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## NUTRITION STATUS, MIDUPPER ARM CIRCUMFERENCE (MUAC) AND NUTRITIONAL INTAKE OF PAPUA ORIGINAL ADOLESCENTS IN GOVERNMENT JUNIOR HIGH SCHOOL 7 JAYAPURA CITY

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### Abstract

Adolescent are identified as a special group that is vulnerable to the effects of nutritional deficiencies. The factors are accelerated growth and development, lifestyle changes and eating habits, pregnancy, activities outside the school and suffering from chronic diseases. A number of nutritional problems include anemia, stunting, wasting, and obesity. Problems with nutritional status based on anthropometric indicators and Li LA are also found. According to Riskesdas 2010 nationally, the nutritional status of female adolescents aged 16-18 years who were stunted was 25.9%, wasting 5.2% (Ministry of Health, 2010). The Hebeybhulu Yoka Health Center is one of the health centers within the Jayapura City Health Office working area, and was inaugurated in 2010 and is located in Yoka Village (Suburbs of Lake Sentani). Within the Hebeybhulu Yoka Health Center work area there are schools where most of the students are indigenous Papuans (OAP), namely government junior high school (GJHS).

Research method Quantitative Descriptive for measuring nutritional status, Upper Arm circumference (LiLA), nutrient intake in native Papuan students. The population was students of GJHS 7 Jayapura city in the working area of the Hebeybhulu Yoka Health Center. The sample in this study was a total sampling of 65 female junior high school students. Variable nutritional status treated with BMI method to detect energy is less risk of chronic use Upper Arm Circumference, and the intake of nutrients (energy and protein) using sheet Food Recall 2 x 24 hours. Data are analyzed univariately and are presented in the frequency distribution table and mean.

The results of the study show: The nutritional status of students in Jayapura N 7 Middle School is good, which is 46 samples (76.8%). Of the 65 samples had BMI with an average of 20.49 kg / m, but there were also those who had less weight as many as 12 students and over 7 weight students. Average student body weight was 47 kg and the average female body height was 151.8 cm. TB / U index, more samples have normal height as much as 62 samples (95.4%) while only 3 samples are short, 3 samples (4.6%). The arm circumference of young women in SMP N 7 Jayapura is mostly not at risk of SEZ, which is 37 samples (56.9%), but there are also 28 samples (43.1%) at risk of SEZ. Intake of nutrition, a young woman from GJHS 7 Jayapura experienced a deficit in energy intake of 75.4% sampel. The average value of energy intake was 1255 Kcal  $\pm$  987 Kcal and for more protein intake there was a deficit of 87.7% of the sample. The average protein intake of the sample was 33 gr  $\pm$  26gr.

**Keywords:** *Adolescent Girls, Nutritional Status, Upper Arm Circumference, Nutrient Intake*

### 1. INTRODUCTION

The first 1000 days of life is a golden opportunity to prevent malnutrition and its consequences. This period is a period of golden period from pregnant women to children aged 2 years. This period requires enormous attention to improve the quality of human resources. The latest evidence published by the Lancet in 2013 shows that in addition to focusing on the first 1000 days of life as a *crucial* period, it also needs to emphasize the nutritional aspects of young

women and conception as important for health and survival, fetal growth, survival and growth and development early childhood (Black et al, 2013 in Patimah, 2017), Young women are identified as a special group that is vulnerable to the effects of malnutrition but is very difficult to make young women as a group with special opportunities. Young women in the world face a number of nutritional problems including anemia, stunting, *wasting*, and obesity.

Problems with nutritional status based on anthropometric indicators and LiLA are also common. According to Riskesdas 2010 data nationally the nutritional status of female adolescents aged 16-18 years classified as stunting was 25.9%, *wasting* 5.2% (Ministry of Health, 2010). Mid-Upper Arm Circumference (MUAC): MUAC was measured using colour-coded non-stretch measuring tapes to the nearest 1 mm. The tape was able to fit tightly but not so as to restrict blood flow or dent the upper arm. The left arm was bent at the elbow. The point of measurement was the distance between the bony prominence at the top of the shoulder (superiorly) and the point of the elbow being bent. To measure the MUAC, the middle of this above-mentioned distance was marked on the arm, and then the MUAC was measured at this midpoint. The MUAC was also done in duplicate. If the measurements were discrepant by more than 0.5 cm then a third observation was taken and the two similar measurements were used (Olimen, 2018).

Nutrition and growth of young women is important for women's health and adult women's height that has relevance to maternal nutrition. Short women are at risk of experiencing pregnancy complications. (Black et al. 2013 in Patimah 2017). Therefore the nutritional status of young women contributes to the nutritional status of the community (Parimalavalli and Sangeetha, 2011 in Patimah 2017). Although explicitly the female adolescents are not mentioned in 1000 HPK but the nutritional status of the young woman or premarital has a major contribution to the health and safety of pregnancy and birth. Therefore, one way to decide on nutrition and health problems between generations is to improve the nutrition of young women, which in other words adolescence is an opportunity to complete the cycle of intergenerational nutrition disorders. (WHO, 2002; WHO 2005 in Patimah 2017). The Hebeybhulu Yoka Health Center is one of the health centers within the Jayapura City Health Office. Hebeybhulu Yoka Health Center is a new Puskesmas which was inaugurated in 2010 and is located in Yoka Village (Lake Sentani Suburbs). In Puskesmas Hebeybhulu Yoka contained mostly school students are natives of Papua, GJHS 7. Based on preliminary observations research sites located around Lake Sentani, while because of the lack of research related to the nutritional status of adolescent girls Papuans so that the perceived need to do research.

1. Knowing the nutritional status of native Papuan students in GJHS 7 Jayapura

2. Knowing Upper Arm Circumference (Li LA) native Papuan Students GJHS 7 Jayapura
3. Knowing the intake of nutrients (energy, protein) Papuan students and GJHS 7 Jayapura

## II. LITERATURE REVIEW

### 1. Young Women

Etymologically, adolescents from Latin "*adolescere*" or "*to grow up*" means growing into adulthood. WHO 2005 defines it as the age period of 10-19 years. Teenage is the second accelerating period of growth after children. Adolescence is characterized by the acceleration of physical growth, sexual maturity, psychological, and behavioral changes to bring transformation from children to adulthood. (Kliegman and Nelson, 2007; Mehndiratta, 2011 in Patimah, 2017). Teens can be grouped in three stages of development, including:

1. Early adolescents (ages 10/13 - 14/15 years) characterized by the occurrence of puberty and increased cognitive development, rapid increase in growth and physical maturity
2. Mid-teens (ages 14/15-17 years) are characterized by almost complete growth of puberty, increased freedom and experimentation
3. Late adolescence (18-21 years) is a period of personal decision making (internalization of the system of personal values) and work-related (Pardede, *et al.*, 2002; WHO, 2005; CDPH, 2012 in Patimah, 2017)

The growth rate of children, women and men is almost as fast as at the age of nine. Furthermore, between 10-12 years of growth, girls experience acceleration first because their bodies require preparation before the age of reproduction. While the male child can only catch up two years later. Young women start and finish their height growth two years before the age of a boy. In them epiphyses grow in the bones so that they cannot increase in height. At the time of early adulthood young women will have less muscle and number of bones but get fatter in a sustainable manner which will be distributed to the breasts, buttocks and hips (Adriani and Wirjadmadi, 2014).

### 2. Young Women Nutrition Needs

The nutritional needs of young women are relatively large because adolescents are still experiencing a period of growth. In addition, teenagers generally do higher physical activity

compared to other ages so that more nutrients are needed.

Teenagers have unique nutritional needs when viewed from a biological, psychological, and social perspective. Biologically, their needs are in harmony with activity. Teenagers need more protein, vitamins, and minerals than any energy compared to children who are not yet puberty. In terms of social and psychological adolescents themselves believe that they do not pay too much attention to health factors in dropping their food choices but rather pay attention to other factors such as adults around them, hedonistic culture, body perceptions based on others, etc. Teen age groups are very preoccupied with various physical activities so that the needs of calories, protein, and micronutrients are highly preferred.

According to Gillespie (1997) quoted by WHO (2005) in Patimah (2017), that intervention in young women has reproductive-related benefits, namely:

- a. Increase pre-pregnancy weight and nutritional reserves that contribute to improving pregnancy and lactation *outcomes*
- b. Improving iron status by reducing the risk of anemia during pregnancy, low birth weight (LBW), morbidity and maternal mortality, increasing work productivity and linear growth,
- c. Improve folate status and reduce megaloblastic anemia during pregnancy.

### 3. Young Women Nutrition Problems

The kinds of nutritional problems experienced by young women.

#### Anemia

Teenagers have many activities both inside and outside the home or at school. All these activities can make them not have time to eat, especially thinking about the composition and nutritional content of the food that enters the body, as a result the teens often feel tired, weak and not energetic. Conditions gets tired too fast because the bus is caused by anemia (lack of blood). Anemia is a condition where the number of erythrocytes (red blood cells) or blood Hb levels is less than normal. The causes are severe bleeding, lack of iron (iron) in the body, lack of folic acid, lack of vitamin B12, helminthiasis, chronic diseases, etc. Red blood grains in healthy people contain hemoglobin, which is red blood cells that are responsible for carrying oxygen and other nutrients (vitamins and minerals) to the brain and body tissues. With anemia (lack of red

blood cell hemoglobin) the red blood capacity to transport oxygen in the body decreases so that the supply of oxygen in the body becomes slightly weak and tired. The most common type of anemia is iron deficiency (fe) if we experience severe bleeding due to injury or menstruation and also anemia because it lacks consumption of foods containing iron.

Anemia in young women is very closely related to reproductive health. If a woman has anemia it will be very dangerous when she is pregnant and giving birth. It will also cause the death of both the mother and baby in the labor process. Signs of anemia are easily weak, tired, lethargic, lacking in activity. Those who may experience anemia are young women. Young women are more at risk of anemia than sons, this is due to:

1. Every month young women experience heavy periods for more than five days, fearing more iron loss (need replacement iron) than girls who menstruate for only three days and a little.
2. Young women often maintain their appearance, want to be thin so they diet and reduce eating. A diet that is not balanced with the needs of the body will cause the body to lack important substances such as iron (fe).

#### Eating disorders

Over-eating, under-eating and eating disorders can have serious health impacts. Adolescents tend to be very conscious of appearances and may feel pressured to be thin or to look a certain way (that is self-image). Fear of becoming obese may lead to overly restrictive eating habits. Some adolescents even go to the extent of resorting to self-induced vomiting in an attempt to control their weight (Zaimin et al, 2016)

#### a. Macro Nutrition Deficiencies and Strengths

At present, multiple nutritional problems (deficiencies and excess nutrients) are quite common among adolescents belonging to the age of growth. In Indonesia, the prevalence of *wasting* girls aged 13-15 years increased 3.4% during the period 2010-2013, from 7.7% in 2010 to 11.1% in 2013. Whereas young women aged 16-18 years were thin (*wasting*) also increased by 4.2%, namely in 2010 the prevalence of thinness was 5.2% to 9.4% in 2013 (Ministry of Health, 2010 and 2013 in Patimah 2017).

SEZ or Chronic Energy Deficiency in women of childbearing age (WUS) aged 15-19 years who are not pregnant experienced an increase from 2007 to 2013, the proportion increased from 30.9% in 2010 to 46.6% in 2013. Chronic malnutrition results in short stature (height <145 cm) which is the cause of growth and maturation barriers, increases *obstetric* risk (content), and reduced work capacity. Malnutrition and short women are at risk of developing pregnancy complications such as congestion due to a narrow pelvis, the fetus is conceived to have a growth disorder <LBW to the next three generations, premature babies (Victoria, *et al*, 2008 in Patimah, 2017), stillbirth, and neonatal death (from birth -28 days).

Nutrition causes more obesity or obesity. Obesity in adolescence tends to settle into adulthood and the longer obesity takes place the greater the correlation with mortality and morbidity (non-communicable diseases) such as hypertension, diabetes, coronary heart disease, which requires high costs. Overweight in adolescence will also affect pregnancy later that can lead to diabetes during pregnancy (*gestational diabetes*), *hypertension induced pregnant*, preeclampsia (marked high blood pressure and found protein in urine), risk of giving birth with *sectio caesaria*, babies born later born with neural tube defects and congenital heart defects (Dean, *et al*, 2014 in Patimah, 2017).

#### 1. Factors that cause nutritional problems

Malnutrition in young women (under *nutrition*) is caused by insufficient food supply, especially for the poor, gender discrimination, in the distribution and access to food in the family. Poor nutrition (thin and very thin) in young women (prospective mothers) who are characterized by a BB <45 kg are at risk of giving birth to LBW babies who are at risk of experiencing death and impaired growth and development in children if they are still alive. (Almatsier, 2001).

Lifestyle changes related to consumption of foods high in fat, sodium, low fiber and low levels of physical activity result in the prevalence of *overweight* (*overweight*) and obesity in young adolescents in urban areas. Obesity occurs because the energy obtained through food exceeds the energy released. This imbalance is obtained from the excess energy obtained or reduced energy released for body metabolism, thermoregulation, and physical activity. Excess energy consumed is stored in tissues in the form of fat. Other factors that influence obesity

are demographic factors, sociocultural factors, biological factors, and behavioral factors. Obesity can also be caused by genetic factors or hereditary factors.

Energy needs of adolescents are influenced by activity level, basal metabolic rate, and increased requirements to support pubertal growth and development. Adolescents need additional energy for growth and activity. Adolescent girls need approximately 2,200 calories each day. This is a significant increase from childhood requirements. To meet these calorie needs, adolescents should choose a variety of healthful foods, such as lean protein sources, low-fat dairy products, whole grains, fruits, and vegetables. In an attempt to meet their energy needs, adolescents can fall prey to unhealthy, coercive and aggressive advertisement. They must therefore be well informed in the choice of healthy foods both at home and in school (Zaimin et al, 2016)

In Barasi, 2007 factors that influence nutrition problems in nutrition in adolescents in the UK include:

- a. Independence: the impact is choosing food itself related to the availability of money, rejection of the influence of parents
- b. Growth: the impact of appetite is very variable because the rate of growth changes too
- c. Diseases and infections: the impact of contact with other children in school results in infection and loss of appetite when sick
- d. Activity: becoming less mobile during adolescence
- e. Pressure from peers: can cause significant changes in eating habits; may start smoking (increase antioxidant needs), drink alcohol (can shift high nutritious food and affect absorption of folate, thiamine, vitamin C, calcium)
- f. Advertising: consumption of fatty foods and high calories / sugar due to promotion.

In Adriani and Wirjadmadi, 2014 the causes of adolescent nutrition problems include

1. Bad eating habits
2. Understanding wrong nutrition
3. Excessive preference for certain foods
4. Excessive promotion through mass media
5. The entry of new food products.

### III. METODOLOGY RESEARCH

#### 1. Type of Research

The type of research used is quantitative research using a *correctional*

*study* design. The purpose of this study was to find out Nutritional Status, Upper Arm Circumference, and Native Papuan Nutrition Intake for Middle School GJHS 7 in Jayapura City.

## 2. Location and Time of Research

This research was conducted in GJHS 7 Jayapura City. Time of research for 2 months

## 3. Research Populations and Samples

### 3.1. Population

The population in this study were all female students native Papuans who were recorded as female students in GJHS 7 evicted 7 Kota Jayapura.

### 3.2 Sample

The sample in this study using *total sampling* that overall student in GJHS 7 at 65 students.

## 4. Research Instruments and How to Collect Data

Research instruments were questionnaires for interviews, *food recall* 2 x 24 hour questionnaires (nutrient intake), tread scales, *microtoise* (BMI for nutritional status), LiLA tape (measuring arm circumference as an indicator of chronic energy deficiency).

Primary data are data on Nutritional status, Upper Arm Circumference, and Intake of nutrients (energy, protein) and characteristic data of female students of indigenous Papuan girls.

## 5. Data Analysis Techniques

Table 1. Sample distribution based on age

Age (years)	n	%
11	2	3.1
12	12	18.5
13	28	43.1
14	16	24.6
15	7	10.8
TOTAL	65	100

Based on the results of the study, the majority of the samples were 13 years old, namely 28 female students (43.1%).

## 2. Parental Education

The data collected is processed and analyzed using univariate analysis and will be presented frequency tables and tables of average values (*mean*) to see any measurement results.

## IV. RESULTS AND DISCUSSION

### Overview of Research Sites

Jayapura Public Middle School 7 is a school located in Yoka Pantai Village, Heram District, and Jayapura City. Yoka village is adjacent to K ampung Yokiwa and K ampung Puay in Jayapura Regency, where the locations of these villages are located around the outskirts of Lake Sentani, Jayapura Regency. Most of the population is native to Papua, so the work of the population is as fishermen and gardening. Jayapura Public junior high School 7 established since 1983 until now and has ownership status sourced from the Jayapura City Education Office with a land area of around 20,000 m<sup>2</sup> with permanent buildings. Most of the students are children of the native Yoka Village.

### Univariate Analysis

#### a. Sample Characteristics

##### 1. Age

The age of the sample is 11 years to 15 years old. More details can be seen in table 1 below:

Characteristics of education of parents (father and mother) samples are divided into non-school, graduating from elementary school, graduating from junior high school, graduating from high school, and college. For more details, can be seen in the table below:

Table 2. Sample Distribution based on Parental Education

	Education	n	%
Father	No school	14	21.5
	Elementary school	1	1.5
	Junior high school	5	7.7
	High school	34	52.3
	College	11	16.9
mother	No school	15	23.1
	Elementary school	3	4.6
	Junior high school	10	15.4
	High school	33	50.8
	College	4	6.2
TOTAL		65	100

Based on table 2 above, the results are that most of the sample parents' education is high school where 34 students (52.3%) have high school fathers, and 33 female students (50.8%) have high school education. But there were still 14 samples of students who did not attend school (21.5%) and 15 of them had mothers who did not go to school (23.1%).

Table 3. Sample Distribution based on Parental Work

	Work	n	%
Father	Does not work	5	7.7
	Farmer	19	29.2
	Fisherman	4	6.2
	Police	2	3.1
	Private	13	20.0
	Civil servants	22	33.8
mother	Housewife	55	84.6
	Farmer	3	4.6
	Private	3	6.2
	Civil servants	4	4.6
TOTAL		65	100

Based on the results in table 3 above for the sample with the father who works as a Civil Servant is the most number, which is 22 samples (33.8%) while the work of the mother as a housewife is the most that is 55 samples (84.6%).

## 2. Work of Parents

Parents occupations are categorized in the sample did not work and as a mother Households, farmers, fishermen, police, private sector, civil servants. More details can be seen in table 3 below:

### 1. Breakfast habits

2. Breakfast consumption from the sample is seen based on the frequency of daily breakfast habits, namely never having breakfast, sometimes breakfast, and



always having breakfast. For more details, can be seen from table 4 below:

Table 4. Distribution of samples based on breakfast habits

Breakfast frequency	n	%
Never	2	3.1
Sometimes	40	61.5
Always	23	35.4
TOTAL	65	100

Based on table 4 above, it can be seen that as many as 40 samples (61.5%) did not always have breakfast (sometimes), always had breakfast as many as 23 samples (35.4%) while those who never had breakfast were 2 samples (3.1%).

The infectious disease from the sample was seen based on the presence or absence of a sample suffering from an infectious disease in recent months such as fever / malaria, flu (cough / runny nose). For more details, can be seen from table 5 below:

Table 5. Distribution of samples based on Infectious Diseases

Infectious disease	n	%
Yes	40	61.5
Not	25	38.5
TOTAL	65	100

Based on table 5 above, it can be seen that as many as 40 samples (61.5%) had suffered from infectious diseases, and 25 did not suffer from infectious diseases (38.5%)

#### b. Sample Frequency Distribution based on Nutritional Status

In this study, sample Anthropometry measurements were taken (Body Weight / Height) to assess nutritional status categorized as under nutrition (BMI <18), good (BMI 18-24.5) and more (BMI

24.5). More details can be seen in table 8 below:

Table 8. Distribution of samples based on Nutritional Status

Nutritional status	n	%
Less	12	18.5
Well	46	70.8
More	7	10.8
TOTAL	65	100

Based on the results of the study, it can be seen that most of the samples had good nutritional status as many as 46 samples (70.8%) and a small number of samples had more nutritional status, namely 7 samples (10.8%). Sample Frequency Distribution based on TB / U index Measurement of

sample nutritional status based on index TB / U to obtain information about the state of the body height of the sample categorized in normal (z-score -2 SD to +2 SD) and Short (z-score <-2SD to -3SD). More details can be seen in the table below:

Table 9. Distribution of samples based on TB / U

TB / U	n	%
Normal	62	95.4
Short	3	4.6
TOTAL	65	100

From table 9 above, it can be concluded that most of the samples had normal height based on age as many as 62 samples (95.4%) while only 3 samples had height in the short category of 3 samples (4.6%).

Table 10. Distribution of Samples by TB / U

Upper arm circumference	n	%
EZ	28	43.1
Not SEZ	37	56.9
TOTAL	65	100

From the results of the study, most of the samples had good arm circumference ( $\geq 23.5$  cm), 37 samples (56.9%) and those lacking (LiLa  $<23.5$  cm) were 28 samples (43.1%).

#### e. Sample Frequency Distribution based on Energy Intake

The energy intake of the sample was obtained based on the results of interviews using the 2x 24 hour recall method analyzed using the Nutrisurvey program. Energy Adequacy Rate (RDA) for girls

Table 11. Distribution of Samples Based on Energy Intake

Energy intake	n	%
Deficit	49	75.4
Less	1	1.5
Is being	6	9.2
Well	9	13.8
TOTAL	65	100

According research results can be seen most of the samples had a deficit of energy intake is 49 samples (75.4%). Sample Frequency Distribution based on Protein Intake. Protein intake is also based upon a sample of n results of interviews using 2x 24-hour recall method were analyzed using nutrisurvey program. Protein Adequacy Rate (RDA) for young

Table 12. Sample Distribution Based on Protein Intake

Protein intake	n	%
Deficit	57	87.7
Less	2	3.1
Is being	2	3.1
Well	4	6.2
TOTAL	65	100

Based on the results of the study, it was found that the majority of the samples had deficit protein intake of 57 samples (87.7%), less intake of 2 samples

#### d. Sample Frequency Distribution based on Upper Arm Circumference (LiLa)

Upper arm circumference measurement of the sample aims to assess the condition of chronic energy deficiency (KEK) with a lack indicator (LiLa  $<23.5$  cm) and good ( $\geq 23.5$  cm).

aged 11 years and 12 years is 2000 kcal, while for ages 13 years till 15 years is 2125 kcal. Energy intake *cut off points* are seen based on deficit conditions ( $<70\%$  AKG), less (70% -80% AKG), moderate (80% -99% AKG), good ( $\geq 100\%$  AKG). For more details, can be seen in table 11 below:

women aged 11 years and 12 years is 60 gr, while for ages 13 years to 15 years it is 69 gr. *Cut off point* Energy intake is seen based on deficit conditions ( $<70\%$  AKG), less (70% -80% AKG), moderate (80% -99% AKG), good ( $\geq 100\%$  AKG). For more details can be seen in table 12 below:

(3.1%), moderate intake of 2 samples (3.1%) and good intake of only 4 samples (6.2%).



## V. DISCUSSION

In general, nutritional status is influenced by consumption of nutrients from food and infectious diseases that interfere with the process of metabolism, absorption and utilization of nutrients by the body. Adolescent nutritional status is a condition of the body that appears due to a balance between consumption and expenditure of nutrients. Nutritional problems that occur in adolescents are a continuation of nutritional problems at the age of children such as anemia, weakness and overweight (Arisman, 2009 in Patimah, 2017). Adolescents in this study were native Papuan students in the age range of 11 years to 15 years, who were junior high school students. In accordance with the definition of early adolescents are those aged 10 to 15 years (Pardede, et al., 2002; WHO, 2005; CDPH, 2012 in Patimah, 2017). In the age of adolescence the indicator commonly used in assessing the stage of development and puberty (sexual maturity) is the age of menstruation. This is influenced by genetic factors, environmental conditions, socioeconomic status, height, body mass index (BMI). Adolescence is the second fast growth period that can reach 50% of adult body weight and 50% of skeleton mass (body frame) and > 20% of total height growth from adult height. As a result of rapid growth there is an increasing need for nutrition both macro nutrition and micronutrients (WHO, 2005; Kamal, et al., 2010 in Patimah, 2017).

The results showed that the nutritional status of Jayapura GJHS 7 Middle School students was good, with as many as 46 female students (76.8%) from 65 samples having BMI with an average of 20.49 kg / m, but there were also less weighted 12 female students and over 7 female students. Average student body weight was 47 kg and the average female body height was 151.8 cm. Research conducted by Sicilia and Kusuma, 2016 found that the majority of female students had a BMI with an average of 20.9 kg / m which was in the normal nutritional status category, but 10% of female students had a BMI <17 kg / m in the thin category and 7.2% of female students had BMI > 27 kg / m which is included in the category of heavy fat. Based on the Indonesian RDA according to the Ministry of Health in 2005, the standard weight of female adolescents was 37.0 kg-48.0 kg while height was 145 cm - 153 cm (Adriani and Wirjatmadi, 2012).

For the TB / U index that describes height , more samples had normal height as many as 62

samples (95.4%) while only 3 samples were short, 3 samples (4.6%) . From the results of the study also obtained an overview of the arm circumference of young women whose samples were mostly not at risk of SEZ, namely 37 samples (56.9%), but the number of samples at risk of SEZ was also 28 samples (43.1%). This shows that there is compatibility with energy and protein intake which is efficient based on the results of recall.

Good parenting is very supportive of achieving optimal nutritional status, through comprehensive care from parents towards the growth of children. The direct causes of child growth are consumption and infectious diseases while indirect causes include parenting, family food security, health services and environmental sanitation. The basic causes of child development include family education, social culture, family economy, state political stability. (Purnamasari, 2018). Increased activity, social life and busyness of teenagers will affect their eating habits such as food consumption patterns often irregular, unhealthy snacks, often not eating breakfast (breakfast). All these habits can have an impact on poor nutritional status and even obesity in adolescence (Adriani and Wirjatmadi, 2012). In this study, it can be seen that most of the samples who do breakfast occasionally are 40 samples (61.5%) and also many who have a history of previous infectious diseases.

Adolescent nutritional needs have increased above the needs of infants and children (Arisman, 2009). As with energy needs, adolescent protein requirements correlate more closely with growth patterns. If supan energy is reduced protein intake will be used to meet energy needs so that the possibility of insufficient protein is available to form new tissue or repair damaged tissue. Finally it can cause a reduced growth rate and a decrease in muscle mass. The adolescent energy adequacy rate according to the 2013 Ministry of Health for the age of 10 12 years is 2000 kcal and adolescents aged 13 years - 15 years 2125 kcal (Patimah, 2017). Energy requirements in adolescents are very dependent on the level of physical maturity and activities carried out.

The results showed that the majority of the samples experienced a deficit in energy intake which was 75.4%. The average value of energy intake was 1255 Kcal ± 987 Kcal and for more protein intake there was a deficit of 87.7%. the average protein intake of the sample was 33 gr ± 26gr. Food types of energy sources consumed by samples are rice, instant

noodles, papeda, yellow sweet potatoes, potatoes. Food sources of protein consumed by the sample are lake fish, chicken eggs, sea fish and soybean tempeh. Research conducted by Susanti 2012 found that the energy intake of young women in orphanages (2072 Kcal  $\pm$  122.83 Kcal) and Islamic boarding schools (1483.4 Kcal  $\pm$  114.1 Kcal) was still below the AKG, while the protein intake of young women in orphanages (52 gr  $\pm$  4.18 gr) and Islamic boarding schools (29 gr  $\pm$  1.09 gr) also under the AKG.

Further research will be carried out in the analysis phase to look at the determinants of nutritional status of indigenous Papuan young women and conduct balanced education and nutrition education for adolescents so that it is expected to increase energy and protein intake from indigenous Papuan young women.

## VI. CONCLUSION AND SUGGESTION

Based on the results of the study, conclusions can be taken as follows:

The level of nutrition in the sample of Jayapura GJHS 7 Middle School students is good, which is 46 samples (76.8%). Of the 65 samples had BMI with an average of 20.49 kg / m, but there were also those who had less weight as many as 12 students and over 7 weight students. Average student body weight was 47 kg and the average female body height was 151.8 cm. TB / U index, more samples have normal height as much as 62 samples (95.4%) while only 3 samples are short, 3 samples (4.6%).

The arm circumference of teenagers in GJHS 7 Jayapura is mostly not at risk of SEZ, which is 37 samples (56.9%), but there are 28 samples (43.1%) at risk of SEZ. Intake of nutrition, a junior high school student in GJHS 7 Jayapura experienced a deficit in energy intake of 75.4% of the sample. The average value of energy intake was 1255 Kcal  $\pm$  987 Kcal and for more protein intake there was a deficit of 87.7% of the sample. the average protein intake of the sample was 33 gr  $\pm$  26gr.

## SUGGESTION

There is a need to monitor nutritional status routinely for students of GJHS 7 Jayapura, most of whom are native Papuan students from the school and

health workers to avoid nutritional problems in their teens.

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