

THE RELATIONSHIP BETWEEN PREGNANT WOMEN WEIGHT GAIN AND NEW BIRTH WEIGHT AT PUSKESMAS BOGOR TIMUR

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Abstract

Normal weight gain for pregnant women according to BMI is kg.¹ Many factors affect the weight of the newborn, including the sex of the baby, the state of the placenta, the mother's age, the mother's activity, smoking habits, birth spacing, height, maternal weight, and nutrition. This study aims to determine the relationship between weight gain for pregnant women and newborn weight at the East Bogor Community Health Center in 2019. This study aims to determine the relationship between weight gain for pregnant women and new birth weight at the East Bogor Community Health Center in 2019. This

type of research This uses total sampling with a sample size of 50 respondents. The analysis used is the *Spearman*. Respondents in this study were mothers who had babies, when the study was conducted in November 2019, which was conducted at the East Bogor Community Health Center.

From the results and discussion of research conducted at the East Bogor Health Center in 2019, regarding the Relationship between Pregnant Women Weight Gain and Newborn Weight, based on table 4.3 of 50 respondents, the weight gain of pregnant women is less and the weight of newborns is more than 13 respondents. (26.0%). The analysis results obtained *p value* 0.043 where the *p value* is $0.043 < (0.005)$, so H_0 is rejected and H_a is accepted, which means that there is a relationship between maternal weight gain and weight for newborns at the Bogor Timur Health Center in 2019.

It is hoped that it can provide reference material and reading material. maternity nursing courses and knowledge about weight gain for pregnant women, as well as a reference in carrying out further research on weight gain in newborns. It is hoped that this researcher can be used as a guide to be able to provide knowledge about the health of increasing the weight of pregnant women with new birth weight at the Puskesmas Bogor Timur.

Keywords : Increased weight of pregnant women, new birth weight

INTRODUCTION

The process of pregnancy is not something pathological, but physiological in all women. Thus, it is important to know the physiological changes that occur during pregnancy, such as increased body weight due to the enlarged organs of the pregnant woman's organs, namely the breasts and uterus, as well as the growth of the fetus from time

to time. Based on recommendations from the World Health Organization (WHO) according to guidelines issued in 2009, the increase in body weight during pregnancy is adjusted to the ratio of weight and height of pregnant women, or based on Body Mass Index (BMI) before pregnancy or at the time of visit. first the patient to a doctor or health service.¹

Assessment of body weight based on age according to WHO with the NCHS (*National Center for Health Statistics*) standard, which uses the following percentiles: percentile less than or equal to three is categorized as malnutrition. The WHO assessment of body weight based on height uses a percentage of the median as follows: between 89–100% is said to be moderately malnourished and less than 80% is said to be acutely malnourished (*wasting*). Weight assessment based on height according to the NCHS standard, using the following percentile, 75–25% percentile is said to be normal, 10% percentile is said to be moderately malnourished, and less than the percentile is said to be severely malnourished.¹

During the growth period, the baby's body weight is divided into two, namely 0–6 months and ages 6–12 months. And aged 0–6 months of growth, body weight will increase every week around 140–200 grams and his body weight will be twice the birth weight at the end of the 6th month. Meanwhile, at the age of 6-12 months there is an increase every week of about 25-40 grams and at the end of the 12th month there will be a threefold increase in birth weight. During playtime, there is an increase in body weight of about four times the birth weight at the age of approximately 2.5 years and weight gain each year is 2–3 kg. in the pre-school and school period

there will be weight gain each year approximately 2–3 years.²

Weight gain for each pregnant woman is not the same. This depends on body mass index (BMI) and body weight before pregnancy. BMI is obtained by dividing your weight in kilograms by your height in meters squared.²

The normal weight gain for pregnant women according to BMI is 11-15 kg.¹ Many factors affect the weight of the newborn, including the sex of the baby, the state of the placenta, the mother's age, maternal activity, smoking habits, birth spacing, height, maternal weight and nutrition, but the relationship between the mother's nutritional status and weight born in child survival, which has consistently shown that birth weight is the size of the mother's body, namely the mother's height and weight before pregnancy.²

The baby's body weight is weighed by baby scales, while in children with standing scales. Before weighing, first check whether the appliance is in balance (The needle indicates zero). Baby is weighed in position lying on your back or sitting without clothes, while the child is weighed in a standing position without shoes with minimal clothing.²

Toddlers to be weighed should wear clothes as light as possible. Clothes, shoes and hats should be removed. If this is not possible, the weighing result must be corrected by the weight of the toddler's fabric which is also weighted.

When things go this forces children under five do not want to be weighed without their mother or accompanying parents, the weighing can be done by using the scale step on the first way, weigh toddler and his mother. Second, just weigh the mother. Third, the results the scale is calculated by subtracting the weight of the mother and child.³

Researchers found that the increase in body weight of pregnant women in Indonesia has not been scientifically recorded, including its relationship to several important labor outcomes, such as length of delivery, the need for cesarean section procedures, birth weight of babies, and so on. Therefore, researchers carried out a study with the aim of providing an overview of the distribution of increased pregnancy weight, the distribution of length of labor, and its relationship to the Indonesian population.²

Being overweight or underweight in pregnant women can hinder fetal development. The higher the weight of the pregnant woman, the more likely the fetus will experience macrosomia. If the mother's weight is low during pregnancy, it will cause fetal growth and development to experience obstacles so that it becomes *Intrauterine growth retardation*, preterm labor and low birth weight for the gestational period.²

Meanwhile, a preliminary study at the East Bogor Community Health Center regarding the relationship between

nutritional status and weight gain during pregnancy with the weight and length of the baby born, shows that 18% of pregnant women have a pre-pregnant weight less than 40 kg and the average pregnancy weight gain is less than 9 kg. The comparison of the estimated weight gain with the amount of weight gain required to compensate for the pre-pregnancy weight is low, only 9% of pregnant women are adequate, and this adequacy is given from mothers whose pre-pregnancy weight is sufficient. Only 3% of women weigh less than 45 kg.⁴

RESEARCH METHODS

This type of research is a quantitative descriptive study, in which the research activity of the researcher only takes pictures of what happens to the object or area under study, then describes what happened in the form of a straightforward research report, as it is. The term descriptive comes from the English term "*to describe*" which means to describe or describe something, such as circumstances, conditions or other things. This method is called a quantitative method, because the research data is in the form of numbers and the analysis uses statistics.⁵ The

design of this study used approach *cross sectional*, which is a study to study the dynamics of the correlation between factors and effects, by means of an approach, collecting data at once. This means that research subjects are

observed only once and measurements are made of the character status or subject variables at the time of examination.⁵

This research has been conducted at the Puskesmas Bogor Timur. The population in this study were mothers who had babies with 50 people.

The variables of this study consisted of the increase in body weight of pregnant women with new birth weight.

Data processing and data analysis used computerization with the SPSS version 17 program. The analysis consisted of univariate and bivariate

analysis, where the bivariate analysis used the statistical test *Spearman* to analyze the Relationship between Pregnant Women Weight Gain and Newborn Weight at Puskesmas Bogor Timur in 2019.

In This research is the location that is determined to conduct research, namely at the East Bogor Community Health Center. Retrieval of data in this study using a *total sampling technique* with 50 respondents who have babies. Research data collection was conducted on November 5, 2019. Data was collected by researchers.

RESEARCH RESULTS

Table 1 Frequency Distribution of Maternal Weight Gain in Puskesmas Bogor Timur

o	ncrease in Maternal Weight	requenc y	ercentage%
	eight LossNormal Maternal Weight	2	24.0%
	nderweight Maternal Weight	6	32.0%
	ateral Body Weight Over	2	44, 0%
	otal	0	100.0%

Source: SPSS Version 17

Based on table 1 of 50 respondents, the incidence of weight gain for pregnant women at the East Bogor Community Health Center in 2019 showed that 22

respondents experienced an increase in the weight of their pregnant women (44.0%).

Table 2 Frequency Distribution of Newborn Baby Weight Gain at Puskesmas Bogor Timur

o	ncrease in Maternal Weight	requenc y	ercentage%
	eightNormal Maternal Weight	2	24.0%
	nderweight Maternal Weight	6	32.0%
	ateral Weight	2	Overwei ght44.0 %
	otal	0	100.0%

Based on table 2 of 50 respondents, the incidence of weight gain for pregnant women at the East Bogor Community Health Center in 2019

shows that 22 respondents (44.0%) experienced an increase in the weight of pregnant women.

Table 3 Relationship Improved Pregnancy Weight With Weight Newborns in 2019 Health Center East Bogor

Improved BB Maternal	BB Improved Newborn						p value	
	Normal	Less	More	Total				
	%	%	%	%				
Normal	1	0	0	2	4.0%	2	4.0%	.043
Less	6	0	3	6	2.0%	6	2.0%	
More	10	0	0	2	2.0%	2	4.0%	
Total	17	4	6	10	8.0%	6	2.0%	00.0%

Source: SPSS Version 17

Based on table 3 of 50 respondents the increase in weight of pregnant women is less and the weight of new babies there were 13 respondents (26.0%) born over. The results of the analysis obtained gain for *p value* 0.043 where the *p value* is

0.043 < (0.005), then H_0 is rejected and H_a is accepted, which means that there is a relationship between weight pregnant women and new birth weight at the Bogor Timur Health Center in 2019.

increase in the weight of pregnant women.

DISCUSSION

a. Increasing Weight of Pregnant Women

Based on table 1 of 50 respondents, the incidence of weight gain for pregnant women at the East Bogor Community Health Center in 2019 shows that 22 respondents (44.0%) experienced an

The results of this study are in line with research conducted by Sri Wahyuni that mothers who have an increased risk of body weight are 63.3% and normal is 36.7%. There were LBW of 0%, BBLN of 96.7% and Big Babies of 3.3%. The conclusion of this study is that there is a relationship between increased body weight of pregnant

women and newborn body weight with a value of $p = 0.040$ ($p > 0.05$).

Weight gain during pregnancy is an indicator of plasma volume expansion and positive calorie balance and represents roughly the adequacy of a diet. In terms of weight gain during pregnancy, it will be described based on the pattern of weight gain, components of weight gain and recommended weight gain.²

Factors that affect weight gain of pregnant women. The weight gain component consists of water, approximately 62% of the total weight gain, 30% fat and 8% protein. The extracellular fluid and blood volume increase —13 and 10%, respectively, of the total weight gain. Normal gain for a healthy mother is around 11-15 kg. This weight gain is only about 25% - 27% of the first total, the material is the weight of the fetus, 5% placenta and 6% amionic fluid, the rest is pregnancy products that occur in the mother's body, namely 10% expansion of blood volume, 11% growth of the uterus and breasts, 13% increase in extra cell fluid and 25% - 27% increase in body fat.⁴

Pre-pregnancy weight can be used singly to predict risk of pregnancy outcome, and can be combined with height, both as BMI and as height / weight. However, if used singly, body weight is still the best indicator. Pre-pregnant BMI represents a genetic and nutritional component. A low pre-

pregnancy BMI is still considered a sign of minimal tissue supply of nutrients. Therefore, prematurity BMI is considered an increased risk as a labor outcome, namely prematurity and IUGR.²

Protein requirements during pregnancy are based on the reference needs of the nonpregnant woman plus the extra amounts needed for growth. The easiest way to determine how much extra protein is needed each day to support the synthesis of new tissue consisting of the product of conception and the mother's body based on the average gestational period. Approximately 925 grams of protein is stored in the normal weight of the fetus and other tissues. If this is divided by 280 days of pregnancy, an average of 3.3 grams of protein should be added to the normal daily requirement.⁴

Based on the theory and results of research that researchers have conducted at the East Bogor Community Health Center with 50 respondents, that some respondents have underweight, namely as many as 22 respondents (44.0%), so it can be concluded that the incidence of increased body weight of pregnant women in East Bogor Community Health Center 2019 is influenced by the increase in weight of newborns.

b. Increase in weight for newborns

Based on table 4.2 of 50 respondents, the increase in weight for

newborns at the East Bogor Health Center in 2019 obtained data that experienced an increase in weight for newborns as many as 26 respondents (52.0%).

The results of this study are in line with research conducted by Sunanita (2015) entitled *The Relationship between Pregnant Women Weight Gain and Newborn Weight Loss at Bps Hj. Hartini, Widang Subdistrict, Tuban Regency*, most of the 30 respondents had a weight gain of pregnant women <12.5 kg and gave birth to babies with birth weights between 2500 - 4000 grams of 21 people (91.3)

Body weight is the most important anthropometric measure in infancy and toddlerhood. Body weight is the result of increasing or decreasing all the tissues in the body. Body weight is currently used as the best indicator to determine the state of nutrition and child development, sensitive to slight changes, objective measurement.³

During the growth period, the baby's body weight is divided into two, namely 0–6 months and 6–12 months of age. And aged 0–6 months of growth, body weight will increase every week around 140-200 grams and body weight will be twice the birth weight at the end of the 6th month. Meanwhile, at the age of 6-12 months there is an increase every week of about 25-40 grams and at the end of the 12th month there will be a threefold increase in birth weight. During

playtime, there is an increase in body weight of about four times the birth weight at the age of approximately 2.5 years and weight gain each year is 2–3 kg. in the pre-school and school period there will be weight gain each year approximately 2–3 years.²

Factors that influence the increase in newborn body weight namely, Mean weight gain is not the same during pregnancy. Approximately 5% of the total weight gain is usually in the first 10-13 weeks of pregnancy and the remaining 95% is almost entirely mean in the remainder of the pregnancy. In the last trimester of pregnancy, growth in weight is more rapid. Peak growth in body weight is reached at 33 weeks of gestation. At approximately 26 weeks of age, the number of lesions is only 1% of the total body composition (10 grams) after which the accumulation of fat continues to reach 12% of total body weight or 360 grams at 38 weeks of age. Therefore if the peak growth in length is reached in the 2nd trimester.³

The nutritional needs of newborns still really need breast milk to meet the nutritional needs of their bodies. Breast milk contains various components according to their needs. Breast milk contains as much as 87.5% water, therefore babies who get enough breast milk do not need to get additional water anymore. Breast milk is in accordance with the baby's digestive tract, while

formula milk is thicker than breast milk.

² The

age of the pregnant woman is an important factor in pregnancy. Pregnant women in developing countries marry at a young age, around the age of menarche, where the risk of giving birth to LBW is 2 times lower within 2 years after menarche. Besides, there is a risk of miscarriage and stillbirth. This happens because of the eating competition between the mother's fetus which is still in the growth stage, as well as hormonal changes during pregnancy so that the woman has a greater body need for nutrients than other adult women. The additional nutritional requirements caused by pregnancy adjusting to the required growth will increase the risk for her pregnancy. In addition, too young an age has risks because it is biologically and psychologically immature.⁴

Based on the theory and research results that researchers have conducted at the East Bogor Public Health Center with 50 respondents, that some newborn respondents have more weight, namely 26 respondents (52.0%), So it can be concluded that the incidence of weight gain New born babies at the East Bogor Puskesmas in 2019 are influenced by the increase in weight of pregnant women.

c. The Relationship between Pregnant Women Weight Gain and Newborn Weight at the East Bogor Community Health Center in 2019

Based on table 4.3 of the 50 respondents, the increase in weight for pregnant women was less and there were 13 respondents (26.0%) overweight newborns. The results of the analysis obtained again for *p value* of 0.043 where the *p value* was $0.043 < (0.005)$, so H_0 was rejected and H_a was accepted, which means that there was a relationship between weight pregnant women and new birth weight at the Bogor Timur Health Center in 2019.

This is in line with research conducted by research conducted by Anika Candrasari (2015) with the title The Relationship Between Pregnancy Weight Gain and Weight Loss of Newborns in Semarang Regency. With the results of the correlation test *Spearman*, the *p value* was 0.040, indicating that the correlation between maternal weight gain and birth weight was not significant. The results of linear regression in the ANOVA test obtained *p value* = 0.000. The adjusted R square value on the model summary results in 0.111, which means that the equation obtained is able to explain the baby's birth weight by 11.1%. The remaining 88.9% is explained by other variables not examined. The conclusion of this study is that there is a relationship between weight gain body of pregnant women with birth weight babies in Semarang district.

According to the International Federation of Gynecological Obstetrics,

pregnancy is defined as the fertilization or fusion of *spermatozoa* and ova and followed by nidation or implantation. When calculated from the time of fertilization to the birth of the baby, a normal pregnancy will last within 40 weeks or 10 months or 9 months according to the international calendar. Pregnancy is divided into 3 trimesters, where the first trimester lasts in 12 weeks, the second trimester 15 weeks (weeks 13 to 27), and the third trimester 13 weeks (weeks 28 to 40).⁵

The normal weight gain for pregnant women according to BMI is 11-15 kg.¹ Many factors affect the weight of the newborn, including the sex of the baby, the state of the placenta, the mother's age, maternal activity, smoking habits, birth spacing, height, maternal weight and nutrition, but the relationship between the mother's nutritional status and weight born in child survival, which has consistently shown that birth weight is the size of the mother's body, namely the mother's height and weight before pregnancy.¹

Weight gain during pregnancy is an indicator of plasma volume expansion and positive caloric balance and roughly represents the adequacy of a diet. In terms of weight gain during pregnancy, it will be described based on the pattern of weight gain, components of weight gain and recommended weight gain.² The size or size of a baby is born describes two factors, namely the length of pregnancy

and the duration of the fetus. Gestational age should be considered, on the other hand, the increase in size that occurs with age is very much dominated and influenced by growth and maturity confounding factors. In general, large babies are more mature and it is known that immature babies (especially those who are not full term such as births less than 32 weeks) have a higher risk of death, illness and developmental failure. Failure to consider / take into account gestational age becomes dominant and a major problem in interpretation, which in turn can affect decision makers at the clinic as well as at the level of public health.¹

Body weight is the most important anthropometric measure in infancy and toddlerhood. Body weight is the result of increasing or decreasing all the tissues in the body. Body weight is currently used as the best indicator to determine the state of nutrition and child development, sensitive to slight changes, objective measurement.³

During the growth period, the baby's body weight is divided into two, namely 0-6 months and 6-12 months of age. And aged 0-6 months of growth, body weight will increase every week around 140-200 grams and body weight will be twice the birth weight at the end of the 6th month. Meanwhile, at the age of 6-12 months there is an increase every week of about 25-40 grams and at the end of the 12th month there will be a threefold

increase in birth weight. During playtime, there is an increase in body weight of about four times the birth weight at the age of approximately 2.5 years and weight gain each year is 2–3 kg. in the pre-school and school period there will be weight gain each year approximately 2–3 years.⁴

Based on table 4.3 of the 50 respondents, the increase in body weight of pregnant women is less and the weight of the newborn is more, there are 13 respondents (26.0%). The analysis results obtained gain for p value 0.043 where the p value is $0.043 < (0.005)$, then H_0 is rejected and H_a is accepted, which means that there is a relationship between weight pregnant women and new birth weight at the Bogor Timur Health Center in 2019. With the weight of the newborn at the East Bogor Community Health Center in 2019. The incidence of weight gain for pregnant women at the East Bogor Community Health Center is caused by the behavior of the newborn's weight, so it can be concluded that the weight of pregnant women is influenced by the weight of the newborn.

Conclusion

From the results and discussion of research carried out at the East Bogor Health Center in 2019, regarding the Relationship between Pregnant Women Weight Gain and Newborn Weight, several conclusions can be drawn, namely as follows:

1. Frequency distribution of the total 50 respondents Weight Gain for Pregnant Women At the East Bogor Community Health Center in 2019, 22 respondents (44.0%) experienced an increase in the weight of pregnant women.

2. Frequency distribution of the total number of 50 respondents with a weight gain for newborns at the East Bogor Community Health Center in 2019, data that experienced weight gain for newborns were 26 respondents (52.0%).

3. Based on table 4.3 of 50 respondents, the increase in weight of pregnant women is less and the weight of newborns is more, there are 13 respondents (26.0%). The analysis results obtained p value 0.043 where the p value is $0.043 < (0.005)$, then H_0 is rejected and H_a is accepted, which means that there is a relationship between weight pregnant women and newborn weight at Puskesmas Bogor Timur in 2019.

Suggestions

gain forBased on the results of this study there are suggestions that Researchers can convey, among others:

1. Educational Institutions

It is hoped that they can provide reference material and reading material for maternity nursing courses and knowledge about weight gain for pregnant women, as well as as a

reference in carrying out further research on weight gain in newborns.

2. For the Research Site

It is hoped that this researcher can be used as a guide to be able to provide knowledge about the health of increasing body weight of pregnant women with new birth weight at Puskesmas Bogor Timur.

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