Between Risk Knowledge, Self-Efficacy, Environmental Observation and Outcome Expectations with Behavior among Overweight and Obese Adolescents

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Abstract: *Obesity is a global health problem which tends to keep increasing from year to year in various age groups, including children and adolescents. Social cognitive theory from Bandura's, behavioral, cognitive and personal factors, and the influence of environment influence each other. The purpose of this research is to find the correlation of risk knowledge, self-efficacy, environment observations and outcome expectations with behavior to reduce weight among overweight and obese adolescents. The design of this research was analytic observation. The subjects were 90 overweight and obese adolescents who had filled out the questionnaires to assess their risk knowledge, self-efficacy, environmental observations, outcome expectations and behavior to reduce weight. The sampling technique used quota sampling.   The results shows that there is a positive correlation and statistically significant among behavior to reduce weight in a row with self-efficacy $\beta= 0.14$; CI 95%= 0.04$-$0.24; p= 0.006), environmental observation ($\beta= 0.11$; CI 95%= 0.00 $-$ 0.23; p= 0.047) , and outcome expectation ($\beta= 0.11$; CI 95%= 0.00 $-$ 0.22; p= 0.041) , but no correlation was found in the knowledge of obesity risk ($\beta= -0.14$; CI 95%= -0.44$-$0.15; p= 0.342). Multiple linear regression analysis indicated that the self-efficacy gave the most significant influence than others.The study concluded that risk knowledge, self-efficacy, environmental observation and outcome expectation variables altogether can influence the behavior of weight loss by 38% (adjusted R 2 = 38.06).*

Keywords: risk knowledge, self-efficacy, environmental observation, outcome expectations, behavior

1. Introduction

Obesity is a global public health problem that is increasing rapidly. Obesity not only happens on middle to high class, but also on the middle to low level class. (Bredbenner UR et.al., 2012; Kemenkes RI, 2013; Cussler UR et.al., 2012; Morgan and Scott, 2014; Toruan, 2007). The obesity numbers are likely to continue to rise at various age groups from year to year, including those on the age of children and adolescents. Obesity in children and adolescents appears to be an alarming increase in recent decades (Scerri and Ventura, 2010).

Obesity causes increasing health risks significantly, where obesity in children and adolescents raises the risk factors for cardiovascular disease and metabolic syndrome which tend to increase in adults (Kim, 2011). This means that obesity which is not being controlled or reduced can continue on as adults by bringing the various risks of diseases caused by obesity.

In 2013, there were 2.1 billion people with obesity in the world and Indonesia included in the top 10 with a total of 40 million people or equivalent with the entire population of West Java. Data from the American Heart Association (AHA) in 2011, there are 12 million children aged 2-19 years (16.3%) and 72 million adults (32.9%) citizens of the United States in obese condition (Nussy URet.al., 2014). In Indonesia, the results of Basic Health Research in 2013 indicated that the prevalence of overweight adolescent aged 16 – 18 years was 7.3% that consists of 5.7% overweight and 1.6% of them were obese. The prevalence trend of overweight is increasing from 1.4% (in 2010) to 7.3% (2013).

A behavior in social learning theory of Bandura, 1989, stressed that the existence of a correlation of mutual causes between three factors i.e. behavior factor, cognitive and personal factors, and the influence of environmental factors.
The cognitive factors include knowledge and self efficacy. Self efficacy predictors are very important and the closest factor to behavior. According to Bandura (1997), self-efficacy is the belief of a person that he can run the task on a certain level, which affects the level of achievement of the task. He also mentioned that a special behavior is self efficacy and trust that owned by a person to display such behavior. Ochsner, 2013 also states that the major factor to initiate and maintain diet behavior is self efficacy (Annesi and Marti, 2011; Chen and Wilkosz, 2014; Ghufron, 2010). Baron and Byrne (2004) state that the efficacy of self is an individual assessment against the abilities and competencies
The environment is an important part in social cognitive theory because it provides models for behavior. A person can learn from others not only from receiving reinforcement from them but also from their observations. Based on the theory of Bandura, knowledge can be gained from the process of observation. When someone observing the events that exist in their environment and the actions or behaviour of people at these events, the person will have knowledge about everything that is happening in the environment, including behavior that he believes could be useful for a particular situation and the result of behavior. People, who do not have enough knowledge about particular behaviours or certain events, will not be able to deal with the special occurrences in their environment (Sarintohe and Prawitasari, 2006).

Outcomes expectation is the expectation at some specific results that follow behavior (Williams, 2010). Hope has a value that ranges from zero which indicates there is no possibility that an outcome will appear after a certain action or behavior, until the number of positive one indicating the certainty that a particular outcome will follow an action or behavior (Hasibuan, 2009). Researchers assume that someone who has expectations of positive results will strive to achieve them. In this case it is the attempt to realize the weight loss due to expectations of positive results i.e. if the weight drops to normal then the risk of disease due to obesity can be avoided.

This research was conducted on senior high school students who are overweight and obese due to the national objective to reduce young generation's weight to create healthy generation.

Based on the explanation above, that if obesity in adolescence is not controlled by doing exercise or weight loss than the condition can continue as they become adults and causing a wide range of risk disease, then it is presumably important to do research on "the relationship of risk knowledge, self-efficacy, environmental observations and outcome expectations with behavior to reduce weight at overweight and obese adolescent."

2. Research Method

The total of research subjects were 90 adolescents with a complete demographic data is summarized in table 1. Research subjects on the basis of gender is relatively balanced and woman has higher number (52.4%), most of them were 16 year old (63,4%), the majority were on overweight category (71.1%), most of them never managed to lose weight (68.9%), most of them never see people succeed in losing weight (90%), most of them wanted to lose weight (78.9%) and mostly never advised themselves to lose weight (91.1%).

This research was carried out in State senior high school 1, 2, 3, 4 and 5 Klojen sub district of Malang on the students of X and XI grades who are overweight and obese. This research was an observational analytic research with cross sectional approach.

The population was the students of X and XI grades from SMA Negeri 1, 2, 3, 4 and 5 Klojen Malang who are overweight and obese. The number of samples in this research was 90 students from the five schools taken proportionally.

3. Result

The total of research subjects were 90 adolescents with a complete demographic data is summarized in table 1. Research subjects on the basis of gender is relatively balanced and woman has higher number (52.4%), most of them were 16 year old (63,4%), the majority were on overweight category (71.1%), most of them never managed to lose weight (68.9%), most of them never see people

succeed in losing weight (90%), most of them wanted to lose weight (78.9%) and mostly never advised themselves to lose weight (91.1%).

The average score of risk knowledge, self efficacy, environmental observations, oucome expectations and behaviour to reduce weight sequentially were (mean + SD) is (25.18 + 2.82), (65.29 + 10.48), (51.27 + 10.86), (44.74 + 9.62) and (31.94 + 5.02).

Table 1: Specific characteristics of the subjects of the research with continuum data scale (n = 90)

Variable	Mean	SD	Min	Max
Age	16.12	0.65	14	18
Weight	73.26	13.34	57	111
BMT	28.30	3.86	25.0	45.2
Risk knowledge	25.18	2.82	18	31
Self efficacy	65.29	10.48	40.7	94.9
environmental observation	51.27	10.86	28.9	77.9
Outcome expectation	44.74	9.62	27	64
Behavior to reduce weight	31.94	5.02	22	46

Table 2: Specific characteristics of the subjects of the research with continuum data scale (n = 90)

Variable	Mean	SD	Min	Max
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Self efficacy	65.29	10.48	40.7	94.9
environmental observation	51.27	10.86	28.9	77.9
Outcome expectation	44.74	9.62	27	64
Behavior to reduce weight	31.94	5.02	22	46

Multiple linear regression analysis results indicate that there is a positive and significant statistically correlation between behavior to reduce weight sequentially with self efficacy (β= 0.14; CI 95%= 0.04–0.24; p= 0.006), environmental observation (β= 0.11; CI 95%= 0.00–0.23; p= 0.047), and outcome expectation (β= 0.11; CI 95%= 0.00 − 0.22; p= 0.041). It can be concluded that there was no statistically significant correlation between behavior for weight loss and risk knowledge about obesity (β= -0.14; CI 95%= -0.44–0.15; p= 0.342). Adjusted $R2$ = 38.06% meaning all independent variables in a linear regression model is able to explain or predict the behavior of losing weight with a score of 38.06%. The value of p<0.001 for the overall model meaning that the overall correlation of all independent variables with behavior to lose weight was statistically significant.

4. Discussion

Total subjects in this research was 90 teenagers whose weight exceeding the normal category. The results showed that 71.1% of them were overweight and 28.9% were obese (obesity 1, obesity 2 and extreme obesity). The comparison was 2.5:1.

This figure shows that most of the teenagers already exceeded normal weight many are already fall into obesity category, compared with the results of Riskesdas in 2013,

that was still in 3.5:1 scale, 5.7% were overweight and 1.6% were obese. Obong et.al did research (2012) about the prevalence of overweight and obese school age children and adolescents in southern Nigeria and found out that the comparison was 11.4%: 2.8% (or 4.1:1). Increasing numbers of obesity is certainly raising fears about teenage health conditions in the future or when they are adult.

This research was conducted to find out the correlation among risk knowledge, self efficacy, environment observation, and self expectation with behavior to reduce weight on overweight and obese adolescents.

The results of the study did not find a positive correlation between risk knowledge and behavior to lose weight ($\beta = -0.14$; CI 95%= -0.44–0.15; p= 0.342). One of the general principles of the theory of Bandura (Bandura, 1989), states that learning can occur without a change in behavior. Behaviorists also state that learning can happen without any permanent change in behavior. But in social learning theory it is said that people can learn through observation, studying them is not necessarily shown in their behavior. Study may lead to changes in behavior or perhaps not at all.

Researchers argue that the knowledge of adolescents about the risks of obesity is not necessarily generating a consequent behavior. The higher the knowledge doesn't necessarily means that their behavior to lose weight is getting better, and vice versa
Theory of learning by Bandura (1989), emphasizing the reciprocal determinism, i.e., behavioral, environmental and personal factors influence each other. Reciprocal correlation means the causes between three factors, namely the behavior (Behavior), personal factors (Person), and the influence of the environment (Environment).
There are probably several factors more powerful in influencing others compared to other factors. In this research, knowledge as part of the personal factor is less powerful in influencing the behaviour (p = 0.626).

Self-efficacy as part of personal factors have a statistically significant correlation with weight loss behavior ($\beta = 0.14$; CI 95% = 0.04 − 0.24; p = 0.006). Research results by Dona et. Al. (2009) showed that self efficacy affects intention and the intention influencing the behavior of the diet. Ochsner, 2013 also states that the major factor to initiate and maintain diet behavior is self-efficacy. The research of Palmeira et. Al. (2007) showed that mothers who participate in weight control experience weight loss and had a significant a decrease in four months. The regression results show that self efficacy, the importance of exercise, and intrinsic motivation affects weight loss.

Researchers argue, teens with high self-efficacy further directs him in feeling, thinking, and motivate themselves to behave in losing weight. The results showed 42.8% of subjects had ever managed to lose weight and 91.1% never advised itself to do the weight loss. Adolescents who have ever managed to lose weight will be likely to repeat that success in the future. Teenagers who once advised themselves will try the perceived behaviour that they think is

capable to be done, that is to lose weight. The feeling of being able to do something increases self efficacy.

This is in accordance with the theory of Bandura (1999) which mentions that the factors which affect the process of the formation of one's self-efficacy among others are: experiences of success, indirect experiences, verbal persuasion and physiological circumstances.

Multiple regression analysis of the results shows that the variable efficacy of oneself has the most powerful influence than other variables which affect the behavior of teens to lose weight (p = 0.012). In accordance with the social cognitive theory from Bandura (1997), it says that self efficacy is a very important predictor and the nearest from behavior.

There is a positive and it is statistically significant between observations of the environment with the behavior to lose weight (β= 0.11; CI 95%= 0.00 − 0.23; p= 0.047), meaning if a teen has an increasingly good environment observations, then the behavior of adolescents in losing weight is getting better too. The results showed the minimum environmental observations score is 70 and up to 118 while the mean+SD was 92.48+10.67. Dalyono (2007), argues that through learning by observation of others can develop emotional reactions against situations that they themselves have never experienced it. Hamza (2008), states that the child's cognitive development depends on how far they actively manipulating and interacting with their environment.

Environmental observations led to the modelling aspect. Through this aspect, the research subject can see the response of others without taking part to learn to do it. The subject of research also can show response to want to imitate positive things or avoid negative things that happen to other people. According to Bandura (1999), when a person observing the events that exist in their environment and the actions or behaviour of people at these events, the person will have knowledge about everything that is happening in the environment, including behavior that he believes could be useful for a specific situation as they observe.

The study also found a significant and positive correlation between the expectations of the results with behavior of weight losing ($\beta = 0.11$; CI 95% = 0.00 − 0.22; p = 0.041). Bradley studies (1980), suggesting that expectations of a result significantly associated with weight loss (r = 0.67, p < 0.01). Gao research et.al. (2008) about the efficacy and results expectations at the beginning of class of physical exercise is linked with the intention and actual behavior of students pointed out that expectations of results have a positive correlation towards the intention and actual behavior of students in physical training classes. Researchers believe that expectations of the results can estimate oneself toward the degree of their capability of what they can do to lose weight and it makes possible to predict the real results.

5. Conclusions and Suggestions

The results of the analysis showed that there was a positive and statistically significant correlation among behavior of

weight loss with self-efficacy, environmental observations and expectations of results. In teenagers with excessive weight or obesity there was no statistically significant correlation between weight loss behavior and knowledge of the risks of obesity.

Significant and positive statistic results are obtained among weight loss behavior with self-efficacy (β= 0.14; CI 95%= 0.04–0.24; p= 0.006), environmental observation (β= 0.11; CI 95%= 0.00 − 0.23; p= 0.047), and expectations of results (β= 0.11; CI 95%= 0.00 − 0.22; p= 0.041). There was no significant correlation between weight loss behavior and risk knowledge about obesity (β= -0.14; CI 95%= -0.44− 0.15; p= 0.342).

All independent variables are able to explain or predict behavior to lose weight as much as 38% (Adjusted R2=38, 06%).

References

[1] Bandura. A. 1989. Social Cognitive Theory. Greenwich: JAI Press.

[2] _____, 1997. "Exercise of Personal and Collective Efficacy in Changing Societies", in Bandura, A. (Ed.),Self Efficacy in Changing Societies, Cambridge University Press, Cambridge, hal 1-45.

[3] _____. 1999. Social Cognitive Theory: An Agentic Perspective. Asian Journal of Social Psychology. 2 : 21-41

[4] Baron, R.A. & Byrne, D. 2004. Psikologi Sosial. Edisi Terjemahan. Jakarta : Salemba Empat

[5] Chen, J.-lin, & Wilkosz, M. E. 2014. Efficacy of technology-based interventions for obesity prevention in adolescents : a systematic review. Health Care, 159-171.

[6] Dalyono. 2007. Psikologi Pendidikan. Jakarta: PT Rineka Cipta.

[7] Dona, BG., Lippke, S., Renner, B., Kwon, S., Schwarzer, R. 2009. Self Efficacy and Planning Predict Dietary Behaviors in Costa Rican and South Korean Women :Two Moderated Mediation Analyses. Applied Psychology : Health and Well Being. Vol 1 No. 1, pp : 91-104.

[8] Gao, Z., Xiang, P., Lee, AM., dan Harrison L. 2008. **Self-efficacy** and **outcome expectancy** in beginning weight training class: their relations to students' behavioral intention and actual behavior. Journal of Research Quarterly for Exercise and Sport. Mar 2008; vol. 79, No.1; pp. 92-100. USA: American Alliance For Health, Physical Education, Recreation, And Dance.

[9] Ghufron, M. N. dan Risnawati, Rini. 2010. Teori-teori Psikologi (pp. 73-81). Yogyakarta: Ar-Ruzz Media.

[10] Hasibuan, S.P.M. 2009. Manajemen Sumber Daya Manusia. Jakarta : Bumi Aksara.

[11] Kemenkes RI., Balitbangkes.2013. Riset Kesehatan Dasar Tahun 2013. Jakarta: Balitbangkes Kemenkes RI.

[12] Morgan, P. J., Philip morgan newcastle edu.au, E., & Hayley scott newcastle.edu.au, E. 2014. Associations between program outcomes and adherence to social cognitive theory tasks : process evaluation of the SHED-IT community weight loss trial for men. Clinical Trials.

[13] Nussy, CY., Ratag, GA., Mayulu, N., 2014. Analisis Upaya-Upaya Penurunan Berat Badan Pada Mahasiswi Angkatan 2010 Fakultas Kedokteran Universitas Sam Ratulangi Manado. Jurnal Kedokteran Komunitas dan Tropik. Vol 2 No. 2. pp : 81-84

[14] Obong, H., Ibeanu, V., Onuha, N., dan Ejekwu, A. 2012. Prevalence of overweight, obesity, and thinness among urban school-aged children and adolescents in southern Nigeria. Food and Nutrition Bulletin. Vol. 33, No. 4. The United Nation University.

[15] Palmeira, A., Teizeira, P., Branco, T. 2007. Predicting short-term weight loss using four leading health behavior change theories.International Journal of Behavioral Nutrition and Physical Activity 4:14, pp 1-12.

[16] Sarintohe, E dan Prawitasari, JE. 2006. Teori Sosial-Kognitif Dalam Menjelaskan Prilaku Makan Sehat Pada Anak Yang Mengalami Obesitas. Sosiosains, Vol 19 (3) pp : 345-355.

[17] Toruan, P. 2007. Fat-Loss Not Weight-Loss: Gemuk tapi ramping. Jakarta: TransMedia.

[18] Williams, D.M., 2010. Outcome Expectancy and Self-Efficacy: Theoretical Implications of an Unresolved Contradiction. Personality and Social Psychology Review. 14 (4), pp : 417 –425