A Social Process of School-Aged Children Becoming Overweight

Jumpee Granger, Wilai Napa, Lawan Singhasai, Jutipak Chantarachot*

Abstract: The number of overweight school-aged children has been escalating around the world, even though various weight management programs have been launched in schools. To better understand the phenomena, this study explored the social process of school-aged children becoming overweight. The grounded theory method of Glaser was applied in collecting and analyzing data. There were six parents, four teachers, and a school lunch team leader involved in the study.

The findings resulted in a preliminary model, Social Process of School-Aged Children Becoming Overweight, which demonstrated that the Child's Characteristics and Dietary Intake was a core category. The five remaining categories were Encouraged Eating, Parental Overweight Perceptions, Weight Gain, Observational/Interventional Triggers, and Weight Control. Child's Characteristics and Dietary Intake involved a child's eating behaviors; Encouraged Eating was inside/outside influences that affected a child's eating behaviors; Parental Overweight Perceptions was their viewpoint towards a child's weight status; Weight Gain is weight gained after increased food consumption; Observational/Interventional Triggers are verbal and nonverbally reflected actions towards a child's weight status. Encouraged Eating and Parent's Overweight Perception influenced Child's Characteristics and Dietary Intake and contributed to a child becoming overweight. Diverse weight-management tactics were attempted, but were not strong enough or regularly applied in order to obtain a positive change. Regular weight checkups and formal notifications from the school are needed as an early warning in helping to promote a healthier weight/lifestyle. Understanding the phenomena enables nurses to create more effective weight management programs. Follow up testing and possible modification of the preliminary model are needed for verification.

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Introduction

The prevalence of overweight and obese children has been significantly increasing around the world, in particular, in developed and developing countries. WHO has indicated this issue as one of the critical health problems [1,2] affecting the world today. Overweight/

obese children are at higher risk of being diagnosed with physical (diabetes, hypertension, and hyperlipidemia, etc.) and mental illnesses, [3,4] and being overweight in childhood is a significant predictor of adulthood obesity.[5] Many factors contribute to overweight children such as genetics, environment, and behaviors such as overeating, high caloric consumption, large portion sizes, lack of physical activities, and spending more time on digital devices. [6-8] Major causes of children being overweight in developing countries were increased economic stress, food marketing influences, and the lack of available and safe places for outdoor activities.[9]

The prevalence of overweight children in Thailand is also quickly rising, not only in the big cities but also in the other smaller provinces. Reports from the Health Department survey of the Primary Educational Service years 1-12, indicated an average percentage of overweight/obese school-aged children at 11.7% and 13.07% in August and December of 2018 respectively.[10] A health survey in 2015 of one of the primary schools in Bangkok, reported that there were 3.6%, 3.1% and 5.4% overweight children of grades 1/2/3 respectively. Moreover, there were 18.9%, 15.5%, and 18.3% obese children of grades 1/2/3 respectively.[11] In Thailand, many healthcare providers and researchers launched many weight management programs dealing with this problem in school-aged students.[12-14] Research outcomes have illustrated that children are more informed and are developing healthier routines. However, these did not demonstrate significant outcomes in the decreasing of the children's weight status.

Ecological System Theory[15] was developed by Urie Bronfenbrenner the USA into a model to illustrate various factors that are related to a child's weight gain. The Model explains three layers of risk factors (from inside to outside), 1) Individual Level (child weight status, child characteristics, and child risk factors, 2) Household Level (parenting styles and family characteristics, and 3) Community Level (community, demographics and social characteristics). However, the Ecological Model does not illustrate relationship/interaction as a process to explain the phenomenon. In Thailand, Jumpee Granger[16] developed a model "The Sustain Weight Gain in Young Children" to illustrate a process of young children becoming overweight. This suggested that encouraged feeding behaviors and parental positive perceptions played an essential role in affecting a young child becoming overweight. However, there is still little known about what social factors are contributing to school-aged children becoming overweight, hence this study.

Study Aim

The aim of the study is to explore the social process of school-aged children becoming overweight.

Methods

Study design and theoretical framework: Glaser and Strauss's grounded theory[17] and Glaser's later works[18,19] were chosen to inform the methodology in this study. Grounded theory (GT) is a vital strategy for exploring holistic realities and capturing the meanings of human behaviors. The study design goes beyond describing the phenomenon of school-aged children becoming overweight. Grounded theory is achieved by creating and connecting categories of information based on the integrated properties of the phenomena during data collection and analysis. The theoretical framework of symbolic interactionism[20], how individuals interact with one another by creating their symbolic worlds, plays a significant role in GT. This framework provides a guiding analysis for generating a theory, such as explaining the social process of how school-aged children become overweight; and GT centers on patterns of interactions between individuals, such as communication, adjustments, and interpretations.[21]

Sample and setting: The setting for this study was a primary school located in Bangkok, Thailand.

Participants were recruited by the school nurse. There were four groups of participants: 1) Parents taking care of an overweight/obese student in grades 1-3, who presented without chronic illnesses that affected their weight status: 2) Homeroom teachers who served lunch and taught these students; 3) The health education teacher who created the lunch menu and taught students about health relevance; and 4) The school lunch team leader who cooked lunch for all children at the school. The participants were all over 18 years old; and all spoke Thai. Theoretical sampling was included in this study as it was part of the data collection in GT and guides future data collection, such as where to go to collect more data to develop an emerging theory.

According to the children's Thai Growth Chart[22], there are four categories of overweight/obese children: overweight, mild obesity, moderated obesity, and severe obesity. A child in the overweight category is defined as >97th percentile of weight by age and gender, while one with mild obesity is defined as a 120-140th percentile, moderate obesity 140-160th, and severe obesity >160th percentile by weight for height and gender.[23]

Ethical considerations: Ethical approval (Number 2559/351) was given by the Ramathibodi Hospital Institutional Review Board (Thailand) and data collection permitted by the principal of the school. All potential participants were contacted by the school nurse, and they were free to decide if they wanted to participate in the study, or not. They were also informed that if they wished to stop the interview process, they could do it at any time. Informed consent was signed as confirming their agreement before participating in the study. The participants' anonymity was maintained throughout the study.

Data collection: There were four methods of data collection: observations, in-depth interviews, journal writings, and document reviews. The researchers interviewed in-depth participants once, and again if needed, based on the need for data clarification[24]. For parents, the interview started with open-ended questions such as "*How do you take care of your child?*", "*How do you evaluate your child's weight status?*" and "*What do you feel are the consequences of children being overweight?*". For teachers, the questions of the interview focused on weight gain relevance such as "*What is their behavior during the day?*"," *How do they interact with other students?*", "*What are the student's physical characteristics?*", "*How do you provide for the student's health/activities?*", also, "*What is the student doing differently from others?*". For the school lunch team leader, interview questions focused on "*What types of food do you cook for students*?" or "*Who created the menu for your team*?"

Observations[24]: the researchers observed participants during interviews such as, how they reflected on their feelings, body language, and were they worried about the child's weight status. Journal writings: the parents were asked to participate in three days of journal writing on (a) types of food that they prepare/buy for their child during the day (weekend and weekday), including amount and frequency; (b) types of food that their child bought and ate during the day, (c) their child's activities during the day; and (d) anything else they wanted to write about themselves and/or their child. Document reviews: the researchers reviewed the school health record of the children relating to demographics, history of illness and weight status.

Data analysis: This study used Glaser's GT[19-20] approach, substantive (open and selective coding) and theoretical coding, for data collection and analysis as follow:

1) Substantive coding: the researchers read and reread the first set of data including interview transcripts, review documents, observational field notes, and journal writings until they understood the data, and then they coded the transcripts line-by-line as open coding. The coded data were grouped, and all beginning concepts were found and identified. The constant comparative approach was applied to compare similarities and differences among these concepts in order to generate diverse categories and their properties by using coding families (6C): cause, contexts contingencies, consequences, covariance, and condition (see example in **Table 1** below).

Table 1 An example of data analysis

Description	Code	Category	6 Cs
I always provide bread at home because when my daughter is hungry, I want her to have something to eat, but I notice that she eats too much of the bread and quickly.	Inside environment	Encouraged eating	Cause

Memos were written to describe the properties of each category. The researchers also used theoretical sampling to explore new concepts; for example, the types of a family (nuclear or extended family) and the different family financial statuses. The type of family may play a significant role in encouraging the children to eat more (or less), and the different financial statuses may affect the eating behavior of the children. Another example of theoretical sampling was different environments; the researchers found that outside factors such as food vendors were an influence on children's high caloric intake, or over-consumption. During follow-up interviews, the researchers used probing questions to gain more of an explanation relating to the children's eating behaviors. Questions focused on *"What kind of outside foods does the child always eat?"*, *"How much and how often do they eat?"*, and *"Any outside food resources that encourage your child's overeating?"* This procedure helped to gain rich descriptions and develop concepts to cover all explanations relevant to weight gain in children.

The next set of data collection from participants was analyzed in the same way as the first, which added in initializing the concepts and categories. During the analysis, the researchers used a constant comparative method to compare the following data set to the previous one of each participant. The method helped the researchers to verify the similarity or differences of each data set. Theoretical sampling technique was continually applied in collecting more data to fill unsaturated categories. When the properties of the categories were saturated (no new conceptual properties had emerged), the data arrangement by the research team was processed, including renaming categories and their properties until they fitted well. Coding families were again used to develop relationships between categories as a prospective theory. When a prospective theory had emerged, selective coding was applied to generate the core category that methodically related to other categories. Some categories which were not related to the core category were excluded or delimited by using the constant comparative method.[17]

2.) Theoretical coding, memo sorting, was used to integrate substantive coding in creating an explanation as a preliminary model. The model demonstrated a relationship among categories as a social process that affected school-aged children being overweight. After the theoretical coding was saturated, the outcome was brought back to discuss with the research team as part of the reviewing process. The outcome as categories and their relationship to each other were revised during this process. One additional set of data was collected from a new participant to verify the model. The model was also brought back to discuss with two of the participants (one parent and a homeroom teacher).

Rigor and trustworthiness: this study used Glaser's GT[20] approach to ensure whether all categories emerged from data, or not. The researchers used a constant comparative method to verify discrepancies between the data set and to lead the researchers in probing for more explanation. The method was done to ensure that the concepts produced a more compelling explanation relevant to the children's increased weight gain. This study also used Lincoln and Guba[25] principles to gain rigor of the study. Member checking technique was used with participants during the interview by asking for clarification and confirmation of understanding, and the technique was used again to confirm summary

findings. Triangulation was used in each step of the study such as different techniques (interviews, observations, health records, and journal writings) were used to collect and compare data. Peer debriefing was involved throughout the data collection and analysis process, for cross-checking, to help the researchers ensure the interpretation of conclusive findings and reducing the researcher's bias.

Findings

The findings are composed of two parts, participants' characteristics and the preliminary model of the Social Process of School-Aged Children Becoming Overweight.

There were six parents, four of whom lived in single-family homes, and two parents in homes that included extended family. The individual incomes of all the families were more than 25,000 baht (~US$833) monthly. There were also three school homeroom teachers, one health education teacher, and a school lunch team leader that participated in the study. All participants spoke Thai exclusively and lived in Bangkok or the adjacent provinces. By reviewing children's health records, it was found that one student was mildly obese, two were moderately obese, and three were severely obese.

The preliminary model of the Social Process of School-Aged Children Becoming Overweight was comprised of six categories. The core category was the *Child's Characteristics and Dietary Intake*. The other categories were *Encouraged Eating*, *Parental Overweight Perception*s, *Weight Gain, Observational/ Interventional Triggers*, and *Weight Control.*

***Child's Characteristics and Dietary Intake (CCDI)*:** Findings showed that all overweight/obese children had the same behavior. They enjoyed eating, and they could either eat a large portion of food or eat more often per day, and they all preferred high caloric food. One mother revealed that her child liked to eat everything, in particular, crispy pork. (P1) while another confirmed that her child could eat large portions:

> *He always asked for more food for lunch* (from his teacher). *He could eat almost two to three times as much as his friends.* (P5)

A homeroom teacher of each class distributed lunch to children depending on how much each student was able to eat based on his/her experience. Some overweight children enjoyed lunch at school. One teacher said:

> *As I notice, overweight children are more likely to eat larger portions than children who are healthy weight or underweight. For example, when they finish lunch in a room, they always go down to buy some more food. Even though some of them do not have enough money to buy extra food, they will tend to ask for food from their friends.* (T1)

This was consistent with what one parent said:

> *My child eats everything, and he can eat three dishes for his lunch meal.* (P5)

However, one teacher revealed that some overweight children did not eat more than others at school. (T2), as confirmed by a parent:

> *My child did not eat much at school lunch because he said the food was not delicious. He would eat more food after school instead.* (*P3*)

Parents expressed that they bought or prepared their child's food based on their preference and the children were more likely to eat high-calorie foods such as french fries and fried chicken. Most of them loved to eat frozen food from convenience stores. According to a teacher, parents were observed providing soda for their child after class because the child liked it. Therefore, these overweight children's behavior with dietary intake, even having large or small portions of school lunch, gradually contributed to their weight

gain as is illustrated by the journal writings. The writings evidenced that all of the children received higher calories than they should have according to suggested weight and height recommendations.

Encouraged Eating (EE): Several outside influences encouraged children to eat more often, as well as have a higher calorie intake, and some of these influences were not healthy choices. These influences included food vendors in front of the school, and convenience stores nearby their house, and were a critical factor that encouraged children to eat unhealthy food such as soda, fried foods, and ice cream. One teacher expressed:

> *Even though we can control the sellers who sell food in our canteen to provide healthy food choices, we cannot control food vendors in front of our school because it is a public place that our school does not have the authority to prohibit them. Government officers seem to do nothing to enforce the laws. When the last class of the day is over, children always buy food from food vendors, before they go back home or while waiting for parents to pick them up.* (T1)

Another influence was nearby convenience stores. Most parents mentioned that their child always seems to grab something from the convenience store before going home such as crackers, cookies, or sweet treats. One mother said:

> *It is difficult to control my child from grabbing something while in the convenience stores because she often puts a treat into the basket without permission, and sometimes I did not realize it until paying at the cashier station.* (P1)

Moreover, eating out was one of the outside influences that encouraged children to overeat, with higher calorie foods and larger portions. One mother said:

> *I bring my child to eat out more often. Mostly we eat fast food, for example, pizza, fried chicken, and burgers. (P3)*

The inside influence included cases where normal food was provided in the house, but other snacks or portions were provided by members of the extended family. This combination also encouraged children to eat more often than they should. One mother revealed that:

> *I always buy discount food supplies from convenience stores that unintentionally encourage my child to eat these foods more often.* (P1).

Another parent stated that their child ate more often with family members and some of them spoiled the children with food. (P2) As overweight children spent more time at home during school breaks, they tended to gain more weight. One teacher mentioned:

> *I have noticed for many years that after a school break the children look chubbier, but as the semester progressed they would gradually look thinner.* (T1)

This aligned with the views of another mother:

> *When my child did not go to school, she would eat more often at home.* (P6)

Parental Overweight Perceptions (POP): Parents shared different perceptions toward their child's weight status and growth needs. For example, they tended to have positive perceptions when their child had reached overweight status. However, later on, when their child gained more and more weight, as well as had some health problems, they started to perceive that their child is becoming overweight, and worried about the child's future health problems. For example, one mother of a 10-year-old boy stated:

> *When he was younger, my boy was so small and later on I was so happy when I saw he could eat larger portions of food and enjoyed eating. Now he is too big, and I have tried my best to lower his weight.* (P5)

Another mother stated:

> *She looked big when she was five years old, and I thought it was still ok. However, when she turned seven years old, she looked too big when I compared her to her friends. She also had loud snoring at night time, and sometimes her breathing would stop shortly. First I thought it was normal for children, but a doctor said it was dangerous and we have to work on controlling her weight seriously.* (P6)

All parents tended to perceive their child as overweight, usually at the point where the child had reached mild obesity, or when they had developed health problems.

Weight gain (WG): Even though parents did not know their child's exact weight status, many indicators were suggesting the child's weight was increasing. In this study, the weight gain was calculated as weight status using the weight for height recommendation of the Pediatric Endocrine Society of Thailand Growth Chart.[22]

Observational/interventional triggers (OIT): Even though parents did not know precisely if the child overweight or obese or not, many triggers informed them. The triggers were observations from parents, innocent greetings from the child's friends, strangers, suggestions from health care providers, and their child health problems. One mother admitted that she realized her child was overweight from observations from strangers, her daughter's friends, and her observations:

> *Everyone who spoke to me would say she looked like a teenager, or sometimes strangers mentioned her body size was close to my own. Even her friends would sometimes call her fatty girl, but she would not care because two other children were much chubbier than her in her school room. I also noticed that she was becoming overweight when I had to change her student outfit more often, and I had a difficult time finding the right size because she had a larger belly.* (P4)

Another mother shared that a doctor informed her that her child was overweight:

> *He was getting sick when he was seven years old at the time, and a doctor mentioned that he was becoming overweight and suggested I bring him to a nutritional clinic.* (P5)

The triggers mentioned above played a pivotal role in informing parents and family members to think about, and be concerned about, the consequences of their child's weight status.

Weight Control (WC): When parents perceived that their child was overweight, they had applied various strategies to control the child's weight, such as limiting some foods/snacks/treats and encouraging more physical activities. One mother tried to limit her child's amount of food:

> *After a doctor informed me that my child had become overweight, I tried to limit his snacks and cut his regular meals in half.* (P5)

Another mother told her daughter's teacher to please not refill her plate of food if she asked, whilst one other mother tried to apply a schedule to her child's food intake:

> *After I met a nutritionist, she gave me a food schedule to set a time when I should give food to my child, what types of food, and how much she should eat* (P4)

Some parents tried to create more activities for their children:

> *I tried to encourage her to do more activities, for instance, on weekdays, she did hula hoop dancing while she was watching TV. For the weekend, I brought her out to a playground, and sometimes we swam at the pool.* (P1)

However, it was difficult to control a child's weight because the factor of encouraging eating affected family members, neighbors, and other environments (convenience stores, food vendors). One mother stated:

I tried my best to control her weight, but every evening when her grandmother picked her up from school, she always bought my daughter some food from food carts in front of the school. I knew that these were mostly unhealthy foods. (P6)

The other mother mentioned that:

When he goes to the convenience store with his dad, he always buys whatever he wants to eat. If I went with them, I would only pick healthy food for him. (P5)

There were various strategies that parents and family members tried to practice. However, some other factors mentioned above made the practice less consistent, and it was not enough to be successful as they should have been.

A Preliminary Model of a Social Process of School-Aged Children Becoming Overweight (SPSCBO)

Analysis in this study lead to the development of a preliminary theoretical model (SPSCBO) that illustrated the emerging six categories interacting with one another (see **Figure 1** below). At the beginning weight gain came from the interaction between a child's characteristics and dietary intake (CCDI) and encouraged eating (EE). In the beginning, the level of EE was typically high and the level of parental overweight perceptions (POP) was low, therefore they would perceive the level of CCDI as being lower than it was. A higher level of CCDI was associated with weight gain in the children. When the children gained more weight, the level of observational/interventional triggers became progressively higher. These triggers increased the level of parental overweight perceptions, and some weight control measures then started to decrease the level of CCDI.

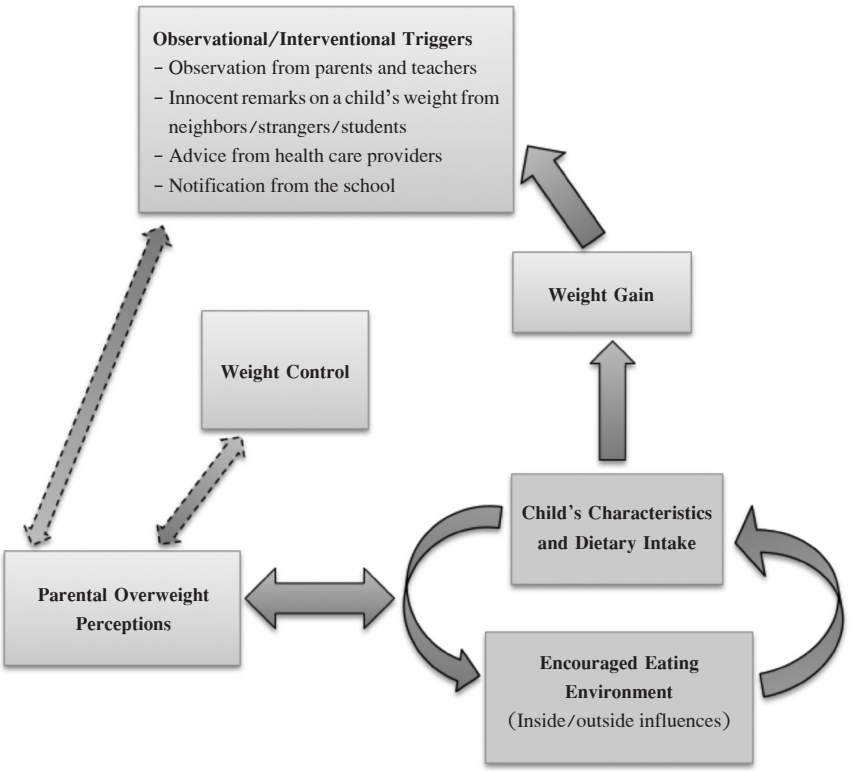

Figure 1. A Preliminary Model of a Social Process of School-Aged Children Becoming Overweight (SPSCBO)

Child's characteristics and dietary intake demonstrated that children were over-eating during regular meals, by eating larger portions or consuming higher calorie foods. They also had extra food provided by family members or ate other snacks more often. The outcome was that that the level of CCDI was always higher, and had never trended downward. However, the CCDI level fluctuated based on the POP level, which played a significant role in readjusting the CCDI level.

The level of EE depended on the level of inside/outside influences in their environment. The EE level would steadily increase if the level of inside/outside influences also increased. The environment levels were inconsistent from one family to the next, and if parents had changed their perceptions, the environment levels would also adjust. The POP was defined as parents' attitudes towards their child's eating behaviors and their growth. The POP level fluctuated and would increase if the WG level and OIT level increased. The OIT and WG levels were positively associated with each other. When the level of POP increased, parents and family members tended to apply more WC consequently, and the WC affected the CCDI pattern. Weight control when applied was neither consistent nor reliable enough to adjust the CCDI pattern significantly.

Discussion

The preliminary model of SPSCBO illustrated that POP play a significant role in controlling their child′s weight. To adjust POP, the OIT has to be reliable and consistent. Surprisingly, OIT from the school in this research study was low. According to information from the school nurse, once per year she notified parents and family members about the child's weight status (if they are overweight/obese) and provided them with weight control brochures. The follow up was lacking with these overweight children, or they were not strictly followed enough. One teacher mentioned that she tried to create a weight reduction intervention program for overweight children, but the school policies and other teachers were more focused on academic activities than they were on students' health. The children, consequently, did not have enough time to continue taking part in her weight reduction program. Granger[16] noted that the critical OIT in younger children was reported by a doctor who was at the time giving these children a vaccine. However, the overweight children in this research had already finished with their vaccine schedules, and they would only meet with a doctor by chance if they were sick. Therefore, the school needs to play a pivotal role in creating an earlier, stronger and consistent OIT to warn parents and family members sooner, to try to control overweight in children before they step up to obese status.

Child's Characteristics and Dietary Intake: A number of research studies[7,8] illustrated that food intake, such as high calorie and sweetened foods, fast foods and larger portion sizes, played a crucial role in children becoming overweight. This study revealed the same conclusion, that children overeat on a regular daily basis, including additional snacks and treats. The children's characteristics in the study were presented as their enjoyment in eating, they could eat larger portions, and they liked to eat high calorie foods. Even though young children can self-regulate their eating, in order to protect against overeating[26] the children in this study seem to fail in regulating themselves from overeating. The reason may be because they are genetically predisposed to a lower level of self-regulation and tend to be susceptible to indulgent parents and overweight environment factors.[27] They may have also been exposed to feeding practices of larger portions from a very young age. This practice would have compromised and contributed to their failure to self-regulate in responding to their appetite cues.[28] Another reason is that parents may use food to reward their child; and this could be associated with the child's self-regulation or his/her emotional state when presented with new food.[29]

Encouraged Eating: The results of the preliminary model demonstrated that the level of WG comes from

the interaction between the levels of CCDI and EE. The level of EE, demonstrated as inside and outside home environments, is high and influences children becoming overweight. The outside environment included food vendors in front of the school or unhealthy food from nearby convenience stores. Many research studies also showed that specific outside environments would influence a child becoming overweight but in different aspects, such as Granger[16] who remarked that the available mobile food merchants, or foods shared with strangers or neighbors causing a young child to become overweight or obese. The hot weather and lack of safe areas to exercise contribute to a decrease in outdoor activities and significantly increase the children's BMI. [30]

This study demonstrated the same result as other studies[31,32] regarding the inside environment that encouraged children to eat more often than they should. This included feeding by extended family members, food available in the home, spending time watching TV and playing with smartphones, or other electronic devices. Singhasai[33] also pointed out that viability of food in the house, a poor dietary pattern, and an authoritarian and permissive food parenting style had an indirect influence on a child's unhealthy eating patterns and his/her weight status. Li et al.[34] found that children who lived in a nuclear family were less likely to be overweight than children who lived with at least two grandparents.

Parental Overweight Perceptions: parental overweight perceptions play a significant role in determining if their child becomes overweight or not, with one study[35] showing that a parent's viewpoints have a pivotal role in influencing whether their child developed a healthy lifestyle, and continued to maintain it. As the model shows, parents and family's member tend to underestimate weight status by the time the preliminary child has already reached the overweight status. They tended to accept the child's weight as normal and refused to intervene, and declined to join a nutrition clinic or weight control program. The reason may be because a chubby baby is perceived as healthy and robust among the Thai people. Of concern, has been found that the perceptions of parents are directly associated with the child's weight status. For example, parents who have an overweight child are less likely to be concerned about the child's weight status compared to parents who have a child of normal weight status.[36-37] Another study[38] demonstrated that mothers were misclassifying their child's weight status in Australia, for the age group of 5-14 years.

When a child gains more weight, this influences the OIT level to become higher, in particular, the child's health problems (sleep apnea, hyperlipidemia), and the parents and family members began to become concerned with their child's health problems. They tried to control the child's weight, by limiting food/diet or creating more physical activities. Unfortunately, when the child had physical problems, they tended to be at a higher level of obesity, and when it is more challenging to begin a weight reduction program. Our finding about this aligned with another study [39] illustrating that most parents of overweight students perceived their child's weight status as a problem at the point when the child's health problems began to present.

When comparing the Sustaining Weight Gain in Young Children (SWGYC) [16] model to the SPSCBO model, both demonstrated that all the children liked to eat, and they preferred to eat higher calories and larger portions of food. They also lived in an environment that encourages them to eat more often than they should be. The SWGYC model illustrated that child-feeding practices plays a significant role as a core category in contributing to a young child becoming overweight. Even though strong triggers such as suggestions from health care providers were given to the parents, the parents continued to have positive perceptions such as "brain growth needs enough nutrition," "too young to restrict food," and "will lose weight when they go to school." They did not control their child's weight strictly and consistently enough.

The SPSCBO model, on the other hand, reveals the point when trigger levels are lower, in particular, notification of weight status by the school. Stronger triggers of notification from health care providers when the child's weight reaches severe obesity levels or having current health problems would increase the parents' perception about their child's weight grain. This is critical since it is more difficult for parents and presumably the children to undertake weight control when the child reaches a level of severe obesity.

Limitations

This research study used GT as a methodology. The findings, which were developed into a preliminary model, involved just one specific group and geographical area and are thus limited in their application to other groups. The model requires testing, and possible modification before being used regularly in practice.

Conclusions and Implications for Nursing Practice

The outcome of this study was a preliminary model that explains the social processes that affects school-aged children becoming overweight. The developed theory helps better understanding the phenomena. From the holistic point of view, all factors should be taken into account, to bring about positive changes in weight control, including school (inside/outside) environment as well as the home and broader community and social factors.

In raising the parents' awareness to practice their child's weight control earlier, school nurses and health education teachers should create an effective follow-up system based on weight status to allow early detection of those children most at risk of becoming overweight, and to include the family or caregivers in the discussion. As discussed above, the OIT from school was low, thus making parents and family less concerned about the problem. The system should plan how often to notify parents, at what point the school should meet with them, and understand and use clear guidelines for taking care of an overweight/obese child. For example, students' weight status screening should be arranged at least once per semester, and if any students' weight status is shown to be overweight, the school nurse should notify the parents right away and do a follow-up on the weight status of those students' every month. If the student's weight status is still increasing, the school nurse should make an appointment to talk with the parents about a weight management program.

A variety of strategies in weight management programs from school nurses, health care providers, and health education teachers to control weight status should be discussed individually with overweight children and their families. As the discussion shows above, the inside/outside influences in each family are different from case to case. If a weight reduction program is created, individual environmental family differences should be considered. For example, if the cause of a child's overweight status is due to buying non-healthy foods from convenience stores, the school nurse should discuss with the parents on how to put limits on this practice. If family members are contributing to overeating that causes a child to become overweight, the school nurse can discuss with the parents how to limit extra food from these family members, and try promoting the serving of healthier fruits/foods that are lower in sugar/calories.

Collaboration between school nurses, health care providers, and health information technology experts is recommended in order to develop new technologies for the creation of better tools for weight reduction programs. As many parents expressed that it was difficult to control their child's weight because they do not know precisely how much their child should eat, and when they are overeating. An application on a smartphone, such as a calorie calculation based on a food source, should be developed to help parents and family members in calorie counting. A research

study based on communication skills for parents and family members needs to be conducted to develop a program to help these parents and family members handle uncooperative children.

A law is required to impede selling unhealthy food in front of schools is needed, for example, getting rid of food vendors, who park in public areas in front of schools. A healthy snack policy is also needed to promote the prevention of overweight children. As one research study[40] showed, environmental improvements and better policies did help in the prevention of obesity in children in 49 communities found in the United States and Puerto Rico.

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กระบวนการทางสังคมของเด็กวัยเรียนที่มีน้ำหนักเกินมาตรฐาน

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บทคัดย่อ: จำนวนเด็กวัยเรียนที่มีน้ำหนักเกินมาตรฐาน มีจำนวนเพิ่มขึ้นทั่วโลกถึงแม้ว่าโรงเรียนต่างๆ จะมีโครงการหลายโครงการในการควบคุมน้ำหนักเด็กเหล่านั้น งานวิจัยฉบับนี้มีวัตถุประสงค์ในการค้นหากระบวนการทางสังคมของเด็กวัยเรียนที่มีน้ำหนักเกินมาตรฐานเพื่อทำความเข้าใจปรากฏการณ์ดังกล่าวให้ดีขึ้น โดยใช้การวิจัยเชิงทฤษฎีพื้นฐานของเกลเซอร์ ในการเก็บและวิเคราะห์ข้อมูล มีผู้เข้าร่วมโครงการเป็นบิดามารดาจำนวน 6 คน ครูจำนวน 4 คน และหัวหน้าทีมในการเตรียมอาหารกลางวันในโรงเรียน 1 คน ผลการวิจัยเป็นการเสนอ รูปแบบจำลองกระบวนการทางสังคม ของเด็กวัยเรียนที่มีน้ำหนักเกินมาตรฐาน ซึ่งพบว่าตัวแปรที่สำคัญในกระบวนการนี้คือ การรับประทานอาหารและลักษณะเฉพาะของเด็ก ส่วนตัวแปรอื่นๆ ได้แก่ การกระตุ้นการรับประทานอาหาร การรับรู้ของผู้ปกครองต่อ น้ำหนักเด็ก การสังเกตหรือกระตุ้นเตือน และการคุมน้ำหนัก เป็นตัวแปรรองในกระบวนการนี้ ซึ่งการรับประทานอาหารและลักษณะเฉพาะของเด็กหมายถึงพฤติกรรมการรับประทานอาหารของเด็ก การกระตุ้นการรับประทานอาหารหมายถึงสิ่งแวดล้อมภายในและภายนอกบ้านที่มีผลต่อพฤติกรรมการรับประทานอาหารของเด็ก การรับรู้ของผู้ปกครองต่อน้ำหนักเด็กหมายถึงการรับรู้และมุมมองของผู้ปกครองที่มีต่อภาวะน้ำหนักเด็ก การเพิ่มของน้ำหนักหมายถึงน้ำหนักที่เพิ่มขึ้นของเด็กหลังจากที่มีพฤติกรรมในการรับประทานอาหารเพิ่มขึ้น การสังเกตหรือกระตุ้นเตือนหมายถึงการแสดงออกทั้งทางวาจาและท่าทางของผู้เลี้ยงดู หรือบุคคลต่างๆ ต่อน้ำหนักของเด็ก โดยงานวิจัยพบว่าการกระตุ้นการรับประทานอาหารและการรับรู้ของผู้ปกครองต่อน้ำหนักเด็กมีผลต่อพฤติกรรมในการรับประทานอาหารของเด็กซึ่งทำให้เด็กมีน้ำหนักเกินมาตรฐาน แม้จะมีความพยายามในการใช้วิธีการต่างๆในการควบคุมน้ำหนักเด็ก แต่วิธีการเหล่านี้ไม่ได้เข้มงวดและต่อเนื่องพอที่จะควบคุมน้ำหนักเด็กได้ งานวิจัยได้ชี้ให้เห็นว่าการติดตามประเมินภาวะน้ำหนักเด็กอย่างสม่ำเสมอและการแนะนำจากโรงเรียนเป็นสิ่งจำเป็น ซึ่งเป็นเสมือนการกระตุ้นเตือนล่วงหน้าที่จะส่งเสริมให้เด็ก มีพฤติกรรมการรับประทานที่ดีและมีน้ำหนักอยู่ในเกณฑ์ปกติ การเข้าใจปรากฏการดังกล่าวจะช่วยให้พยาบาลและผู้ที่เกี่ยวข้องสามารถริเริ่มโครงการควบคุมน้ำหนักเด็กในวัยเรียนได้อย่างมีประสิทธิภาพและควรมีงานวิจัยเพิ่มเติมเพื่อทดสอบรูปแบบจำลองดังกล่าวหรือทดสอบความสัมพันธ์ของตัวแปรต่างๆ

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