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Student's knowledge, attitude, subjective norms, and perception towards obesity prevention behavior

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Abstract

Purpose: Obesity is an excessive accumulation of fat due to an imbalance of nutrient intake with energy used over a long time. One of the factors that can increase the incidence of obesity is a lack of knowledge about obesity prevention. Knowledge about health affects attitudes as a long-term result of exposure to information. The generated attitude can be a positive or negative response to general objects. Behavior is formed because it arises from intentions that were previously influenced by attitudes, subjective norms, and perceptions. This study aims to determine the relationship between knowledge, attitudes, subjective norms, and perceptions of obesity prevention behavior among students in the Special Region of Yogyakarta. **Methods:** This research was conducted using an observational descriptive cross-sectional design among students in the Special Region of Yogyakarta. The study sample size was 384 respondents. Independent variables are knowledge, attitudes, subjective norms, and perceptions of obesity prevention. The dependent variable is the behavior of obesity prevention. All variables were measured using researchers' questionnaires. Bivariate analysis used chi-square and Mann-Whitney tests. Multivariate analysis used logistic regression. **Results:** Bivariate analysis of knowledge and behavior showed no relationship ($p>0.05$), but analysis result of attitudes, subjective norms, and perceptions with behavior of obesity prevention showed a significant relationship ($p<0.05$). The coefficient of determination in multivariate analysis was 0.086, indicating all variables studied in influence analysis 8.6% behavior of obesity prevention. **Conclusions:** There is no relationship between knowledge and behavior of obesity, but there is a significant relationship between attitude, subjective norm, and perception of behavior of obesity prevention among students in the Special Region of Yogyakarta.

Keywords: attitudes; behavior; obesity prevention; perceptions; subjective norms

INTRODUCTION

Health problems in Indonesia today are increasingly diverse. One of the existing health problems is the problem of nutrition. Nutritional issues are now becoming a double dietary problem, which means that the problem of malnutrition has not been fully resolved, while the problem of excess nutrition has emerged. The problem of excess nutrition can trigger obesity that occurs in adulthood, even at an early age [1]. Obesity is the accumulation of excessive fat due to an imbalance between nutrient intake (*energy intake*) and energy use (*energy expenditure*) over a long period [2].

Adolescents, including the late adolescent age group, are among the target groups at risk of experiencing overnutrition. This group consists of 18-—to 21-year-olds who are generally already at the higher education level and have student status. Overnutrition in adolescents is characterized by relatively excessive body weight compared to the age or height of adolescents of the same age, which results from excessive fat accumulation in the body's fat tissue [3].

Another factor that can increase the incidence of obesity is the lack of knowledge about obesity prevention. Knowledge results from human knowledge of something or all human actions to understand the objects they face [4]. Health knowledge will affect attitudes as a long-term result of exposure to information. The attitudes that arise can be positive or negative reactions or responses to objects that will be evaluated in general [5]. Attitude is an evaluation of positive or negative feelings from someone if they have to do the behavior that will be determined. Behavior formed in someone is due to the emergence of intentions previously formed because of attitudes, subjective norms, and perceptions of the ability to control behavior [6].

The proportion of obesity in the age group > 18 years in Indonesia has increased in the Basic Health Research data starting from 2007, which was 10.5%; in 2013, it was 14.8%, and in 2018, it was 21.8%. The data uses the body mass index (BMI) indicator ≥27 kg/m. The Special Region of Yogyakarta Province is one of the provinces with a percentage almost close to the national figure, which is 21.4%, but has increased compared to 2013, which was 15.8% [7].

Adolescent obesity tends to continue into adulthood. Obesity is one of the factors causing degenerative diseases, such as cardiovascular disease, type 2 diabetes mellitus, arthritis, gallbladder disease, respiratory disorders, and skin disorders [8]. Based on this, a study was conducted on the relationship between knowledge, attitudes, subjective norms, and perceptions of obesity prevention behavior in students in the Special Region of Yogyakarta Province.

METHODS

This descriptive observational study, with a cross-sectional design, was conducted from August to December 2020 in the Special Region of Yogyakarta Province. The sample was determined by purposive sampling, considering the inclusion criteria of students aged 18-21 and students studying in the Special Region of Yogyakarta Province and the exclusion criteria of students with inactive status. Based on calculations with an infinite population, 384 respondents were obtained.

Univariate analysis was conducted to describe the characteristics of respondents descriptively. Bivariate analysis was performed using the chi-square correlation test to see the relationship between each independent variable and the dependent variable and the chi-square and Mann-Whitney correlation tests to see the relationship between the confounder variables and the dependent variable. Multivariate analysis was conducted using the logistic regression test to see the magnitude of the influence of the independent and confounder variables on the dependent variable.

RESULTS

In the univariate analysis, the respondents' characteristic data showed that most of the respondents were 20 years old, totaling 139 (36.20%). Three-quarters of respondents had no family history of obesity, totaling 319 (83.07%). Two-thirds of respondents were not undergoing a weight loss diet, totaling 269 (70.05%). Most had monthly pocket money ranging from Rp 500,000 to Rp 1,000,000, totaling 133 (36.64%).

The frequency distribution of independent variables in this study showed that most of the knowledge levels were in the high category with 277 respondents (72.14%), positive attitudes with 193 respondents (50.26%), positive subjective norms with 196 respondents (51.04%) and positive perceptions with 210 respondents (54.69%). The frequency distribution of dependent variables in this study showed that more than half of the respondents, 232 respondents (60.42%), had active behavior toward obesity prevention. Bivariate analysis was conducted using the chi-square correlation test to see the relationship between each independent and dependent variable.

Table 1. Results of correlation analysis of independent and dependent variables

Variables	Behavior		*p-value*
	Active n (%)	Passive n (%)	
Knowledge			
Tall	172 (62.09)	105 (37.91)	0.279
Low	60 (56.07)	47 (43.93)	
Attitude			
Positive	105 (54.40)	88 (45.60)	0.015*
Negative	127 (66.49)	64 (33.51)	
Subjective norms			
Positive	133 (67.86)	63 (32.14)	0.002*
Negative	99 (52.66)	89 (47.34)	
Perception			
Positive	148 (70.48)	62 (29.52)	0,000*
Negative	84 (48.28)	90 (51.72)	

OR: *odds ratio;* CI95%: 95% *confidence interval*;
p-value : significance value (*significant p<0.05)

In Table 1, respondents with high knowledge mostly have active behavior with 172 respondents (62.09%), positive attitudes with active behavior amounted to 105 respondents (54.40%), positive subjective norms with active behavior amounted to 133 respondents (67.86%), and positive perceptions with active behavior amounted to 148 respondents (70.48%). The analysis of knowledge and obesity prevention behavior showed no relationship between knowledge and behavior (*p*>0.05).

Table 2. Results of correlation analysis of co-founder variables with dependent variables

Variables	Behavior		*p-value*
	Active n (%)	Passive n (%)	
Age			
18 years	24 (48.00)	26 (52.00)	0.323[b]
19 years old	65 (61.90)	40 (38.10)	
20 years	89 (64.03)	50 (35.97)	
21 years	54 (60.00)	36 (40.00)	
Family history of obesity			
There is	25 (38.46)	40 (61.54)	0.839[a]
There isn't any	127 (39.81)	192 (60.54)	
Weight loss diet program			
Yes	72 (37.39)	43 (62.61)	0.565[a]
No	160 (59.48)	109 (40.52)	
Monthly pocket money			
<Rp 500,000	64 (68.82)	29 (31.18)	0.002[b]*
Rp. 500,000 – Rp. 1,000,000	85 (63.91)	48 (63.91)	
Rp. 1,000,000 – Rp. 1,500,000	47 (59.49)	32 (40.51)	
>Rp 1,500,000	36 (45.57)	43 (54.43)	

p-value: significance value; [a]*Chi-Square* test;
[b] *Mann-Whitney* test (*significant p<0.05)

Table 3. Results of multivariate analysis on obesity prevention behavior variables

Variables	OR	CI 95%	*p-value*	R^2
Attitude	0.60	0.39-0.93	0.023*	0.086
Subjective norms	1.93	1.24-2.99	0.003*	
Perception	2.74	1.76-4.24	0.000*	
Monthly pocket money	0.74	0.60-0.91	0.004*	

OR: *odds ratio* ; CI 95%: *confidence interval* 95%;
p-value: significance value; R2: coefficient of determination;
*significant p<0.05

Analysis of other dependent variables (attitudes, subjective norms, and perceptions) with obesity prevention behavior in students in the Special Region of Yogyakarta Province showed that there was a significant relationship (*p*>0.05). The Mann-Whitney test analysis showed no significant relationship between age and obesity prevention behavior.

Table 2 show no relationship between each of these *confounders* and obesity prevention behavior. This results of the study of family obesity history on obesity prevention behavior and weight loss diet programs on obesity prevention behavior were based on the Chi-square test. Analysis of the relationship between the monthly pocket money variable and obesity prevention behavior using the *Mann-Whitney test* obtained a result of *p*<0.05, meaning that there is a significant relationship between monthly pocket money and obesity prevention behavior in students.

Table 3 shows a relationship between attitude, subjective norms, perceptions, and pocket money per month on obesity prevention behavior in students, each of which has *a p-value* <0.05. The influence of attitude, subjective norms, perceptions, and pocket money per month on obesity prevention behavior in students' months towards obesity prevention behavior in this study was 8.6%. In comparison, other factors could influence 91.4%.

DISCUSSION

The results of the correlation analysis between knowledge and obesity prevention behavior in Table 4.3 show the results of statistical tests with *a p-value* > 0.05, meaning that there is no relationship between knowledge and obesity prevention behavior in students. This is in line with other studies that state that there is n between knowledge and behavior. The study links the results obtained with social cognitive theory, which states that behavior is not only influenced by personal factors in a person, such as motivation, goals, and desires but can also be influenced by their environment [9]. Knowledge is not

a central component in controlling the formation of a person's behavior [10].

The analysis chi-square correlation test showed a relationship between attitudes and obesity prevention behavior in students (p <0.05). The results of other studies that are in line state that there is a significant relationship between attitudes and behavior. This occurs because of the influence of the cognitive domain on the formation of behavior based on a positive attitude towards a behavior [11]. Other studies also show that the strong relationship between attitudes and behavior explains a strong relationship between attitudes and behavior. Student behaviors can mediate the relationship between knowledge and student behavior, but is very weak [10].

The chi-square correlation test showed a relationship between subjective norms and obesity prevention behavior (p <0.05). A person's subjective norm is interpreted as support from outside the person's personal, which leads to the closest circle that can influence the occurrence of a behavior. The results of other studies are in line with this study on HIV/AIDS prevention, which explains that peer support influences prevention behavior. The influence of peer support can occur directly and indirectly on behavior. The test results on the parameter coefficient in the study showed a direct influence of 17.1% and an indirect influence of peer support through knowledge of 14.46%. The study also showed a positive influence of peer support, so if it is good, it will influence prevention behavior [12].

The chi-square correlation test showed a difference between perception and obesity prevention behavior in students (p <0.05). The perception referred to in this study is the perception of the ability to control behavior. It is interpreted as perceiving how easy or difficult it is to realize a specific behavior (belief) according to what is desired [6]. The results of other studies that are in line with this study showed a *p-value* <0.01, which means that there is a significant relationship between the perception of the ability to control behavior and obesity risk reduction behavior [13], a different result from this study which showed that there was no relationship between perceptions in the ability to control behavior and healthy eating behavior as a way to prevent obesity [14].

Analysis of the relationship between the monthly pocket money variable and obesity prevention behavior using the *Mann-Whitney test* obtained a result of p<0.05, meaning that there is a significant relationship between monthly pocket money and obesity prevention behavior in students. In line with other studies that explain that pocket money is one of the risk factors influencing the risk of forming behavior, it is stated that one with pocket money in the high category can increase the risk of obesity 2 times. Pocket money in the high category tends to be able to choose food more freely [15]. Adolescents will consume more snacks and heavy foods outside the home irregularly if they have more pocket money [16].

The results of this study's multivariate analysis align with other studies that show that attitudes, subjective norms, and perceptions significantly influence and relate to pocket money. Pocket money predicts obesity and is related to eating behavior [17,18]. Increasing pocket money can increase the risk of poor nutritional status, such as fast food *consumption* [19].

CONCLUSION

The findings indicate that students in the Special Region of Yogyakarta Province exhibit a high level of knowledge regarding obesity prevention, with 72.14% (277 respondents) demonstrating positive knowledge. Additionally, 50.26% (193 respondents) displayed a positive attitude, 51.04% (196 respondents) showed positive subjective norms, and 54.69% (210 respondents) had positive perceptions related to obesity prevention. Notably, 60.42% (232 respondents) actively engaged in behaviors to prevent obesity, underscoring an overall encouraging trend toward proactive measures against obesity among students in the region.

Despite the high level of knowledge, no significant relationship was found between knowledge and obesity prevention behavior, suggesting that knowledge alone may not translate into action. However, attitudes, subjective norms, and perceptions were significantly related to obesity prevention behavior, highlighting their importance in shaping students' actions. Furthermore, the study revealed that these factors and monthly pocket money collectively influence obesity prevention behavior. These findings emphasize the need for comprehensive strategies that address knowledge, social, attitude, and practical resources to promote obesity prevention among students effectively.

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