

## ***Character Formation of Nutrition Aware Adolescents in an Effort to Prevent Triple Burden in Students of the Civil Integrated Model High School in Palu City***

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### **ABSTRACT**

*Teenagers are one of the determinants of quality and highly competitive human resources (HR). Improving nutrition is not only focused on the first 1000 HPK but also during adolescence. From RISKESDAS data (2018), adolescents aged 13-18 years have a short and very short nutritional status of 51.6%. thin and very thin 16.8%, overweight and obese 29.5%. And 32% aged 15-24 years are anemic. There are three burdens of nutritional problems (triple burden), namely stunting, wasting, obesity and micronutrient deficiencies, namely anemia. Another problem is that 65% of teenagers do not eat breakfast, 97% do not consume enough vegetables and fruit, lack physical activity and. For this problem, it is necessary to build the character of nutritionally aware teenagers through the implementation of local balanced nutrition. The aim is to see changes in adolescent behavior regarding local balanced nutrition. Research method Type of experimental research, with a quasi-experimental approach to pre-post-test one group design using the Accidental Sampling technique, a sample of 63 students at Madani High School, Palu City. The research results showed that the majority of respondents had good knowledge, but there were still some who did not know enough about balanced nutrition. Most attitudes show good positive results and good positive behavior assessment results. Knowledge is good, but implementation is still lacking, so it is necessary to build character in teenagers by implementing balanced nutrition through regular plate contents.*

**Keywords:** *Character, Awareness of Balanced Nutrition, Triple Burden, Teenagers*

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### **INTRODUCTION**

Junk food is widely available in schools, middle schools and high schools through various outlets in British Columbia<sup>1</sup>. Dietary habits are a risk factor for disease in teenagers<sup>2</sup>. Teenagers are

one of the determinants of quality and empowered human resources (HR). Competitive. For this reason, improving nutrition is not only focused on the first 1000 days of life (HPK), but also on adolescence<sup>3</sup>.

2018 RISKESDAS data shows that 51.6% of adolescents aged 13-18 years have short and very short nutritional status, in addition there are 16.8% of adolescents aged 13-18 years who are thin and very thin, while the prevalence of overweight and obesity is 29.5% in adolescents aged 13-18 years aged 16-18 years, and 13.5% in adolescents<sup>4</sup>. RISKESDAS data also shows that 65% of teenagers do not eat breakfast, 97% do not consume enough vegetables and fruit, lack physical activity and consume excessive amounts of sugar, salt and fat. If this problem continues into adulthood, health problems will arise for the unborn fetus so that the chain of intergenerational nutritional problems will not stop<sup>4</sup>.

The results of the 2017 UNICEF Survey found changes in eating patterns and physical activity in adolescents. increased consumption of unhealthy foods such as instant foods and also foods high in GGL content<sup>5</sup>. Research results Emilia, (2017) show that the problem of nutritional deficiency and excess in adolescents is caused by eating patterns that do not refer to nutritional balance<sup>6</sup>. Eating a varied and nutritionally balanced diet is not always expensive, but it is available around the house or yard. Indonesia is famous for its various kinds of local food which are rich in nutrients to meet the nutritional needs of teenagers<sup>6</sup>.

Building adolescent character regarding awareness of balanced nutrition by using local food ingredients is very necessary at this time<sup>7</sup>. There is a phenomenon of a gap between expectations (healthy and intelligent teenagers) and reality (triple burden problem in teenagers), so it is necessary to solve nutritional problems in teenagers by involving multidisciplinary and multisectoral sciences such as education and health services. services, schools, teachers, parents and the community<sup>8,9</sup>.

Building the character of nutritionally aware adolescents by implementing local balanced nutrition can form individuals with character and break the chain of nutritional problems in adolescents in a sustainable manner<sup>10</sup>. It is necessary to carry out research to find out how effective the character formation of nutritionally aware adolescents is through implementing balanced nutrition based on local food in high schools throughout the country. Palu

City and the value of knowledge, attitudes and behavior of balanced nutrition.

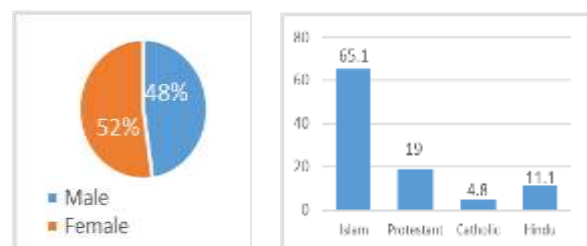
## METHOD

The type of research used is applied experimental research, which was previously included in quasi (almost experimental) research with a pre-post-test control group design. The two groups were matched based on school status, student age, education, and parental occupation. and the aim of explanatory research is to try to explain the relationship between variables based on empirical reality, by providing a qualitative analysis explanation. The sampling technique used Accidental Sampling so that 63 respondents were obtained. This research uses a mixed-methods approach which combines quantitative and qualitative approaches. This research was conducted in January 2022 to 2023. The questionnaire used in collecting pre and post test data is a questionnaire regarding balanced nutrition in accordance with the 2014 balanced nutrition guidelines from the Ministry of Health and has been tested for validity and reliability.

## RESULTS

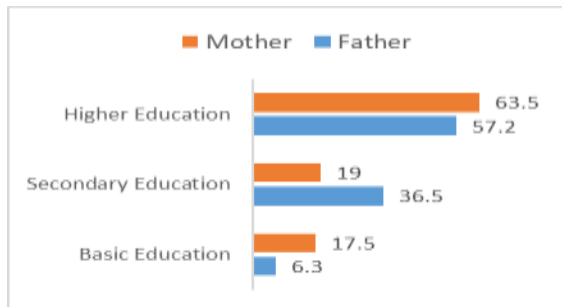
The results of initial data analysis of 63 students at Madani Integrated Model High School showed that the majority of respondents, namely 52.3% were female and the other 47.7% were male (figure 1).

Distribution of respondents based on religionIts adherents can be seen in Figure 1. The respondents with the largest number of respondents were Muslim at 65.1%, Protestant Christians at 19%, Catholic Christians at 4.8%, and Hindus at 11.1%.



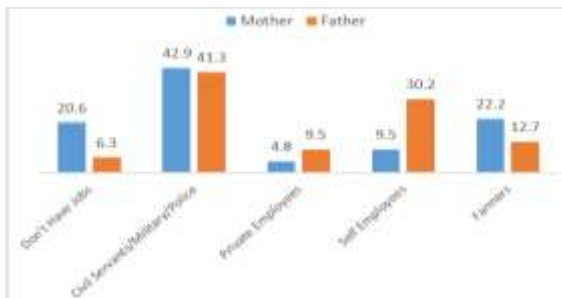
**Figure 1. Distribution of Respondents Based on Gender and Religion**

The level of education of the respondent's parents ranges from no school to college. Education levels are categorized into 3, namely basic education (junior high school and below), secondary education (high school) and higher education (diploma, bachelor's degree, master's degree and above). The research results showed that 63.5% of the parents of the respondents had a high level of education and 57.2% of the fathers. The parents of respondents with secondary education were 19% mothers and 36.5% fathers, while those with low education were 17.5% mothers and 6.3% fathers.



**Figure 2. Distribution of Respondents' Parental Education**

Work is an activity that must be carried out by every person for the sake of survival or to fulfill various needs. The type of work of the parents of respondents in this study was that 41.3% of fathers worked as civil servants/Military/Police, 9.5% private employees, 30.2% self-employed, 12.7% farmers and did not have a permanent job. /not working as much as 6.3%. For work, 20.6% of mothers do not have jobs, 42.9% work as civil servants/Military/Police, 4.8% as private employees, 9.5% as self-employed and 22.2% as farmers (figure 3).



**Figure 3. Distribution of Occupation of Respondents' Parents**

## 2. PUGS Media Exposure

To obtain information on respondents' exposure to PUGS, this research was categorized into: two categories, namely having seen media containing PUGS and never seeing media containing PUGS. Table 1 describes the respondents' exposure to PUGS.

In research regarding exposure to PUGS in adolescents, they were asked whether respondents had ever seen/read and heard the term PUGS, it turned out that 74.6% of respondents answered yes and 25.4% never. This shows that the majority of respondents have been exposed to/heard of PUGS. If the respondent answers never, then the respondent will not ask again regarding PUGS exposure questions.

Researchers asked further about the type of media/information sources that respondents saw, so that from these results it was known that the majority of respondents (46.8%) received PUGS messages from the internet and from health workers (17%), while from poster media it was 8.5 %, television 8.5%, and from parents 6.4%, teachers 4.3%, books 4.3% and brochures 4.3%.



The results of questions/studies regarding the logo on PUGS launched by the Ministry of Health, the majority of respondents (80.9%) had seen the logo, and 19.1% had never seen the logo. Respondents who already knew the name of the logo which means Balanced Nutrition Tumpeng were 68.1% and 31.9% did not know the name of the logo.

In the image or logo of food consumption guidelines (Contents of My Plate), 76.6% had seen the image and 23.4% said they had never seen it. The results of questions about the meaning of images that answered eating guidelines were 24.4%, those that filled my plate were 20% and those that answered my dinner plate were 55.6%.

On the question regarding food that is diverse, nutritionally balanced and safe, all respondents (100%) answered what they meant by a variety of food, debt Balanced and safe food is food that contains sources of energy, protein, vitamins and minerals.

## RESULTS

**Table 1. Respondents' exposure to PUGS**

No	Variable	Outcome Measurement	Amount	
			n	%
1	Have seen, read/heard PUGS messages	1. Forever	47	74.6
		2. Never	16	25.4
		Total	63	100
2	Media sources know about PUGS	1. Books	2	4,3
		2. Brochure	2	4,3
		3. Poster	4	8,5
		4. Television/radio	4	8,5
		5. Internet	22	46,8
		6. Teacher	2	4,3
		7. Parents/Friends	3	6,4
		8. Health workers	8	17
Total	47	100		
3	Have seen the following logo/image	1. Forever	38	80.9
		2. Never	9	19.1
		Total	47	100
4	What is the name of the picture 	1. Balanced nutrition	5	7.9
		2. Balanced nutritional menu	2	3.2
		3. Balanced nutritional cone		
		00. Don't know	32	50.8
		Total	8	12.7
			47	100
5	Have you seen the following image/logo: 	1. Forever	36	76.6
		2. Never	11	23.4
		Total	47	100
		1. Eating guidelines	11	23,4
6	What is the name of the picture	2. My dinner plate	25	53,2
		3. Fill my bamboo	9	19,1
		00. Don't know	2	4,3
Total	47	100		
7	What is meant by food is diverse, nutritionally balanced and safe	1. Foods that contain sources of energy, protein, vitamins and minerals	47	100
		2. Food with large portions	0	0
		3. Clean and delicious food	0	0

### 3. Friends of the same age

Peers have an important role to play in this regard influence behavior eating habits in adolescents. Behavior of buying food or eating

together often done with peers. In this study, those who most often accompanied respondents in buying food were peers, 50.8%, 25.4% who bought their own food and 23.8% who were accompanied by family (Table 2).

**Table 2. Food Consumption Habits of Peers and Respondents**

No	Variable	Outcome Measurement	Amount	
			n	%
1	Who do you most often buy food with?	1. Friends	32	50.8
		2. Alone	16	25.4
		3. Parents	10	15.9
		4. Sister/sister/sister	5	7.9
		Total	63	100
2	When buying food with friends, do you buy the same type of food?	1. From	41	65.1
		2. Never	22	34.9
		Total	63	100
3	When buying food with friends, who determines the type of food purchased	1. Yourself	59	93.7
		2. Friends	4	6.3
		Total	63	100

When buying food with friends, 65.1% of respondents bought the same type of food and 34.9% different types of food. The most dominant person in determining the type of food purchased with peers is the respondent himself (93.7%).

#### 4. PUGS knowledge

Students' knowledge about General Guidelines for Balanced Nutrition (PUGS) was collected using the interview method using a questionnaire<sup>11</sup>. Knowledge about PUGS includes B2SA counseling, various foods, frequency of eating vegetables, frequency of eating fruit, functions of various nutrients, sources of nutrients, fat consumption and the consequences of excess fat consumption. If the respondent's knowledge regarding nutritional knowledge was assessed as a whole, 56.9% of them answered correctly. The results of the PUGS knowledge study regarding B2SA extension showed that 48 students (76.2%) answered

correctly, namely Variety, Balanced and Safe Nutrition and respondents who answered incorrectly and did not know B2SA represented 15 students (23.8%).

A diverse diet is a diet consisting of rice, vegetables, fruit, vegetable side dishes and animal seafood. In this study, respondents answered correctly about diversity food was 58.7%, while respondents who answered incorrectly and did not answer were 41.3%.

The recommended frequency of vegetable consumption for PUGS every day is 3-4 times, while the recommended frequency of fruit consumption is 2-3 times per day. In this study, respondents who had the knowledge to consume vegetables according to PUGS recommendations (3-4 times) were 4.8%, and respondents who answered incorrectly and did not know were 95.2%.

**Table 3. Distribution of Respondents According to PUGS Knowledge**

No	Variable	Outcome Measurement	Amount	
			n	%
1	B2SA is an abbreviation of	1. A variety of balanced and safe nutrition	48	76.2
		2. Nutritious, varied, balanced and safe	7	11.1
		3. Don't know	8	12.7
		Total	63	100
2	A wide variety of food consisting of...	1. Rice, vegetables, fruit, vegetable side dishes, animal side dishes	37	58.7
		2. Rice, vegetables, side dishes, fruit, eggs	6	9.5
		3. Rice, vegetables, vegetable side dishes, animal side dishes, milk	15	23.9
		4. Don't know	5	7.9
		Total	63	100
3	In your opinion, how many times should we eat vegetables every day?	1. 1-2 times a day	18	28.6
		2. 2-3 times a day	37	58.7
		3. 3-4 times a day	3	4.8
		4. Don't know	5	7.9
		Total	63	100
4	In your opinion, how many times should we eat fruit every day?	1. 1-3 times a day	36	57.1
		2. 2-3 times a day	20	31.7
		3. 3-5 times a day	1	1.6
		4. Don't know	6	9.5
		Total	63	100
5	The following food groups can be used as a source of energy, namely:	1. Bread, noodles, cassava, rice, vermicelli	21	33.3
		2. Cassava, rice, vermicelli, eggs, fish	15	23.8
		3. Bread, rice, vermicelli, meat, eggs	24	38.1
		4. Don't know	3	4.8
		Total	63	100
6	Continuous consumption of food sources of energy that exceeds needs will cause...	1. Excess weight	59	93.7
		2. Malnutrition	1	1.6
		3. Stamina increases	1	1.6
		4. Don't know	2	3.2
		Total	63	100
7	The main function of carbohydrates is...	1. Source of energy for the body	61	96.8
			1	1.6
		2. Maintain health	1	1.6
		3. Don't know	63	100
		Total		
8	Food sources of carbohydrates include...	1. Sago, banana, honey	1	1.6
		2. Sweet potatoes, bananas,	43	68.3

		rice	17	27.0
		3. Rice, potatoes, sugar	2	3.2
		4. Don't know	63	100
		Total		
9	The daily recommendation is to consume as much sugar as...	1. 3-4 tablespoons	42	66.7
		2. 5-6 tablespoons	8	12.7
		3. Don't know	13	20.6
		Total	63	100
10	Oil consumption using oil...	1. Saturated fat	8	12.7
		2. animal	2	3.2
		3. Vegetables	38	60.3
		4. Don't know	15	23.8
		Total	63	100
11	If someone consumes excessive fats and oils it will result in...	1. Other nutritional needs are not met	43	68.3
		2. Other nutritional needs are met by fats and oils	4	6.3
		3. Other nutritional requirements have no effect	1	1,6
		4. Don't know	15	23,8
		Total	63	100

Based on the recommendation to consume fruit every day, knowledge As many as 31.7% of respondents regarding fruit consumption according to PUGS recommendations, namely 2-3 times a day, 68.2% of respondents who chose the wrong answer and didn't know it.

Variations in food consumption principal is one of the messages in PUGS. Staple food is the main source of energy for the body. In this study, respondents' knowledge about various foods that contain energy sources, among others, came from: 21 students (33.3%) answered bread, noodles, cassava, rice and vermicelli, then those who answered came from cassava, rice, vermicelli, eggs and fish as much as 23.8%, those who answered came from bread, rice, vermicelli, meat, eggs as much as 38.1% and those who didn't know 4.8%. so 33.3% of respondents answered correctly and 66.7% incorrectly.

Respondents' knowledge regarding the impact of consuming food that contains energy sources in excess of their needs over a long period

of time can be seen in table 4. The impact of consuming food that contains excessive energy sources continuously will cause excess body weight. As for those who...answer, overweight is 93.7%. Those who answered stamina increased by 1.6%, those who answered malnutrition by 1.6% and those who answered they did not know by 3.2%.

One of the nutrients that is really needed by the human body is carbohydrates (KH), where carbohydrates in the body act as a source of energy for the body. Respondents' knowledge regarding the main function of KH was: 96.8% of respondents answered as a source of energy for the body, 1.6% answered maintaining health and 1.6% did not know.

KH nutrition can be obtained from various types of food ingredients. Knowledge respondents regarding various sources of food that contain KH nutrients, including: the majority of respondents (68.3%) answered that it came from sweet potatoes, bananas and rice, 27% answered that it came from rice, potatoes and

granulated sugar and those who didn't know 3.2%.

One of PUGS's 10 messages is to limit consumption of oil, sugar and salt. The recommended limit for using granulated sugar is 4 tablespoons, the recommended limit for consuming oil a day is 5 tablespoons and it is recommended to use vegetable oil. In this study, it was recommended to consume granulated sugar a day, most respondents (66.7%) answered 3-4 times, 12.7% answered 5-6 tablespoons, and 20.6% answered they didn't know. . In the question of daily oil consumption, it is best to use oil: 8 respondents (12.7%) saturated fat, 3.2% animal oil, 60.3% vegetable oil and 23.8% who don't know.

On the question of the consequences if

someone consumes fats and oils excessively: 68.3% answered that the need for other nutrients is not met, 6.3% answered that the need for other nutrients is met, 6.3% answered that the need for other nutrients. Nutrients had no effect as much as 1.6% and those who answered they didn't know were 23.8%.

## 5. B2SA attitude

The respondent's attitude is a description of feelings, a person's view of an object. The manifestation of this attitude cannot be seen directly, but can only be interpreted first from closed behavior. Data about attitudes was collected by interview using an attitude questionnaire. The results of research regarding respondents' attitudes can be seen in table 4.

**Table 4. Distribution of Respondents based on B2SA attitude**

No	Statement	Outcome Measurement	Amount	
			n	%
1	Every day I have to eat various kinds of food	1. Strongly agree	23	36.5
		2. Agree	38	60.3
		3. Don't agree	2	3.2
		4. Strongly disagree	0	0
		Total	63	100
2	If my weight is normal, that means it's necessary I have enough energy	1. Strongly agree	12	19.0
		2. Agree	38	60.3
		3. Don't agree	13	20.7
		4. Strongly disagree	0	0
		Total	63	100
3	Food sources of carbohydrates should be limited to around 50-60% of energy needs	1. Strongly agree	5	7.9
		2. Agree	45	71.4
		3. Don't agree	13	20.7
		4. Strongly disagree	0	0
		Total	63	100
4	Excessive consumption of fats and oils will not reduce consumption of other foods	1. Strongly agree	1	1.6
		2. Agree	13	20.6
		3. Don't agree	37	58.8
		4. Strongly disagree	12	19.0
		Total	63	100
5	I will not eat food that is not salted with iodized salt	1. Strongly agree	6	9.5
		2. Agree	13	20.6
		3. Don't agree	35	55.6
		4. Strongly disagree	9	14.3
		Total	63	100



6	Not having breakfast is a problem that will happen harming my health	1.Strongly agree	24	38.2
		2.Agree	22	34.9
		3.Don't agree	12	19.0
		4.Strongly disagree	5	7.9
		Total	63	100
7	I will drink only when I feel thirsty	1.Strongly agree	7	11.1
		2.Agree	14	22.2
		3.Don't agree	19	30.2
		4.Strongly disagree	23	36.5
		Total	63	100
8	Drinking habitsalcoholic won't interfere with my liver function	1.Strongly agree	4	6.4
		2.Agree	0	0
		3.Don't agree	15	23.8
		4.Strongly disagree	44	69.8
		Total	63	100
9	Cooked food will be more covered so as not to be attacked by flies	1.Strongly agree	43	68.3
		2.Agree	19	30.1
		3.Don't agree	1	1.6
		4.Strongly disagree	0	0
		Total	63	100
10	I will always read the labels on packaged foods even when I buy them That	1.Strongly agree	9	14.3
		2.Agree	43	68.3
		3.Don't agree	11	17.4
		4.Strongly disagree	0	0
		Total	63	100
11	Every day I will exercise diligently not the time to practice	1.Strongly agree	8	12.7
		2.Agree	44	69.8
		3.Don't agree	10	15.9
		4.Strongly disagree	1	1.6
		Total	63	100
12	To build muscle, I will eat as many eggs as I can without any other food	1.Strongly agree	1	1.6
		2.Agree	7	11.1
		3.Don't agree	25	39.7
		4.Strongly disagree	30	47.6
		Total	63	100

The statement "every day I have to eat a variety of foods" 36.5% of respondents strongly agreed, 60.3%

agreed, and 3.2% disagreed. In the statement "If my weight is normal it means my energy needs are met" 19% of respondents chose to strongly agree with this statement, 60.3% agreed and 20.7% disagreed.

Respondents' attitudes towards the statement "Food sources of carbohydrates should be limited to around 50-60% of energy requirements" were 7.9% who strongly agreed, 71.4% agreed and 20.7% disagreed. Respondents' attitudes towards the statement "Excessive

consumption of fats and oils will not reduce consumption of other foods" stated that 1.6% strongly agreed, 20.6% agreed, 58.8% disagreed and 19% strongly disagreed.

Respondents' attitudes towards the statement "I will not eat food that is not salted with iodized salt" stated that 9.5% strongly agreed, 20.6% agreed, 55.6% disagreed and 14.3% strongly disagreed. Respondents' attitudes towards the statement "Not having breakfast is a problem that will harm my health" stated that

38.2% strongly agreed, 34.9% agreed, 19.0% disagreed and 7.9% strongly disagreed.

Respondents' attitudes towards the statement "I will drink when I feel thirsty" were 11.1% strongly agree, 22.2% agree, 30.2% disagree and 36.5% strongly disagree. Respondents' attitudes towards the statement "The habit of drinking alcohol beverages will not damage my liver function" which stated that 6.4% strongly agreed, 23.8% disagreed and 69.8% strongly disagreed.

Respondents' attitudes towards the statement "Food that is already cooked should be covered so that flies do not attack it" were 68.3% who strongly agreed, 30.1% agreed, and 1.6% disagreed.

Respondents' attitudes towards the statement "I will always read the labels on packaged food even though I have bought the food" stated that 14.3% strongly agreed, 68.3% agreed, and 17.4% disagreed.

Respondents' attitudes towards the statement "Every day I will exercise diligently even though it is not yet time to practice" which stated that 12.7% strongly agreed, 69.8% agreed, 15.9% disagreed and 1.6% strongly disagreed.

Respondents' attitudes towards the statement "To build muscle, I will eat as many eggs as possible without other food" stated that 1.6% strongly agreed, 11.1% agreed, 39.7% disagreed. and strongly disagree as much as 47.6%.

Based on several questions and statements Regarding respondents' attitudes towards B2SA, strongly agree and agree describe a good attitude for B2SA questions number 1,2,3,5,6,9,10,11. And those who chose to disagree and strongly disagree expressed a good attitude on B2SA question no. 4,7,8 and 12, so to speak that part large (78.9%) respondents have your own good attitude and the other 21.1% have a bad attitude.

## CONCLUSION

Based on the results of data collection in the form of a questionnaire, most respondents have good knowledge, but there are still those who lack balanced nutrition, most have a good attitude with a percentage of 78.9% and those who lack B2SA. attitude is 21.1%. Media

production that has been completed is a banner on guidelines for balanced nutrition and the contents of my plate as well as a banner about joint action with teenagers to prevent stunting and awareness among teenagers about balanced nutrition. Socialization about balanced nutrition to teachers and administrative staff and some of them already know about balanced nutrition, but there are also those who don't know about balanced nutrition.

Good knowledge but not accompanied by implementation that requires further intervention by building character in teenagers through implementing balanced nutrition, such as using the contents of my plate so that school teenagers can bring provisions according to balanced nutrition guidelines.

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