRACT
<p>Keywords: Women of childbearing age, Hormonal Contraception, Blood pressure</p>	<p>Injectable contraception is a type of hormonal contraception that has advantages and disadvantages, one of the effects is increased blood pressure and weight if used for a long period of time. Active family planning users in Jember Regency on condom contraception are (1,343) people, implants (19,778) people, injectable contraception (165,626) people, pills (67,522) people (BPS East Java Province Statistics East Java, 2022). Method: This study design uses observational analytics with a cross-sectional approach. The study population All women of childbearing age who use 3-month hormonal contraceptive injections with a random sampling technique, namely 48 respondents. Data collection using a questionnaire. Data analysis with the Chi-Square test. Results: 52.1% Using 3-month hormonal contraceptive injections with a duration of <24 months, 58.3% of respondents experienced an increase in normal blood pressure. There is a relationship between the duration of use of 3-month hormonal contraceptive injections and increased blood pressure, obtained p-value = 0.001 $< \alpha$0.05. Conclusion: The duration of use of 3-month hormonal contraceptive injections can cause increased blood pressure in women of childbearing age, women of childbearing age prefer contraceptive methods that suit their needs and consult health workers to avoid risk factors.</p>
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INTRODUCTION

Injectable contraception is a type of hormonal contraception that has advantages, disadvantages, and side effects. One side effect of injectable contraception is increased blood pressure and weight (Widyaningsih & Isfaizah, 2020). Long-term use can have adverse health effects. The increase in blood pressure is not a significant percentage, but special attention is needed to prevent fatal effects and prevent weight gain that leads to obesity (excessive weight gain) (Sartika et al., 2021). According to World Health Organization (WHO) data, compared to ASEAN countries, contraceptive use in Indonesia is 61%, exceeding the ASEAN average of 58.1%. However, it is still low compared to Vietnam (78%), Cambodia (79%), and Thailand (80%). Indonesia has 65 million women of childbearing age (Sartika et al., 2021). The dominant contraceptive method selection is non MKJP/non long-term

contraceptive method, namely the injection method 56.86% and the pill method 17.21% (East Java Health Office, 2021, p. 42). Active family planning users in Jember Regency for condom contraception amounted to (1,343) people, implants (19,778) people, injection contraception (165,626) people, pills (67,522) people (BPS East Java Province Statistics East Java, 2022). The results of the preliminary study showed that the most active family planning users were in the Summersari area, the condom method 1.03%, the pill method 35.73%, the injection method 50.13%, the IUD 2.83%, the implant method 6.43%, the MOW method 3.86%. In Fatmasari's research (2018), hypertension mostly occurred in hormonal birth control recipients for a period of >2 years (62.8%) and <2 years (35.1%), occurring due to an increase in blood plasma volume caused by renin-angiotensin aldosterone activity (Widyaningsih & Isfaizah, 2020).

The prevalence of hypertension according to the 2013 Basic Health Research (Riskesmas) was 25.8%, and in the 2018 Basic Health Research (Riskesmas), the prevalence increased to 34.11%. Hypertension is a non-communicable disease characterized by systolic blood pressure of 130 mmHg or higher and diastolic blood pressure of 80 mmHg or higher. One factor contributing to high blood pressure is the prolonged use of hormonal contraceptives (Fatmasari, 2018). The use of contraceptives, especially hormonal contraceptives, can not only cause increased blood pressure, but also increase gradually and not consistently. This is in line with JKI, or Nursing Journal of Indonesia (2023) which states that one of the factors causing increased blood pressure is There is a relationship between the duration of injectable hormonal contraceptive use and blood pressure in women of childbearing age (WUS) (Hutasoit, 2019). Various hormonal effects on gonadotropins and pituitary function include inhibition of FSH secretion from progesterone, which differs from estrogen, and inhibition of LH release, which can cause hypertension. The duration of hormonal contraceptive use is closely related to the occurrence of health problems experienced by women of childbearing age who use hormonal contraceptives. One health problem that can be experienced by women of childbearing age who use hormonal contraceptives is increased blood pressure (Nurhidayati, 2020).

Hypertension can be caused by secondary causes such as the use of oral medications and contraceptives. Increased blood pressure can be caused by the use of hormonal contraceptives, such as oral contraceptives, injectables, and implants, which contain the hormones estrogen and progesterone, which are known to increase blood pressure. This is due to cardiac hypertrophy and an increased angiotensin II pressor response, involving the Renin-Angiotensin System pathway. Furthermore, hormonal contraceptives also contain ethinylestradiol, which is a known cause of hypertension, while gestagens have minimal effects on blood pressure. Ethinylestradiol can increase angiotensinogen levels 3-5 times normal (Rina Hanum 2022).

Side effects are usually caused by excess estrogen and progesterone and can cause changes in blood pressure in women who have never had hypertension. However, changes in blood pressure usually affect systolic blood pressure, which returns to normal when injectable contraception is stopped (Widyaningsih & Isfaizah 2018). However, the

effectiveness of hormonal contraceptives is closely related to age and duration of use. The risk of hypertension increases in women over 35 who use hormonal contraceptives. (Theni Yuniarti 2021). The causes of increased blood pressure are generally multifactorial, one of which is hormonal contraception. Injectable contraception is a type of hormonal contraception that contains the hormone progesterone. The use of synthetic progesterone can increase sodium levels and blood pressure in the body.

The effects of hypertension can cause damage to organs such as the heart, brain, kidneys, and blood vessels. As a result, the heart must work harder to circulate blood, which can lead to heart damage. The risk of high blood pressure is influenced by age, length of hormonal contraceptive use, and weight gain (Widyaningsih & Isfaizah, 2020)..

METHODS

The design used in this study is cross-sectional. This study uses This approach uses a method where variables including risk factors and variables including effects are observed simultaneously at the same time. The location of this study was the Siti Nur Faizah PMB, Jember Regency. The study was conducted in July 2024. The population in this study were all fertile women who used 3-month injectable hormonal contraception at the Siti Nur Faizah PMB, totaling 92 people. The sampling technique used simple random sampling with a sample size of 48 respondents. In this study, the instrument used was a questionnaire. Data analysis used the Chi-Square Test. Therefore, in this study, the analysis used was univariate and bivariate analysis to obtain the research results.

RESULTS AND DISCUSSION

General Data

General data includes respondent characteristics but is not included in the research variables. General data contains characteristics of women of childbearing age. These characteristics include age, mother's highest level of education, and mother's occupation. These characteristics are explained in the following table:

1. Frequency Distribution of General Data on Respondent Characteristics Based on Age

Table 1. Frequency Distribution of General Data on Respondent Characteristics Based on Age in PMB Siti Nur Faizah Jember Regency in 2024

Age	Frequency (f)	Percentage(%)
20-35 years	48	100
Amount	48	100

Based on table 4.1, it shows that from 48 respondents, it can be seen that respondents aged 20-35 years were 100%.

2. Frequency Distribution of Respondent Characteristics Based on Education

Table 2. Frequency Distribution of General Data on Respondent Characteristics Based on Education in PMB Siti Nur Faizah, Jember Regency in 2024

Education	Frequency(f)	Percentage(%)
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Elementary School	11	22.9
JUNIOR HIGH SCHOOL	19	39.6
SENIOR HIGH SCHOOL	17	35.4
COLLEGE	1	2.1
Amount	48	100

Based on table 4.2, it shows that from 48 respondents, it can be seen that some of the respondents with the highest education were junior high school, amounting to 39.6%

3. Frequency Distribution of Respondent Characteristics Based on Occupation

Table 3. Frequency Distribution of General Data on Respondent Characteristics Based on Occupation at PMB Siti Nur Faizah, Jember Regency in 2024

Work	Frequency(f)	Percentage(%)
Work	19	39.6
Doesn't work	29	60.4
Amount	48	100

Based on table 4.3, it shows that from 48 respondents, it can be seen that most of the respondents were unemployed, 66.7%.

4. Frequency Distribution of Respondent Characteristics Based on the Routine of 3-Monthly Birth Control Injections

Table 4. Frequency Distribution of General Data on Respondent Characteristics Based on the Routine of 3-Monthly Birth Control Injections at PMB Siti Nur Faizah, Jember Regency in 2024

3-month injection routine	Frequency(f)	Percentage(%)
Yes	33	68.7
No	15	31.3
Amount	48	100

Based on table 4.4, it shows that from 48 respondents, it can be seen that most of the respondents routinely use contraceptive injections every 3 months, namely 68.7%.

5. Frequency Distribution of Respondent Characteristics Based on Salty Food Consumption

Table 5. Frequency Distribution of General Data on Respondents' Characteristics Based on Salty Food Consumption at PMB Siti Nur Faizah, Jember Regency in 2024

Based on table 5, it shows that from 48 respondents, it can be seen that most of the respondents consumed salty foods, 70.8%.

Consumption of Salty Foods	Frequency(f)	Percentage(%)
Yes	34	70.8
No	14	29.2
Amount	48	100

6. Frequency Distribution of Respondent Characteristics Based on Family History of Hypertension

Table 6. Frequency Distribution of General Data on Respondent Characteristics Based on Family History of Hypertension in PMB Siti Nur Faizah, Jember Regency in 2024

Family History of Hypertension	Frequency(f)	Percentage(%)
Yes	24	50
No	24	50
Amount	48	100

Based on table 4.6, it can be seen that from 48 respondents, Some of the respondents had a history of hypertension in their family, amounting to 50%..

7. Frequency Distribution of Respondent Characteristics Based on Systemic Disease History

Table 7. Frequency Distribution of General Data on Respondent Characteristics Based on Systemic Disease History at PMB Siti Nur Faizah, Jember Regency in 2024

History of Systemic Disease	Frequency(f)	Percentage(%)
Yes	16	33.3
No	32	66.7
Amount	48	100

Based on table 7, it can be seen that from 48 respondents, Most of the respondents did not have a history of systemic disease, amounting to 66.7%.

Special Data

Specific data is data contained in research variables. This section will present the results of research on respondents in Siti Nur Faizah's PMB for Jember Regency in 2024 about the results of the Old Relationship The Use of 3-Monthly Injectable Hormonal Contraceptives on Blood Pressure in Women of Childbearing Age as follows:

1. Frequency Distribution of Duration of Use of 3-Month Injectable Hormonal Contraceptives in Women of Childbearing Age at PMB Siti Nur Faizah, Jember Regency

Table 8. Frequency Distribution of Duration of Use of 3-Month Injectable Hormonal Contraceptives in Women of Childbearing Age at PMB Siti Nur Faizah, Jember Regency in 2024

Duration of use	Frequency (f)	Percentage (%)
3-Month Injectable Hormonal Contraception		
<24 months	23	47.9
>24 months	25	52.1
Amount	48	100

Based on table 4.8, the results obtained are that Some of the respondents used 3-monthly injectable hormonal contraception for a duration of >24 months, amounting to 52.1%.

2. Frequency Distribution of Increase in Blood Pressure of 3-Month Injectable Contraceptive Acceptors at PMB Siti Nur Faizah, Jember Regency

Table 9. Frequency Distribution of Increase in Blood Pressure of 3-Month Injectable Contraceptive Acceptors at PMB Siti Nur Faizah, Jember Regency 2024

Increased Blood Pressure in Acceptors of 3-Month Injectable Hormonal Contraceptives	Frequency (f)	Percentage (%)
Normal	20	41.7
Tall	28	58.3
Amount	48	100

Based on table 9, the results obtained are that Some of the respondents experienced an increase in normal blood pressure, namely 58.3%..

3. The Relationship Between the Duration of 3-Month Injectable Hormonal Contraceptive Use and Increased Blood Pressure in Women of Childbearing Age in the Summersari Community Health Center Area, Jember

Table 10. Distribution The Relationship Between the Duration of 3-Month Injectable Hormonal Contraceptive Use and Increased Blood Pressure in Women of Childbearing Age in the Summersari Community Health Center Area, Jember 2024

Duration of Use of Hormonal Injectable Contraceptives: 3 Months	Increased Blood Pressure				Total	A	P
	Normal		Tall				
	n	%	N	%			
<24 months	17	85	6	21.4	23	47.9	<0.05 0.001
> 24 months	3	15	22	78.6	25	52.1	
Amount	20	100	28	100	48	100	

Based on the results of table 4.10, a cross-tabulation of the duration of use of 3-month injectable hormonal contraceptives with increased blood pressure is shown. Acceptors with a duration of contraceptive use < 24 months who experienced normal blood pressure were 85% and those who experienced high blood pressure were 21.4%.

Acceptors with a duration of use of injectable hormonal contraceptives for 3 months > 24 months who experienced normal blood pressure were 15% and those who experienced high blood pressure were 78.6%.

Based on the results of the analysis using Chi Square with p value 0.001, a <0.05. So H0 is rejected H1 is accepted with the conclusion that there is a Relationship between the Length of Use of 3 Months of Injectable Hormonal Contraceptives and Increased Blood Pressure in Women of Childbearing Age at PMB Siti Nur Faizah Jember.

Discussion

Length of Use of Injectable Type Hormonal Contraception 3 Months in Women of Childbearing Age at PMB Siti Nur Faizah

Table 4.8 shows that the frequency distribution of the duration of use of 3-monthly injectable hormonal contraception shows that 52.1% of mothers used 3-monthly injectable hormonal contraception for >24 months, while almost half of mothers used 3-monthly injectable hormonal contraception for <24 months.

Contraception is a method of preventing pregnancy, which can be temporary or permanent. Contraception is one factor that influences fertility rates. The large number of respondents who have used injectable contraception for a long period of time (>24 months)

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indicates that injectable contraception has long been popular among the public. Acceptors feel comfortable with injectable contraception because it is effective in delaying, spacing, or terminating pregnancies. On average, respondents who have long used DMPA injectable contraception said they have felt happy and comfortable using it because it is easy to use and only requires an injection every 3 months, and they don't need to remember to take medication like with birth control pills.

Nearly half of mothers use 3-monthly injectable hormonal contraception for >24 months. This is because mothers feel comfortable using 3-monthly injectable contraceptives because they are cheap and only need to return once every 3 months for another injection. In addition, if mothers already feel comfortable, it is usually difficult to switch to other contraceptives and there are also mothers who are afraid to switch to other contraceptives such as implants and IUDs because of fear and worry about the side effects of these contraceptives. Most mothers use 3-monthly injectable hormonal contraception for <24 months. This is because many mothers choose to switch from 1-monthly injectable hormonal contraception to 3-monthly, some mothers feel fewer or different side effects with 3-monthly injectables compared to 1-monthly injectables, and mothers feel more comfortable with less frequent injections. The results of this study are in line with the opinion of Susiloningtyas (2023) that mothers choose contraception based on safety and comfort in using contraception.

Blood Pressure in Women of Childbearing Age at PMB Siti Nur Faizah

Table 9 shows that the distribution of blood pressure frequency in 3-month injectable hormonal contraceptive acceptors. Most experienced a normal increase in blood pressure, namely 58.3%. In line with Yumni's (2023) research, 25 respondents (59.5%) had normal blood pressure, 11 respondents (19%) had prehypertension, and 6 respondents (21.4%) had hypertension.

One of the side effects of injectable contraceptives is changes in blood pressure. Women have the hormone estrogen, which helps prevent blood viscosity and maintain healthy blood vessel walls. However, if the estrogen and progesterone hormones in injectable contraceptives are imbalanced, this can affect blood pressure and blood vessel health. The study found that respondents had hypertension, a condition that can occur at any age, as the risk of hypertension increases with age. Furthermore, blood pressure can increase depending on the duration of use; this process takes time, so the increase is not immediate. However, this increase in blood pressure is not a chronic condition, but rather a side effect of injectable contraceptives due to the excess hormones contained in the injectables. Blood pressure can return to normal with a healthy lifestyle.

Researchers believe that high blood pressure in women over 100 is multifactorial, one of which is hormonal birth control. Injectable contraceptives are a type of hormonal contraceptive containing progesterone. The use of synthetic progesterone can increase body sodium and blood pressure. Previous research has shown that long-term progesterone administration can cause damage to the endothelial walls of blood vessels, so any changes in serum lipids require more frequent monitoring. This research is supported by another study

conducted by Sanger, which examined the effect of depot medroxyprogesterone acetate injections on lipid profiles, which found a decrease in HDL-cholesterol levels after 12 months of use. A decrease in HDL-cholesterol levels increases the risk of high blood pressure.

Analysis The Relationship Between Using Injectable Contraceptives for 3 Months and Blood Pressure at PMB Siti Nur Faizah

The results of table 4.10 show a cross-tabulation of the duration of use of 3-month injectable hormonal contraceptives with increased blood pressure, acceptors with a duration of use of contraceptives <24 months who experienced normal blood pressure were 85% and those who experienced high blood pressure were 21.4%. Acceptors with a duration of use of 3-month injectable hormonal contraceptives >24 months who experienced normal blood pressure were 15% and those who experienced high blood pressure were 78.6%. The results of the analysis using Chi Square obtained a p value of 0.001, $p < 0.05$. So H_0 is rejected H_1 is accepted with the conclusion that there is a Relationship between the Duration of Use of 3-Month Injectable Hormonal Contraceptives with Increased Blood Pressure in Women of Childbearing Age at PMB Siti Nur Faizah.

This study aligns with Emilda's (2022) study, which found that, based on duration of use, most respondents (56.1%) who used DMPA injections had used the contraceptive for more than two years. This is in line with Rosyid's (2023) study, which showed a chi-square test result of $p = 0.013$ ($p < 0.05$), indicating that H_0 was rejected, indicating a relationship between the duration of three-month injectable contraceptive use and the incidence of hypertension.

According to researchers, prolonged use of progestin-only contraceptives can increase blood pressure in women who use them. This increase in blood pressure can be caused by the influence of the progesterone hormone contained in the injectable. Continuously elevated blood pressure with prolonged use of progestin-only contraceptives can lead to hypertension. The longer a woman uses progestin-only contraceptives, the greater the likelihood of increased blood pressure in the woman. The progestin hormone in injectables can cause fluid retention and weight gain, which can contribute to increased blood pressure.

The increase in blood pressure caused by the use of progestin-only contraceptives is temporary and will subside or return to normal after discontinuation of the contraceptive. The response to progestin-only contraceptive use can vary between individuals, depending on factors such as age and underlying health conditions. Although progestin-only contraceptives are effective in preventing pregnancy, their long-term use should be considered, especially for individuals at risk for or predisposed to hypertension. Progestin-only contraceptive users should be under regular medical supervision to monitor their blood pressure and identify any signs of significant elevation. Based on research findings, it is recommended that progestin-only contraceptive use not be prolonged without interruption to reduce the risk of persistent blood pressure elevations.

According to researchers, prolonged use of progestin-based contraceptive injections can increase blood pressure in mothers. Blood pressure can be affected by the progesterone hormone contained in these contraceptives. Continuously increasing blood pressure with

prolonged use of progestin-based contraceptive injections can lead to hypertension. The longer the use of progestin-based contraceptive injections, the greater the likelihood of increased blood pressure in the acceptor. The progestin hormone in injectable contraceptives can cause fluid retention and weight gain, which can contribute to increased blood pressure. In line with research by Rosyid (2023), the results of the chi-square test were p -value = 0.013 ($p < 0.05$), where this value indicates that H_0 is rejected, meaning there is a relationship between the duration of three-month injectable contraceptive use and the incidence of hypertension..

CONCLUSION

Based on the results of a study conducted on respondents using 3-month injectable hormonal contraceptives at PMB Siti Nur Faizah, it can be concluded that the majority of acceptors have used this contraceptive for more than 24 months. The results also showed that the increase in blood pressure experienced by acceptors was generally still within the normal category. However, a relationship was found between the duration of use of 3-month injectable contraceptives and increased blood pressure in women of childbearing age, where acceptors with a duration of use of more than 24 months tended to experience increased blood pressure. These findings indicate that the duration of use of 3-month injectable hormonal contraceptives needs to be considered to minimize potential risks to health, particularly related to blood pressure. In light of these findings, the researchers offer several recommendations. Family planning users are advised to increase their knowledge about the complications of 3-month injectable contraceptives and consider using non-hormonal contraceptives after more than 24 months of use. Educational institutions are encouraged to conduct community service activities through counseling and mentoring family planning users to help them choose long-term contraception wisely. Furthermore, health workers, particularly midwives at the research site, are encouraged to continually update their knowledge through the latest literature and provide direct education to users regarding the side effects of 3-month injectable contraceptives. Finally, for future researchers, this study can serve as input and comparison material, and can be expanded with different variables to produce more comprehensive findings.

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