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Birth weight is assessed from mother's weight gain during pregnancy and quality pregnancy examinations in Jombok Village Pule District Trenggalek Regency

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ABSTRACT

Birth weight is one measure of the success of health programs, related to the risk of disease and child survival. The weight gain of pregnant women will affect the weight gain of the fetus. ANC is very important for detecting infant abnormalities during the neonatal period. The aim of this research was to determine the effect of maternal weight gain during pregnancy and quality pregnancy examinations on birth weight in Jombok Village, Pule District, Trenggalek Regency. This research design uses a survey method with a cross sectional approach, the research sample is 30 respondents, using accidental sampling techniques and measuring instruments in the form of questionnaires. The independent variables are Weight Gain for Pregnant Women, and Quality Pregnancy Examination, the dependent variable is Birth Weight. Data analysis used Multiple Linear Regression Test with a significant value ($p < 0.05$). The results of the research show that there is an influence of weight gain in pregnant women and quality pregnancy examinations on birth weight with a significance value (p) of 0.001b ($p < 0.05$), so it is stated that H1 is accepted. Quality pregnancy checks (at least 6 times) will increase the mother's knowledge about her pregnancy and detect all risks to pregnancy and danger signs. Health workers need an active role in quality pregnancy checks and monitoring pregnant women's weight gain to achieve normal birth weight.

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1. Introduction

Birth weight is one measure of the success of health programs, related to the risk of disease and child survival. The increase in weight of pregnant women will affect the increase in fetal weight. (Wigianita et al., 2020). Supervising and monitoring the condition of babies in the womb is an alternative health measure for monitoring the weight of newborn babies (Novitasari et al., 2020). ANC is very important for detecting baby abnormalities during the neonatal period (Zhou et al., 2019).

Data from the World Health Organization states that the prevalence of LBW babies in the world is 15.5% or around 20 million babies are born every year, around 96.5% of which occur in developing countries. According to WHO in 2019, Indonesia is in ninth place in the prevalence rate of LBW babies with more than 15.5% of all births each year (Sukmawati et al., 2018).

Indonesian health profile data (2021) shows that the highest cause of neonatal death is low birth weight (LBW) babies, namely 111,719 (2.5%) cases Local Area Monitoring Data (PWS) for Maternal and Child Health (KIA) for East Java Province in 2021, the quality of health services for pregnant women shows that K4 coverage has decreased from 2020, namely 90.94% to 90.5% with a target of 100% achievement. The LBW rate in Trenggalek Regency in 2022 will be 63 babies (3.78%).

In research conducted by Ruindungan, Kundre, and Masi entitled "The relationship between antenatal care (ANC) examinations and the incidence of low birth weight (LBW) in the Tebolo Regional Hospital work area". The results of this study stated that the relationship between Antenatal Care examinations and the incidence of LBW results was good (p-value = 0.001). Calculation of the odds ratio (OR) shows that OR is 3,000 (OR> 1), indicating that an Antenatal Care examination has a 3-fold chance of LBW (Lathifah, 2019).

Based on a preliminary study conducted in Jombok Village, Pule District, Trenggalek Regency in January 2023, data on the number of pregnant women in 2022 was 97 people, the number of LBW babies was 6 babies and 3 large babies, and there were 36 pregnant women whose pregnancy checks were less than 6 times during pregnancy. Pregnancy examinations up to December 2022 show that there are 37% of pregnant women whose ANC is less than the predetermined target. The results of interviews with 10 postpartum mothers in Jombok Village showed that 6 postpartum mothers experienced weight gain, 4 of them had a history of less than 6 prenatal visits and their babies' weight was less than normal.

Pregnancy checks that do not meet the requirements mean that there is a lack of information about maternal health during pregnancy and monitoring of pregnant weight does not work as expected. This can have an impact on the resulting output, namely babies born with low birth weight (LBW). When a baby is born with LBW, there is a risk of stunted growth and development and even a risk of stunting. Education for pregnant women regarding LBW is needed so that pregnant women know the risk factors for LBW and can take precautions independently. This education can be given during pregnancy checks(Asniatin & Tyastuti, 2018).

The Trenggalek District Health Service has made various efforts to overcome the problem of LBW, such as Home visits to pregnant women by village midwives, assistance to high-risk pregnant women, monitoring the consumption of Fe tablets, training of cadres to accompany pregnant women, integrated ANC. It is hoped that the results of this research can be used as basic data and reference for frther researchers to carry out development research on weight gain during pregnancy and regularity of quality pregnancy checks for weight birth body. And than that the results of the research can add scientific contributions regarding the relationship beetwen mother's weight gain during pregnancy and quality pregnancy examinations wiith birth weight.

Based on the description above, the researcher wants to take the research title "Birth Weight in View from the Mother's Weight Gain During Pregnancy and Quality Pregnancy Examinations in Jombok Village, Pule District, Trenggalek Regency.

2. Method

The research method uses a survey method with a cross-sectional approach. The research population was all postpartum mothers in Jombok Village, Pule District, Trenggalek Regency in April - June 2023, totaling 30 people. The sample in this study was all postpartum mothers in Jombok Village, Pule District, Trenggalek Regency. At the time the research was conducted, they had passed the 42-day postpartum period. The sampling technique is accidental sampling. The independent variables in this study are the mother's weight gain during pregnancy and the quality of pregnancy examinations. The dependent variable in this research is birth weight. Bivariate analysis with Chi-Square with the degree of significance determined by $\alpha = 0.05$, meaning that if the statistical test results show $p \leq \alpha$ then there is a significant relationship between variables and Multivariate Multiple Linear Regression analysis using Statistical Product and Solution Service (SPSS) to determine whether there is the relationship between more than two variables, namely two independent variables and a dependent variable on an Ordinal scale

(Nurhayati, 2016) with the degree of significance determined at α = 0.05, meaning that if the statistical test results show p ≤ α then there is a significant relationship between the variables.

Table 1
Distribution of variable on knowledge of stimulation children's language development

No	Pregnant Women's Weight Gain	Frequency	Percentage (%)
1	Normal	24	80,0
2	Abnormal	6	20,0
	Total	30	100

Based on Table 1 it is known that most of 24 (80%) respondents category Pregnant Women's Weight Gain normal at Jombok village Pule district Trenggalek regency.

Table 2
Distribution of quality pregnancy examination on birth weight in jombok village pule district trenggalek regency

No	Quality Pregnancy Examination	Frequency	Percentage (%)
1	Quality	19	63,0
2	Non Quality	11	37,0
	Total	30	100

Based on Table 2 it is known that some 19 (63%) respondents category Quality pregnancy examination is quality at Jombok village Pule district Trenggalek Regency.

Table 3
Cross tabulation between effect women's weight gain on birth weight in jombok village pule district trenggalek regency

Pregnant Women's Weight Gain	Birth Weight				Total	
	Abnormal		Normal			
	n	%	n	%	n	%
Normal	4	13,0	24	80,0	28	93.0
Abnormal	2	7,0	0	0	2	7.0
Total	6	20,0	24	80.0	30	100.0

Based on table 3 it is known that almost all of the weight gain of pregnant women affects the birth weight of 24 respondents (80%), This significant value (p) of 0.003 (p < 0.05) is obtained, so stated that there is an influence on the weight gain of pregnant women on birth weight in Jombok village Pule district Trenggalek Regency.

Table 4.
Cross tabulation between effect quality prenatal examination on birth weight in jombok village pule district trenggalek regency

Quality pregnancy examination	Birth Weight				Total	
	Abnormal		Normal			
	n	%	n	%	n	%
Quality	1	3,0	18	60,0	19	63.0
Non Quality	5	17,0	6	20,0	11	37.0
Total	6	20,0	24	80.0	30	100.0

Based on table 4, it is known that the majority of quality prenatal examinations for pregnant women have an effect on birth weight for 18 respondents (60%), a significant value (p) of 0.008 (p > 0.05) is obtained, so it is stated that there is no effect of quality prenatal examinations on birth weight in Jombok village Pule district Trenggalek Regency.

Table 5
The effect of of pregnant women's weight gain and quality pregnancy examinations on birth weight in jombok village pule district trenggalek regency

Variable	Coefficient	Correlation Coefficient	R^2 *(R Square)*	*p*
Pregnant Women's Weight Gain	0.667	0.416		
Quality Pregnancy Examination	0.281	0.338	0.386	0.001[b]
Constant	0.053	0.005		

Based on table 5, prenatal examinations on birth weight, with a significant value (p) of 0.001b (p < 0.05), so it is stated that H1 is accepted. The constant 0.053 means that if the quality pregnancy check variables in pregnant women's weight gain and quality pregnancy checks with quality pregnancy checks do not exist (X1 and X2 = 0), then quality pregnancy checks are at 0.053. The regression coefficient The regression coefficient The R2 (R Square) analysis or coefficient of determination is 0.386. Because this multiple coefficient of determination test is obtained from multiple linear regression calculations, the coefficient of determination is 0.386 or R2 x 100% is 38.6%. The significance of this value has the implication that the variables birth weight in quality pregnancy examinations and birth weight in weight gain of pregnant women contribute a correlation of 38.6% and the remaining 61.4% is influenced by other variables not studied in Jombok village Pule district Trenggalek Regency.

3. Results and Analysis

3.1 Birth weight is seen from the weight gain of the pregnant woman

Based on tabel Table 3, it is known that the increase in weight of pregnant women has an effect on birth weight, almost all of them, namely 24 respondents (80%), obtained a significant value (p) of 0.003 (p < 0.05) so it was stated that there is an influence of addition pregnant mother's weight to birth weight.

The nutritional status of pregnant women determines the weight of the baby. The nutritional adequacy of pregnant women can be seen from their weight gain during pregnancy. Low or inappropriate maternal weight gain has a high risk of giving birth to an LBW baby. So pregnant women should gain weight. Pregnant women's weight gain is not only influenced by maternal physiological changes but is also influenced by other characteristics and biological factors (placental metabolism).(Novitasari et al., 2020). The functions of the placenta are as an endocrine organ and an intermediate substance between mother and fetus. Homeostatic changes can change the structure and function of the placenta which has an impact on fetal growth conditions. The placenta can affect the mother's metabolic system due to changes in insulin hormones and the inflammatory system, resulting in weight gain for pregnant women (Puspita, 2019). The weight gain of pregnant women normally is 12-15 kg during pregnancy. Pregnant women's weight gain is not the same, depending on their body mass index (BMI) and weight before pregnancy. A baby's weight at birth is normally 2500 – 4000 grams (Montol et al., 2022).

Research conducted by (Appiah et al., 2020), states that weight gain during abnormal pregnancy has a 7,534 chance of giving birth to LBW compared to mothers who gain weight during normal pregnancy. Pregnant women's weight gain reflects their nutritional status during pregnancy. Pregnant women who gain less weight will cause the size of the placenta to be smaller and the supply of nutrients from mother to baby to be reduced, resulting in retardation of intrauterine fetal development and babies with low birth weight. Meanwhile, a pregnant mother's weight gain normally will produce a child with a normal birth weight. Pregnant women who have normal nutritional status or normal weight gain tend to have newborn babies with normal weight.(Agustin et al., 2019)

According to researchers, it is very important to pay attention to the weight gain of pregnant women to get a baby born with a normal birth weight. Weight gain can be monitored through the nutritional status or BMI of pregnant women. To achieve a normal BMI, adequate food intake is required, namely 300 kcal/day or one portion of food more than before the mother became pregnant.

3.2 Birth weight is reviewed from the Quality Pregnancy examination

Based on table 4, shows that quality prenatal examinations of pregnant women affect birth weight, The majority of respondents, namely 18 respondents (60%), obtained a significant value (p) of 0.008 (p > 0.05), so it is stated that there is no effect of examination. quality pregnancy on birth weight.

The weight gain of pregnant women can be used as an index to determine the nutritional status of pregnant women because there are similarities in the amount of weight gain during pregnancy for all pregnant women. In Indonesia, the KMS (Card for Health) is currently used for pregnant women. This KMS can be used to monitor the weight gain of pregnant women so that we can carry out an intervention to improve the nutritional status of pregnant women if there is weight gain according to their gestational age (Ifalahmah & Wulandari, 2015). KMS is used by mothers at every pregnancy check-up. KMS contains pregnancy monitoring and health education during pregnancy. According to researchers, pregnancy checks alone without being accompanied by the implementation of the health education that has been delivered can cause normal weight as an outcome of pregnancy to not be achieved. (Candrasari et al., 2023)

According to researchers, this is because pregnant women understand the importance of nutritional intake during pregnancy, therefore they consume nutritious food with nutritional content that is good for the fetus and the pregnant woman's weight is good. So, in measuring the estimated fetal weight, the majority of pregnant women in the third trimester have a normal estimated fetal weight.

3.3 Birth weight is reviewed from the weight gain of pregnant women and quality prenatal examinations

From the data above, it is known that there is an influence of weight gain among pregnant women and quality prenatal examinations on birth weight, with a significance value (p) of 0.001b (p < 0.05), so it is stated that H1 is accepted.

According to researchers, the weight gain of pregnant women is closely related to the nutritional status of pregnant women. The nutritional status of the pregnant woman can determine the weight of the baby. Low weight gain in pregnant women has a high risk of LBW. Pregnant women are strongly advised to gain weight by their BMI, to reduce the risk of giving birth to an LBW baby. Pregnant women, to know the development of their weight during pregnancy and their baby's birth weight, are recommended to have a quality pregnancy check-up.(BERLIAN, 2019)

According to researchers, quality pregnancy checks increase the mother's knowledge about her pregnancy and detect all risks that occur during pregnancy as well as danger signs of pregnancy. With pregnancy checks, mothers can monitor the health condition of the mother and fetus during pregnancy (Wulandari et al., 2022). With at least 6 pregnancy checks, health workers can immediately detect high risks and pregnancy complications. Health workers can examine and monitor birth weight by examining the height of the uterine fundus, as well as monitoring weight gain according to BMI.(Oktadianingsih et al., 2019)

Stated that Antenatal care and early detection of high risks of pregnancy and childbirth can also reduce maternal mortality rates and monitor the condition of the fetus. Infant and maternal mortality rates as well as high LBW babies are essentially also determined by the nutritional status of pregnant women (Andriani & Wulandari, 2022). Pregnant women must pay attention to their health by making Antenatal Care visits and paying attention to the adequacy of visits according to gestational age. ANC examinations during pregnancy have an important role in the mother's nutritional status during pregnancy because by routinely carrying out ANC examinations during pregnancy, the mother's nutritional status tends to be normal. Health education regarding nutrition during pregnancy can be given to mothers through ANC examinations. (Khoiriah et al., 2015)

According to (Ernawati, 2016), in his research, pregnant women who received ANC services were at least 2.4 times more likely to give birth to children with normal birth weight (2.5–4.0 kg) compared to those who received less service. ANC. That can happen if pregnant women attend ANC sessions receive all the necessary services, and practice the advice, then they will have more chances of giving birth to a healthy baby (Nurhayati, 2016).

Most pregnant women with abnormal pregnancy weight gain still give birth to babies with normal birth weight. This can be because the baby's birth weight is not only influenced by the mother's weight gain during pregnancy, but there are other factors, such as maternal factors, fetal factors, placental factors, and environmental factors, in addition to how often ante visits are carried out natal, anemia, gestational age. (Asniatin & Tyastuti, 2018)

4. Conclusion

There was no effect of quality pregnancy examination on birth weight with a value (p) of 0.008 (p > 0.05). Commitment is required from pregnant women to understand and implement the advice given after a pregnancy check-up. There is an influence of weight gain in pregnant women and quality prenatal examinations on birth weight with a significance value (p) of 0.001b (p < 0.05), so it is stated that H1 is accepted. Maternal weight gain and prenatal check-ups are the mother's needs during pregnancy which occur simultaneously in pregnancy to produce pregnancy outcomes, namely a healthy baby with a normal birth weight. It should be used as basic data and reference for future researchers to develop research regarding the Effect of Weight Gain in Pregnant Women and Quality Pregnancy Examinations on Birth Weight, namely by extracting deeper and broader information through books that are competent in discussing pregnancy examinations and Birth Weight. In this research threre were no significant limitations, because all respondents were cooperative, so the research could run smoothly.

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