CHAPTER 1

INTRODUCTION

Background and Significance of the Research Problem

The World Health Organization (WHO, 2011) stated that obesity and overweight have become international epidemics and are now the fifth leading risk to global health. Both developing and developed countries continue to face obesity and overweight as major problems in both adults and children. More particularly, the prevalence of overweight children has increased since the 1980s (WHO, 2011). Between the years 2003 and 2008, the prevalence of overweight children in the United States increased from 16.3% to 20% (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010, Ogden et al., 2010; Mayer, 2009). Moreover, the rate of childhood overweight in China has increased from 14.6% (1999) to 21.8% (2002) (Popkin, Shufa, Fengying, & Bing, 2009). Similarly, in Singapore, the result of a survey showed that overweight in school-aged children had increased from 6.2% to 14.6% (Ministry of Health Singapore, 2011).

In Thailand, the overall prevalence of overweight in 10–12 year old children has increased from 15.1% in 2001 to 16.7% in 2005 (Mo-suwan, 2008). In addition, the prevalence of overweight in children aged 10-12 years old in Chiang Mai and Lampang, Thailand was 16.5% and 14.2%, respectively (Chiang Mai Provincial Public Health Office, 2012; Lampang Provincial Public Health Office, 2012). This

situation remains a major concern as the incidence of overweight has exceeded the goal of 10% laid down in the tenth National Economic and Social Development Plan (2007-2011). Clearly, overweight in children has become a serious public health problem in Thailand as it has in other countries.

Overweight can have severe health consequences for children such as high blood pressure, type-2 diabetes mellitus (DM), and cardiovascular diseases (Van Vliet et al., 2011; Zimmet et al., 2007). Moreover, overweight also has a significant impact on a child's social, emotional, and cognitive development. Overweight in children can lead to mental and emotional health problems due to the psychological stress caused by social stigmatization. Immediate consequences of being overweight, as perceived by children themselves, are psychosocial problems, such as social discrimination, low self-esteem, depression, and negative self-body image (Allen, Byrne, Blair, & Davis, 2006; Cornette, 2008; Hwang et al., 2006). Furthermore, overweight children suffer from low self-image and social anxiety. These problems could cause additional negative effects on academic performance and achievement. To this end, it can be concluded that the consequences of overweight could lead not only to physical but also psychosocial problems as well (Allen et al., 2006; Ogden et al., 2010). The wide varieties of consequences make overweight a complex health issue. The complexity of overweight and obesity as health issues is exacerbated by the multiple causational factors for these conditions (Center of Disease Control and Prevention [CDC], 2009).

Multiple factors associated with childhood overweight include personal factors, parental factors, and environment factors (Abdelkafi et al., 2012; American Dietetic Association [ADA], 2006; Ayala et al., 2007; Elder et al., 2010). Research carried out in Northern Thailand revealed that the major factors which lead to

childhood overweight were personal factors such as dietary intake, physical activity, and sedentary behavior of the children (Chotibang, Fongkaew, Mo-suwan, Meininger, & Klunklin, 2008). The parental factors which were most influential were children's dietary practices, accessibility of foods, meal structures, food socialization practices, and food-related parenting style (Ventura & Birch, 2008). Moreover, nutritional knowledge, modeling of behaviors and parent's attitude had an influence on childhood weight problems (Ventura & Birch, 2008). Furthermore, environment factors including peers, the mass media and advertising, schools, fast-food restaurants, and convenience stores all influenced childhood nutritional behaviors as well.

The intervention for weight control comprise of four levels: individual, family, school, and community. At the individual level, effective intervention provide knowledge, modify perception, promote food consumption, and raise nutrition awareness (Chen, Weiss, Heyman, Vittinghoff, & Lustig, 2008; Summerbell et al., 2005). In the family, school, and community levels, the beneficial effects of intervention include nutrition education, training of trainers, family involvement, modification of school meals, and adjustment to the environments of the community, such as the control of food sold in shops and the availability of health food shops in the community (Jiang, Xia, Greiner, Lian, & Rosenqvist, 2005, Jiang et al., 2007; McCormick, Ramirez, Caldwell, Ripley, & Wilkey, 2008; Nemet et al., 2005; Samuel et al., 2006; Slawta et al., 2008; Taylor et al., 2006). Barriers of the school, family and community intervention programs such as school policy regarding cafeteria meals and other food sold at school and school staff education and training (Slawta et al., 2008), the difficulty of establishing regular healthy eating habits (McCormick et al., 2008), and difficulty to influence parental change in the home environment (Jiang et al.,

2005). Generally, such four-level are successful in terms of increasing consumption of healthy food, increasing fruit and vegetable intake, and maintaining or decreasing the children's body weight.

However, it seems that only individual-level intervention can change eating behavior, eating habit, and control weight (Woolfolk, Winne, & Perry, 2006). Individual information can be updated continually, and subsequent individual messages offer the opportunity to give feedback about the direction and extent of changes in determinants of behavior. Individual-based interventions can improve child cognitive and change behavior (Woolfolk et al., 2006). Successful interventions generally focus on modifying individual behavior, corresponding to social norms around food consumption (WHO, 2011). Thus, the intervention should facilitate individual maintenance of behavior change in children (Nicklas & Hayes, 2008) and emphasize the modification of attitude, subjective norms, perceived behavior control and eating healthy food (Araújo-Soares, McIntyre, & Sniehotta, 2009). This intervention was related to Theory of Planned Behavior (TPB) in order to help children understand their situations, increase awareness, and also encourage children to modify their attitude and behavior in order to maintain appropriate eating behaviors by proposing their own objectives, self-monitoring, stimulus control, dietary restraint, cognitive restructuring, and setting behavior goals rewards (Chen, Weiss, Heyman, & Lustig, 2010).

The Theory of Planned Behavior (TPB) is a theory that outlines the determinants of actual behavior (Ajzen, 1988, 1991). The behavior is influenced by three major factors: attitude toward behavior, subjective norms and perceived behavioral controls. In combination, all of these factors can lead to behavior intention.

Especially, the effective intervention on children attitude toward eating behavior, subjective norms and perceived behavioral controls could have strong effect on children intention to perform eating behavior for weight control and eating behavior for weight control (Choyhirun, Suchaxaya, Chontawan, & Kantawang, 2006, Fila & Smith, 2006). Thus, TPB can be applied to many decisions in an eating event by using attitude, subjective norms and perceived behavioral controls to increase intention to perform healthy eating behavior in children (Fila & Smith, 2006; Hewitt & Stephens, 2007). Studies based on TPB in children focus on intention to eat five portions of fruit and vegetables a day and awareness of the health benefits of fruit and vegetables. The strategies were designed to motivate reinforcement, self-monitoring, and goal setting. TPB-based interventions have been successful in increasing intention, and awareness of the health benefit of eating five portions of fruit and vegetables. However, barriers have included difficultly with addressing subjective norms such as parents, friends and teachers, difficulty to follow the TPB framework in the intervention procedure, difficulty to increase intention to have other healthy eating behaviors (not only consumption of fruit and vegetables in overweight children), and difficulty to individually tailor interventions to influence attitude and behavior intention in every case (Araújo-Soares et al., 2009; Blanchard et al., 2009; Fila & Smith, 2006; Gratton, Povey, & Clark-Carter, 2007; Jansen, Mackenbach, Joosten-van Zwanenburg, & Brug, 2010).

Hence, to maximize the chance of success, individual-level interventions should be applied to change behavior for weight control because the intervention is specifically tailored to the individual (Enderlin & Richards, 2006). Moreover, children between ten and twelve years old begin to develop the capacity for abstract

thinking as a formal operation (Piaget, 1983) and begin to move from dependence on parents to independent behavior (Radzik, Sherer, & Neinstein, 2002). Thus, they can take care of their dietary behavior and choose types of foods by themselves (Kim et al., 2008). Changed eating patterns and improved self control could be possible outcomes. In addition, the individual intervention should modify attitude, subjective norms, perceived behavior control towards eating behavior, and improve skill of control weight (Ezendam, Oenema, van de Looij-Jansen, & Brug, 2007; Gratton et al., 2007). TPB behavioral methods will help children have greater intention and enact changes to bring about healthy eating behaviors. This will improve children's eating behavior, intention to perform eating behavior, skill of weight control and nutritional status.

The effectiveness of an individual-based intervention on the improvement of intention to perform eating behavior for weight control, eating behavior, and nutritional status among overweight children which followed TPB framework has so far not been specifically investigated. Although evidence demonstrates some success in increasing intention, and increasing awareness of the health benefit of consuming five portions of fruit and vegetables for children in western countries, this program is needed for testing among overweight children in Thailand, following a TPB framework and encouraging overweight children to set their goals for eating behavior for weight control. This intervention is expected to demonstrate improvement of intention to perform eating behavior for weight control, eating behavior, and nutritional status among overweight children.

Research Objectives

1. To compare intention to perform eating behavior for weight control, eating behavior, and nutritional status among overweight children before entering the intervention, and after entering the intervention.

2. To compare intention to perform eating behavior for weight control, eating behavior and nutritional status among overweight children who received an individual-based intervention and those who did not receive the intervention.

Research Hypotheses

1. Overweight children who receive an individual-based intervention will have better intention to perform eating behavior for weight control than before entering the intervention.

2. Overweight children who receive an individual-based intervention will have better eating behavior than before entering the intervention.

3. Overweight children who receive an individual-based intervention will have better nutritional status than before entering the intervention.

4. Overweight children who receive an individual-based intervention will have better intention to perform eating behavior for weight control than those who do not receive the intervention.

5. Overweight children who receive an individual-based intervention will have better eating behavior than those who do not receive the intervention.

6. Overweight children who receive an individual-based intervention will have better nutritional status than those who do not receive the intervention.

Definition of Terms

Overweight children. It refers to an excessive fat accumulation in children aged 10 to 12 years old, studying in the fifth grade and having BMI-for-age > +1 S.D [according to 2007 WHO growth reference: BMI for age (Z-scores) 5 to 19 years (WHO, 2007).

Eating behavior. It refers to a child's behavior in eating, including the choosing of types of food, limiting the amount of food, and methods of eating which achieve normal weight. For the purposes of this study, eating behavior was measured using the Eating Behavior Weight-Control Questionnaire, which was developed by Choyhirun et al. (2006).

Intention to perform eating behavior for weight control. It refers to the perception of overweight children intends to perform eating behavior and control weight. It was measured using the Intention to Engage in Eating Behaviors for Weight Control Questionnaire developed by Choyhirun et al. (2006)

Nutritional status. It refers to a state of the health in children that is influenced by food intake and use of nutrients. Nutritional status includes growth status obtained by measuring weight and height. The cut-offs BMI for age (Z-scores) classified children nutritional status developed by WHO (2007). It is divided into five categories: 1) obesity = >+2 S.D.; 2) overweight = >+1 S.D; 3) normal weight = +1 S.D. to -1 S.D.; 4) thinness = <-2 S.D; 5) severe thinness = <-3S.D.

An individual-based intervention. It refers to the modules of activities for Thai overweight children which were developed by the researcher based on the Theory of Planned Behavior (TPB) (Ajzen, 1988, 1991). The intervention was aimed

to enhance attitudes toward eating behaviors for weight control; subjective norms regarding eating behaviors for weight control; perceived behavioral control toward eating behaviors; and behavioral intention for overweight children. The intervention was taken five consecutive weeks.