
Research Article

The Effect Of Educator Training On Students Knowledge Of Balanced Nutrition In Makassar, Indonesia

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Abstract: Adolescents are susceptible to nutritional problems for many reasons. One way to overcome these nutritional problems is to apply a balanced lifestyle nutrition. Peers become one of the prospective mediators to seek to change the value and behavior of health in adolescents. But before peer educators educate their friends, they need to improve their knowledge of balanced nutrition. To analysis the effectiveness of peer educator training on students' knowledge about balanced nutrition. This study is an intervention study. Sampling was done by purposive sampling method and the number of selected samples was 40 students. Data analysis was performed with SPSS version 16 using paired T test to assess the difference of respondent knowledge before and after intervention. The results showed that after peer education training, there was an increase in respondents' knowledge of well-balanced nutrition in the good category, from 17.5% before training to 70% after training, an increase of 52.5%. knowledge of the respondents in the category quite decreased, ie from 45% before training to 25% after training, decreased by 20%. Knowledge of respondents in the category of less decreased as well, ie from 37.5% before training to 5% after training, decreased by 32.5%. The training is done effectively to improve the knowledge of respondents. Nutrition educators who have been trained are expected to transmit the knowledge they have to their peers. Health promotion programs, especially balanced nutrition should be aggressively conducted in schools, considering the school is a place to form healthy behaviors.

Keywords: Adolescent, Balanced Nutrition, Training, Peer

INTRODUCTION

Adolescents are individuals who are experiencing the development of psychology and patterns of identification of children into adulthood [1]. In adolescents, there is a transition from full social and economic dependence to parents to a relatively more independent state [2]. Physical growth in adolescents causes them to require a greater nutritional intake than in childhood [3]. Plus in this period, teenagers are very active with various activities, both school and sports activities [4]. Especially in young women, nutritional intake is also required for the preparation of reproduction [5], [6].

Adolescents are susceptible to nutritional problems for many reasons. First, teens experience accelerated growth and development of the body so that it requires more energy [7]. Second, adolescents love to follow changes in lifestyle and eating habits that are not necessarily healthy [8]. Third, pregnancy, participation in sports, alcoholism and drugs increase the need for energy and nutrients [6], [9].

Various factors that trigger the occurrence of nutritional problems in adolescence include poor eating habits in which adolescents eat sparse without knowing the need for various nutrients and the impact of unmet needs of these nutrients to their health, a misconception of nutrition that causes adolescents to apply settings restriction of food wrongly so that their nutritional needs are not met, excessive joy to certain

foods related to the prevalence of trends among teenagers cause nutritional needs are not met [10], [11]. In addition, excessive promotion through mass media is used by food entrepreneurs to promote their products in ways that greatly affect adolescents [12], [13]. In fact, these food products are not healthy foods when consumed in excessive amounts [14], [15].

To prevent the occurrence of nutritional problems, need to be socialized guidelines balanced nutrition that can be used as guidelines for eating, physical activity, clean life and maintain normal weight. Disseminating information about "balanced nutrition guidelines" has been considered less successful, many people are unaware of the change of the four perfectly healthy five slogans to the general guidelines of balanced nutrition even though the change has taken place almost 20 years. Seeing this, there needs to be an effort to disseminate information in a balanced nutrition message, so that all walks of life including junior high school students can find out the messages contained in the balanced nutrition messages and can apply them in everyday life.

Peers (peer group) are teenagers who have the same level of maturity [16]. They interact and each has a unique role. Teens tend to have peer groups. In the group will develop climate and certain norms. At this time, teens are more concerned with his role as a member of the group than his personal pattern

[17]. At the same time, adolescents tend to separate themselves from their parents [18].

Teenagers have a strong need to be liked and accepted by their peers [19]. Interactions among peers play an important role in one's social development [20]. One of the most important functions of peers is as a source of information about the world outside the family [21]. Included in this case is health information. Therefore, some health interventions involve the role of peers in delivering health messages or forming certain values and behaviors [22]. As the study conducted by Setyawati in Yogyakarta, found that HIV-AIDS prevention efforts in adolescents may involve the role of peers. Teenagers are more open in talking about sex and behaviors at risk of contracting HIV / AIDS [23].

Similarly, found by Aisah who examines the effect of peer education on changes in the prevention behavior of iron nutritional anemia in women of childbearing age in the city of Semarang [24]. The study found that the knowledge, attitudes and skills of the respondents were not affected by age and education level. But it is influenced by peer education intervention [24].

In Makassar, a study conducted by Syria in Tallo District to 60 respondents aged 15-19 years on the role of peers in improving knowledge about early marriage found that there was an increase in knowledge in the intervention group rather than control. Increased knowledge of adolescents who are educated by peers is also quite high. The study recommends peer involvement in programs targeting adolescents [25].

Peers become mediators who are quite prospective in seeking behavior change in adolescents [26]. Included in this case is the behavior of balanced nutrition. However, the important thing needed to change behavior is through increased knowledge. Although good knowledge is not necessarily followed by good behavior as well. Before teenagers can pass that knowledge on to others, then they need to improve their own knowledge. This research was conducted to see the effectiveness of peer educator training on knowledge of balanced nutrition on students of peer educator candidate in SMUN 16 Makassar adult.

METHOD

Research Design & Population and sample

The type of research conducted is the study of intervention. The population of this study is all students of class X in SMUN 16 Makassar. Selection of sample is done by purposive sampling according to specified inclusion criteria. Based on the selected criteria 40 students selected

Method of collecting data

Data collection is done by trained enumerators. The respondent's knowledge data is measured by a validated questionnaire. In addition, data were collected on nutritional status.

Data analysis

The research data was processed using SPSS version 16. To know the difference of respondent knowledge before and after intervention was used paired t test.

RESULTS AND DISCUSSION

Based on table 1 it can be seen that the respondents in this study were at most 15 years old at 67.5% and at least 16 years old, ie 12.5%. By sex, most of the respondents are female, that is 67.5% and the rest is male that is 32.5%. Based on religion, most respondents are Moslems that is 82.5%. Based on the tribe, most respondents came from the Bugis tribe that is 57.5%, but there are also respondents who come from the Tribe of Java and Alor, which is 2.5% each. Based on nutritional status, most of the respondents are normal, 85%, but some have nutritional problems. Respondents have less nutritional status, namely 7.5%, more nutrition 2.5% and obesity 5%.

Table 1. Characteristics of Respondents

Characteristics Respondents	of n (47)	%
Age (Years)		
14	8	20
15	27	67.5
16	5	12.5
Gender		
Male	13	32.5
Female	27	67.5
Religion		
Islam	33	82.5
Protestant	5	12.5
Catholic	2	5
Tribe		
Bugis	23	57.5
Makassar	10	25
Toraja	5	12.5
Java	1	2.5
Alor	1	2.5
Nutrition Status (BMI)		
Under Nutrition	3	7.5
Normal	34	85
Over Weight	1	2.5
Obesity	2	5

Based on table 2, it can be seen that the knowledge about the most unknown nutrition of the respondents is about the pattern of consumption of animal and vegetable food that is 52.5% and the importance of physical activity to prevent non-communicable diseases is 52.5%. While the least known by the respondents, is the consumption of various foods. The most frequently answered question is the importance of breakfast to prevent obesity and the importance of reading the label, ie 37.5%. The most frequently answered question of the respondent is about the consumption of a wide variety of foods. Based on table 3, it can be seen that the knowledge about the most unknown nutrition of the respondent is about the consumption pattern of animal and vegetable food that is 22.5%. While the least known by the respondents, is the importance of consumption of vegetables and fruits to prevent SM is 2.5%. The most frequently answered question wrong by the respondent is how to maintain normal weight 30%. The most frequently answered questions are the importance of

breastfeeding for infants and the importance of consumption of vegetables and fruits to prevent SM, which is 95%.

Based on table 4, it was shown that after peer education training, there was an increase of respondent knowledge on good category, from 17.5% before training to 70% after training, increased by 52.5%. While knowledge of the respondents in the category quite decreased, ie from 45% before training to 25% after training, decreased by 20%. Likewise, the knowledge of the respondents in the category less decreased as well, ie from 37.5% before training to 5% after the training, decreased by 32.5%. From the results of

statistical tests performed, shows the value $p = 0.000$, which means there is a significant difference in the knowledge of respondents before and after the training of peer education.

Adolescence is one of the phases of life at risk of having nutritional problems and related health problems [27]. One of the causes of such nutritional and health problems is the lack of adolescent knowledge about nutrition and health in general [28], [29]. Nutrition and health information is sometimes obtained from various sources that are not necessarily accurate or the information received is incomplete or comprehensive so it can lead to a lack of understanding of adolescents.

Table 2. Respondents' Knowledge of Balanced Nutrition Before Training of Peer Educator

Aspects of Knowledge	Do not know		Wrong		True	
	n	%	n	%	n	%
Consumption of diverse foods in balanced nutrition messages	1	2.5	3	7.5	36	90
Importance of breast milk for infants	10	25	4	10	26	65
Importance of vegetable and fruit consumption to prevent SM	7	17.5	2	5	31	77.5
The pattern of consumption of animal and vegetable foods according to balanced nutrition messages	21	52.5	3	7.5	16	40
Carbohydrate source consumption pattern	8	20	10	25	22	55
Fat consumption patterns	16	40	5	12.5	19	47.5
The importance of breakfast to prevent obesity	15	37.5	15	37.5	10	25
The importance of water adequacy	18	45	13	32.5	9	22.5
The importance of reading the label	3	7.5	15	37.5	22	55
The importance of handwashing habits	5	12.5	2	5	33	82.5
How to maintain a normal weight	9	22.5	8	20	23	57.5
The importance of food diversity	15	37.5	9	22.5	16	40
Clean life behavior to prevent infectious disease	11	27.5	7	17.5	22	55
The importance of physical activity	21	52.5	8	20	11	27.5
Monitoring of body weight	20	50	2	5	18	45

Based on the results of the study, it is illustrated that the respondents have not much to know how the pattern of consumption of animal and vegetable foods that should fit the balanced nutrition pattern. Animal and vegetable foods need to be consumed appropriately and in balance. Because each source of food has a role in becoming a healthy human body. Animal foods are a source of protein and fat as well as important minerals. Animal food is needed as a source of Fe and zinc. Excessive consumption of animal food sources can lead to non-communicable diseases. Lack of consumption of animal foods can lead to iron deficiency (anemia) and zinc deficiency (hipozinkemia).

Table 3. Respondents' Knowledge of Balanced Nutrition After Training of Peer Educator

Aspects of Knowledge	Do not know		Wrong		True	
	n	%	n	%	n	%
Consumption of diverse foods in balanced nutrition messages	6	15	1	2.5	33	82.5
Importance of breast milk for infants	1	12.5	1	2.5	38	95
Importance of vegetable and fruit consumption to prevent SM	1	2.5	1	2.5	38	95
The pattern of consumption of animal and vegetable foods according to balanced nutrition messages	9	22.5	11	27.5	20	50
Carbohydrate source consumption pattern	2	5	7	17.5	31	77.5
Fat consumption patterns	5	12.5	12	30	23	57.5
The importance of breakfast to prevent obesity	6	15	4	10	30	75

The importance of water adequacy	5	12.5	8	20	27	67.5
The importance of reading the label	4	10	7	17.5	29	72.5
The importance of handwashing habits	3	7.5	5	12.5	32	80
How to maintain a normal weight	1	2.5	14	35	25	62.5
The importance of food diversity	3	7.5	9	22.5	28	70
Clean life behavior to prevent infectious disease	3	7.5	3	7.5	34	85
The importance of physical activity	3	7.5	3	7.5	34	85
Monitoring of body weight	5	12.5	5	12.5	30	75

Vegetable foods are a major source of fiber, vitamins and minerals as well as antioxidants. Plant foods are needed in the prevention of non-communicable diseases. Excessive consumption of vegetable foods will lead to deficiencies of important minerals such as Fe and Zink, since plant foods usually contain substances that inhibit the absorption of Fe and Zinc. On the other hand, less consumption of vegetable foods can lead to degenerative diseases. Plant fiber is needed to prevent various metabolic disorders, such as maintaining blood sugar and cholesterol levels. The main problem that is often encountered in adolescents is that they do not like to consume vegetables and fruits. Based on FGD results that have been done, teenagers do not like vegetables and fruits, usually because they do not know the benefits, do not like the tasteless or not available at home or school.

Table 4. Changes in Respondents' Knowledge of Balanced Nutrition After Peer Educator Training

Knowledge	Before		After		P (*Paired T Test)
	n	%	n	%	
Good	7	17.5	28	70	0,000
Medium	18	45	10	25	
Less	15	37.5	2	5	

The knowledge and attitudes of the respondents were in good category but the consumption patterns of vegetables and fruit of the respondents were still less than the standard of balanced nutrition [30]–[32]. A study conducted on SMAN 2 Rantepao Toraja Utara students found that although adolescents have been exposed to information about the importance of vegetable and fruit consumption but have not been able to increase consumption of vegetables and fruits in adolescents [33]. Similarly, studies conducted on juvenile students of SMPN 1 Kesu Toraja Utara, found that consumption of vegetables and fruits is still below the minimum recommendation. In addition, the study found a significant relationship between the attitude and consumption of fruit vegetables in adolescents [34].

Another aspect of knowledge of the most unknown respondents is the importance of physical activity in preventing non-communicable diseases. One of the problems encountered in adolescents today is lack of physical activity. The various facilities and facilities they encounter in their daily life, causing them to do less physical activity. The use of gadgets has become an indispensable part of everyday teenagers. In fact, physical activity is needed to keep the body

healthy and fit. Especially to prevent the occurrence of non-communicable diseases. Metabolic syndrome (MS) is related to physical and sedentary activity. MS was more common in adolescents with lower physical activity (4.3%) than moderate (3.1%) and high (2.6%) [35]. Watch time was associated with increased risk of SM in adolescents [36]. The findings recommend that healthy lifestyle interventions in adolescents should include components aimed at reducing screen time.

Physical activity regularly or routinely affects mild to moderate effects on decreased risk of metabolic disorders, heart and blood vessel disease, and MS [37], [38]. Routine physical activity also prevents the occurrence of type 2 diabetes mellitus and affects the various components of BC such as giving a positive effect on insulin resistance, glucose intolerance, dyslipidemia and hypertension and weight loss [39].

Diet is the most important behavior that can affect the nutrition status [40], [41]. The quantity and quality of food and drinks consumed will affect the nutritional intake which will further affect the health of individuals [42]. Optimal nutrition is essential for normal growth as well as physical development and adolescent intelligence [43], [44]. Good nutrition makes the body weight normal or healthy, the body is not susceptible to infectious diseases, increased work productivity and protected from chronic diseases and premature death [45]–[47]. In order to keep the body healthy and protected from various chronic diseases or non-communicable diseases associated with nutrition, then the adolescent diet needs to be improved toward balanced nutrition consumption.

Balanced nutrition is a daily-consuming diet containing nutrients in types and quantities that suit the needs of the body by observing the principle of diversity or variation of food, physical activity, hygiene, and maintaining normal weight to prevent nutritional problems

Conclusions

Peer educator training with nutritional education module developed in this study succeeded in increasing the knowledge of respondents about balanced nutrition in the good category, from 17.5% to 70%, increased by 52 , 5%, the knowledge of the respondents in the category quite decreased, from 45% to 25%, decreased by 20%. Knowledge of respondents in the category of less decreased as well, ie from 37.5% to 5%, decreased by 32.5%. Nutrition educators who have been trained are expected to transmit the knowledge they have to their peers. In addition, health promotion programs, especially balanced nutrition should be aggressively conducted in

schools, considering the school is a place to form healthy behaviors that are expected to continue to survive until adolescence into adulthood phase

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