

# Effects of Self-Control Program Based on Future Orientation of Grade 9 Overweight School Girls of a Private School

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## Abstract

This quasi-experimental research is aimed at studying the effect of a self-control program based on future orientation on grade 9 overweight school girls. Subjects were 32 overweight school girls. They were randomly put equally into an experimental group and a control group. The experimental group participated in a twelve-session program based on the Transtheoretical Model (TTM) of stages of change designed by the experimenter aimed to convince the subjects to be concerned about their future physical and mental health and to keep their weight (WT) and body mass index (BMI) in a normal range by choosing food consumption and doing exercise. Each session lasted for a 50-60 minute period. The control group participated in other activities not related to those performed by the experimental group. Paired sample T- Test was used to compare within the group and between groups. After the experiment, the experimental group lost their weight and body mass index while the control group had weight gain and higher BMI. When compared the mean differences of body weight within the groups between before and after the program, the mean difference of the experimental group was higher than the control group at  $p \leq .05$  level ( $t=2.368$ ,  $df = 15$ ,  $sig = .032$ ) which meant that subjects in the experimental group lost their weight more than the control group. The mean difference of BMI was also significant at  $p < .05$  level ( $t=2.659$ ,

$df = 15$ ,  $sig = .018$ ). Future orientation of the physical and mental health can encourage overweight school girl subjects to control their behavior on eating and exercising. Further findings were discussed.

**Keyword:** Body mass index , Future orientation, Self - control, Overweight

## Introduction

Lifestyle in Thailand has changed rapidly according to economic growth in Bangkok metropolitan areas, nearby provinces and big cities. Everything is now in a rush which has a lot of effects on daily life activities. One major problem which has been increasing is the overweight populations (Saiwongse, 2013; Department of health, 2015). Thongtaeng & seesawang (2012) did a study on the effects of being overweight on physical and mental health of Thai Children supported by the Ministry of Public Health and found that being overweight had some bad effects on physical and psychological health of children. It is a major cause of obesity and diabetes in children, and mental health problems such as feeling of stressed, inferior, insecure, being rejected, bullying, and depression. Department of health (2015) found that there was a trend that overweight population was increasing to more than one third of Thai population and it was more than double of number found in the last two decades (1991-2009). When compared to

the populations from ten ASEAN countries, Thailand was ranked to be number two for having the overweight and obesity cases. In the same time, the number of overweight and obesity in school age children (6-14 years old) was increasing considerably. It was about 10% of the school children who were overweight or obese. One interesting finding was that the number of overweight and obese in Bangkok was the highest of Thailand provinces (The National Health Commission Office, 2014; Wiriyautsahakul, 2014). A survey done by the Department of Health Policy and Strategies in 2014 found that the number of obese children was increased from 8.8% in the year 2013 to 9.5% in the year 2014 and the number of obese children living in big cities was 20% due to dietary problem and decreasing of time spent for exercising. There was then a national policy on health promotion for school children in that year in order to help the children to have an average height and good body structure in one year and the key performance indices were at least 83% of school children have a normal height while at least 76% will have a good body structure. According to Bunnag, Sangperm, Jungsomjatepaisal, Pongsaranunthakul, & Leelahakul (2012) being overweight or obese in children was caused by having improper eating habit and lacking of exercise. The office of Health promotion (2009) found that girls were more prone to be overweight or obesity than boys. Being overweight and obese not only has bad effects on physical health but also has a lot of bad effects on mental health as well (Bunnag et al., 2012). In order to follow the national policy on body weight control for children and youth, various activities have been set up for promoting health. Johnson, Blum, & Cheng (2014) proposed that future orientation expecting participants to foresee their future and set up their plans to prevent the bad outcome. For example, at present, diet and exercising are more concerned and put into action plans to avoid unwanted

or negative future consequences of being overweight and obese. Food intake control and exercise could help the student control their weight (Fock & Khoo, 2013). DiClemente & Prochaska (1983) proposed their transtheoretical model (TTM) and stages of change that any change needs to be step by step. Prochaska, Reddings, & Evers (2008) proposed that stages of change start with precontemplation or not ready to change stage, contemplation (getting ready to change) when a person intend to change in the next months, preparation (ready to change) when people intend to take some action to change in a very near future, action when people do something specifically different from what they used to do in the past six months, and maintenance, when people keep on doing new things or new behavior which cause the change to be permanent. According to review of literature, the researchers set up a program for the experiment to see whether the body weight and body mass index of the overweight students participated in this program would be decreased or not.

## Objectives

To study the effects of using the program based on future orientation on body weight and body mass index of the overweight students

## Methods

This is a quasi-experimental research. The population were 34 female overweight students in grade 9 of a school in Bangkok Metropolitan area. The parents permitted their students to participate in the program. The number of subjects in this study was calculated by Yamane's formula (1973) at the significant level of  $p .05$  and thus, 32 subjects were chosen at random to participate in this study. Subjects were randomly selected again into two groups, the control group and the experimental group. Each group contained 16 students.

## Instruments

At the beginning, participants were measured their height in centimeter and bodyweight in kilogram, those who had their weight equal to or beyond 2SD of the standard norms provided by the Department of Public Health (1999) and the BMI for-age-percentile beyond 85, (25kg/m<sup>2</sup>), proposed by the World Health Organization for ASEAN countries will be classified as being overweight in this study.

The program was constructed based on The Transtheoretical Model (DiClemente & Prochaska, 1983; Prochaska, DiClemente, & Norcross, 1992; Prochaska et al., 2008). For the experimental group, the first session was at the pre-contemplation stage when the researcher gave the information about the situation of overweight and obese patients in Thailand as well as those findings in the world population which is now a significant problem in health service to the students. The second stage when a motivational interview was given to see the reaction of the students and motivated them to have future orientation about their physical appearance, abilities, and health as well as mental health. The third stage was making personal plans about what should be done and on seeking for knowledge about being overweight and obese including how to control one's bodyweight and BMI. In stage four, the students were encourage to change their behavior including choosing kinds of food to eat or to avoid, how to perform bodily exercise according to their physical

conditions. The last stage began when the new behaviors were performed by the students and the researchers encouraged the students that they could control their behavior and maintain their new behavior. Any student who failed at any stage should go back to the second stage again and be supported and encouraged to keep on their motivation to control over their weight and BMI to achieve their goals according to their future orientation. There were some activities given along these stages of change to make it possible for the students to keep up with their future oriented goals. According to these stages of change, the researcher divided the activities into twelve sessions in order to make sure that each participant in the experimental group was motivated to change their eating behavior and do some physical exercises. The activities given in the experiment followed the constructs proposed by Prochaska et al. (2008) consisted of processes of change, decisional balance, and self-efficacy. The experimental group members kept their promise not to tell anybody in the school what they had done along the experimental procedure. For the control group, the participants were given other activities not related to the experimental program.

## Results

After completion of the program the body weight and body mass index of the members in the experimental group and the control group were compared as shown in table 1.

**Table 1:** Body Weight (WT) and BMI Comparison Between The Experimental Group and The Control Group after The Experiment

Group	N	Mean	SD	t	df	p
Experimental Group (WT)	16	81.85	14.79	-.067	15	.948
Control Group (WT)	16	82.12	7.87			
Experimental Group (BMI)	16	31.24	5.25	-1.00	15	.333
Control Group (BMI)	16	32.82	3.95			

It was found that there was no difference between the experimental group and the control group after the experiment, both the average body weight and BMI. However, when studied in detail in individual changes of the body weight and BMI, there was something interesting. When comparing the difference between the mean score after the experiment within the groups, it was found that there were some differences between pre-post experimental body weights (WT) and BMI in both groups.

The experimental group had decreased their WT and BMI. In the contrary, the control group had gained their WT and BMI. The results were presented in Table 2.

Besides small differences within the groups, further testing was performed by t-independent test between the differences of WT and BMI within each group when compared to another group. The result was presented in Table 3.

**Table 2:** Differences Between The Pre and Post Experimental Scores of The Two Groups

Group	Exp.	N	Mean	S.D.	t	df	p
Experimental (WT)	pre	16	83.20	14.23	1.75	15	.101
	post	16	81.85	14.79			
Control (WT)	pre	16	80.68	9.46	-1.47	15	.161
	post	16	82.12	7.87			
Experimental (BMI)	pre	16	31.96	5.08	2.11	15	.052
	post	16	31.24	5.25			
Control (BMI)	pre	16	32.23	4.37	-1.48	15	.160
	post	16	32.81	3.95			

**Table 3:** The Differences Between mean of Differences of WT and BMI Between The Experimental Group and Control Group

	N	M. diff	S.D. diff	t	df	p
Exp. Group	16	1.35	3.09	-2.37*	15	.032
Ctrl. Group (WT)	16	-1.45	3.93			
Exp. Group	16	.73	1.38	-2.65*	15	.018
Ctrl. Group (BMI)	16	-.59	1.60			

\* $p < .05$ 

It was shown that there was a significant difference of body weight changes between the two groups ( $p < .05$ ;  $t = 2.37$ ;  $df = 15$ ,  $sig = .032$ ). While subjects in the experimental group had decreased their weight, subjects in the control group had

increased their weight. The difference of BMI was also in the same fashion, while the experimental group had a reduction of BMI, the control group gained more BMI ( $p < .05$ ;  $t = -2.65$ ,  $df = 15$ ,  $sig = .018$ ).

## Discussions

Although there was no significant differences of body weight and body mass index within the two groups after the treatment, there was a significant difference of changes within the group in body weight and body mass index when compared between the two groups. This brought to a question why there was not a significant difference when comparing within groups. When studying in details within each group, there was only some cases in the experimental group got benefit out of this program. Therefore, personal interview was taken from some participants after the experiment was over, especially those who failed to lose their weight. The answers were that they found it difficult to follow the instruction. It was hard for them to choose their meals at home as well as at the school. At home the parents felt that it was causing troubles to prepare the requested healthy food for their kids. At school, there were also not enough choices for them. In order to follow their future goal, some of the subjects had to reduce their food intake. These answers reflected the stage of decision making

with the feelings of pro and cons which was quite difficult for children or young adults to do. The problem was they did not have the authority to ask for things they wanted. They felt they had no self-reliance. Another problem was they felt that they were putting some burden on their parents to prepare quality food for them. There were only a few students who dared to ask their parents to prepare them proper food and/or had good co-operation from their parents.

The problem also occurred in the exercise program. The participants could not make a good time schedule for them to do the exercise. They had to spend their time in traveling between home to school which each single trip was about an hour or more. They had to wake up so early around 5:00 am. to get ready to arrive at school before 07:30 am. Their breakfast was based on the time of traveling. If they took public commuter and got in a traffic jam, they usually could not have their breakfast. Therefore, there was not enough time for physical exercise in the morning. In the evening, they had to wait in a “ready to go” fashion for their parents or their school bus.

They also had to do their homework while waiting because traveling in the evening usually takes longer time than in the morning. When they got home, they were so tired and hungry and had to eat as fast as possible to have enough time to do their homework or play with computers or phones instead of having physical exercise before going to bed. As a matter of fact, if you eat too fast you always eat more than enough because the digestion of food intake takes time in chewing to make the food small enough for next step of digestive processes before they can be absorbed to the blood circulatory system and send the negative feedback signal to stop eating. Thus over eating will result in having excess calories intake and then, converted to be bodily fat. Even on Saturday and Sunday, they had to go to study or attend to some special classes, for example, music, singing, painting, etc., instead of physical exercise or sports activities. Therefore, if the subject were not ready to adhere to the program, the expected outcome would hardly happen. These findings were in accordance with the study done by Peterson (2009) that before starting the TTM program, the participant's readiness for change was to be evaluated first. If they were not ready, the process could not go on. Supports and encouragement were also important for the process of change too. Furthermore, good cooperation from the parents is very important for this kind of program too.

The students who conformed to the instruction got lower body weight and body mass index by the end of the program. In the contrary, those who could not do so had no significant change in their body weight and body mass index. It was quite difficult to find the way to motivate all the children to follow the process in a limited time for this research program. According to The Transtheoretical Model (DiClemente, & Prochaska, 1983; Prochaska,

DiClemente, & Norcross, 1992), the stages of change may vary from person to person. When one failed at any step he/she should go back to the earlier stage and try again until he/she could reach their set goals. From literature review by Glanz, Rimer, & Viswanath (2008), studies in the smoking participants from various countries found that there were very few participants who were in the stage of preparation, most of them were in the precontemplation or contemplation stage. It meant that it is really difficult to change unless the person has the strong decision to do so. A study done by Toft and colleagues (Toft et al., 2006) on diet and exercise intervention in a general population found that there were several important mediators of participation and adherence. For example, the awareness of bad effects of unhealthy lifestyle, perceived susceptibility of disease, which would result in the future orientation and effect motivation towards lifestyle changes, and so on. Mediators of high adherence were low self-efficacy about changing dietary habits and perceived susceptibility of coronary vascular disease.

Tuah and colleagues (2011) suggested that TTM and a combination of exercise or other interventions had minimal impact on weight control and no conclusive evidence for sustainable weight loss even if some program took a long period of time (from 9 to 24 months). TTM is rather a theoretical framework in weight loss management. The impact of TTM may depend on how to use it in combination with other strategies like food control and exercise.

In conclusion, this current study was done with school girls in grade 9 of a private school in Bangkok area. More than half of the subjects in the experimental group could not follow the activities and plans they had made by themselves. To diet and exercise are difficult tasks by their perception. The benefit from adhering to the program might

not be large enough for them. That was why the results of the study were rather small both in the number of subjects who adhered to the program and the average weight and BMI loss that were rather small. However, the increment of weight of the control group helped to confirm that the program could prevent overweight and obesity. If there were more subjects in the experimental group adhered to the program, the difference between the two groups would be larger. Therefore, emphasizing on some techniques might be combined in order to increase the effects of the program of change such as motivational interviewing (MI), and self-efficacy promotion. Furthermore, cooperation of the parents is needed for helping children to change their lifestyle in food consumption and exercise. Future studies on these mediators is suggested.

#### ***Limitation of the study***

This study was done with a small group of children in one private school in Bangkok area. It cannot be generalize to the population of teenagers. Further studies and larger number of participants is then suggested.

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#### ***Declaration of conflicting interests***

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

#### ***Ethics approval***

This project was approved by the Human Research Ethics Committees, Saint Louis College. The serial number was E.020/2560



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