THE CORRELATION OF NUTRITION KNOWLEDGE AND JUNK FOOD CONSUMPTION FREQUENCY TOWARDS BODY MASS INDEX

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Abstract

Nutrition knowledge is one of the factors that lead to a change in behavior toward a modern lifestyle in choosing food. Changes in behavior toward the modern direction make consumers choose foods that are easy to find and processing is relatively short, such as consuming junk food. Good nutrition knowledge is expected to affect the consumption of good food so that it can lead to good nutrition status as well. The purpose of this research is to know the correlation between nutrition knowledge and frequency of junk food consumption towards the nutritional status of Unpad Faculty of Law students. The data collecting by using a questionnaire that is adapted to the aims of research and refers to the framework of concepts and theories that have been made. Data analysis through 2 stages that is univariate and bivariate analysis. Univariate analysis to describe the characteristics of the respondent, knowledge, and consumption habits of junk food. Bivariate analysis was done to determine the correlation of knowledge and junk food consumption frequency towards nutritional status. The knowledge aspect of junk food is 94% with good category and 3% who understand the nutrition knowledge of junk food. Based on the frequency of junk food consumption, obtained 46% respondent that often consume junk food, 8% normal and 46% rare. There is no significant influence towards nutritional knowledge with the Body Mass Index. Meanwhile, other result shows that there is no significant influence between the frequencies of junk food consumption with the Body Mass Index.

Key words: *body mass index, junk food, knowledge, nutrition*

INTRODUCTION

Rapid progress in the era of globalization has led to an increase in the level and quality of life of people living in urban and rural areas, resulting in a change in behaviour towards a modern lifestyle, such as in food scope, among others, high calorie, high fat, high cholesterol, high salt, low fibre, smoking, drinking alcohol and so on [4]. The development of-of the knowledge of nutrition is one of the factors that lead to behavioral changes toward a modern lifestyle in choosing food. The high nutritional knowledge of a person determines the attitude and behavior of choosing food, which determines whether or not one can understand the nutritional benefits of the food consumed.

Nutrition knowledge affects attitude and behavior in choosing food. Good nutrition knowledge is expected to affect the consumption of good food so that it can lead to good nutrition status as well. Inadequate knowledge of nutrition and errors in choosing food will affect the nutritional status [11]. Changes in behavior toward the modern, making consumers choose foods that are easy to find and food processing is relatively short, such as junk food. Consuming junk food especially in urban areas is certainly not a strange thing anymore, especially seen from the activity of the urban community is solid course choosing junk food as one of the promising choices to fill the stomach.

About 84% of teenagers have lunch or dinner in restaurants and some of which are in restaurants are girls and teenagers prefer junk food including in Indonesia. This happens due to technological and socio-economic developments that result in changes in the consumption patterns of junk food. Basically, people know the side effects of consuming junk food in excess, it's just that they often ignore it and do not pay attention to the

content that is in it. Junk food contains lots of fat and high cholesterol. In addition, it contains chemicals such as preservatives and artificial sweeteners that cause the accumulation of foreign substances in the body. Junk food does not contain vitamins, minerals, and nutrients and has an addictive substance as a flavor enhancer that can make the eaters become addicted when eating it [3]. The higher the contribution of junk food so there are high risk towards nutritional status. Therefore, the correlation of knowledge and junk food consumption frequency towards the nutritional status which represented by the body mass index of the student are need to determined. Hopefully, the consumption of junk food and the disease risk can be minimize in the future. Data collection used in this study in the form of questionnaires given to respondents. Respondents in this study are The Law Faculty students of Universitas Padjajaran aged 20 to 23 years that located in the middle of the Bandung city. The environment around the campus certainly is a promising place for business in fulfilling daily life, such as the number of restaurants that are widespread in the environment. From snack foods to heavy meals and fast food are contained therein.

MATERIALS AND METHODS

The research has been done quantitatively, data obtained by using a cross-sectional design that is research is done where independent variable and dependent variable are taken at one time simultaneously [10]. Population in this research is a student of Faculty of Law Universitas Padjajaran Bandung. The research is done by a simple random sampling method through online questionnaire as many as 50 respondents.
The data collected by a questionnaire that is adapted to the aims of research and refers to the framework of concepts and theories that have been made. Closed questions given are concern weight, height, some questions about junk food knowledge, and the frequency of junk food consumption by respondents. Data were analyzed by univariate and bivariate

analysis. Univariate analysis is an analysis that is done to analyze each variable from the result of research. Univariate analysis to describe the characteristics of the respondent, knowledge, and the habits in consumption of junk food. Bivariate analysis also done to determine the relationship of knowledge and junk food consumption frequency towards the nutritional status.

RESULTS AND DISCUSSIONS

This study used the knowledge and frequency of junk food consumption as comparison towards body mass index of the Faculty of Law students. From 50 respondents it can be known gender as follows:

Table 1. Respondents' distribution by gender

Gender	Frequency(n)	Percentage (%)
Female	30	60
Male	20	40
Total	50	100

Source: Own results.

The table above shows that the number of male respondents is 20 respondents (40%) and female respondents amounted to 30 respondents (60%). This is because the survey is done randomly so there are no restrictions based on gender.

Distribution of Respondents by Size of Anthropometry
-*Weight.* Based on the survey results on body weight measurement obtained average respondents is 57.81 kg, with a minimum value of 42 kg and a maximum value of 89 kg.
-*Height.* Based on survey results on height measurement obtained the average height of respondents is 163.96 cm, with a minimum value of 146 cm and a maximum value of 178 cm.

Junk Food Knowledge
Knowledge of junk food is something that is known about junk food, whether it is about the definition of junk food itself or its relationship with individuals who consume such health effects or anything else. Knowledge of junk food includes knowledge

about the selection and consumption of junk food well and provides all the nutrients needed for normal body function.

Table 2. Respondents' distribution based on junk food knowledge

Knowledge	Frequency (n)	Percentage (%)
Good (4-6)	47	94
Enough (3-4)	3	6
Less (1-2)	0	0

Source: Own results.

Based on Table 2, it can be seen that most of the respondents have good knowledge about Junk food (94%), knowledge of Junk food is enough (6%), and knowledge of Junk food is less (0%). This shows that most students have a good knowledge of Junk food. Good knowledge of students about Junk food, which means they understand what they consume. This is related to the notion of Junk food itself, examples of Junk food, and also the negative impact of Junk food itself.

The frequency of Junk Food Consumption
The frequency of junk food consumption is how often more and more nutritional examples and consumed junk food during the last 1 month consumed by students.

Table 3. Respondents' distribution based on Junk food consumption

Consumption	Frequency (n)	Percentage (%)
Often	23	46
Normal	4	8
Rare	23	46
Total	50	100

Source: Own results.

Based on table 3, it is seen that all respondents who often consume junk food by 8%, while the normal junk food consumes by 46%, and rarely consume junk food by 46%. The categories of junk food frequencies we provide have the option of 0, 1-2 times/month, 3-4 times/month, and 2-7 times/week and have 6 types of junk food i.e. Kentucky fried chicken, burger, pizza, pasta, fries, and nuggets.
This happens because most of them live in very strategic urban areas with junk food sales centers and easily accessible. In addition, junk food is a food that is well known if the layers

of society, both urban or village society though. With tasty taste, tasty, cheap and practical causes most people, especially students of Law Faculty, Universitas Padjadjaran consume these foods to meet their basic needs of eating. While the remaining 46% (23) students answered rarely consume junk food, this is possible because they realize the dangers of junk food what if consumed continuously which can cause various diseases. Junk food contains addictive substances that can make the consumer can be addicted to what when it tasted. Therefore, a minority of the students never consume food that is rampant in circulation that is junk food.

Body Mass Index (BMI) Status
A person's Body Mass Index can be determined by comparing the results obtained from the examination with the existing standard values. In addition to the determination of nutritional status can also use the results of BMI calculations. BMI is one of the simplest anthropometric indices to monitor an adult body mass index over the age of 18, especially those associated with deficiency and overweight [12]. BMI is a measurement that compares weight with height. Although it is called an "index", the BMI is actually a ratio or ratio expressed as weight (in kilograms) divided by the square of the height (in meters) [9].

Table 4. Respondents' distribution based on Body Mass Index (BMI) Status

BMI Status	Frequency (n)	Percentage (%)
Skinny	7	14
Normal	37	74
Fat	4	8
Total	50	100

Source: Own results.

Based on Table 4, the results of the survey can be found out that the BMI status of the students of the Faculty of Law Unpad has various BMI status based on high relationship and weight. Where can be seen BMI status of skinny person counted 7 respondents (14%), normal person BMI status counted 37 respondents (74%), and status of fat BMI counted 4 respondents (8%). This indicates

that the students of Faculty of Law Unpad have an average of normal BMI status.

Knowledge and Frequency Relation with BMI

BMI is the state of the body which is the end result of the balance between the nutrients that enter the body and its use [6]. According to [2], BMI is a measure of a person's body condition that can be seen from the food consumed and the use of nutrients in the body. BMI is divided into three categories, namely the Body Mass Index is less, normal nutrition and more nutrition. Knowledge plays an important role in the formation of attitudes and actions. Knowledge of balanced nutrition is useful in determining what is consumed every day. Given the knowledge of balanced nutrition, the nutritional needs can be tailored to the needs that should, so as to achieve optimal health. The level of knowledge about a person's nutrients will affect his habits in choosing food.

The behavior of food consumption in adults needs to be considered. Because the food consumed will affect the Body Mass Index. Body Mass Index is formed from what foods are consumed. Deficiency and excess nutrients consumed will affect the metabolic processes in the body. If the intake of nutrients is consumed less then it will cause the body weakness due to lack of energy, decreased body resistance so easily sick and can experience less nutrition. Conversely, if the intake of nutrients consumed in excess will cause the build-up of energy that can trigger more nutrients.

Table 5. The correlation of knowledge towards BMI

Knowledge	BMI (%)			Total (%)
	Skinny	Normal	Fat	
Less	12.8	78.7	8.5	100
Enough	33.3	0	66.7	100
Good	14.0	74.0	12.0	100

Source: Own results.

Based on Table 5, it shows that of 47 respondents who have good nutrition knowledge has normal BMI of 35 respondents (74.0%), skinny BMI of 7 respondents (14.0%), and fat BMI of 5 respondents (12, 0%). The respondents who have enough nutritional knowledge have normal BMI of 0

respondents (0%), 1 person BMI skinny (33.3%), and fat BMI as much as 2 respondents (66.6%).

Table 6. Summary Output of correlation of junk food knowledge towards BMI

Regression Statistics	
Multiple R	0.328408
R Square	0.107852
Adjusted R Square	0.089265
Standard Error	0.565737
Observations	50

Source: Own results.

Based on the result of research, got the value of multiple R equal to 0.328 which mean level of correlation of linear relationship between knowledge of junk food to BMI equal to 32.8% and got value of r^2 equal to 0.108 which mean 10.8% Y value (junk food knowledge) influenced by X variable (BMI) or junk food knowledge relation factor to BMI is only 10.8%. This value is less than 1 so it can be concluded that is small influence between knowledge of nutrition with BMI respondent. Based on table 7, can be stated that knowledge junk food affects BMI.

Table 7. The knowledge correlation of junk food towards BMI

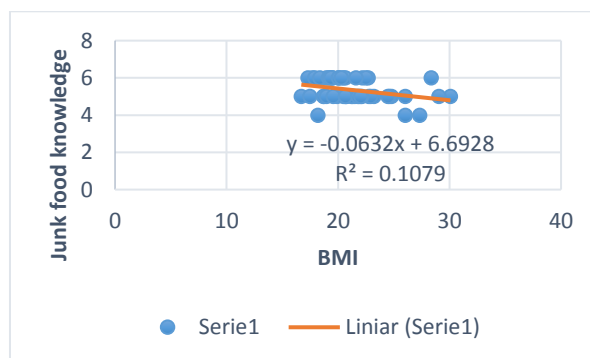|	df	SS	MS	F	**Sig. F**
Regression	1	1.857206	1.857206	5.802714	0.019888
Residual	48	15.36279	0,320058		
Total	49	17.22			

Source: Own results.

Fig 1. The knowledge correlation of junk food towards BMI
Source: Own results.

Based on the Fig.1, obtained regression equation y = -0.0632x + 6.6928 and seen that the distribution of respondents' knowledge of junk food to BMI is not linear. It is seen that the Body Mass Index is not only influenced by knowledge alone which is an indirect factor but also influenced by direct factors like infection and food consumption.

In general, a BMI assessment can be done directly and indirectly [1]. Assessment of Body Mass Index is directly divided into four methods, namely: anthropometry, biochemistry, biophysical and clinical. While indirectly divided into three methods, namely: food consumption survey, vital statistics and ecological factors.

Anthropometry is one way of direct assessment of Body Mass Index which is more often used because it is simple, practical and its implementation is relatively cheap and can be done on many people with a relatively short time. The use of anthropometry was conducted by the general public who received prior training [12].

Table 8. The correlation of consumption frequency towards BMI

Consumption	BMI (%)			Total (%)
	Skinny	Normal	Fat	
Rare	8.7	82.6	8.7	100
Normal	25.0	75.0	0	100
Often	8.7	78.3	13	100

Source: Own results.

Based on Table 8, it can be seen that from 23 respondents who frequently consume junk food has found 18 respondents (78.3%) have normal BMI, 2 respondents (8.7%) have skinny BMI, and fat BMI as many as 3 respondents (13%). There are 4 respondents whose frequency is normal in consuming junk food have normal BMI as much as 3 respondents (75.0%), BMI thin as much as 1 person (25.0%), and fat BMI 0 person. Of the 23 respondents whose frequency was rare in junk food consumption had normal BMI of 19 respondents (82.6%), fat BMI as many as 2 respondents (8.7%), and skinny BMI of 2 respondents (8.7%).

Based on the result of research, the value of multiple R equal to 0.068 which mean level of correlation of linear relationship between junk food knowledge towards BMI of 6.8% and the regression value of 0.0047 which mean 0.47% the frequency of junk food consumption (Y value) is determined by the value of the variable X (Body Mass Index). This value is less than 1 so it can be concluded that small influence between the frequency with BMI respondent.

Table 9. Summary Output of the junk food consumption correlation towards BMI

Regression Statistics	
Multiple R	0.068414
R Square	0.00468
Adjusted R Square	-0.01606
Standard Error	0.504464
Observations	50

Source: Own results.

Tabel 10. The junk food consumption correlation towards BMI

	df	SS	MS	F	Sig. F
Regression	1	0.057441	0.057441	0.225716	0.63687334
Residual	48	12.21522	0.254484		
Total	49	12.27266			

Source: Own results.

Based on Table 10, can be stated that the frequency of junk food consumption has no effect on BMI. The lack of correlation between the frequency of junk food consumption and BMI is due to many other factors affecting BMI such as infection, income, food availability, nutrition education, nutrition knowledge, social culture and physical activity.
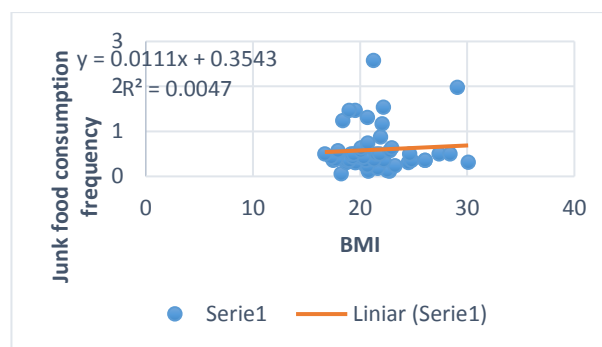

Fig. 2. Correlation of junk food consumption frequency towards BMI
Source: Own results.

Based on the graph above, obtained regression equation $y = 0.0111x + 0.3543$ and it appears that the distribution of respondents' knowledge of junk food to BMI is not linear. It is seen that BMI is not only influenced by knowledge alone which is an indirect factor but also influenced by direct factors like infection and food consumption.

Although the results of the frequency of consumption of junk food are not too big on BMI in students due to the wrong diet and also the influence of the surrounding environment, such as ease of access to buy junk food. In a study conducted by Darvishi et al in 2013, more nutritional percentages were found in adolescents who consumed junk food at least 6 times per day [7]. The high frequency of junk food consumption such as drinks and snacks (> 1x per day) can cause more nutrition. Opportunities for increased nutrition can reach up to 20.3% [13]. Another thing is also mentioned in research conducted by Bashkar in India in 2012, that in addition to junk food type of drinks and snacks, types of sweet foods such as cakes, biscuits, and syrups can also cause more nutrition. With a delicious taste, tasty, cheap and practical cause most people, especially students of Law Faculty, Universitas Padjadjaran consume these meals to meet the basic needs of eating. The tendency of students to eat junk food one of them because of the addictive substances contained in junk food can cause dependence. This addictive substance can cause over-eating and will increase the risk of more nutrients in children [5].

BMI in adults is influenced by many factors, one of which is the habit of consuming daily food. Eating habits are not influenced by the nutrients contained in food. But many factors that influence the formation of eating habits, one of which is the environment. Adults tend to pay less attention to food intake. Generally, adults prefer to consume fatty foods, energy savory and sweet. While fiber-rich foods such as vegetables and fruits are ignored. As a result, energy intake (calories) that enter into the excess body [8]. Yet at this age is recommended to consume foods high in fiber but low in fat, this is because growth and development are no longer happening and

should fulfillment of nutrients centered for health maintenance in order to form a good BMI.

To reduce the danger of junk food can be done the following steps:

(i)Get used to breakfast and eat at home, because the home food is healthier and more nutritious. So before leaving for school or sightseeing, especially to the mall, try breakfast. Guaranteed, full stomach pocket intake was reduced.

(ii)If unable to stem the desire to eat junk food, buy the smallest portion. For example, in a frugal package, there are two pieces of chicken, better divided into two with friends. When buying ice cream, sodas or other menus, choose a small or regular size. Do not be tempted by additional toppings or spices. Because it can increase the content of calories in food.

(iii)For those who find it difficult to escape from junk food, drink water as much as possible. Although according to the recommendation is 8 glasses per day, drink more the better. Because water helps the disposal of all toxins in the body. Includes substances contained in junk food. Do not forget also to exercise regularly. At least three times a week, half to one hour a day. With exercise, the calories in the body will burn. The type of exercise that is done does not have to be heavy. Walk half an hour, better than hanging out in front of the tv.

Also, take advantage of junk food by eating vegetables and fruits. These two foods are high in fiber. Choose fruit that is easy to carry such as apples, pears, tomatoes, bananas, oranges, grapes, or strawberries. As soon as the hunger strikes, the fruit is full. This way will gradually become a positive habit. If it is already entrenched, junk food intake is reduced by itself. After successfully reducing junk food, increase the consumption of fiber contained in vegetables, fruits, and grains.

CONCLUSIONS

Of the 50 respondents consisting of 30 women and 20 men who came from students and students Faculty of Law, Universitas

Padjadjaran. Respondents had an average body weight of 57.81 kg, while the mean height was 163.96 cm. There are 94% of respondents that have good category know general definition of junk food and 6% are quite understand about the knowledge of junk food.

Based on junk food consumption frequency there are 46% who often consume junk food, normal 8% and 46% rarely eat junk food. Many who eat junk food because it is available in their location and rarely consume because the respondents have good junk food knowledge

BMI of 50 respondents is 74% normal, 8% fat and 14% thin. There are no significance influence on nutritional knowledge towards Body Mass Index of respondents because the results of the regression value are only 0.1. Meanwhile, the value of regression of frequency relationship with Body Mass Index of 0.06 where this value is very less than the number 1 so it can be concluded that not too big influence the relationship between the frequency with the Body Mass Index of respondents. Not influential junk food is caused because in analyzing the BMI must be taken into account all aspects of both the activity, the food consumed every day, the speed of metabolism and genetics in order to get a valid conclusion.

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