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- CHECK THE WRITING FORMAT ACCORDING TO THE COMPLETE TEMPLATE AND REFERENCE

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O **KEYWORDS:** Only 5-6 keywords and they should not be a repeat of the terms used in the article title. Don't give abbreviations in the key word otherwise popular. Write keywords alphabetically (1. Clear/adequate, 2. Needs modification, 3. Inadequate)

**COMMENTS:**

ADEQUATE BUT ARRANGE ALPHABETICALLY AND WRITING STYLE

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O **METHODS:** The author should give explanations about methodology adopted.

(1. Appropriate for aims, 2. Too simple, 3. Inappropriate/erroneous)

**COMMENTS:**

IN METHODS, MEDIA EXPOSURE CATEGORISATION IS NOT CLEAR. PLEASE RECHECK.

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O **DISCUSSION:** Under the head Discussion engage, explore, explain, elaborate and evaluate the results/observations more critically with **RECENT STUDIES** reported on the topic of research.

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**COMMENTS:**

MAINLY CORRECT

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O **CONCLUSION:** Conclusion should be concise and reiterate the key discussion points. Streamline and make it more compact. No Bullets and in a paragraph. Do not cite any reference under this head.

(1. Correct/warranted by Discussion 2. Mainly correct 3. Wrong preliminary/speculative)

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MAINLY CORRECT. WHAT DO YOU MEAN BY "THE USE OF HORMONAL CONTRACEPTIVES HAS THE GREATEST EFFECT ON WEIGHT GAIN, AND THE LENGTH OF TIME USING CONTRACEPTION HAS THE GREATEST EFFECT ON INCREASING BLOOD PRESSURE,? THIS HAS TO BE CLARIFIED.

---

O **RECOMMENDATIONS:** Give Recommendations of the study under separate heading after the Conclusion. Make recommendations of the study streamline and more compact. No Bullets and in a paragraph. Do not cite any reference under this head.

(1. Correct/warranted by Discussion 2. Mainly correct 3. Wrong preliminary/speculative)

**COMMENTS:**

THIS SECTION CAN BE ELABORATED FURTHER. HORMONAL CONTRACEPTIVES HAS THE GREATEST EFFECT ON WEIGHT GAIN, AND THE LENGTH OF TIME USING CONTRACEPTION HAS THE GREATEST EFFECT ON INCREASING BLOOD PRESSURE??) WHERE SHOULD THE FOCUS BE? ANALYZE THE EFFECT OF HORMONAL CONTRACEPTIVE USE, DURATION OF USE, DIETARY PATTERNS ON WEIGHT GAIN AND INCREASED BLOOD PRESSURE.?

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O **LANGUAGE:** Get the language edited from some professional who is expert in English. Use that is for I.E.; for example for E.G.; and for and in the text. Type of etc. expression is not usually recommended in scientific writing.

(1. Correct grammar and style, 2. Minor corrections needed 3. Poor, needs major revision)

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---

**O CONCLUSION AND RECOMMENDATION TO THE EDITORS**

Acceptable After Moderate Revision. No need to referee again

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**(Always refer our Reference No. for all correspondence)**

**Additional Weight And Improvement Of Blood Pressure In Hormonal Contraception Acceptors**

**Erni Yuliasuti<sup>1</sup>, Rafidah<sup>2</sup>, Hapisah<sup>3</sup> and Dede Mahdiyah<sup>4</sup>**

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- The subject matter is very important but the paper is basically descriptive and gives an overview of the topic. It is neither empirical nor a (critical) review paper, but, an essay. The author may revise the paper as a critical review on the topic of research.

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Evaluate the observations critically and update the text with **RECENT STUDIES** under the head **INTRODUCTION**

- Give the **Objectives** of the study in brief and under separate sub-heading under the head introduction

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**COMMENTS:** CAN ADD COUPLE OF MORE KEYWORDS LIKE BODY WEIGHT

---

O **INTRODUCTION:** Evaluate the observations critically and update the text with **RECENT**

**STUDIES** (1. Importance of studying of topic, 2. Convincing rationale of study, 3. Review of Literature on topic)

**COMMENTS:** LITERATURE REVIEW INSTEAD. THERE ARE SOME THAT ARE NOT SUITABLE FOR HORMONAL CONTRACEPTIVE ACCEPTORS TO INCREASE BLOOD PRESSURE

---

O **OBJECTIVES:** It should be brief and under separate sub-heading under the head introduction

(1. Importance of studying of topic, 2. Convincing rationale of study, 3. Inappropriate/erroneous)

**COMMENTS:**

MENTIONING "CONSIDERING ALL THE FACTORS AND CONSEQUENCES MENTIONED ABOVE" IS INADEQUATE. OBJECTIVE HAS TO BE CLEARLY SPECIFIED.

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O DATA/MATERIAL

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---

O METHODS: The author should give explanations about methodology adopted.

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COMMENTS:  
IT WILL BE MORE EFFECTIVE IF HORMONAL CONTRACEPTIVE DATA OR ASPECTORS ARE ALSO CONSIDERED.

---

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(1. Correct 2. Mainly correct 3. Wrong preliminary/speculative)

COMMENTS: THE EFFECT OF HORMONAL CONTRACEPTION ON BODY WEIGHT SHOULD BE DETAILED BETWEEN THE DURATION OF CONTRACEPTION USE AND THE TYPE OF CONTRACEPTION USED ON BODY WEIGHT

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O DISCUSSION: Under the head Discussion engage, explore, explain, elaborate and evaluate the results/observations more critically with **URGENT STUDIES** reported on the topic of research.

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(1. Correct/warranted by Discussion 2. Mainly correct 3. Wrong preliminary/speculative)

COMMENTS: THE CONCLUSIONS CALL HEALTH CONSEQUENCES AND THERE IS NO DATA TO REFER TO THE AUTHOR TO GET THESE CONCLUSIONS. IS THERE AVAILABLE HISTORICAL DATA (WEIGHT AND BLOOD PRESSURE? ON THE USE OF TYPES OF CONTRACEPTION WITHOUT SUCH CONCLUSIONS CANNOT BE NEEDED.

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O HEADINGS, SUBHEADINGS AND SUB-SUBHEADINGS

(1. Clear/adequate, 2. Needs modification, 3. Inappropriate)

COMMENTS: NEEDS MODIFICATION

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O ABBREVIATIONS

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(1. Complete/adequate, 2. Sufficient, 3. Insufficient/partly irrelevant)

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**REFEREE-02**

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O TITLE

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O **RUNNING HEAD:** An Abbreviated Title of the paper: It should be a brief of the title to be printed with alternative page no. of the paper.

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**COMMENTS:** MAY PROVIDE 'WEIGHT AND BLOOD PRESSURE ENHANCEMENT' IN HORMONAL CONTRACEPTION

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(1. Clear/adequate, 2. Needs modification, 3. Inadequate)

**COMMENTS:** DON'T TOO LITTLE

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O **ABSTRACT:** The abstract should consist of 100-150 words. The abstract should be written in complete sentences and should succinctly state the objectives, the experimental design of the paper, and the principal observations and conclusion; it should be intelligible without reference to the rest of the paper. **Do not cite any reference and avoid quotes in the abstract.**

(1. Clear/adequate, 2. Minor revisions, 3. Inadequate/unclear)

**COMMENTS:** MAY BE FURTHER FIXED. SUGGESTIONS FOR CHANGING THE RIGHT PHRASE.

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O **METHODS:** The author should give explanations about methodology adopted.

(1. Appropriate for aims, 2. Too simple, 3. Inappropriate/erroneous)

**COMMENTS:** EXPLAIN CLEARLY ON THE OUTCOME/DEPENDENT VARIABLE CLASSIFICATION IN THE METHODS.

**OTCOME VARIABLE:** Effect of Long Use Contraception Against Weight Gain and Increased Blood Pressure must be cleared

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O **RESULTS:** The results section should present all the findings and explain findings. Simply inserting tables/figures is not enough.

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**COMMENTS:** PRESENT CLUBBED WITH RESULTS. SUGGEST PRESENT SEPARATELY. THE AUTHORS CAN ADD THE IMPLICATION OF THIS STUDY/ANALYSIS.

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## ADDITIONAL WEIGHT AND IMPROVEMENT OF BLOOD PRESSURE IN HORMONAL CONTRACEPTION ACCEPTORS

Erni Yuliasuti<sup>1</sup>, Rafidah<sup>2</sup>, Hapisah<sup>3</sup>, Dede Mahdiyah<sup>4</sup>

<sup>1,2,3</sup>Poltekkes Kemenkes Banjarmasin, South Kalimantan, Indonesia,

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### ABSTRACT

DMPA injections and pills are the most popular types of hormonal contraceptives. This contraceptive has a high effectiveness, but also causes side effects for the acceptor such as weight gain and increased blood pressure. Of the 7431 PUS in the working area of the Kertak Hanyar Health Center, there were 2663 (35.83%) pill acceptors and 4371 (58.82%) injection acceptors. Preliminary study of 10 injection and pill acceptors, 7 (70%) experienced weight gain and 6 (60%) experienced an increase in blood pressure.

The purpose of the study was to analyze the effect of using hormonal contraception, duration of use, dietary consumption patterns on weight gain and blood pressure in the Kertak Hanyar Health Center, Banjar Regency.

This type of research is an analytic survey with a *pre-experimental design* with a *pretest-posttest design*. The instruments used were questionnaires, interview guidelines, body scales, sphygmomanometer, family planning participant cards and family planning registers. The population is 99 people who accept DMPA injections and combination pills. Data analysis with *univariate*, *bivariate* with *Chi Square* and *testMann-Whitney test*, *multivariate* with *multiple linear regression*.

The results showed that 74 (74.4%) acceptors experienced weight gain and 51 (51.5%) experienced an increase in blood pressure. There was an effect of using hormonal contraception ( $p=0.040$ ) and duration of use ( $p=0.021$ ) with weight gain. There was no effect of food consumption pattern with weight gain ( $p=0.296$ ). The increase in blood pressure was influenced by the length of use ( $p=0.003$ ) and diet ( $p=0.010$ ). Meanwhile, the use of hormonal contraception had no effect on increasing blood pressure ( $p=0.562$ ). The use of hormonal contraception has the greatest effect on weight gain, the value of  $exp(B)= 3.352$ , and the duration of contraceptive use has the greatest effect on increasing blood pressure,  $exp(B)= 0.925$ .

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**Keywords:** hormonal contraceptive acceptors, body weight

Commented [i3]: keyword writing customized content

## INTRODUCTION The

government takes an anticipatory step to suppress the high rate of population growth through the 2015-2019 Medium Term Development Plan (RPJM) strategy to achieve a balanced population condition, one of which is the implementation of improving family planning services by using the Long-Term Contraceptive Method (MKJP) to reduce risk. drop-out and the use of Non-Long-Term Contraceptive Methods (Non-MKJP) by providing continuous information for the continuity of family planning participation and the provision of continued family planning services taking into account the principles of Rational, Effective and Efficient (REE).<sup>1</sup>

The most popular hormonal contraceptive methods are injections *Depo Medroxy Progesterone Acetate* (DMPA) and pills that include combination pills containing the hormones estrogen and progesterone, and progesterone pills containing the hormone progesterone.<sup>2</sup> The hormonal contraceptive method is one of the most effective methods of contraception, but it also has some side effects, such as disruption of menstrual patterns and weight gain.<sup>3</sup> Side effects of the excessive content of the hormone progesterone on the cardiovascular system can cause changes in blood pressure. In addition, the content of depoprovera stimulates the appetite control center.<sup>4</sup>

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The 2007 Riskesdas report shows that the prevalence of hypertension in Indonesian women occurs at the age of 34-35 years, it is suspected that this condition is related to the use of hormonal contraception.<sup>5</sup> Lubianca from the results of her research showed a significant decrease in blood pressure in hormonal contraceptive acceptors who stopped using it.<sup>6</sup> The results of the study showed a relationship between the incidence of hypertension and the use of hormonal contraception.<sup>7</sup> Research in Korea shows the use of oral contraceptives increases blood pressure. *The Nurses' Health Study* reported that oral contraceptive use increased risk (rr=1.8) compared to never using it. The risk of increased blood pressure is related to race, family history of hypertension, obesity, diet/food intake, smoking and duration of use of combined hormonal contraceptives.<sup>8</sup> The risk of developing hypertension increases with the duration of use of the contraceptive pill.<sup>9</sup> The results of the study by Nafisah, et al (2014) stated that there was a significant relationship between the duration of using birth control pills and the incidence of increased blood pressure. Where acceptors with long use of birth control pills > 2 years have a 10.09 times greater risk of developing hypertension than those with 2 years of use.<sup>10</sup>

Disorders of hormonal balance in hormonal family planning acceptors due to the use of synthetic estrogen and progesterone hormones can cause effects on the body. The use of estrogen can inhibit the secretion of FSH (*Folicle Stimulating Hormone*) and similarly, the use of synthetic progesterone can inhibit the secretion of LH (*Luteinizing Hormone*), so that if the secretion of FSH and LH is inhibited there will be an imbalance of the hormones estrogen and progesterone which will stimulate the occurrence of disorders of the blood vessels. manifested by an increase in blood pressure.<sup>3</sup>

Weight gain in DMPA injection acceptors is the most common side effect. Most DMPA acceptors will experience an increase in body weight of 5% in the first 6 months.<sup>11</sup> Research by Berenson and Rahman (2009) stated that for 36 months the use of DMPA experienced an increase in body weight of 5.1 kg, body fat 4.1 kg and body fat percentage 3.4%.<sup>12</sup> Pratiwi, et al (2014), stated that 23 acceptors (57.50%) experienced an increase in body weight. Most of the average weight gain in one year is > 0 – 1 kg (47.8% acceptors). The average body weight before and after the use of DMPA contraception was 54.4 kg 58.1 kg.<sup>13</sup>

The increase in body weight due to the use of DMPA contraceptives is related to the regulation of appetite and body fat levels. One study found an increase in appetite with contraceptive use after 6 months.<sup>14</sup> It can be associated with the hormone progesterone contained in DMPA will be able to stimulate the central nervous control of appetite in the hypothalamus resulting in increased appetite.<sup>15</sup>

Use of contraceptive pills in South Kalimantan Province 308,908 acceptors (48.41%) from 638,063 active family planning participants. Likewise in Banjar Regency the use of contraceptive pills is quite dominant, namely 46,494 (50.85%) of the 91,435 active family planning participants. .82 %) injection acceptor.<sup>16</sup> The results of a preliminary study at the

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Kertak Hanyar Health Center, obtained from 10 acceptors using injectable contraception, *Depo Medroxy Progesterone Acetate* 7 acceptors experienced weight gain. The weight gain experienced varies with the range between 1-6 kg. And from 10 pill acceptors with duration of use 4 years, there are 4 acceptors (40%) who do not experience an increase in blood pressure, while contraceptive pill acceptors with use > 4 years there are 6 acceptors (60%) experiencing an increase in blood pressure.

The side effects that users of hormonal contraception most complain about are weight and blood pressure problems. weight gain and increased blood pressure. The purpose of this study was to analyze the effect of using hormonal contraception, duration of use and food consumption patterns with weight gain and increased blood pressure and to analyze the greatest effect on weight gain and blood pressure increase.

## METHODS

This study used an analytical survey. Analytical research survey is a research to study the dynamics of correlation between phenomena, both between risk factors and effect factors, or vice versa. The research design used is a *experimental design* with *pre-pretest-posttest*.<sup>17</sup> This study was conducted by giving a *pretest* (initial observation) on initial body weight and initial blood pressure before using contraceptive pills/injections before being given an intervention by observing the KB participant card. After being given the intervention, then carried out *posttest* / final observation was by measuring weight and blood pressure after using contraception.

The sample is acceptors of DMPA injection contraception and the combination pill who came to visit the working area of the Kertak Hanyar Health Center as many as 99 people. Accidental sampling technique . Data collection time starts from June 30 to August 11, 2018. Data collection uses primary and secondary data sources. Primary data collection was obtained by using research instruments in the form of questionnaires, weighing the weight of the injection contraceptive acceptor to determine the acceptor's weight gain, measuring the acceptor's blood pressure and through interviews to ask the duration of contraceptive use and the acceptor's weight before using injectable contraceptives. Secondary data were obtained from family planning participant cards and family planning report registers in the Kertak Hanyar Health Center Work Area, Banjar Regency. The data processing process includes *editing, scoring, coding, processing* and *cleaning*. The data analysis technique used is univariate, bivariate and multivariate analysis.

## RESULTS

### 1. Univariate analysis

The results showed that the most widely used hormonal contraception was injection contraception, namely 60 acceptors (60.6%). The average length of contraceptive use is 49.53 months (4 years). The food consumption pattern of the acceptors on average had a good diet.

Acceptors experienced weight gain as many as 74 people (74.7%) and 25 acceptors (25.3%) did not experience weight gain. The average weight gain is 6 kg. The acceptors experienced an increase in blood pressure as many as 51 people (51.5%) and 48 acceptors (48.5%) did not experience an increase in blood pressure.

### 2. Bivariate Analysis

Tables 1 and 2 show that most of the use of contraceptive pills (87.2%) and 40 people (66.7%) experienced weight gain. Some of the pill acceptors 22 people (56.4%) and injection 29 people (48.3%) experienced an increase in blood pressure.

Table 1 Effect of Contraceptive Use

Hormonal Against Gain

Weight Gain

Commented [i6]: EXPLAIN CLASSIFICATION OF RESULTS/VARIABLES DEPENDING ON THE METHOD.



Contraceptive Use	Weight Gain				p
	Up		No		
	n	%	n	%	
Pil	34	87.2	5	12.8	0,040
Injection (DMPA)	40	66.7	20	33.3	

Table 2 Effect of Contraceptive Use

Hormonal Against Increase

Blood Pressure

Contraceptive Use	Improved Blood pressure				p
	Rise		No		
	n	%	n	%	
Pills	22	56.4	17	43.6	0.562
Injections (DMPA)	29	48.3	31	51.7	

use of contraceptive pills experienced an increase in blood pressure and greater weight gain than the use of DMPA injectable contraceptives. The results of the test *Chi Square* with a value of  $p = 0.040 < 0.05$ , which means that there is an effect between the use of contraception and weight gain. However, the increase in blood pressure did not show an effect, namely  $p = 0.562$ .

Table 3 Effect of Long Use on

Contraceptive Weight Gain and Increased Blood Pressure

	Usable
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Commented [i7]: table creation is adjusted to the journal template, as well as the source

	Weight		Blood Pressure	
	Rise	Not	Up	Not
<b>Mean</b>	54.6	34.4	60.2	38.2
<b>Standard Deviation</b>	46.0	27.2	49.8	30.5
<b>Minimum</b>	12	3	15	3
<b>Maximum</b>	276	million		96.27612
<b>p</b>	0,021		0,003	

Table 3 shows that the acceptors who experienced weight gain had an average length of use of 54.6 months (4.6 years). The results of the test *Mann-Whitney* obtained a value of  $= 0.021 < \alpha = 0.05$  which means that there is an influence between the duration of contraceptive use on weight gain. While the pattern of food consumption shows the value of  $= 0.296 > = 0.05$  which means that there is no influence between the pattern of food consumption on weight gain.

Table 4 The Effect of Eating Consumption Patterns on Weight Gain and Increased Blood Pressure

	Consumption Pattern Eating			
	Weight		Blood Pressure	
	Rise	Not	Up	Not
<b>Mean</b>	12.0	11.5	12.4	11.3
<b>Standard Deviation</b>	2.4	1.8	2.2	2.2
<b>Minimum</b>	5	8	7	5
<b>Maximum</b>	16	5	16	15
<b>p</b>	0,276		0.010	

Table 4 shows that for acceptors who experienced an increase in blood pressure, the average length of use was 60.2 months. The results of the test *Mann-Whitney* obtained a value of  $= 0.003$ , which means that there is an influence between the duration of contraceptive use on increasing blood pressure. The pattern of food consumption shows the

value of  $=0.010 < 0.05$ , which means that there is an influence between the pattern of food consumption on the increase in blood pressure.

### 3. Multivariate Analysis

#### a. Effect of Hormonal Contraception on Weight Gain.

test results *Logistics Regression In multiple* use of hormonal contraception has a value of  $\exp(B)$  cases, the  $= 3.352$ , greater than the duration of contraceptive use with  $\exp(B) = 0.782$ . So that which has the greatest influence on weight gain is the use of hormonal contraception.

#### b. Effect of Hormonal Contraception on Increased Blood Pressure

Results of Test *Logistics Regression multiple times*, it is found that the duration of contraceptive use with  $\exp(B) = 0.925$  is greater than the pattern of food consumption has a value of  $\exp(B) = 0.779$ . So that which has the greatest influence on increasing blood pressure is the duration of contraceptive use.

## DISCUSSION

### 1. The effect of using hormonal contraception on weight gain.

The results showed that the most widely used use of hormonal contraception was injection contraception, namely 60 acceptors (60.6%). Most of the use of contraceptive pills (87.2%) and injections (66.7%) experienced an increase in body weight. Some of the pill acceptors 22 people (56.4%) and injection 29 people (48.3%) experienced an increase in blood pressure.

One of the most common side effects of hormonal contraception is weight gain experienced by hormonal contraceptive acceptors. This is in accordance with Pratiwi's research (2014) which states that there is a relationship between the use of DMPA injectable contraceptives and weight gain.

The weight gain experienced by hormonal contraceptive acceptors varies from normal, excessive to very excessive. Although the results of the study showed that the respondent's weight gain was normal, it could become abnormal if the hormonal imbalance that causes increased appetite continues.

The results of the test *Chi Square* obtained a value of  $= 0.040$  indicating the effect of the use of hormonal contraception on weight gain. The use of hormonal contraception has the greatest effect on weight gain ( $\exp(B) = 3.352$ .)

The effect of injectable contraceptives on weight changes is that the content of the hormone progesterone in the form of the synthetic hormone *Depo Medroxy Progesterone Acetate* facilitates the metabolism of carbohydrates and sugars into fat so that they become fat. under the skin increases and decreases physical activity.<sup>14</sup> In addition, the hormone progesterone also stimulates the appetite control center in the hypothalamus that causes appetite increases, so the acceptor eat more than usual. As a result, the use of contraception can cause changes in body weight, including weight gain.<sup>15</sup>

Obesity happens to acceptor hormonal contraception (injectable DMPA) is basically due to the hormone progesterone, which can cause increased appetite when high doses and excessive because, according to experts DMPA stimulates the central control of appetite in the hypothalamus which causes the acceptor to eat more than usual.<sup>18</sup>

Increased levels of estrogen and progesterone in the blood are related to the body's metabolism.<sup>3</sup> A slow metabolism can lead to weight gain because women have smaller muscles than men. Muscle burns more calories than other body tissues, so the metabolism in women is much slower than in men. This causes women to be fatter easily when compared to men.

### 2. Effect of Long Use of Hormonal Contraceptives on Weight Gain

The results showed the average length of use of hormonal contraceptives was 49.53 months (4 years). The results of the test *Mann - Whitney* obtained a value of  $p = 0.021$ , which means that there is an effect of long use of hormonal contraception on weight gain.

Hormonal contraceptives are ideally used for 2 years and a maximum of 4 years. Long-term use of hormonal contraception can trigger weight gain, vaginal dryness, cancer, emotional disturbances because the balance of the hormones estrogen and progesterone in the body becomes chaotic so that it can lead to abnormal cell changes.<sup>19</sup>

Long-term (long-term) use of progesterone causes weight gain due to anabolic changes and appetite stimulation. This happens because the hypothalamus as a control system that affects the absorption of food and drives appetite. Mild gains of 1-2 kg are often experienced by acceptors, then stabilize after continued use but a small number of women continue to experience moderate weight gain while they are using the method.

### 3. The Effect of Eating Consumption Patterns on Weight Gain

The results of the test *Mann - Whitney* obtained a value of  $p = 0.298$ , which means that there is no effect of food consumption patterns on weight gain.

Excessive weight gain is one of the side effects of using hormonal contraceptives, but not all acceptors will gain weight, because the effects of these drugs are not always the same for each individual.<sup>3</sup>

Weight gain in hormonal family planning acceptors can occur not only due to excessive eating patterns, but also due to reduced physical activity. The increase can be caused by other things, one of which is the mother's job. The characteristics of the respondents mostly work as housewives, namely 78 respondents (78.8 %). Mothers who do not work are likely to be deficient in physical activity, especially for mothers who have household assistants who help with household chores. So that the activities carried out tend to not expend so much energy, so that the intake of nutrients that are put into the body is not balanced with the energy released through physical activities carried out or released through sweat or fat burning. Thus, mothers who do not work will be more likely to experience weight gain. As stated by Proverawati (2010) that someone with less physical activity can increase the prevalence of obesity.<sup>20</sup>

Psychological factors are often referred to as factors that encourage excessive weight gain. Emotional disorders due to psychological pressure when a person feels anxious, sad, disappointed or depressed, usually tends to eat more food to overcome these unpleasant feelings. According to psychoanalytic theory, weight gain can be explained as someone with a feeling of anger that is always suppressed will show up in the form of eating.<sup>21</sup>

### 4. The Effect of Hormonal Contraceptive Use on Increased Blood Pressure The

results of the statistical test *Chi-Square* are known to have a value of  $p = 0.562 \geq \alpha = 0.05$ , meaning that there is no effect between contraceptive use and an increase in blood pressure.

The use of hormonal contraception can cause different side effects for each acceptor who uses it. One of the side effects that can occur with hormonal birth control acceptors is an increase in blood pressure. but not all use of hormonal contraceptives can result in an increase in blood pressure.

Hormonal contraceptives can cause hypertension in approximately 4-5% of women with normal blood pressure before using hormonal contraceptives. The risk of increased blood pressure is related to race, family history of hypertension, obesity, dietary intake of food, smoking and duration of use of combined hormonal contraceptives.<sup>8</sup>

### 5. Effect of Long Use of Hormonal Contraceptives on Increased Blood Pressure The

duration of use of hormonal contraceptives that experienced an average increase of blood pressure was 60.2 months ( $> 5$  years), with a value of  $p = 0.003$  which means that there is an influence between the duration of contraceptive use and an increase in blood pressure. . The duration of the use of hormonal contraception has the greatest influence on the increase in blood pressure ( $\exp(B) = 0.925$ ).

Prolonged use of hormonal contraception in women over 35 years and in those using contraception for more than 5 years and obese individuals can lead to hypertension.<sup>22</sup> Nafisah's research (2014) stated that there was a significant relationship between the length of use of the contraceptive pill and the incidence of increased blood pressure where the acceptor with the duration of using the contraceptive pill was > 2 years.<sup>10</sup>

6. The Effect of Eating Patterns on Increased Blood Pressure The results of the statistical test are *Mann Whitney* known to have a value of  $=0.003 \leq \alpha = 0.05$ , meaning that there is an effect of using contraceptives on increasing blood pressure.

The results showed that 30 respondents who did not adjust their eating patterns because there was a habit of eating dinner after nine o'clock in the evening and a bad diet so that they were overweight and caused hypertension. This condition shows that mothers who do not adjust their diet mostly experience an increase in blood pressure. This is in accordance with the theory of Varney (2010) which states that women who use hormonal contraceptives can cause changes in body weight due to excessive progestin content and increased appetite, depression, fatigue, symptoms of hypoglycemia, decreased libido, neurodermatitis, weight gain, hypertension and limb dilatation.

## CONCLUSION

Weight gain is influenced by the use of hormonal contraception and the duration of its use. The use of hormonal contraception has the greatest influence on weight gain. The increase in blood pressure is influenced by the duration of contraceptive use and food consumption patterns. The duration of the use of hormonal contraception has the greatest effect on increasing blood pressure.

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**Commented [i8]:** the reference is adjusted to the content