THE CORRELATION STUDY OF PREGNANT WOMEN'S MALNUTRITION WITH ABORTUS INCIDENCE IN THE TAMBAKBOYO HEALTH CENTER AREA, TAMBAKBOYO SUB-DISTRICT, TUBAN DISTRICT

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ABSTRACT

Malnutrition was a medical condition caused by unbalanced nutritional intake in the form of macronutrients and micronutrients. Malnutrition was at risk for abortion. The high number of malnutrition accompanied by abortion, so this study aims to determine whether there is a correlation study of malnutrition in pregnant women with the incidence of abortion at the Tambakboyo Health Center, Tambakboyo District, Tuban Regency.

The research design was correlational analytic with the population of all pregnant women who were examined (216) by collecting data through medical records. The sampling technique is simple random sampling (140). The independent variable is malnutrition of pregnant women, the dependent variable is the incidence of abortion. Analysis with contingency coefficient test with = 0.05.

The results were obtained from data on 140 pregnant women, for malnutrition who experienced abortions based on BMI almost half (46%), based on Chronic energy deficiency almost half (29%) and based on anemia almost half (30%). From the data analysis, the results were obtained in the form of abnormal BMI sig 0.000, in the form of chronic energy deficiency sig 0.004, in the form of anemia sig 0.000. Because sig < 0.05, Hi is accepted, which means that there is a significant relationship between malnutrition in pregnant women and the incidence of abortion in the form of BMI, CED and anemia.

The conclusion of this study is that there is a correlation between malnutrition in pregnant women and the incidence of abortion in the Tambakboyo Community Health Center, Tambakboyo District, Tuban Regency. Thus, it is hoped that health workers will provide IEC on balanced nutrition to prospective mothers before preparing for pregnancy, both through formal and informal channels.

Keywords: Malnutrition of pregnant women, BMI, Chronic Energy Deficiency Anemia, Abortion.

1. INTRODUCTION

Malnutrition according to WHO is a medical condition caused by an unbalanced intake or provision of nutrients. Malnutrition is more often associated with inadequate nutritional intake or often called undernutrition, but the term malnutrition also includes overnutrition (excess nutrition) (WHO, 2015). The imbalance in nutritional intake in question can be in the form of macronutrient or micronutrient deficiencies.

According to the 2018 Riskesdas results, the prevalence of chronic energy deficiency in pregnant women of childbearing age in East Java province was 19.59%. The prevalence for obesity in the national adult age group based on the 2018 Riskesdas was 21.8% and 13.6% overweigh. For East Java the obesity rate for the childbearing age group has increased significantly based on the 2013 Riskesdas of 8.4% to 22.37% in the 2018 Riskesdes. Meanwhile the prevalence of anemia in pregnant women in Indonesia based on the 2013 Riskesdas is 37.1% and in Riskesdas 2018 of 48.9%. In East Java, the prevalence rate of anemia in pregnant women in 2015 was 5.8%, still below the national target of 28% (RPJMN 2015-2019).

Meanwhile in Tuban Regency, based on the LB3 KIA reporting, it was recorded that in 2020 the number of pregnant women was 16,965 people with pregnant women with CED of 2,392 people (14.09%), anemia 2,321 people (13.68%), while there is no definite reporting of obesity because not included in the LB3 or SPM reporting.

Abortion is often interpreted as a threat or expulsion of the products of conception (the meeting of the egg and sperm cells) at a gestational age of less than 20 weeks or a fetus weighing less than 500 grams, before the fetus can live outside the womb. This is a process of ending the life of the fetus before it is given the opportunity to grow (Nugroho, 2015)

In the world there are 208 million pregnancies with 41 million leading to abortion and 11 million leading to spontaneous abortion. In developing countries, 90% of abortions occur unsafely, thus contributing 11% - 13% to maternal deaths (Ministry of Health RI, 2015). The 2010 Riskesdas showed that the percentage of miscarriages in Indonesia was 4% in the group of women who had been married aged 10-59 years (Ministry of Health RI, 2015). The exact percentage of events in East Java Province is unknown because abortion is not included in the Minimum Service Standards Reporting System (SPM) (Permenkes no 04 of 2019). Meanwhile, in Tuban Regency, based on the 2020 KIA LB3 report,

there were 475 cases of abortion out of 16,965 first visits / K1 (2.78%).

Based on data from the medical records of pregnant women in the Tambakboyo Health Center area, in 2019 there were 81 pregnant women with chronic energy deficiency, 47 people with anemia, no data on obesity and 19 cases of abortion. Whereas in 2020 there were 561 pregnant women with 77 cases of chronic energy, 47 cases of obesity, 26 cases of anemia and 34 cases of abortion. While in the initial study in January 2021, there were 6 cases of abortion with 4 malnourished mothers who experienced abortions and one abortion maternal death with obesity and complications of hypertension and Diabetes Mellitus.

The increase in the incidence of abortion and one maternal abortion death due to malnutrition, researchers are interested in conducting research on the relationship between the incidence of malnutrition of pregnant women based on BMI, CED and anemia on the incidence of abortion in the Tambakboyo Health Center area, Tambakboyo District, Tuban Regency.

2. METHOD

This type of research is correlational analytic with a *cross-sectional time approach* in the Tambakboyo Health Center area, Tambakboyo subdistrict, Tuban district. The population in this study were all pregnant women who checked themselves at the Tambakboyo Health Center as many as 216 pregnant women. While the sample used the probability sampling technique with simple random sampling of 140 respondents.

The independent variable in this study was malnutrition in pregnant women based on CED, BMI and anemia while the dependent variable was the incidence of abortion. The type of instrument used was secondary data using the MCH book/mother card that was examined in the Tambakboyo Health Center area, Tambakboyo sub-district, Tuban district by recapitulating data on pregnant women who experienced malnutrition based on BMI, CED, and anemia in the first trimester and the incidence of abortion. The analysis used the contingency coefficient test with a significant level of 0.05.

3. RESULT AND DISCUSSION
General Data

General data includes the characteristics of pregnant women based on age, education and gravida. While the specific data is Malnutrition of pregnant women based on BMI, CED and anemia, and the incidence of abortion. As well as the relationship

between Malnutrition of pregnant women based on BMI, CED and anemia with the incidence of abortion.

1. Characteristics of respondents based on age

Table 1. Distribution of Respondents based on the age of pregnant women in the Tambakboyo Health Center Area, Tambakboyo District, Tuban Regency

Age	Amount	
	Frequency	Percentage
< 20 years	10	7 %
20 – 35 years	116	83 %
.> 35 years	14	10 %
Amount	140	100%

Based on table 1 shows that out of 140 pregnant women, almost all of the respondents were aged 20-35 years, namely 116 people (83%)

2. Characteristics of respondents based on education

Table 2. Distribution of Respondents based on Education of pregnant women in the Tambakboyo Health Center Area, Tambakboyo District, Tuban Regency

Education	Amount	
	Frequency	Percentage
SD	24	17 %
Junior High School	60	43%
High school	36	25%
Diploma	8	6%
Bachelor	12	9%
Amount	140	100%

Based on table 2, it shows that out of 140 pregnant women, almost half have junior high school education, namely 60 people (43%)

3. Characteristics of Respondents based on Gravida

Table 3. Distribution of Respondents based on Gravida of pregnant women in the Tambakboyo Health Center Area, Tambakboyo District, Tuban Regency

Gravida	Amount	
	Frequency	Percentage
1 (primiparous)	61	44 %
2-3	74	52%
>3	5	4%
Amount	140	100%

Based on table 3, it shows that out of 140 pregnant women, the majority of gravida 2-3 (52%)

Special Data

1. Malnutrition of Pregnant Women based on BMI

Table 1. Distribution of the frequency of Malnutrition of Pregnant Women based on BMI in the Tambakboyo Health Center, Tambakboyo District, Tuban Regency

BMI	Amount	
	Frequency	Percentage
Underweight	24	17%
Normal	95	68%
Overweight	21	15%
Amount	140	100%

Based on table 1, it shows that out of 140 pregnant women, most of the respondents were pregnant women with normal BMI, namely 95 people (68%)

2. Malnutrition of Pregnant Women based on Chronic Energy Deficiency (CED)

Table 2. Frequency distribution of Malnutrition for Pregnant Women based on CED in the Tambakboyo Health Center,

Tambakboyo District, Tuban Regency

LILA	Amount	
	Frequency	Percentage
Normal	102	73%
CED	38	27%
Amount	140	100%

Based on table 2, it can be seen that out of 140 pregnant women, the majority of respondents were normal, namely 102 people (73%).

3. Malnutrition of Pregnant Women based on Anemia

Table 3. Frequency distribution of Malnutrition for Pregnant Women based on Anemia in the Tambakboyo Health Center, Tambakboyo District, Tuban Regency

Anemia	Amount	
	Frequency	Percentage
Normal	102	73%
Mild anemia	36	26.3%
Moderate anemia	1	0.7%
Severe anemia	0	0
Amount	140	100%

Based on table 3, it shows that out of 140 pregnant women, the majority of respondents were normal, namely 102 people (73%).

4. Incidents of Abortion

Table 4. Distribution of the frequency of Abortion Incidents in the Tambakboyo Health Center, Tambakboyo District, Tuban Regency

Abortion incident	Amount	
	Frequency	Percentage
No Abortion	121	86.3%
Abortion	18	13.7%
Amount	140	100

Table 4 shows that out of 140 pregnant women, almost all, namely 121 women (86.3%) no abortion.

Statistical Test Results

1. Correlation Study of Maternal Malnutrition based on BMI with the incidence of abortion

Table 1. Incidence of Abortion according to Malnutrition of Pregnant Women based on BMI in the Tambakboyo Health Center, Tambakboyo District, Tuban Regency

BMI	Abortion incident					
	No Abortion		Abortion		Amount	
	f	%	f	%	f	%
Underweight	13	54	11	46	2	100
Normal	88	92	7	7	95	100
Overweight	20	95	1	75	21	100
Amount	121	86	19	16	140	100

Based on table 1 it can be seen that more respondents who did not experience abortion were overweight (95%) while respondents who experienced abortion were found to be underweight (46%).

2. Correlation of Malnutrition of Pregnant Women based on Chronic Energy Deficiency with Abortion Incidence

Table 2. Abortion events according to Malnutrition of Pregnant Women based on Chronic Energy Deficiency in the Tambakboyo Health Center Area, Tambakboyo District, Tuban Regency

CED	Abortion incident					
	No abortion		Number of abortions			
	f	%	f	%	f	%
Normal	94	92	8	8	102	100
CED	27	71	11	29	38	100
Amount	121	86	19	14	140	100

Based on table 2 it can be seen that the number of respondents who did not experience an abortion were more mothers who had normal LILA (92%) while the respondents who experienced abortion were more found in mothers who had CED (29%).

3. Correlation Study of Malnutrition of Pregnant Women based on Anemia with the incidence of Abortion

Table 3. Abortion events according to Malnutrition of Pregnant Women based on Anemia in the Tambakboyo Health Center, Tambakboyo District, Tuban Regency

Anemia	Abortion incident					
	No abortion		Abortion		Total	
	f	%	f	%	f	%
Normal	94	91	9	9	103	100
Mild anemia	27	75	9	25	36	100
Moderate anemia	0	0	1	10	1	100
Severe anemia	0	0	0	0	0	100
Total	121	86	19	16	140	100

More respondents who had abortions were obtained from mothers with moderate anemia (100%) while respondents who did not experience abortions were obtained from mothers who did not experience anemia (normal) (91%).

From the results of the contingency coefficient test, it was found in the correlation study of malnutrition based on abnormal BMI sig 0.000, based on CED sig 0.004, and based on anemia sig 0.000. Because sig <0.05, Hi is accepted, which means that there is a significant relationship between malnutrition of pregnant women and abortion in terms of BMI, CED and anemia. Meanwhile, the contingency coefficient value for malnutrition is based on BMI R=0.398, CED=0.238 and anemia R= 0.332 which means that all malnutrition based on BMI, CED and anemia has a low relationship with the incidence of abortion. And of the three, malnutrition based on BMI has the strongest relationship.

DISCUSSION

1. Malnutrition of Pregnant Women

Malnutrition rates, namely 41% of 140 pregnant women based on research, obtained malnutrition rates based on BMI are pregnant women with a normal BMI of 95 (68%) BMI less than 24 people (17%) and BMI more than 21 people (15%). For malnutrition based on LILA measurements, normal LILA rates were 102 (73%) and CED were 38 people (27%) while malnutrition based on anemia obtained numbers for pregnant women who were not anemic / normal 102 people (73%), mild anemia 36 people (26.3%) moderate anemia 1 person (0.7%) and no severe anemia (0%).

Based on the characteristics, the malnutrition rate at the Tambakboyo Health Center was more in the age group less than 20 years (70%), the junior high school education group (48%), and the primiparous group (54%).

Malnutrition is influenced by many factors, among others, age, education and parity. Pregnant women between the ages of 20-35 years will be better prepared both physically and spiritually for this to happen. The age of pregnant women greatly influences the growth and development of the fetus and the mother herself. The younger and the older the age of pregnant women also affects the fulfillment of the necessary nutritional needs. Young women (less than 20 years) need additional nutrition because apart from being used for their own growth and development they also have to share it with the fetus they are carrying. Because in mothers who are less than 20 years old, competition for food can occur between the fetus and the mother herself who is still growing and there are hormonal changes that occur during pregnancy. Meanwhile, older people (over 35 years) need a lot of energy because organ functions are getting weaker and they are required to work optimally, so additional energy is needed to support an ongoing pregnancy (Maryam, S., 2015).

A higher level of education is expected to have better knowledge or information about nutrition so that they can fulfill their nutritional intake (Suparyanto in Akbar, A., 2017). For people who are highly educated and sufficient about nutrition, use a lot of rational considerations and knowledge about nutritional values food (Irianto, 2014)

Meanwhile, mother parity with more than 3 pregnancies experiences difficulties in gaining the expected weight (Ministry of Health RI, 2010). In this case the mother is said to have given birth more than 3 times. The benefit of an obstetric history is to help determine the amount of need for nutrients because too frequent pregnancies can deplete the body's reserves of nutrients (Arisman, 2010). Mothers with too frequent parity (more than 3 times) will have poor nutritional status because the nutritional reserves in the mother's body have been depleted. For the best parity is 2 times (Surasih, H. 2009).

Malnutrition is influenced by socio-economic factors, biological factors, behavior and consumption patterns in line with the facts in the Tambakboyo Health Center area. The percentage of malnutrition is more common in the age group less than 20

years, with low education and primigravidas. In primigravida this is associated with an age of less than 20 years

In society, nutrition is often a matter of little attention. In addition to the factors mentioned above, the influence of social media and electronics is also enough to make an unhealthy lifestyle due to bad consumption patterns and the desire to look more attractive by having an unbalanced diet, limiting their intake of nutrients below the body's needs and some again there are those who make eating junk food as a lifestyle. Many pregnant women, especially those with primi para and young mothers, experience malnutrition in the form of malnutrition, chronic lack of energy and even anemia. While some other pregnant women also experience malnutrition due to overnutrition due to uncontrolled food intake without being balanced with adequate activity. This condition of overnutrition is more experienced by pregnant women with multi parity, especially those with a history of hormonal birth control.

2. Abortion Incident

Based on the results of the study, it was shown that out of 140 pregnant women, almost all (87%) did not experience an abortion and a small number had an abortion (13%). From observational data, high abortion rates are dominated by first pregnancies and groups of women at risk include malnourished mothers and unwanted pregnancies. It seems that the pandemic condition has also had an effect on the increase in the abortion rate. Because of the existing cases, there are also abortion mothers with positive PCR swab conditions and also positive antigen swabs with previous or currently experiencing symptoms of Covid 19.

3. Correlation Study of Maternal Malnutrition Based on BMI with Abortion Incidence

Based on the results of the study, it can be seen that more respondents who did not experience abortion were obtained from mothers with overweight (95%) while respondents who experienced abortion were obtained from mothers with underweight (46%). After analysis with the contingency coefficient test, the approx sig 0.000, where $\alpha = 0.05$, if sig $< \alpha$ means there is a correlation. Because the approx sig number is $0.000 < \alpha = 0.05$, which means there is a correlation between malnourished pregnant women based on BMI and the incidence of abortion in the Tambakboyo health center area, Tambakboyo sub-district, while the R value = 0.398 which means a low level

of relationship between BMI with the incidence of abortion .

In the Tambakboyo health center area, malnutrition based on observations of the characteristics of pregnant women is more experienced by primigravida mothers due to lack of nutritional intake and lack of knowledge and awareness of the importance of fulfilling nutrition in preparation for pregnancy apart from genetic factors and a small part due to disease. This is exacerbated by changes in the metabolism of the body's system and hormonal changes which cause complaints of pregnancy in the early trimester and also inhibit the fulfillment of nutrients so that the supply of nutrients to the fetus decreases and the growth and development of the fetus is disrupted.

Malnutrition is a state of the body caused by insufficient daily nutritional intake so that it does not meet the body's needs (Gibson, 2005). Because pregnant women need more nutrition for the development of their fetus than women who are not pregnant, if the mother is malnourished, the supply of nutrients to the fetus will also be disrupted.

Still according to Paramita (2019) In the first trimester there are also many changes in the body's systems including the digestive system and metabolic changes. High levels of hCG (Human Chorionic Gonadotropin) and changes in carbohydrate metabolism cause nausea and vomiting. In malnourished mothers, this condition will further exacerbate the disruption of the supply of nutrients to the fetus which will have bad consequences for the fetus, one of which will result in miscarriage (abortion).

From the description above, efforts should be made to emphasize abortion rates due to abnormal BMI as early as possible. Correction of nutritional problems must start from pre-conception to during conception and postpartum. Therefore, knowledge about balanced nutrition is not only given through formal channels, but can also be intensified through informal channels. The use of electronic media and social media, which are popular with almost all age groups, especially young women and women of childbearing age, can be used for campaigns for healthy nutrition in addition to existing facilities such as education in schools, health centers, toddlers' health posts, and youth health posts. So that when the mother decides to get pregnant there is already an intervention regarding her nutritional problems and the mother is in good nutritional condition during pregnancy.

4. Correlation Study of Pregnant Women Malnutrition Based on Chronic Energy Deficiency and Abortion Incidence

Based on the results of the study it can be seen that more respondents who did not experience an abortion were more mothers who had normal LILA (92%) while the respondents who experienced abortion were more found in mothers who had CED (29%).

A correlation study of malnutrition in pregnant women based on Chronic Energy Deficiency (CED) obtained a figure of approx sig 0.004 where α = 0.05 , if sig < α means there is a correlation. Because the approx sig number is 0.004 < α = 0.05 , which means there is a correlation between malnourished pregnant women based on CED and the incidence of abortion in the Tambakboyo health center area, Tambakboyo sub-district. Meanwhile, the R value = 0.238, which means a low level of relationship between CED pregnant women and the incidence of abortion.

According to Nugraha (2010) Chronic Energy Deficiency causes poor growth of uterine organs, one of which is the growth of the endometrium which results in the products of conception not being able to implant properly which will then have an effect during the course of growth, and according to Prawiroharjo (2010) an imperfect implantation environment can cause abortion because it can cause the administration of nutrients to the products of conception to be disrupted.

Similar to malnutrition, many primigravida mothers experience CED in pregnant women in the Tambakboyo Health Center area. Most of those who experience malnutrition also experience Chronic Energy Deficiency. According to researchers' observations, CED is also caused by a lack of knowledge and awareness of the importance of fulfilling nutrition in preparation for pregnancy, genetic factors and a small part due to disease. This is also exacerbated by changes in the metabolism of the body's system and hormonal changes that cause complaints of pregnancy in the early trimester and also inhibit the fulfillment of nutrition so that the supply of nutrients to the fetus decreases and the growth and development of the fetus is disrupted.

In addition to the problem of disturbed implantation sites, Chronic Energy Deficiency also causes an inadequate supply of nutrients to the fetus. When nutrients are not properly met as energy needs, there will be obstacles for the mother to supply nutrients to her fetus so that the fetus will also experience nutritional deficiencies which result in growth and

development, so the risk of abortion will be even greater.

From the description above, it is the same as handling malnutrition, strengthening education on nutrition problems must be attempted early, both in the form of KIE and its handling. In addition to fulfilling pre-conception balanced nutrition, if there are health problems due to chronic lack of energy, treatment must be carried out thoroughly, so that when deciding to become pregnant the mother is truly in a healthy condition so that the fruit of conception can implant properly and the fetus will grow healthy.

5. Correlation Study of Malnutrition of Pregnant Women based on Anemia with Abortion Incidence

According to the study, it was found that more respondents who had an abortion were found to be mothers with moderate anemia (100%), while respondents who had not had an abortion were found to be mothers who were normal (93%).

A correlation study of malnutrition in pregnant women based on anemia obtained a figure of approx sig 0.000 where α = 0.05 , if sig < α means there is a correlation. Because the approx sig number is 0.000 < α = 0.05 , which means there is a correlation between malnutrition-based pregnant women with anemia

and the incidence of abortion in the Tambakboyo health center area, Tambakboyo sub-district. Pregnant women with anemia with abortion

Based on the research results, anemia in pregnant women is partly accompanied by other malnutrition conditions in the form of underweight, overweight, and CED. Of the cases of anemia that existed, it was mild anemia except for one case with moderate anemia and ended in post-abortion death.

Anemia in the Tambakboyo Health Center is mostly caused by a lack of iron consumption and a small part due to disease. This is due to a lack of knowledge about the importance of consuming iron, as well as their ignorance about the sources of iron in food. In addition, many young women prefer to consume junk food rather than healthy food that contains lots of micronutrients including iron.

Anemia during pregnancy is a condition that will have a bad effect on the mother and the fetus, apart from the lack of hemoglobin levels for the body's own interests, the need for iron will also increase during pregnancy. According to Syaifudin (2006) anemia can reduce the supply of oxygen to the mother's metabolism because the lack of hemoglobin levels to bind oxygen can result in indirect effects on the fetus, including abortion.

One of the causes of abortion is due to disorders of the placenta. Anemia also results in placental disorders such as hypertrophy, classification and infarction, causing disturbances in its function (Wiknjosastro, 2005).

Because anemia is a problem of malnutrition that must be considered in preparation for pregnancy, in fact many government efforts have been made by the Tambakboyo Health Center to prevent it. Examination of anemia in female and female adolescents is a form of screening carried out to prepare for healthy reproduction. Education about the problem of anemia and administration of blood-boosting tablets has also been carried out in schools and youth Posyandu.

For women who are pregnant, giving fe tablets of at least 90 tablets during pregnancy must be given. In addition, KIE was also carried out on how to increase Fe intake such as foods containing iron, consumption of sources of vitamin C and sources of vitamin B12 to maximize iron absorption. In fact, assistance is also provided for adherence to drinking Fe by both families and cadres and health workers.

The high cases of abortion due to anemia is an indication that the efforts mentioned above are not optimal.

Because abortion is an early complication of pregnancy, efforts to prevent it must start from pre-conception. Screening for anemia and administering iron tablets to female adolescents and catins should be followed by adequate CIE regarding the importance of consuming a balanced nutritional diet including consumption of sources of iron. Pamphlets / brochures are provided regarding what foods contain iron, how much to consume per day and so on. If anemia is found, young women, catin and expectant mothers should get adequate Fe tablets before their pregnancy. And if there are indications of a disease that causes anemia, treatment should be carried out until it recovers before the mother decides to become pregnant.

By carrying out a comprehensive effort, it is hoped that the abortion rate can really be suppressed, and the fetus in the womb can grow and develop optimally.

4. CONCLUSION

Most of the pregnant women experience malnutrition based on BMI, CED and anemia. Almost all pregnant women do not experience abortion. Based on the contingency coefficient test there is a significant correlation between malnutrition of pregnant women, both based on BMI, CED and

anemia, with abortion incidents in the Tambakboyo Health Center, Tambakboyo District, Tuban Regency, while among the three This form of malnutrition based on BMI has the strongest association with abortion.

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