FACTORS AFFECTING SUGAR ADDICTION BEHAVIOR AMONG HIGH SCHOOL STUDENT IN KANCHANABURI PROVINCE, THAILAND

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Abstract- A cross-sectional study design was to identify the factors affecting sugar addiction behavior among high school student in Kanchanaburi province, Thailand.. A total of 432 high school students were involved in the study. A two-stage-cluster sampling technique and a structured questionnaire were used to collect the data from 20th January 2015 to 20th February 2015. A multiple logistic regression was used to determine the significant determinants of sugar addiction behavior among high school students. After adjusting found that BMI (AOR: 1.717, 1.889, 0.468, 95% CI: 0.906-3.255, 0.476-7.491, 0.180-1.220), acknowledge about project or campaign don't eat sugar in school (AOR: 0.537, 95%CI: 0.294-0.982) and dietary pattern (AOR: 9.643, 3.083, 95%CI: 3.730-24.928, 1.538-6.178) were significantly associated with sugar addiction behavior among high school students. Hence, the effective and improved health workforce performance should be coupled with effective health education to lower sugar addiction rate of high school student. Also strengthening of teacher, village health volunteers and community structures may be improve the sugar addiction behavior in high school students.

Keywords- Sugar addiction

I. INTRODUCTION

Today, the problems of teenage situation in Thailand are the intensification of all aspects such as the deviation of attitude and behavior, the distant of religious, the consumption value, the contention, the addition, the pornography and the game addiction etc. Especially, the consumption behavior, the fast food consumption, the sparkling water, the candy consumption and the dessert consumption were focus. From a dietary habit survey of school adolescents in Bangkok, Nonthaburi, Pathumthani and Nakhonpathom provinces by Division of Nutrition, Department of Health found that the unwanted behavior is the 23.29 percent of soft drink consumption in every day of, 14.91 percent of soft drink consumption as the snack, 16.51 percent of juice consumption as a snack, and 84.0 percent of food consumption of two meals per day (Monday - Friday) [1].The result of the research on reference indicated that some chemicals were released from the brains of people addicted to sugar.{The satisfaction and craving with the sweet food calls the sugar dependency or sugar addiction. People addicted sugar had difficulty stopping or reducing eating sweet food. This addiction is no different from general addiction. Moreover, eating foods in sweet or sugar is the number one cause of obesity, diabetes, hypertension, cancer, paralysis among others. Several nutrition experts mentioned that the sugar is absorbed into the bloodstream in a matter of 10 minutes. Then insulin, released by the pancreas reduces the volume of sugar in the bloodstream, making the concentration lower. This mechanism is called "Hypoglycemia" and affects the cerebrum. Learning, creativity, consciousness and awareness behavior is found in this area of the brain; these activities are passed onto the brain stem which is responsible for instinct and behavior. Violent behavior was found prevalent in sugar addicted people. Surveys in the U.S. found that 80-85% of prisoners having low blood sugar similar to neurotic psychopath groups} [2].

A research of Avena, NM, Rada, P., & Hoebel, BG[2] found that sugar is an addictive substance because it affects to the nervous system of the brain. From the result of studies with mice showed that mice the wanted and had withdrawal symptoms as amphetamine addition were found in mice. A research of Wideman, CH, Nadzam, GR, & Murphy, HM[3] found that the effect on the nervous system derived from sugar was similar to the opium addition. Obesity and diabetes occurred in people long-term sugar addiction. Moreover, the sugar craving was still presented by the short term of stop eating sugar. Based on the research of Parker, G., Parker, I., &Brotchie, H[4] found that the stress, overweight and obese people were eating the junk food.

Kanchanaburi province found in the western part of Thailand has the third highest population in the western area. In future a highway project will convene between Kanchanaburi and Dawei deep seaport, indicating that there is a possibility of high growth in its progress. The Thamuang district located in this area is the key economic zone with its large sugar manufacturing industry. Moreover, many high schools located in this area. From the child and teenage monitor project of this province indicated that the average of child obesity was 4.57 percent, which was higher than the national average (4.56 percent) [3]. The study of the Agency for Cultural

Kanchanaburi found that smoking, alcohol and substance abuse, gambling, media exposure and sexual controversy were influencing Kanchanaburi teenagers. The information from Public health information of Kanchanaburi Province investigated that the public health behaviors such as unbalanced diet, over food consumption, lack of exercise, and the stress was found in this province. This behavior was the risk of chronic diseases, including ischemic heart disease[4]. In addition, the research of Nutrition Institute, Mahidol University mentioned that the children game addictions take any snack foods and soft drink. This activity presented the obesity more than 1.8 time of general child. Moreover, the childhood obesity was change to the adult obesity about 80 percent. Moreover, the teenage obesity was high risk of non-chronic diseases more than the general teenage. Sleep apnea, depression and arthritis were also found in child obesity [5].

Of such problems, it is interesting to study the factors that influence. There are no reports of the sugar addiction in youth aged 16-18 years, which is growing into a mature adult In order to find ways to prevent infections from spreading even more sweet to the point.

This study aims to describe the sugar addiction of youth aged 16 – 18 years old and to determine the factor related to sugar addiction of youth aged 16-18 years, in Thailand. The benefit of this study is to improve the intervention policy on health promotion sugar addiction consumption against teenage obesity as well as the information to prevent on the risk factors related to adolescent sugar over consumption among these populations in Thailand.

II. DETAILS EXPERIMENTAL

2.1. Materials and Procedures

This study was cross-sectional study which aims at investigating the factors affecting teenage children behavior of sugar addiction among high school student age between 16 – 18 years old. The study conducted from 20th January, 2015 to 20th February, 2015 in Kanchanaburi province, Thailand. The students from three school facilities (Thamuang Rajbumrung School, Laokwan Rajbumrung School, and Phanomthuan Chanupatham School) located in Kanchanaburi province were randomly selected in this study.

The sample size was calculated based on the formula of Yamane from an eligible population of people.

$$n = \frac{N}{1+ Ne^2}$$

When n = Sample size
N = Population size = 14,395
e = Sampling error rate. (.05)

Therefore,

$$n = \frac{(14,395)}{1+ 14,395(0.05)^2}$$

$$n = 389.1855 \approx 390$$

Thus, the smallest size of sample in this study is 390. However the error of 10% is including so that the given smallest size of the sample is equal to 429 subjects $\approx$ 432 subjects.

A structured questionnaire was used to collect data from student in high schools. This questionnaire contained the closed-ended questions to generate a quantitative data consists of 5 parts;

Part 1: Demographic data (8 questions)
This section contained introductory information on demographic data.

Part 2: Nutritional attitude (8 questions)
This part contained 8 questions about nutritional attitude which applied from Health Education Division, Department of Health Service Support, Ministry of Public Health of Thailand.[6]

Part 3: Nutritional knowledge (9 questions)
This part contained 9 questions about nutritional knowledge which applied from Health Education Division, Department of Health Service Support, Ministry of Public Health of Thailand.[6]

Part 4: Dietary form (6 questions)
This part contained 6 questions about dietary form which applied from Health Education Division, Department of Health Service Support, Ministry of Public Health of Thailand.[6]

Part 5: Sugar addiction quiz (12 questions)
This part contained 12 questions about sugar addiction quiz which taken from Dr. Nancy Appleton's Lick the sugar habit.[7]

III. RESULTS

3.1. Distributions of respondents by dependent and independent variables

3.1.1 Distributions of respondents by characteristics, demographic data, family data, shops data and project or campaign about don't eat sugar in school data the independent variable in this study was characteristics; demographic data, family data, shops data and project or campaign data about sugar consumption in school data. Further, an answer to students was cross-checked with records in 3 schools of Kanchanaburi province.

The results shown in Table 1, there were 432 participants involved in this study. About 69% of respondents were female student and 31% of respondents were male students. The percentage of 16, 17 and 18 years old were 35.2%, 33.1% and 31.7%, respectively. The BMI percentages of underweight, normal, overweight and obesity were 31.7%, 53.7%, 6.2% and 8.3%, respectively. The daily income percentages of 0-100 and 101-200 THB were 96.1 and 3.9%, respectively. The percentages of members in family are the obese less than 2 and greater or equal 2 persons were 80.8% and 19.2%, respectively. The percentage of number of shops between home and school less than 8 and greater or equal 8 stores were 68.3% and 31.7%, respectively. The percentage of number of shops in school less

than 5 and greater or equal 5 stores were 50.5% and 49.5%, respectively. The percentage of know and don't know acknowledge about project don't eat sugar in school were 47.2% and 52.8%, respectively.

Table 1 Number and percentage of respondents by demographic data and characteristics

Characteristics	Number	Percent
	Total 432	100.0
Sex		
- Male	134	31.0
- Female	298	69.0
Age (years old)		
- 16	152	35.2
- 17	143	33.1
- 18	137	31.7
BMI		
- Underweight	137	31.7
- Normal	232	53.7
- Overweight	27	6.2
- Obesity	36	8.3
Daily income (THB)		
- 0 - 100	415	96.1
- 101 – 200	17	3.9
Members in family is the obese (persons)		
- < 2	349	80.8
- ⩾ 2	83	19.2
Number of shops between home and school (stores)		
- < 8	295	68.3
- ⩾ 8	137	31.7
Number of shops in school (stores)		
- < 5	218	50.5
- ⩾ 5	214	49.5
Acknowledge about project don't eat sugar in school		
- Know	204	47.2
- Don't know	228	52.8

3.1.2 Distributions of respondents by nutritional attitude, nutritional knowledge, dietary pattern, dietary pattern: sugar addiction In terms of nutritional attitude, nutritional knowledge, dietary pattern, and dietary pattern for sugar addiction. Over half students (55.8%) were found range of 10.34-16 points (Good) for nutritional attitude factors. More half students (53.7%) were found in a range of 19-23.66 points (Low) for nutritional knowledge factors questionnaire part. Over half students (54.6%) were found in a range 5-9 points (Medium) for dietary pattern factors. Majority students (84.7%) were found in a problem on sugar addiction.

Table 2 Number and percentage of respondents by nutritional attitude, nutritional knowledge, dietary pattern, sugar addiction factors

Characteristics	Number (n = 432)	Percent
		100.0
Nutritional attitude (points)		
- Good (10.34 – 16)	241	55.8
- Medium (5.67 – 10.33)	169	39.1
- Low (1 – 5.66)	22	5.1
Nutritional knowledge (points)		
- Good (24.34 – 27)	104	24.1
- Medium (23.67 – 24.33)	96	22.2
- Low (19 – 23.66)	232	53.7
Dietary pattern (points)		
- Good (10 – 14)	63	14.6
- Medium (5 – 9)	236	54.6
- Low (0 – 4)	133	30.8
Dietary pattern : sugar addiction		
- Have problem	366	84.7
- No problem	66	15.3

3.2 Association between sugar addiction and independent variables

3.2.1 Association between sugar addiction and socio – demographic factors Chi-Square and simple logistic regression tests were performed to determine existence of relationship between sugar addiction and socio-demographic factors among students from three schools of Kanchanaburi province, Thailand. The results revealed that BMI and acknowledge about project or don't eat sugar in school were significant with sugar addition. In terms of nutritional attitude, nutritional knowledge, dietary pattern factors, as indicated in Table 3 and 4 two from three variables were found significant. Dietary pattern.

Table 3 Association between sugar addiction and socio – demographic factors.

Independents variables	Sugar addiction			Crude OR	95% CI	p-value
	n	Yes (%)	No (%)			
Sex	**432**					
- Male	134	85.8	14.2	1		
- Female	298	84.2	15.8	1.133	0.637-2.018	0.671
Age (years old)	**432**					
- 16	152	36.3	28.8	1		
- 17	143	34.2	27.3	0.992	0.498-1.977	
- 18	137	29.5	43.9	0.532	0.283-1.001	0.072
BMI	**432**					
- Underweight	137	30.9	36.4	1		
- Normal	232	55.7	42.4	1.547	0.856-2.796	
- Overweight	27	6.6	4.5	1.699	0.473-6.102	
- Obesity	36	6.8	16.7	0.483	0.209-1.112	**0.034***
Daily income (THB)	**432**					
- 0 - 100	415	95.9	97.0	1		
- 101 – 200	17	4.1	3.0	1.368	0.305-6.124	0.682
Members in family is the obese (persons)	**432**					
- < 2	349	84.5	15.5	1		
- ⩾ 2	83	85.5	14.5	1.083	0.550-2.131	0.817
Number of shops between home and school (stores)	**432**					
- < 8	295	85.4	14.6	1		
- ⩾ 8	137	83.2	16.8	1.182	0.680-2.055	0.552

Table 3 Association between sugar addiction and socio – demographic factors (cont.)

Independents variables	Sugar addiction			Crude OR	95% CI	p-value
	n	Yes (%)	No (%)			
Number of shops in school (stores)	**432**					
- < 5	218	82.1	17.9	1		
- ⩾ 5	214	87.4	12.6	1.509	0.887-2.568	0.129
Acknowledge about project or campaign don't eat sugar in school	**432**					
- Know	204	79.9	20.1	1		
- Don't know	228	89.0	11.0	2.042	1.192-3.499	**0.009***

Table 4 Association between sugar addiction and nutritional attitude, nutritional knowledge, dietary pattern variables.

Independents variables	Sugar addiction			Crude OR	95% CI	p-value
	n	Yes (%)	No (%)			
Nutritional attitude	**432**					
- Good	241	54.6	62.1	1		
- Medium	169	39.9	34.8	2.050	0.461-9.133	
- Low	22	5.5	3.0	1.301	0.748-2.263	0.461
Nutritional knowledge	**432**					
- Good	104	22.7	31.8	1		
- Medium	96	21.3	27.3	1.921	1.029-3.588	
- Low	232	56.0	40.9	1.096	0.544-2.211	0.078
Dietary pattern	**432**					
- Good	63	11.7	30.3	1		
- Medium	236	54.1	57.6	7.267	2.984-17.699	
- Low	133	34.2	12.1	2.424	1.286-4.568	**0.000***

3.3 Predicting factors for sugar addiction in students

Full model of multiple logistic regression analysis of predicting factors for sugar addiction in students was calculated by using enter method in SPSS version 16.0 Table 5 shows the eleven variables that were included in a full multiple regression model to determine predicting factors for sugar addiction in students. In this full model, three variables were significant consist of BMI (p-value = 0.034), Acknowledge about project or campaign don't eat sugar in school (p-value = 0.043) and dietary pattern (p-value < 0.001).

Table 5 Full model of multiple logistic regression analysis for sugar addiction among students with demographic data factors, nutritional attitude factors, nutritional knowledge factors and dietary pattern factors

Independent variables	Adj. OR	95% CI		p-value
		Lower	Upper	
Sex				
- Male	1			
- Female	1.046	0.538	2.035	0.894
Age (years old)				
- 16	1			
- 17	0.941	0.445	1.988	
- 18	0.576	0.285	1.164	0.231
BMI				
- Underweight	1			
- Normal	1.717	0.906	3.255	
- Overweight	1.889	0.476	7.491	
- Obesity	0.468	0.180	1.220	**0.034***
Daily income (THB)				
- 0 - 100	1			
- 101 – 200	0.887	0.165	4.781	0.889
Members in family is the obese (persons)				
- < 2	1			
- ≥ 2	0.858	0.390	1.884	0.702
Number of shops between home and school (stores)				
- < 8	1			
- ≥ 8	1.748	0.943	3.242	0.076
Number of shops in school (stores)				
- < 5	1			
- ≥ 5	0.665	0.361	1.224	0.190
Acknowledge about project or campaign don't eat sugar in school				
- Know	1			
- Don't know	0.537	0.294	0.982	**0.043***
Nutritional attitude				
- Good	1			
- Medium	1.651	0.318	8.584	
- Low	1.127	0.598	2.124	0.814
Nutritional knowledge				
- Good	1			
- Medium	1.280	0.620	2.643	
- Low	0.779	0.353	1.721	0.384
Dietary pattern				
- Good	1			
- Medium	9.643	3.730	24.928	
- Low	3.083	1.538	6.178	**0.000***

DISCUSSION

4.1 Sugar addiction

Sugar addiction is probably the most important and widespread type of addiction on planet earth today and getting worse by the day. It affects many children, especially teenagers, whose lives are chaotic and eating habits poor. It affects millions of adults, who just let it slide because it is so socially acceptable.[8] This study's findings showed that over half respondents (84.7%) were found to have a problem about sugar addiction. This study results are consistent with results in Child Watch project Thailand 2007 – 2008.[3] In addition, the current study results were further supported by results from literature.

4.2 Socio – demographic factors

In answering this research question, socio-demographic and environment in school factors were examined in this study. The details of these factors are discussed below.

4.2.1 Sex With regard to sex, half students who participated in this study were female. Both bivariate and multivariate analysis revealed that sex was not associated with sugar addiction (p-value = 0.894). The current result was not significant because of number of possible reasons. This could be due to over half students who participated in this study were female. Hence, our study results resemble in sex but contrasted in age with results from other previous studies.[9] Results from the Canadian province of Newfoundland and Labrador (NL) that total of 652 participants (415 female, 237 male). The prevalence of 'food addiction' according to the YFAS criteria

was 5.4% in the entire population (in women and men it was 6.7% and 3.0%, respectively). Additionally, when using BMI adiposity classifications, overweight/obese women had higher prevalence of 'food addiction' as compared to overweight/obese men.

4.2.2 Age With regard to age, a similar proportion students who participated in this study were 16 (35.2%), 17 (33.1%) and 18 (31.7%) years old. Both bivariate and multivariate analysis revealed that age was not associated with sugar addiction (p-value = 0.231). About students interviewed found to be within in each of three age categories of 16, 17 and 18 years old. The current result was not significant because of number of possible reasons. Our study results resemble with other previous studies' results. Results from California a study explained that more than half a million teenagers have eating disorders. Teenage girls are at greatest risk, with as many as 10 in 100 young women suffering from an eating disorder, but a growing number of teenage boys are struggling with eating disorders as well. Eating disorders may begin as a diet or new workout routine that gets more restrictive and obsessive over time. Teens may stop spending time with family or friends in order to exercise longer, or may cut out food groups until their diet consists of a limited number of low-calorie foods.[10]

4.2.3 BMI With regard to BMI, half students who participated in this study were normal. Both bivariate and multivariate analysis revealed that BMI was associated with sugar addiction (p-value = 0.034). About students interviewed found to be within in each of four categories of underweight, normal, overweight and obesity. The current result was significant because of number of possible reasons. Hence, our study results resemble with results from other previous studies that "Food addiction" was also related to higher current/lifetime BMI, with participants meeting the "food addiction" threshold being obese on average. Participants who met the YFAS "food addiction" cut-off had higher current and lifetime BMI than either participant with only healthy controls. This is consistent with the proposal that addictive-like eating is related to compulsive consumption of calorie-dense foods, which would increase the risk of obesity. Thus, addictive-like eating behavior (not accounted for by eating disorders) may be particularly relevant to obesity[11].

4.2.4 Daily income With regard to Daily income, half students who participated in this study were range 0-100 THB. Both bivariate and multivariate analysis revealed that daily income was not associated with sugar addiction (p-value = 0.889). About half students interviewed found to be within in each of two categories of range 0-100 THB and 101-200 THB. The current result was not significant because of number of possible reasons. Hence, our study results resemble with results from other previous studies that Low-income women with preschool-aged children regard food cravings and food addiction as common behavior, but view food cravings with humor and not something to be resisted, according to Nipher M. Malika and her associates. Study participants viewed food craving as a strong desire for food and as an acceptable behavior that did needed to be neither changed nor resisted. In fact, food cravings were viewed as a source of humor in nearly all of the interviews conducted by the investigators. In contrast, food addiction was treated as much more serious and distinct from food cravings, and was viewed as a behavioral failing rather than a moral one. Participants considered it possible for children to have food addictions but only if parents indulged their children's cravings.[12]

4.2.5 Members in family are the obese With regard to members in family are the obese, half students who participated in this study were less than 2 persons. Both bivariate and multivariate analysis revealed that members in family are the obese was not associated with sugar addiction (p-value = 0.702). About half students interviewed found to be within in each of two categories of < 2 persons and ≥ 2 persons. The current result was not significant because of number of possible reasons. Hence, our study results resemble with results from other previous studies that Food addiction is likely the culmination of several factors that interplay in the overall cause of this disorder. A man or woman may develop a food addiction as a result of biological, psychological, or social reasons. Biological causes that may influence the progression of a food addiction might include hormonal imbalances, abnormalities in various brain structures, side effects from the use of certain medications, or having family members with food addiction issues.

4.2.6 Number of shops between home and school With regard to number of shops between home and school, half students who participated in this study were less than 8 stores. Both bivariate and multivariate analysis revealed that number of shops between home and school was not associated with sugar addiction (p-value = 0.076). About half students interviewed found to be within in each of two categories of < 8 stores and ≥ 8 stores. The current result was not significant because of number of possible reasons. Hence, our study results resemble with results from other previous studies that the food in school cafeteria lines tempts students into buying food that pleases their taste buds, but give those empty calories and too much fat; yet they are hungry again an hour later. This problem is larger than most people realize. Three-fourths of schools in the United States serve foods with more than acceptable amounts of fat.[13]

4.2.7 Number of shops in school With regard to number of shops in school, half students who participated in this study were less than 5 stores. Both bivariate and multivariate analysis revealed that number of shops in school was not associated with

sugar addiction (p-value = 0.190). About half students interviewed found to be within in each of two categories of < 5 stores and ≥ 5 stores. The current result was not significant because of number of possible reasons. Hence, our study results resemble with results from other previous studies that Most of the schools that have vending machines fill them with sugar-filled sodas and other beverages, as well as, snacks high in fat. These snacks may include candy, ice cream, gum, and even candy-smothered popcorn. This food has little to no nutritional value and is usually high in fat, but students do not seem to care. They like to grab something quick from the vending machines rather than buying a complete, nutritious meal. When students eat like this, they go to class and the fat is stored. Over time, the students become a little more overweight each week until they are diagnosed as obese. Soda from vending machines can ruin a child. The increase of caffeine consumption alone can lead to insomnia and anxiety in students. Also, one-third of students who consume high doses of caffeine regularly are hyperactive enough to be diagnosed with ADHD. Another problem with soda in vending machines is that many students replace milk with soda in their diets. Soda has absolutely no calcium, an essential mineral that all growing students need to have strong, healthy bones. Replacing the calcium-rich milk for soda can cause students to have osteoporosis in later years. Luckily, some schools have noticed these problems and have done something about them. The state of California has banned middle schools from selling carbonated drinks before the end of the last lunch period.[14]

4.2.8 Acknowledge about project or campaigns don't eat sugar in school With regard to acknowledge about project or campaign don't eat sugar in school; half students who participated in this study were less than don't know. Both bivariate and multivariate analysis revealed that Acknowledge about project or campaign don't eat sugar in school was associated with sugar addiction (p-value = 0.043). About half students interviewed found to be within in each of two categories of know and don't know. The current result was significant because of number of possible reasons. The findings of this study indicated that project or campaign don't eat sugar in school was effect for sugar consumption in student. Student who know about project or campaign don't eat sugar in school don't have sugar addiction problem.

4.2.9 Nutritional attitude With regard to nutritional attitude, half students who participated in this study were range 10.34-16 points (Good). Both bivariate and multivariate analysis revealed that nutritional attitude was not associated with sugar addiction (p-value = 0.814). About students interviewed found to be within in each of three categories of Good (10.34-16 points), Medium (5.67-10.33 points) and Low (1-5.66 points). The current result was not significant because of number of possible reasons. In addition, other study that There is a pervasive belief in the United States that most people with excess weight choose to overeat and not exercise, making obesity a lifestyle choice deserving of little sympathy or patience. This belief has resulted in socially acceptable public ridicule of overweight and obese individuals and negative stereotypes. Some physicians also maintain these negative attitudes. Food addiction, which closely resembles the neurochemical response of alcohol and drug addiction, has finally gained credibility in the scientific community as a plausible explanation for obesity in some people. Although obesity rates have escalated, many physicians remain misinformed about obesity and only treat the symptoms. Most physicians are unaware of food addiction and its effects on the mind and body. Some physicians are also unaware of their own weight bias and its impact on their patients.[15]

4.2.10 Nutritional knowledge With regard to nutritional knowledge, half students who participated in this study were range 19-23.66 points (Low). Both bivariate and multivariate analysis revealed that nutritional knowledge was not associated with sugar addiction (p-value = 0.384). About students interviewed found to be within in each of three categories of Good (24.34-27 points), Medium (23.67-24.33 points) and Low (19-23.66 points). The current result was not significant because of number of possible reasons. This study results showed that most student who have a good nutritional knowledge don't have sugar addiction problem.

4.2.11 Dietary pattern With regard to dietary pattern, half students who participated in this study were range 5-9 points (Medium). Both bivariate and multivariate analysis revealed that dietary pattern was associated with sugar addiction (p-value = 0.000). About students interviewed found to be within in each of three categories of Good (10-14 points), Medium (5-9 points) and Low (0-4 points). The current result was significant because of number of possible reasons. This study results showed that most student who have a good dietary pattern don't have sugar addiction problem.

CONCLUSIONS

In demographic data and characteristics among students. With regards to research question one about demographic data and characteristics among students; our findings appear to concur with findings of 2007-2008 Child Watch project Thailand. Our findings seem to indicate that big proportion of students (84.7%) have a problem about sugar addiction. With regards to demographic data and characteristics among students, two variables might affect sugar addiction this variable is BMI and acknowledge about project or campaign don't eat sugar in school. In Nutritional attitude, nutritional knowledge, dietary pattern, sugar addiction factors findings of this study

suggested that dietary pattern affect sugar addiction in high school, Kanchanaburi province, Thailand. However, there is a need explore further other nutritional factors which were not found using other study setting and study designs such as case-control study.

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