Factors Predicting Overweight Prevention Behavior in Junior High School Students in The Eastern Economic Corridor Thailand. Case Study: Small And Medium Schools

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Abstracts: The development of the area as ASEAN's leading economic zone is an issue of concern in modernization, such as excessive food consumption and decreased physical activity. Promoting health in children is crucial, and one way to achieve this is by preventing them from becoming overweight. This research aimed to identify the factors influencing overweight prevention behaviors among junior high school students In the Eastern Economic Corridor Thailand. Case Study: small and medium schools. We collected data from 91 subjects using a self-administered questionnaire. The study subjects were randomly selected by systematic random sampling. Data were analyzed using frequency, percentage, and multiple regression analysis. The study showed that 22.0% of study subjects were overweight and obese. The results revealed that factors affecting overweight prevention behaviors included student earnings management and role model from family and friends on overweight prevention were predicted the overweight prevention behaviors of junior high school students at 30.8% statistically significant at 0.05. In conclusion, as a result of the prevention of overweight in junior high school, stakeholders such as families, schools, and communities should apply these factors in organizing activities to prevent overweight in children.

Keywords: Junior high school students, Overweight, Prevention behavior, Special economic zones.

1. INTRODUCTION

At present, The World Health Organization [1] reported that the world population is overweight or obese. It is estimated to increase to 1 billion people of the world population by 2025. It is found in about 650 million adults, 340 million teenagers and 39 million children. Both adults and children will suffer from health problems from being overweight or obese. In Thailand, according to the 2022 Annual Report of the Bureau of Nutrition [2] between 2018-2022, children aged 6-14 years with early onset of obesity and obesity were 13.5% of students were overweight and this proportion was higher than the target of the country (10%). According to the Chachoengsao Provincial Public Health Office's fiscal year 2021 report [3], children aged 6-14 years were disproportionately high in 2019-2021 at 59.70%, 63.29% and 57.67%, respectively, which did not meet the 66% threshold. Obese children are prone to hypertension, metabolic disorders, and risk of developing cardiovascular diseases as an adult. It also negatively affects mental health and being bullied leading to low self-esteem and low academic performance [4]. This puts children and adolescents at risk of poor health.

The cause of overweight and obesity is due to an imbalance in diet and exercise. Changes in dietary and exercise patterns are the result of environmental and social changes related to development, as well as lack of policy support in sectors such as health, agriculture, transportation, urban planning, environment and food processing [5]. Distribution the Eastern Economic Corridor (EEC) project has been developed as ASEAN's leading economic zone to attract investment in new targeted industries to drive the economy [6]. The results of the research will reduce the prevalence of overweight in middle school students, obesity and other diseases in the future.

2. MATERIEL AND METHODS

2.1. Research Objectives

This research aimed to identify the factors influencing overweight prevention behaviors among junior high school students In the Eastern Economic Corridor Thailand. Case Study: small and medium schools.

2.2. Theory and Conceptual Framework of the Research

A study of what factors can predict overweight prevention behavior in middle school students. Quantitative research methods are used by analyzing the causal factors of behavioral health problems, both intrapersonal factors. Family and environmental factors and social support.

The Department of Health [7] has developed criteria based on the growth of children aged 5-19 years to create a growth graph of Thai children in 2015. This research used the weight for height assessment criteria because it is an internationally used indicator of overnutrition and can classify children with stature according to their stature, stature, skinny, tall and short stature, by dividing their growth into 6 levels as shown in Table 1.

2. Table 1. Interpretation of weight for height criteria of Thai children aged 5-19 years. [7]

Weight for height	Interpretation
<-2 SD	Very thin
<-1.5 SD to -2 SD	Thin
+1.5 SD to -1.5 SD	Normal
>+1.5 SD to +2 SD	Overweight
>+2 SD to +3 SD	Early onset of obesity
>+3 SD	obesity

2.3. Multilateral Involvement in Overweight Prevention

Guidelines for preventing overweight in junior high school students include eating age-appropriate foods. Male adolescents should receive 1,700-2,300 kcal per day and teenage girls should receive 1,600-1,850 kcal per day. For physical activity guidelines in the age group of 13-17 years, both males and females, choose activities that improve movement, enhance breathing and blood circulation, such as running, swimming, walking, cycling. Build muscle strength such as pushing the floor, sitting up, lifting weights [8].

2.4. Eastern Economic Corridor

The Eastern Economic Corridor with densely located industrial plants. As a result, the context of the area has changed from an agrarian society to an industrial society. Some areas are a mix of agriculture and industry. These changes affect health conditions, especially obesity in school-age children with inappropriate troubleshooting activities [6].

2.5. Conceptual Framework

Independent variables

- Knowledge about dietary and exercise habits
- Attitude toward dietary and exercise habits
- Motivation for overweight prevention behaviors
- Eating habits and exercise
- Student earnings management
- Environment conducive to access to food sources
- School management on food consumption and exercise
- Receiving information about food intake and exercise
- Support from family and friends on overweight prevention
- Role model from family and friend for overweight

→

dependent variables

Overweight prevention behaviors in junior high school students

prevention
- Activities that encourage overweight prevention
- Socio-cultural influence on the overweight prevention

Figure 1. Research Conceptual Framework

2.6. Setting and Participation

Junior high schools were randomly selected. Sample size was calculated using the estimation of population mean. A total of 91 study subjects were selected by systematic random sampling.

Inclusion criteria being aged ≥12-15 years and being willing to participate in the study.

Exclusion criteria the study subjects were being unwilling or unable to complete the questionnaire.

2.7. Research Tool

A self-administered questionnaire used for data collection composed of 14 parts including personal characteristics, knowledge about dietary and exercise habits, attitude toward dietary and exercise habits, motivation for overweight prevention behaviors, eating habits and exercise, student earnings management, environment conducive to access to food sources, school management on food consumption and exercise, receiving information about food intake and exercise, support from family and friends in preventing overweight, role model from family and friend for overweight prevention, activities that encourage the prevention of overweight, socio-cultural influence on the prevention of overweight, and overweight prevention behaviors. Personal characteristics included 14 items regarding data of study subjects. Knowledge was assessed through 8 yes-no questions and categorized into 3 group as high (7-8 scores), medium (5-6 scores) and low (0-4 scores). Overweight prevention behaviors consisted of 10 “5-level Likert scale” questions starting from “always” to “never”. All other parts of the questionnaires composted of 10 “5-level Likert scale” questions starting from “strongly agree” to “strongly disagree”. All parts of the questionnaires, except for person characteristics and knowledge, were classified into 3 groups using mean score as high (3.68 – 5.00) average (2.34 – 3.67) and low levels (1.00 – 2.33). The questionnaire was qualified by the 3 experts in public health and adolescent. Item Objective Congruence Index (IOC) was tested for its reliability. All items were greater than 0.5. The radiality of the questionnaire was tested by 30 students who were not in the study.

2.8. Data Collection

Students who were willing to participate in the study were requested to sign the assent form by students themselves and by their primary caregivers. After getting permission from head of each school, we made appointment with students who were the study samples to explain about data collection. Then, they were requested to complete the questionnaire. Responding to the questionnaire was approximately 40 minutes. All complete questionnaires were used for data analysis.

2.9. Data Analysis

Data were analyzed by descriptive statistics including frequency, percentage, mean, standard deviation to present personal information and overview of all independent variable. Multiple regression analysis was employed to determine factors influencing overweight prevention behaviors among junior high school students.

3. RESULTS AND DISCUSSIONS

3.1. Personal Data of the Sample

A total of 91 subjects were included in the study; 52.7% medium school and 54.9% female. 38.5% of them

were 14 years old and 35.2% of them in the grade 8. Respect to nutritional status, 70.3% of them were normal. Most of primary caregivers (63.7%) of the subjects were parents. Approximately 60.4% received 51-100 Thai baht to school and 33.0% of them played computer games when they had free time (Table 2).

Table 2. The number and percentage of samples, classified by personal data (n=91).

Personal data	Number	Percentage
School		
Medium school	48	52.7
Small school	43	47.3
Sex		
Male	41	45.1
Female	50	54.9
Age		
13	34	37.4
14	35	38.5
15	22	24.1
Grade		
7	30	33.0
8	32	35.2
9	29	31.8
Nutritional status		
Thin	4	4.4
Very thin	3	3.3
Normal	64	70.3
Overweight	8	8.8
Obesity onset	7	7.7
Obesity	5	5.5
Primary caregivers		
Father and mother	58	63.7
Father	6	6.6
Mother	19	20.9
Relative	2	2.2
Grandparents	6	6.6
Money earned for school (Thai baht)		
0-50	34	37.4
51-100	55	60.4
101-150	2	2.2
Activities in free time		
Watch TV	21	23.1
Play sports	13	14.3
Play computer games	30	33.0
Read	2	2.2
Sleep	18	19.8
Others	7	7.6

3.2. Factors Potentially Influencing Overweight Prevention Behaviors

The results indicated that the sample had all variables observed at a high level, except for knowledgeable about dietary and exercise habits (67.0%), school management of food consumption and exercise (72.5%), and socio-cultural influences on overweight prevention (69.2%) were at an average level (Table 3).

Table 3. Number and percentage of samples classified by levels of the variables studied (n=91).

Independent variables	Number (%)		
	high	average	low
Knowledge of dietary and exercise habits	29 (30.8)	61 (67.0)	2 (2.2)
Attitude of dietary and exercise habits	75 (82.4)	14 (15.4)	2 (2.2)
Motivation of overweight prevention behaviors	72 (79.1)	19 (20.9)	-
Eating and exercise habits	64 (70.3)	26 (28.6)	1 (1.1)
Student earnings management	81 (89.0)	10 (11.0)	-

Environment conducive to access to food sources	44 (48.4)	34 (37.4)	13 (14.3)
School management on food consumption and exercise	7 (7.7)	66 (72.5)	18 (19.8)
Receiving information about food intake and exercise	55 (60.4)	26 (28.6)	10 (11.0)
Support from family and friends for overweight prevention	60 (65.9)	22 (24.2)	9 (9.9)
Role model from family and friends on overweight prevention	45 (49.5)	44 (44.0)	6 (6.6)
Activities encouraging overweight prevention	63 (69.2)	21 (23.1)	7 (7.7)
Socio-cultural influence on the overweight prevention	5 (5.5)	63 (69.2)	23 (25.3)
Overweight preventing behaviors	40 (44.0)	45 (49.5)	6 (6.5)

3.3. Factors Affecting Overweight Prevention Behavior of Junior High School Students

The stepwise multiple regression analysis was explored to determine factors affecting overweight prevention behaviors of junior high school students. The results revealed that factors affecting overweight prevention behaviors included student earnings management (Beta = 0.404) and Role model from family and friends on overweight prevention (Beta = 0.342). The two variables predicted the overweight prevention behaviors of junior high school students at 30.8% statistically significant at 0.05 (Table 4).

Table 4. Factors affecting overweight prevention behavior of junior high school students (stepwise multiple regression analysis) (n=91).

Independent variables	B	Beta	t	p-value
Student earnings management	0.339	0.404	4.549	<0.001*
Role model from family and friends on overweight prevention	0.276	0.342	3.856	<0.001*

*P-value <0.05, Constance = 0.569, R Square = 0.323, Adjusted R Square = 0.308

3.4 DISCUSSION

The results indicated that 22.0% of the subjects were overweight and obese. Factors affecting overweight prevention behaviors among junior high school students in qualitative results included student earnings management and role model from family and friends on overweight prevention.

According to the survey results, the subjects were overweight 22.0% and this figure was higher than the target (10%) set by the Department of Health. As a result of the body receiving more energy than the body needs. Therefore, the residual energy is stored in the form of fat in various organs. It adversely affects health and increases the risk of other complications.

The study indicated that students who had good earning management tended to have better overweight prevention than those who had no management. It could be described that the money they received each day indicated their ability to buy food. Students who received a lot of money each day would have better food buying behavior than students who receive a small amount of money each day. The foods sold in front of school or nearby were not expensive, which students could buy them easily. This is consistent with the qualitative study. Based on the interview with students, it was found that students collected the money given by their parents to buy foods sold in front of school before going home. Most of them were fried foods, soft drink , crispy snacks, which were not expensive. The environmental factors in schools affecting hypernutrition among kindergarten students in Bangkok indicated that types of high energy foods sold around school areas had a high level of positive association with hypernutrition among kindergarten students [9].

Our results found that students who Role model from family and friends on overweight prevention had more chance to prevent overweight than those who did not receive. Subjects who received models from family and friends for good overweight prevention had good protection against overweight. It can be explained that most people perceive the stories of society through media. This is mainly due to observation from the subject. In some behaviors, learning through a single model alone. The family therefore plays an important role in being a good role model in preventing overweight in terms of both diet and exercise [10].

This study revealed that the subjects who received activities supporting overweight prevention, such as eating and exercise habits and role model from family and friends on overweight prevention Therefore, students who involved in these activities might be more confident to control their weight.

CONCLUSIONS

The student earnings management and role model from family and friends on overweight prevention can predict overweight prevention behaviors in middle school students. Stakeholders such as families, schools and communities should focus on encouraging students to plan on purchasing nutritious food. It is a good model to prevent overweight.

REFERENCES

[1] World Health Organization. “World Obesity Day 2022-Accelerating action to stop obesity.”

[2] The Bureau of Nutrition. “Annual Report 2022 Nutritional Surveillance. Department of Health. Thailand.”

[3] Chachoengsao Provincial Public Health Office. "Annual Report Fiscal 2021.”

[4] World Obesity Federation. “World Obesity Atlas 2022.”

[5] World Health Organization. “Obesity and overweight.”

[6] Office of the Secretariat of the House of Representatives. “Eastern Economic Corridor (EEC) New Hope for Sustainable Economic Growth.”

[7] Bureau of Nutrition. “Manual of growth reference criteria for children aged 6-19 years.” 2021. Department of Health, Ministry of Health. (2th edition) (Revised version) TS Interprint Company Limited. ISBN: 978-616-11-4548-4.

[8] Bureau of Nutrition. “Annual Report 2017. Department of Health, Ministry of Health.”

[9] S. Aino, S. Rattanagreethakul, and S. Junprasert, “School Environment Factors Affecting Overweight Kindergarteners in Bangkok.” Journal of Public Health Nursing Vol.32, No.1, January-April (in Thai), pp.11-28, 2018.

[10] S. Joyrod and A. Songthap, “Family role is fundamental in overweight prevention among school children.” The Southern College Network journal of Nursing and Public Health. Vol.6, No.2, May-August (in Thai), pp.270-278, 2019.

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