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Influence Supplements Multi Micronutrients (MMS) on Nutritional Status Mother Pregnant in City Gorontalo

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ABSTRACT

Multi micronutrient supplements (MMS) are supplements that contain 15 most essential vitamins and minerals for pregnant women. MMS contains many nutrients, one of which is vitamin B which can increase appetite, vitamin B12 and folic acid which can form hemoglobin to prevent anemia. This research aims to determine the effect of multi supplements micronutrient (mms) on the nutritional status of pregnant women in Gorontalo City. This research method is a quantitative method with a pre-experimental research design with a one group pre and post test design . The sample was 112 people using the Slovin formula, sampling using proportional sampling . Statistical analysis used the T-test to see changes before and after being given MMS. The results of the study showed that for nutritional status there was a decrease in the percentage of malnutrition before it was given mms 12.5% decreased to 0.9% after being given MMS. Normal nutrition which was previously 87.5% increased to 99.1% after being given MMS. Conclusion: There is an influence of MMS on the nutritional status of pregnant women in Gorontalo City with a p-value of 0.000 ≤0.05, meaning that MMS is effective in improving the nutritional status of pregnant women.

KEYWORDS: MMS, status nutrition, status biochemistry, pregnant mother.

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INTRODUCTION

Nutritional problems can occur in every life cycle, starting from the fetus to babies, children, adults to old age. Pregnancy period is a period that really determines the quality of the child born. Anemia during pregnancy can be caused by iron deficiency and it is known that pregnant women's iron needs double from before. According to WHO (2021), anemia in pregnant women is a condition where the number or concentration of red blood cells/hemoglobin is less than the normal limit, namely <11 mg/dl, which will cause a decrease in the capacity of blood to carry oxygen to body tissues.

According to WHO 2019, globally the prevalence of anemia in pregnant women throughout the world is 41.8%. In Asia, the prevalence of anemic pregnant women is estimated amounting to 48.2%, Africa 57.1%, Then America by 24.1% and Europe as big as 25.1%. In Indonesia prevalence anemia in pregnancy Still tall. Based on the results of Basic Health Research in 2013, the prevalence of anemia in pregnant women was 37.1%. Then in 2018 there was a quite significant increase, namely from 37.1% to 48.9%, in It can be seen that half of pregnant women (50%) in Indonesia experience anemia (Ministry of Health of the Republic of Indonesia, 2018).

From 33 provinces in Indonesia and 497 cities or districts, the proportion of anemia in pregnant women is 37.1%. Gorontalo Province is one of the provinces with a high incidence of anemia in pregnant women, namely 39.6%. Where Boalemo Regency is the district with the highest incidence of anemia, namely 16.9%, then the second highest is North Gorontalo Regency at 12.1%, next is Gorontalo Regency at 4.1%, followed by Gorontalo City at 3.4% , followed by Bone Bolango Regency at 1.9% and finally Pohuwato Regency at 1.2%.

One form of serious attention from UNICEF, WHO and the United Nations University (UNU) has planned the use of Multimicronutrient (MMN) supplements in pilot trials in at least 11 countries to assess the effectiveness of MMN

administration. There are several indicators that will be monitored in test try these, namely heavy and birth length, increase (BB) body weight during pregnancy, improvements in biochemical indicators of micronutrient status, compliance with tablet intake, and side effects were reported by those receiving the MMN intervention (UNICEF et al., 1999). In 2007 UNICEF recommended the use of multi-micronutrients as prenatal supplements in an effort to increase hemoglobin levels in pregnant women. The World Health Organization (WHO) recommends the use of MMS as a substitute for TTD for pregnant women because many pregnant women experience deficiencies in various vitamins and minerals. besides deficiency iron And sour folate. So that need give multivitamins and other minerals, such as those contained in MMS. MMS contains more nutrients micro ie 15 kinds Which consists from iron (Fe), folic acid, VIT A, VIT C, VIT D, VIT E, VIT B1 (thiamine), VIT B2 (riboflavin), VIT B3 (niacin), VIT B6, VIT B12, zinc (Zn), copper (Cu), iodine and selenium (Se) compared to TTD which only contains 2 micronutrients, namely iron and folic acid.

In 2014 Sumarni conducted research to determine the effect of giving MMS before conception in improving maternal iron status and birth outcomes . This research proved that the birth weight of children from the group given MMS was significantly heavier than children from the group of mothers given iron folate. as well as with Research conducted in Probolinggo Regency, East Java, proves that multi-micronutrient supplementation 2-6 months before pregnancy has a better effect on the maternal immune response, as well as hormone production. Human placental lactogen (hPL) which ultimately increases placental weight and birth weight, as well as reducing the risk of abortion and prematurity (Sumarni, 2017).

In October, MMS began to be distributed in 6 districts and cities as follows innovation program to pregnant women during pregnancy so that there is no malnutrition in pregnant women, and it is hoped that this program can also reduce the prevalence of anemia in Gorontalo Province. The aim of this research is to know Influence Supplements Multi Micronutrients (MMS) on the Nutritional Status of Pregnant Women in Gorontalo City.

MATERIALS AND METHODS

This research method is a quantitative method, with a pre-experimental research design with a one group pre and posttest design . Pre-experimental is a research design used to look for cause and effect relationships with the involvement of research in manipulating independent variables. Population is all objects or subjects that have at least one characteristic in common (Irwan, 2022). The population in this study was all pregnant women third trimester in 7 Community Health Centers in Gorontalo City, totaling 263 pregnant women. Determination of sample size in This research uses the Slovin formula, From results calculation the For sample in study amount 158 respondents. Bivariate analysis is used to determine or identify nutritional status in pregnant women before and after being given multi-micronutrient supplements . Before carrying out bivariate analysis, the variables will first be tested for normality. If distributed normal so will done paired samples Q test (Test Q pair).

RESULTS AND DISCUSSION

Results

Table 1. Frequency Mother Pregnant based on Status Nutrition before And after being given Multi Micronutrient Supplements in Gorontalo City

Nutritional status	Before		After	
	N	%	N	(%)
Nutrition Not enough	14	12.5	1	0.9
Nutrition Normal	98	87.5	111	99.1
Total	**112**	**100**	**112**	**100**

Source: Primary data, 2024

Based on table 1 above, it shows that before being given mutli micronutrient (MMS) supplements, 14 pregnant women (12.5%) had poor nutritional status and 98 pregnant women (87.5%) had normal nutritional status. After being given MMS, there was 1 pregnant woman (0.9%) who had poor nutritional status and those with normal nutritional status increased to 111 respondents (99.1%).

Table 2 Frequency Mother Pregnant based on Status Biochemistry before and After being given Multi Micronutrient Supplements (MMS) in Gorontalo City

Biochemical Status	Before		After	
	N	%	N	(%)
Normal	38	33.9	108	96.4
Anemia Light	44	39.3	2	1.8
Anemia Currently	30	26.8	2	1.8

Anemia Heavy	0	0.0	0	0.0
Total	**112**	**100**	**112**	**100**

Source: *Primary data, 2024*

Based on table 2 above, it shows that before being given multi micronutrient (MMS) supplements, 38 pregnant women (33.9%) were categorized as having normal hemoglobin levels, 44 pregnant women (39.3%) were categorized as mild anemia, 30 pregnant women (26, 8%) were categorized as moderate anemia and 0 pregnant women (0.0%) were categorized as severe anemia. After being given multi micronutrient supplements (MMS), pregnant women who had normal hemoglobin levels increased to 108 pregnant women (96.4%), in the mild anemia category there were 2 pregnant women (1.8%), in the moderate anemia category there were 2 pregnant women left. (1.8%), and the severe anemia category remains 0 pregnant women (0.0%).

Taking decision in study This taken from base decision : If the sig value (2 tiled) is <0.05 then there is a significant difference in the effect of multi micronutrient (MMS) supplements on the nutritional status and biochemical status of pregnant women in the city of Gorontalo . If the sig value (2 tiled) is >0.05 then there is no significant difference in the effect of multi micronutrient (MMS) supplements on the nutritional status and biochemical status of pregnant women in the city of Gorontalo.

Table 3 Results test analysis influence giving supplement multi micronutrientsto nutritional status

MMS	Status Nutrition				Mean	*P- Value*
	Nutrition Not enough		Nutrition Normal			
	N	%	N	%		
Before	14	12.5	98	87.5	26,815	
After	1	0.9	111	99.1	29,203	0,000

Source: *Primary data, 2024*

Based on table 3 above, it shows that before being given MMS there were 14 pregnant women (12.5%) who had poor nutritional status, 98 pregnant women (87.5%) had normal nutritional status with a mean value of 26.815. After being given MMS, 1 (0.9%) pregnant woman remained with poor nutritional status and 111 pregnant women (99.1%) had normal nutritional status with an average value of 29.203.

From the results of the paired t-test analysis, a p-value of 0.000 was obtained, when compared with the 2-tiled sig value of 5% (0.05), the p-value <0.05 indicates a difference in nutritional status before and after being given multi-micronutrient supplements (MMS).

DISCUSSION

Based on research that was conducted for 3 months, it was found that there were 19 pregnant women third trimester (17.0%) in the Dungingi Community Health Center area, 16 third trimester pregnant women (14.3%) came from from the South City Health Center area, then 9 third trimester pregnant women (8.0%) from the Pilolodaa Health Center, then there were 22 third trimester pregnant women (19.6%) in the North City Health Center area, next There is 16 mother pregnant trimesters III (14,3%) is at in region Dumbo Raya Health Center, then 18 pregnant women in the third trimester (16.1%) were in the East City Health Center area and 12 pregnant women in the third trimester (10.7%) were in the Sipatana Health Center area.

This shows that in this study, pregnant women in the third trimester were more likely to be in the North City Community Health Center area. North City Health Center consists of 6 sub-districts and 19 neighborhoods. And the smallest is in the Pilolodaa Community Health Center area because it only consists of 3 sub-districts. According to researchers' assumptions, pregnant women who are in urban areas tend not to want to become respondents, and do not want to have their pregnancy checked at a health service center, pregnant women in urban areas prefer to have their pregnancy checked by an obstetrician, in matter This pregnant mother come to Community health center only because he wanted to take the KIA book.

Territory is a place to live, a place to live and a source of life for citizens which includes land, sea and air space. The area contains various kinds of resources, one of which is the Community Health Center. Puskesmas is a health service facility that carries out community health efforts and individual health efforts first level, with more priority promotive and preventive efforts to achieve the highest level of public health. Region Work Public health center is One subdistrict Which determined based on the number of residents in a sub-district, density and mobility.

Based on research conducted by Puspitasari (2023), it shows that the quality of life of pregnant women in urban areas can be influenced by the number of living children, gestational age, number of pregnancies as well as the work of pregnant women. The results of research also conducted in Pakistan stated that pregnant women in urban areas considered their health to be better because they had higher education and had more knowledge.

Distribution frequency based on age

Based on research that has been carried out, the results show that the majority of pregnant women in the third trimester are

aged 20-29 years, namely 59 people (52.7%), then there are 49 pregnant women aged more than 30 years (43.8%). And the fewest were pregnant women aged less than 20 years, namely 4 people (3.6%).

This shows that in this study the average number of pregnant women was aged 20-29 year. Where according to assumptions researcher This age is a good age because it is included in the healthy reproductive category. This means that at this age respondents will more easily understand and comprehend new information or knowledge related to the effects of multi micronutrient supplements (MMS) on nutritional status and biochemical status when consumed. Age greatly affects the mental and physical effects of pregnant women. As you get older, it decreases too the quality and quantity of egg cells, the performance of the uterus, and the higher the incidence of congenital abnormalities.

Age is the length of life lived starting from the time of birth. The pregnancy period is very vulnerable to iron deficiency events because during pregnancy, more iron will be needed, especially to supply the fetus and placenta that are growing. Growth and for the mother's red blood cell mass. The age classified as very young is under 20 years and those classified as too old are >35 years. Based on research conducted by Shofiana (2018), the best age for pregnant women during pregnancy and childbirth is 20-35 years. Pregnant women aged <20 years have a high risk when giving birth. This is in line with research conducted by Sandewi in Yula (2022) that mothers aged 20-35 years are included in the healthy reproductive age category. This is also supported by Dr. Dian Indah Purnama, Sp.OG in the book 100+ important things pregnant women must know (2014) states that the optimal age for women to get pregnant is 20-35 years.

Based on research conducted by Azizah et al (2023) that age can influence pregnancy where the lower the age of the pregnant mother, the lower the biochemical status (hemoglobin levels). In his research, regarding risk factors for the incidence of anemia, it was stated that there was a tendency for the older the pregnant mother to be the greater the presentation of anemia.

Distribution frequency based on work

Based on research that has been carried out, the results of the research show that the majority of third trimester pregnant women who were respondents worked as housewives, namely 74 pregnant women (66.1%), then there were 21 pregnant women (18.8%) work as employees, 12 pregnant women (10.7%) worked as civil servants, and the least number of pregnant women worked as entrepreneurs (4.5%).

This shows that in this study more third trimester pregnant women became housewives. Pregnant women who become housewifery is a risk factor for anemia. Most housewives only depend on their husband's income for financial needs. This results in pregnant women not being able to make early ANC visits, so that pregnant women do not get access consultation nutrition from health workers early which results in a lack of consumption of nutritious food for pregnant women. Matter This can result in pregnant women who do not work being more susceptible to anemia.

Work is defined as an activity to produce or help produce goods or services with the aim of obtaining income in the form of money or goods within a certain period of time (Azizah, 2023). Based on research conducted by Azizah et al (2023), there is an influence of the work of pregnant women on the occurrence of anemia, especially on Mother pregnant Which Work level currently.

Matter this caused During activities, pregnant women pay less attention to their health condition and maintain their diet which affects energy needs during pregnancy. This is also in line with research conducted by Anggraini & Sari (2015) in Azizah (2023) that there is a significant relationship between maternal employment and the incidence of anemia in pregnant women. Pregnant women who work have a double workload because apart from doing housework, their nutritional intake is not balanced.

Providing Multi Micronutrient Supplements (MMS) on the Nutritional Status of Pregnant Women in Gorontalo City

Based on research that has been conducted at 7 existing Community Health Centers in Gorontalo City for 3 months, with a long process that began with observing all Community Health Centers in early November, after which the researchers visited the KIA polyclinic to ask about Multi Micronutrient Supplements (MMS). It turned out that there were several Community Health Centers that had not distributed Multi Micronutrient Supplement (MMS) for pregnant women even though this MMS has already entered Gorontalo and distribution will start in October 2023, then there are also Community Health Centers which only distribute it to pregnant women in the first trimester, and there are several Community Health Centers where distribution is carried out from November, This is the reason why there were fewer Community Health Centers studied during the research because they were not included in the research category.

After that, the researcher then continued observing by looking mother's visit book/register Pregnant who is in the KIA polyclinic to see amount, name, address, number telephone call from a pregnant woman in the third trimester. And it will return again in January and February 2024 after pregnant women consume 90 MMS tablets.

In January 2024, researchers visited pregnant women in several Community Health Center areas that had distributed MMS from October. This visit aimed to ensure that pregnant women in the third trimester were willing to be respondents in this research. After the pregnant women were willing, the researchers would continue by measuring nutritional status, biochemical status and looking at nutritional status and

biochemical status before the pregnant woman consumes MMS in the KIA Book. Henceforth, researchers will continue the visit in February because it is still ongoing. There are several pregnant women who have not been Enough three months in consuming Multi Supplements Micronutrients (MMS) and exist in several areas. The health center where the MMS distribution was carried out in November, so the visit was made in February to wait for the pregnant women to finish consuming the multi micronutrient (MMS) supplement.

Based on the research results, it shows that there is an effect of multi micronutrient (mms) supplements on the nutritional status of pregnant women in Gorontalo City with a p-value of 0.000 ≤0.05. This provides an illustration of the nutritional status of consuming multi-micronutrient supplements from pregnant women will increase or experience changes.

Determining the nutritional status of pregnant women is seen from the LILA size in measurements This shows that change in status nutrition Mother pregnant From the previously undernourished category of 12.5% or as many as 14 pregnant women, there was a decrease after intervention or consuming multi micronutrient supplements (MMS) to 0.9% or as many as 1 pregnant woman who still had malnutrition status. There is an improvement in nutritional status after consuming MMS, according to researchers' assumptions because multi micronutrient supplements (MMS) contain many nutrients, and have more complete micronutrient content. Apart from containing iron and folic acid, MMS also contains vitamin B which can increase appetite and prevent nausea and vomiting during pregnancy.

For the normal nutrition category, which was previously 87.5% or 98 pregnant women, this increased to 99.1% or 111 pregnant women with normal nutritional status after consuming multi micronutrient supplements (MMS). Increased nutritional status normal in pregnant women this third trimester Because pregnant women diligently consume supplements, it turns out that many pregnant women like the taste of MMS and MMS also doesn't make pregnant women nauseous. This shows that pregnant women are aware that multi micronutrient (MMS) supplements have an important role in improving nutritional status.

According to the results of research conducted by Nita Dalmiya (2009) in Dewi Hastuty (2022), pregnant women who consume *multi-micronutrient* (MMS) supplements can improve maternal health, increase body weight and nutritional status, not only that, they can also increase the baby's birth weight. Matter This in line Also with study Which done by Herta Masthalina stated that the number of multi micronutrient (mms) supplement tablets will influence the weight gain of pregnant women.

Mother pregnant is group vulnerable to lack nutrition. The pregnancy process will increase energy and nutrient metabolism. increased need for nutrients and energy required for fetal growth and development. The growth of the fetus and placenta is very dependent on protein intake from the mother so increasing protein intake is very important. Insufficient energy and protein intake will inhibit fetal growth. This will have an impact not only on reducing the baby's weight and growth but also on reducing the number of cells.

Providing and consuming multi micronutrient (MMS) supplements on Pregnant women are very important because they can meet the increased need for vitamins and minerals during pregnancy (Hastuiti, 2022). The composition of multi mycornutrient (MMS) supplement tablets is more complete than Fe-folic acid tablets. Apart from containing iron and folic acid, it also contains vitamin B which can increase appetite and prevent nausea and vomiting during pregnancy so that by providing multi micronutrient (MMS) supplements, the nutritional status of pregnant women can be more optimal.

LILA is used as a benchmark to diagnose a pregnant woman with malnutrition or malnutrition status normal. According to research conducted by Ng Cm (2019), there are differences between arm circumference And heavy body Mother pregnant between Mothers pregnant with SEZ And Mother Normal pregnancy. This confirms the research results that pregnant women who have abnormal nutritional status have low nutritional levels compared to pregnant women with normal weight.

Based on the results of this study, researchers are of the opinion that the more regularly pregnant women consume multi-micronutrient (MMS) supplements , the better their nutritional status pregnant mother will the better, where the mother is pregnant will have a normal LILA, if a pregnant woman has a small or abnormal LILA there is a risk that the fetus will experience low birth weight, premature birth, fetal defects, and other pregnancy complications. Iron absorption.

CONCLUSION

There is an effect of giving multi-micronutrient (mms) supplements on the nutritional status of pregnant women in Gorontalo City with a p-value of 0.000 ≤ 0.05

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