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Relationship between Duration of Use of 3 Months of Injectable Contraceptives and Weight Gain in KB Acceptors at the Independent Practice of Midwife C. Yuni Anggarini

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Abstract. 43.8% of contraception acceptors in Lampung Province in 2022 used injective contraception. 69.2% of them experienced a 5 kg body weight increase side effect. This may lead to obesity. This research aimed to determine the correlation between the duration of accepting a contraceptive injection every 3 months and contraception acceptors' body weight increase in C. Yuni Anggraini Private Midwives Clinic. This quantitative research used a cross-sectional design. The population was 108 respondents. 58 respondent samples were taken using consecutive sampling. The data were analyzed using univariate analysis with a frequency distribution table and bivariate analysis with a chi-squared test. 22 respondents (37.9%) accepted a contraceptive injection every 3 months for 1-2 years and 22 (37.9%) accepted a contraceptive injection every 3 months for more than 2 years. 42 respondents (72.4%) experienced body weight increases. The bivariate analysis result derived a p-value of 0.024. This indicated a correlation between the duration of a contraceptive injection every 3 months and contraception acceptors' body weight increase in C. Yuni Anggraini Private Midwives Clinic. A contraceptive injection every 3 months for a long time can increase contraceptive acceptors' body weight increase.

Keywords: contraceptive injection, body weight, duration.

1. BACKGROUND

The fertility rate is influenced by the role of the government through the Family Planning (KB) program. This program aims to intervene in the natural factors of population growth by promoting the use of contraceptives, often referred to as KB tools or methods. Starting in the late 1970s, until now the KB program is under the management of the National Population and Family Planning Agency (BKKBN) (Setiyawati et al., 2023).

According to *the World Health Organization* (WHO), contraceptive use has increased in many regions of the world, especially in Asia and Latin America, but remains low in Sub-Saharan Africa. Globally, modern contraceptive use has increased only slightly from 54% to 57.4%. Regionally, in the past six years, the proportion of couples of childbearing age (15-49 years) reporting use of modern contraceptive methods has shown small increases. In Africa, the figure rose from 23.6% to 27.6%, in Asia from 60.9% to 61.6%, and in Latin America and the Caribbean it increased slightly from 66.7% to 67.0% (Maulida, 2023).

It is estimated that there are around 225 million women in developing countries who want to delay or terminate pregnancy but do not use contraceptive methods. This is due to limited choices of contraceptive methods and experiences of side effects. The unmet need for

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contraception is still very high, and this injustice is exacerbated by population growth (Maulida, 2023).

The Central Statistics Agency recorded that 55.36% of fertile couples (PUS) in Indonesia use birth control. The percentage increased by 0.3% points in 2022 compared to last year's 55.06%. Of the majority of family planning participants, 56.01% of acceptors chose to use the injection method, 18.18% of family planning participants used the Pill contraceptive, 9.49% used the implant contraceptive and 8.35% used the intrauterine contraceptive device (IUD). In terms of effectiveness, injection contraception is a short-term contraceptive method so that the level of effectiveness in controlling pregnancy is lower than other types of contraception. This pattern occurs every year, where participants choose more short-term contraceptive methods than long-term contraceptive methods (IUD, implant, MOW and MOP) (Rima Eka Pratiwi et al., 2023).

The coverage of active KB participants in Lampung Province who use modern methods reached 76.8%. In 2022, the pattern of use of acceptor contraceptives in this region showed the highest percentage in the injection method (43.8%), followed by Pills (20.9%), Implants (15.4%), IUDs (13.0%), Condoms (5.4%), MOW (1.1%), MOP (0.5%), and MAL (0.02%) (BKKBN Lampung, 2023).

However, the injectable birth control method has a number of side effects, including menstrual disorders (30%) such as amenorrhea, spotting, and menorrhagia, which are also common in other hormonal contraceptives. In addition, other complaints found include nausea and headaches (less than 1–17%). In acceptors of 3-month injectable hormonal birth control, 69.2% experienced weight gain of up to 5 kg (Hartanto, 2018).

The Family Planning Program has a strategic, comprehensive, and fundamental role in creating a healthy and prosperous Indonesian society. Based on Law Number 52 of 2009 concerning Population Development and Family Development, Family Planning is defined as an effort to regulate child birth, birth spacing, ideal age for childbirth, and pregnancy regulation. This is done through promotion and protection in accordance with reproductive rights, in order to create a quality family (Ministry of Health of the Republic of Indonesia, 2022).

Depo Provera, containing 6-alpha-medroxyprogesterone, is a parenteral contraceptive with a strong and highly effective progestagen effect. Noresterate belongs to the same group. Depo Medroxyprogesterone Acetate (DMPA) is available as a microcrystalline solution. After an injection of 150 mg, peak levels are reached within one week, remain high for 2–3 months,

then gradually decrease. In long-term use, no accumulation of DMPA in the blood or serum was found (Kunang, 2020).

The use of contraceptive injections generally causes side effects such as menstrual cycle disorders, menstrual pattern disorders such as amenorrhea, menorrhagia, spotting , delayed return of fertility, weight gain, and not infrequently the impact of these side effects can cause psychological problems such as anxiety in some women (Yusuf et al., 2020).

Body weight is influenced by various factors, such as hormones, physical activity, stress, nutritional intake, genetics, metabolism, and physiology. Weight gain is often caused by the hormones progesterone and estrogen. Progesterone increases appetite and converts carbohydrates into fat, resulting in the accumulation of fat that is difficult to react with water, making fat tissue tend to be dry. Meanwhile, decreased estrogen levels affect lipid metabolism, which increases body fat reserves, especially in the abdominal area, thus contributing to weight gain (Harista, 2017).

Excessive weight gain has an impact on causing obesity in hormonal birth control users, especially users of 3-month injection birth control with a long duration. The side effects of obesity itself can cause hypertension, heart disease, stroke and diabetes mellitus. This is because obesity can affect the way the body uses insulin to control blood sugar levels. When someone is overweight, it will increase fatty acid levels and inflammation (Muayah, 2022)

According to Heriani and Haryanti (2023), the side effects of 3-month injection contraception (DMPA) vary depending on the duration of use. In general, injection contraception has similar requirements to pills, with a maximum recommended use of 5 years. Longer use of injection contraception can trigger various effects, such as nausea, vomiting, bleeding, decreased libido, and bone loss.

In this case, the role of the government and health workers, especially midwives, is very important. The government plays a role in educating the public about the risks and benefits of injectable contraception and ensuring accessibility and monitoring its use. Meanwhile, midwives play an active role in providing information, counseling, and assistance to acceptors to minimize side effects and ensure reproductive health is maintained.

Based on a preliminary study at PMB C. Yuni Anggarini, Sidoharjo, Waypanji District, South Lampung, 108 acceptors of 3-monthly injectable contraception were recorded during the period November 2023–January 2024. From the results of interviews with 10 acceptors, eight of them who had used contraception for more than 2 years experienced an average weight gain of 1–2 kg. Based on these findings, researchers are interested in examining the relationship

between the duration of use of 3-monthly injectable contraception and weight gain in contraception acceptors at the location.

2. THEORETICAL STUDY

According to Law of the Republic of Indonesia No. 52 of 2009, Family Planning is an effort to regulate child birth, spacing and ideal age of childbirth, regulating pregnancy, through promotion, protection and assistance in accordance with reproductive rights to create a quality family. Family planning is an effort to measure the number of children and the desired spacing of children. Therefore, the Government has launched a program or method to prevent and delay pregnancy (Zubaidah, 2021)

C o n t r a s e p s i o n is a business to prevent pregnancy occurs . Efforts - efforts i t u can b e r s i f e temporary and p erm an en t (W i k n j o sa st ro , 2018). C o n t r a s e p s i o n that is prevention t e r i n y a egg cell by h cell s per m a (concept) or prevention m ene m pe l nya a the egg that has been laid in the name of God to wall r a hi m (Sartika et al., 2021)

C o n t r a s e p s i o n h or m on a l me r a k a n one of the methods c o n t r a s e p s i o n the most effective And re version b el For prevent it happened C on t ras e p s i ho r m mona l m e a s a n co n tr as e p s s i o n w h i c h estrogen and progress give u m p an back to k e l e nja r hi p o f i s is through h ipo t a la m u s so that happen obstacle to f ol i k el and process o v u l ation (Rima Eka Pratiwi et al., 2023) .

Weight gain ranges from 1-5 kg in the first year of injection. The cause of weight gain is due to increased body fat. Injectable contraception, especially Depo Metroxy Progesterone Acetate (DMPA), stimulates the appetite control center in the hypothalamus, which causes the acceptor to eat more than usual (Hartanto, 2018). The risk of increase is due to the hormone progesterone which facilitates the conversion of carbohydrates and sugar into fat, so that fat under the skin increases, in addition the hormone progesterone also causes increased appetite and decreases physical activity, as a result the use of injectable contraception can cause weight gain (Yurike Septianingrum, Erika Martining Wardani, 2018) .

Estrogen and progesterone play a role in regulating the pituitary gland through the hypothalamus, which inhibits follicle development and ovulation. Estrogen inhibits the secretion of Follicle Stimulating Hormone (FSH), so that the development and maturity of the De Graaf Follicle stops. Progesterone also inhibits the release of Luteinizing Hormone (LH). Estrogen accelerates the peristalsis of the fallopian tubes, so that the results of conception cannot attach to the endometrium that is not ready for implantation (Kunang, 2020).

During the non-pregnant cycle, estrogen and progesterone levels vary. When one hormone peaks, a feedback mechanism leads to decreased secretion of that hormone by the ovary and increased secretion of the other hormone. If pregnancy occurs, estrogen and progesterone levels remain elevated without a cycle peak, preventing further ovulation. Estrogen regulates hormones in the hypothalamus, supports ovum growth and maturation, and stimulates endometrial development. Progesterone prevents premature ovum release and supports endometrial development (Sulistyawati, 2020).

3. RESEARCH METHODS

This study is a quantitative study *using a cross-sectional design* . The study was conducted in March 2024 - August 2024. The location of the study was at PMB C. Yuni Anggarini in Sidoharjo Village, Way Panji District, South Lampung Regency. The population in this study were all 3-month Injectable KB Acceptors at PMB C. Yuni Anggarini in 2024 with a population of 108 respondents. Sampling in this study used *consecutive sampling,* where sample selection was carried out by determining subjects who met the inclusion criteria and were included in the study until a certain period of time. The sample consisted of 58 respondents. Data analysis was carried out univariately and bivariately.

4. RESULTS AND DISCUSSION

The distribution of respondent characteristics can be seen in table 1.

Table 1. Distribution of Respondent Characteristics, Duration of Contraceptive Use and Body Weight of Family Planning Acceptors

No	Variables	N	%
1	**Age**		
	< 20 years	1	1.7
	20- 35 years	35	60.3
	>35 years	22	37.9
	Total	58	100
2	**Education**		
	Low education	25	43.1
	Secondary Education	28	48.3
	higher education	5	8.6
	Total	58	100
3	**Work**		
	Doesn't work	50	86.2
	Work	8	13.8
	Total	58	100
4	**Parity**		
	Primipara	20	34.5
	Multipara	38	65.5
	Total	58	100

5	**Duration of use**		
	< 1 year	14	24
	1-2 Year	22	38
	>2 years	22	38
	Total	58	100
6	**Weight**		
	Increase	16	27.6
	Not increasing	42	72.4
	Total	58	100

Source: Primary Data Processing, 2024

Table 1 shows that most respondents were aged 20-35 years (60.3%), most had secondary education (48.3%), most were unemployed (86.2%) , most were multiparous (65.5%), most had used contraception for 1 to >2 years (38%) and most did not experience weight gain (72.4%).

Table 2. Relationship between the duration of use of 3-month contraceptive injections and weight gain in contraceptive acceptors at PMB C. Yuni Anggarini

Duration of use	Weight				N	%	p value
	Not increasing		Yes increase				
	N	%	n	%			
< 1 year	7	50.0	7	50.0	14	100	0.024
1-2 years	7	31.8	15	68.2	22	100	
> 2 years	2	9.1	20	90.9	22	100	
Total	**16**	**27.6**	**42**	**72.4**	**58**	**100**	

Source: Primary Data Processing, 2024

Respondent Characteristics

Based on the results of the characteristics of respondents based on the age of the mother at PMB C. Yuni Anggraini, South Lampung Regency, most of them were aged 20-35 years as many as 35 respondents (60.3%), based on education, it was dominated by secondary education (SMA/SMK) namely 28 respondents (48.3%), based on occupation, it was dominated by unemployed mothers (IRT) namely 50 respondents (86.2%) and based on parity, it was dominated by Multipara namely 38 respondents (65.5%).

Factors that play a role in the formation of behavior can be divided into two (Notoatmodjo, 2018), namely internal factors in the form of intelligence, perception, motivation, interest, emotion and so on to process external influences, and external factors, including objects, people, groups, and cultural products that are targeted in realizing their behavior. In this study, behavior is related to the length of use of injectable contraception .

Green tries to analyze human behavior from the level of health, human behavior is determined or formed by three factors, namely predisposing factors that are manifested in age, education, work, attitude, knowledge. supporting factors that are manifested in the physical

environment, the availability or unavailability of health facilities or means, for example health promotion. Driving factors such as husband's support (Notoatmodjo, 2018).

According to the researcher's opinion in this study, more respondents used 3-month injection contraception for a period of 1-2 years and > 2 years, this is because based on age characteristics, the dominant age is 20-35 years, namely reproductive age, so respondents are reluctant to choose long-term contraception methods. In addition, education and work also affect the mindset of respondents in determining the contraception used.

Frequency distribution of duration of use of 3-month contraceptive injections

Based on the frequency distribution of the duration of use of 3-month contraceptive injections, the results obtained were that the duration of contraceptive use was mostly for a period of 1-2 years, 22 respondents (37.9%) and the period of > 2 years, namely 22 respondents (37.9%), while < 1 year was 14 respondents (24.1%).

Contra s ep s i o n inject own e f f i t i n g g i t s t i n g , effectiveness of the use of Tribulant injection family planning is very high, the failure rate is less than 1%. The World Health Organization (WHO) has conducted research on DMPA (*Depo Medroxyprogesterone Acetate*) with a standard dose with a failure rate of 0.7%, as long as the injection is carried out regularly according to the specified schedule (Mulyani and Rinawati, 2019).

The average duration of use of three-month injection contraceptives is >1 year of use can result in weight gain. Because progestin in 3-month injection contraceptives can activate glucocorticoid receptor hormones and in high doses can change fat metabolism, this can cause the accumulation of fat layers in humans which automatically long-term use of hormonal injections can disrupt the balance of estrogen and progesterone hormones which can cause weight gain (Andriani, 2018).

The results of this study are in line with Mutika et al. 2023 entitled The Relationship between Duration of Use of 3-Month Injectable Contraceptives and Weight Gain in PMB I. The results of the study showed that the highest use of injectable contraception was > 1 year with the highest increase in body weight of 2 - 5 kg. This is also in line with the research of Kurniasari (2021) where the results of the study showed an increase in the weight of 3-month injectable contraceptive acceptors by 3.7 kg after 1 year of using 3-month injectable contraceptives. According to research by Zubaidah (2021), the results of the duration of use in a period of > 36 months were 43 people (62.3%).

According to the researcher's opinion, the community prefers 3-month injection contraceptives for reasons of being more practical, highly effective and the costs incurred are

also not expensive and quite affordable because they are only done once every 3 months so they do not incur large costs at once, this is what causes acceptors to use injection contraceptives in the long term. This study is also supported by the characteristics of respondents based on work, which are more dominated by housewives, namely 50 respondents (86.2%) so that mothers still depend on their husbands for their needs.

Frequency distribution of weight gain

The results of the frequency distribution study based on weight gain show that out of 58 respondents, the majority of respondents experienced weight gain, namely 42 respondents (72.4%) and 16 respondents (27.6%) did not gain weight.

Body weight is a measure needed for a measurement of physical growth and is needed for someone to receive the required dose of medication (Mardalena, 2017). Another definition of body weight is the amount of body components such as protein, fat, water, minerals. While weight gain is a condition where a person's weight exceeds normal and exceeds their original weight (Fikawati, 2018).

Excessive weight gain will cause several diseases such as Obesity, Hypertension, Diabetes Mellitus, and Heart Disease. Efforts that need to be made by health workers are to provide IEC (Communication, Information and Education) about the causes, and encourage clients to go on a low-calorie diet and exercise regularly (Fatmawati et al., 2023).

Several studies that are in line are Kurniasari (2020) entitled The Effect of 3-Month Injectable Contraceptives on Maternal Weight Gain at the Gdeong Air Bandar Lampung Health Center in 2020. The results of the study showed a mean increase in weight of 3-month injectable contraceptive acceptors of 3.7 kg, a mean increase in weight of 1-month injectable contraceptive acceptors of 1.8 kg. Zubaidah's research (2021) showed the results of the length of use in a period of > 36 months as many as 43 people (62.3%) while the increase in maternal weight showed a weight gain of ≥ 5 kg as many as 51 people (73.9%). Apria's research (2019) on 3-month injectable contraceptive acceptors in Tanjung Agung Village stated that of the 71.2% who used 3-month injectable contraceptives, 75.4% experienced weight gain and 24.6% did not experience weight gain.

According to the researcher's opinion, the content of estrogen and progesterone hormones in hormonal contraception. Progesterone can stimulate increased appetite, so that hormonal contraception can cause weight gain, but weight gain is also influenced by multifactorial factors, one of which is parity and age where in this study the characteristics of

respondents based on parity are dominated by multiparous parity, namely 38 respondents (65.5%) and age is dominated by 20-35 years, namely 30 respondents (60.3%).

Relationship between the duration of use of 3-month contraceptive injections and weight gain

The results of the analysis of the relationship between the duration of use of 3-month contraceptive injections and weight gain. In KB acceptors at PMB C Yuni Anggraini, the results were obtained from 14 respondents who had used <1 year, there were 7 respondents (50.0%) and 7 respondents (50.0%) who experienced weight gain. While from 22 respondents who had used 1-2 years, there were 7 respondents (31.8%) who did not experience weight gain and 15 respondents (68.2%) who experienced weight gain. And from 22 respondents who had used >2 years, the results were obtained that there were 2 respondents (9.1%) who did not experience weight gain and 20 respondents (90.9%) experienced weight gain. The results of the statistical test with chi square obtained a p value of 0.024, meaning that there was a close relationship between the duration of use of 3-month contraceptive injections and weight gain in KB acceptors at PMB C. Yuni Anggarini, South Lampung Regency.

Injectable contraception is a contraceptive in the form of a liquid that is then injected into the body, some are given once a month containing estrogen and progesterone, but there are also those given once every 3 months containing only progesterone (Marmi, 2018). Injectable contraception for 1 month and 3 months both contain the hormone progesterone which has the effect of increasing appetite. However, the progesterone hormone content in the DMPA injectable contraception is greater than the combination injectable contraception, which is 25 mg for the combination injectable contraception and 150 mg for the DMPA injectable contraception. The progesterone hormone content in the DMPA injectable contraception is greater than that in the combination injectable contraception, so the effect on weight gain is also greater for DMPA than for the combination (Sari and Wiwik, 2020)

The progesterone hormone can later stimulate the appetite control center called the hypothalamus. The more progesterone hormone that stimulates the hypothalamus, the greater a person's appetite. So that DMPA injectable contraceptive acceptors can have a greater appetite than 1-month injectable contraceptives (Sari and Wiwik, 2020). Weight gain occurs because progesterone can increase appetite and facilitate the conversion of carbohydrates into fat, so that fat accumulation causes weight gain. Meanwhile, estrogen also affects lipid metabolism which leads to an increase in body fat reserves, especially in the abdominal area, resulting in weight gain (Fatmawati et al., 2023). In addition, the estrogen component can also

cause fluid retention resulting in weight gain. Weight gain in this 3-month injectable contraceptive averages 1-5 kg in the first year. Meanwhile, weight gain in 1-month injectable contraceptive averages 2-3 kg in the first year of use (Sari and Wiwik, 2020).

Several studies that are in line are Setyawati et al (2023) entitled The Relationship between Duration of Use of 3-Month Injectable Contraceptives and Weight Gain in KB Acceptors at the Aulia Clinic, Jombang. The results of the bivariate analysis using the chi square test from 69 samples showed a relationship between Duration of Use of 3-Month Injectable Contraceptives and Weight Gain in KB Acceptors with a P Value: 0.002 (<0.05). Purba et al (2023), the results of the study showed that there was a relationship between the variable of duration of use and weight gain with a p value = 0.002. Research by Zerihun et. al (2019), the results of the study showed that the average weight and body mass index (BMI) of Depo-Provera users increased significantly (p = 0.02). Ibrahim et al's (2019) study Hormonal methods are more commonly used, the average weight gain among hormonal users (adjusted mean 2.85, 95% CI 2.45, 3.24) is significantly higher than non-hormonal users. This is also in line with Zubaidah's (2021) study, which found a significant relationship between the duration of use of 3-month injectable contraception and weight gain (p value 0.000) and Apria's (2019) study, which obtained a p value of 0.002, which means that there is a relationship between the duration of contraceptive use and weight gain.

According to the researcher's assumption, users of contraceptives in the long term use of injectable contraceptives will cause the hormone progesterone to continue to increase in the body which makes appetite continue to increase so that weight gain increases. In this study, there were several users who had been using injectable contraceptives for more than 1 year but did not experience weight gain because weight gain in injectable acceptors was not only influenced by hormonal changes as a result of using injectable contraceptives. There are other factors that can affect weight gain in a person including injectable acceptors. These factors include, for example, the habit of eating a lot in acceptors, or because they eat a lot but lack exercise or lack of physical activity, hereditary obesity, physiological factors of the body, increasing age, hormonal disorders.

5. CONCLUSION AND SUGGESTIONS

Based on the results of the study, it was concluded that there was a relationship between the duration of use of 3-month injection contraception and weight gain in KB acceptors at PMB C. Yuni Anggarini, South Lampung Regency (*p value* 0.024). It is hoped that mothers will be more selective in choosing contraceptive methods. Mothers should seek more information from health workers and the mass media about what contraceptive methods are suitable for them.

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