

## Factors Related Well Height and Body of Good Proportion among Students in Namon District Kalasin Province: Thailand

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### Abstract

This cross-sectional analytical study aimed to study factors related well height and body of good proportion (WHGP) among students in Namon District Kalasin Province: Thailand. 5 Cluster random sampling was used to select 942 students from 2,264 students in primary school and junior high school (age 6 – 15-year-olds) of 18 schools. Data were analyzed using descriptive statistics and Binary logistic regressions. The results were a total of 73.99% of weight were proportionate status; male 41.46 %, female 58.54% ( $\bar{X} = 34.90 \pm 13.29$ , Min = 13.00kg. Max = 86.00kg.). Mostly of height were normal height 77.81%; male 40.93%, female 59.07% ( $\bar{X} = 138.50, \pm 14.91$ , Min = 100.00 cm. Max 175.00 cm.). A total of 68.05% were well height and body of good Proportion (WHGP.); male 41.41%, female 59.59%. Factors significantly associated with reporting WHGP (P value <.05) were (a) sex (OR = 0.660, 95% CI = 0.480-0.907), (b) studying at grade level (OR = 6.787, 95% CI = 2.292-20.094), (c) parental level of education (OR = 7.593, 95% CI = 2.419-23.834), (d) knowledge of meat is a protein that helps build muscles (OR = 1.678, 95% CI = 1.041-2.703), (e) knowledge of the nutrition: five food groups (OR= 2.108, 95% CI = 1.191-3.729) (f) student behavior eating breakfast before going to school (OR = 4.272, 95% CI = 1.802-10.128), (g) student behavior adheres to an advertised diet with an interest in the nutritional value (OR = 2.310, 95% CI = 1.334-3.999), (h) student behavior drinking milk every day (OR = 2.388, 95% CI = 1.330-4.2080).

**Conclusion:** Factor related well height and body of good proportion among students that showed including characteristic factors, literacy factors, behavior factors, family factors, and social service factors. The WHGP is an indication of the student's nutritional status and is an indicator of the student's growth and quality of life and there are differences according to the condition of each country. Government must make it a priority because if a student has good nutrition, they will be quality human resources for the country developing in the future.

**Keyword:** Body of Good Proportion, Height, weight, Student

### 1. Introduction

School-aged children are the important future of the nation and are an important human resource for the development of the country. They are the age of movement and energy all the time, non-stop except during illness. Their body needs to get all adequate 5 food groups and should receive a balanced amount of food to the body needs. School-aged children, there are growing in bones, teeth, muscles, and various systems in the body, nutrients according to the principles of nutrition are important factors in the body's growth. The energy needs of School-aged children depend on their growth rate and the activities they perform. They have more activities and as growing age; it needs to get enough energy equal body need. The malnutrition problems in school-aged children found the problem of short stature, thinness, and anemia. However, short stature is caused by chronic malnutrition, stunted children, low immunity, frequent illnesses, and low intelligence, but different from obesity problems that are caused by excessive dietary habits, not having enough physical activity, and causing illness with chronic non-communicable diseases (Non-Communicable Chronic Disease: NCD). (Supamitr, 2014) Rodriguez-Martinez et al. (2020): *Height and body-mass index trajectories of school-aged children and adolescents from 1985 to 2019 in 200 countries and territories: a pooled analysis of 2181 population-based studies with 65 million participants*. They pooled data from 2,181 population-based studies, with

measurements of height and weight in 65 million participants in 200 countries and territories. In 2019, they estimated a difference of 20 cm or higher in mean height of 19-year-old adolescents between countries with the tallest populations (the Netherlands, Montenegro, Estonia, and Bosnia and Herzegovina for boys; and the Netherlands, Montenegro, Denmark, and Iceland for girls) and those with the shortest populations (Timor-Leste, Laos, Solomon Islands, and Papua New Guinea for boys; and Guatemala, Bangladesh, Nepal, and Timor-Leste for girls). In the same year, the difference between the highest mean BMI (in Pacific island countries, Kuwait, Bahrain, The Bahamas, Chile, the USA, and New Zealand for both boys and girls and in South Africa for girls) and lowest mean BMI (in India, Bangladesh, Timor-Leste, Ethiopia, and Chad for boys and girls; and in Japan and Romania for girls) was approximately 9–10 kg/m<sup>2</sup>. In 2015 survey report found that the indicators of good height and the good of proportion body among students of the national level must not be less than 66 percent, Kalasin province was 54.65%, was in a low level when compared with the national level: there were divided as follows: short stature 7.50%, thinness 5.20%, and obesity 12.50%. In 2016 there were divided as follows: short stature 12.72%, thinness 3.99%, and obesity 8.97%. (Health District Office 7, 2017)

Therefore, from the problems encountered, the authors interested to study the status of well height and body of good proportion among students and to study factors associated with well height and body of good proportion among students in Namon District Kalasin Province, to provide information on how to use it as a guideline for health promotion of student which brings a good quality of student life.

## 2. Method

### 2.1 Recruitment of Subjects

This study was a cross-sectional analytical survey administered to students of primary school and junior high school (age 6 – 15-year-olds) in Namon District Kalasin Province Thailand. The required sample size was estimated using a formula for multiple Logistic regression to identify relationships between multiple independent variables and a dichotomous dependent variable. The 5 Cluster random sampling was applied to select 942 from 2,264 students spread across a study of 18 schools. Data were collected & analyzed between April 2020, and December 2020, given in Table 1. (Wayne W., 2015)

$$n = \frac{Np(1-p)z_{1-\frac{\alpha}{2}}^2}{d^2(N-1) + p(1-p)z_{1-\frac{\alpha}{2}}^2}$$

**Table 1:** Custer of School, Population of Students and Samples

Custer of school	Schools	Population of Students	Samples
Custer 1	4	677	229
Custer 2	4	519	209
Custer 3	4	324	168
Custer 4	3	190	123
Custer 5	3	554	213
Total	18	2,264	942

### 2.2 Research Instruments

- 1) Standard weighing and Height machine
- 2) The study used separate questionnaires to assess (a) characteristics (11 variables) with checklist questionnaires, (b) knowledge of nutrition (15 variables 15 scores) with (c) food consumption behaviors Level (15 variables) with 3 rating scale. A questionnaire dealing with data was developed by

the researcher, three experts commented on the draft questionnaire, and revisions were made to improve its validity with IOC index values ranging from 0.67 – 1.00, this was pretested with 30 samples and calculated Cronbach's alpha coefficient. The Reliability was 0.865, KR 20 was 0.884. (Singhareart, 2015)

### **2.3 Terminology definition**

**Well Height:** Student height is a level according to the criteria and above, in comparison with the growth curve of The Department of Health, greater than or equal to -1.5 S.D. of the age-related height.

**Body of Good Proportion:** Student weight is at a reasonable level, in comparison the growth curve of The Department of Health, has a value of +1.5 S.D. to -1.5 S.D.

**Well Height and body of good proportion (WHGP):** Student is a height well and body of good proportion in the same person.

### **2.4 Data Analysis**

After data collection, the data were validated, coded, and analyzed using the statistical application. Descriptive statistics were used to examine the characteristics, knowledge of nutrition, and food consumption behaviors level. Relationships analysis by Chi-Square Test and Binary Logistic Regression Analysis (Bivariable Analysis & Multivariable Analysis to identify relationships between multiple independent variables and a dichotomous dependent variable) analysis was applied to determine the adjusted odds ratio with a 95% confidence interval. (Siljaru, 2014)

### **2.5 Research Ethics**

Ethical Certification of Research from the Human Research Ethics Committee Nakhon Ratchasima Rajabhat University, Reference No. HE-RDI-NRRU.087-2563. (Human Research Ethics Committee, 2020).

## **3. Result**

### **3.1 Characteristics of Samples**

A total of 56.69 % of the respondents were females. The average age was  $10.29 \pm 2.25$  years; weight  $\bar{X} = 34.90 \pm 13.29$  kg. (Min = 13.00 kg. Max = 86.00 kg.), height  $\bar{X} = 138.50 \pm 14.91$  cm. (Min = 100.00 cm. Max = 175.00 cm.). A total student of 93.10 % of no congenital disease, 6 months ago didn't get sick 81.10%, 63.27% lived with parents, parents had finished junior high school 57.11%, and got money to school  $\bar{X} = 24.11 \pm 9.57$  Bath (Min = 5.00 B. Max = 80 B.)

### **3.2 Knowledge and Food Consumption Behaviors Level**

The study sample knowledge of nutrition was good level 65.61%, moderate level 28.03% level should be improved 6.37%:  $\bar{X} = 12.00 \pm 2.05$  (Min = 3, Max = 15). The food consumption behavior level of the students found that there was a moderate level 88.43%, good behavior 10.62%, bad behavior 0.96%),  $\bar{X} = 2.22 \pm 0.23$  (Min = 1.13 Max = 2.87), respectively.

**Table 2:** Knowledge and Food Consumption Behaviors Level

<b>Knowledge Level</b>	<b>Number</b>	<b>%</b>	<b>Food Consumption Behaviors Level</b>	<b>Number</b>	<b>%</b>
the level should be improved	60	6.37	bad behavior	9	0.96
moderate level	264	28.03	moderate level	833	88.43
good level	618	65.61	good behavior	100	10.62
Total	942	100.00	Total	942	100.00
$\bar{X} = 12.00$ , S.D.= 2.05 Min = 3, Max = 15			$\bar{X} = 2.22 \pm 0.23$ Min = 1.13 Max = 2.87		

### **3.3 Weight, Height and Well Height and Body of Good Proportion (WHGP.) among Student**

A total of 73.99% of weight were proportionate status; male 41.46 %, female 58.54% ( $\bar{X} = 34.90 \pm 13.29$ , Min = 13.00 kg. Max = 86.00 kg.). Mostly of height were normal height 77.81%; male 40.93%, female 59.07% ( $\bar{X} = 138.50, \pm 14.91$ , Min = 100.00 cm. Max 175.00 cm.). A total of 68.05% were well height and body of good Proportion (WHGP.); male 41.41%, female 59.59%, given in Table 3.

**Table3:**Weight, Height and Well Height and Body of Good Proportion (WHGP.) of Student

Status	Number	%	Male		Female	
			Number	%	Number	%
<b>Weight</b>						
Thinness	92	9.77	37	9.07	55	10.30
Proportionate	697	73.99	289	70.83	408	76.40
Overweight	153	16.24	82	20.10	71	13.30
<b>Total</b>	<b>942</b>	<b>100.00</b>	<b>408</b>	<b>100.00</b>	<b>534</b>	<b>100.00</b>
$\bar{X} = 34.90 \pm 13.29$ , Min = 13.00 kg. Max = 86.00 kg.						
<b>Height</b>						
Short stature	94	9.98	47	11.52	47	8.80
Normal height	733	77.81	300	73.53	433	81.09
Well height	115	12.21	61	14.95	54	10.11
<b>Total</b>	<b>942</b>	<b>100.00</b>	<b>408</b>	<b>100.00</b>	<b>534</b>	<b>100.00</b>
$\bar{X} = 138.50, \pm 14.91$ , Min = 100.00 cm. Max 175.00 cm.						
<b>Status of WHGP</b>						
Well height and body of good proportion	641	68.05	259	41.41	382	59.59
No WHGP.	301	31.95	149	49.50	152	50.50
<b>Total</b>	<b>942</b>	<b>100.00</b>	<b>408</b>	<b>43.31</b>	<b>534</b>	<b>56.69</b>

### **3.4 The Correlation analysis between the characteristics, knowledge of nutrition, and food consumption behaviors level with WHGP among Students in Namon District**

The relationship analysis with Chi-Square Test showed statistically significant at the level of 0.05, associations between dependent variables with WHGP that found Sex, Age-group, Studying at grade level, Parental level of education, Parent occupation, Knowledge of the nutrition: five food groups (K6), Knowledge of the body requires adequate amounts of nutrients (K9), Student behavior eating junk food (B3), Student behavior eating breakfast before going to school (B6), Student behavior adheres to an advertised diet with an interest in the nutritional value (B13) and Student behavior drinking milk every day (B15).

### **3.5 The factors associated analysis with WHGP among Students in Namon District**

The factors associated analysis used Binary Logistic Regression Analysis (Bivariable Analysis & Multivariable Analysis to identify relationships between multiple independent variables and a dichotomous dependent variable) analysis was applied to determine the adjusted odds ratio with a 95% confidence interval.

**Step 1:** Analysis of correlation between variables by Correlations Coefficients Spearman that showed 0.001 – 0.7073, which had a value of not more than 0.75, it was considered that there was no Multicollinearity problem.

**Step 2:** The Binary Logistic Regression Analysis (Bivariable Analysis & Multivariable Analysis to identify relationships between multiple independent variables and a dichotomous dependent variable)

analysis was applied to determine the adjusted odds ratio with a 95% confidence interval that showed all the coefficients in the logistic regression equation were significantly different from 0 (Sig. <0.001), the factors analytical capacity were 20.20% and the accuracy was 71.44%. The Binary logistic regression analysis indicated statistically significant associations between WHGP and several factors (P-value < 0.05), and the results are given in Tables 4, 5, and 6.

**Table 4:** The Binary Logistic Regression Analysis

<b>Analysis</b>	<b>Statistics</b>
<b>Omnibus Tests of Model Coefficients</b>	
Step/Block/Model	
- Chi-square	146.622
- df	61
- Sig.	<0.001
<b>Model Summary</b>	
- Cox & Snell R Square	0.144
- Nagelkerke R Square	0.202
<b>Classification Table</b>	
- Overall Percentage	71.44

**Table 5:** Unadjusted ORs of Having WHGP among student and 95% CIs for Each Factor (n = 942)

<b>No</b>	<b>Factors</b>	<b>Statistics</b>		
		<b>OR</b>	<b>95% CI</b>	<b>P-Value</b>
1	Sex	0.692	0.525-0.911	0.009
2	Age-group - 6 – 9 years old - 10 – 12 years old - 13 – 15 years old	1.691 1.826	1.252-2.283 1.212-2.752	0.001 0.001 0.004
3	Studying at grade level - Primary school 1-3 - Primary school 4-6 - junior high school	- 2.281 2.707	- 1.661-3.133 1.732-4.231	<0.001 <0.001 <0.001
4	Parental level of education - Primary School - High School - Bachelor	- - 1.160 4.116	- - 0.875- 1.536 1.422-11.918	0.027 - 0.302 0.009
5	Parent occupation - Official - Trade - Labor - Agriculturist	- - 1.090 2.104 2.161	- - 0.582-2.042 1.124-3.939 1.128-4.140	<0.001 - 0.789 0.020 0.020
6	Knowledge of the body requires adequate amounts of nutrients (K9)	0.669	0.469-0.955	0.027
7	Student behavior eating junk food (B3) - Never - Sometimes - Usually	- - 1.556 0.949	- - 1.021-2.369 0.573-1.573	0.008 - 0.040 0.840

8	Student behavior eating breakfast before going to school (B6) - Never - Sometimes - Usually	- - 2.801 3.100	- - 1.335-5.880 1.525-6.304	0.007 - 0.006 0.002
9	Student behavior adheres to an advertised diet with an interest in the nutritional value (B13) - Never - Sometimes - Usually	- - 1.933 1.800	- - 1.269-2.944 1.172-2.766	0.008 - 0.002 0.007
10	Student behavior drinking milk every day (B15). - Never - Sometimes - Usually	- - 1.895 1.707	- - 1.168-3.075 1.052-2.768	0.035 - 0.010 0.030

#### 4. Discussion

The WHGP among students in Namon District was 68.05% in Table 3. It was according to the KPIs of the Ministry of Public Health defined the WHGP among school-aged children 6-15 years in primary schools and junior high school not less than 66%. (Ministry of Public Health, 2021). Overall weight Height and WHGP, had a higher average. However, it is less than the Central European countries that were the most nutritious and healthy environment for young people, found that 19-year-old female had the same growth conditions as a female in the Netherlands, 13 years old and the 19-year-old male had the same growth conditions as the 14-year-old male in the Netherlands, but compared to the Southeast Asian countries weight and height of 19-year-old people in Thailand were more averages. In conclusion weight, height, WHGP, and BMI by age of students and adolescents vary greatly from country to country, which indicates the nutritional quality environmental conditions including the health risks of each country are different. This finding is in agreement with previous studies including Buhendwa, Roelants, Thomis, and Nkiamia (2017): Nutritional status and height, weight and BMI centiles of school-aged children and adolescents of 6–18-years from Kinshasa. Results: Compared to the WHO reference, percentiles of height and BMI were generally lower. This difference was larger in boys than in girls and increased as they approached adolescence. The prevalence of short stature ( $<-2$  SD) and thinness ( $<-2$  SD) was higher in boys (9.80 and 12.00 than in girls (3.40% and 6.10%), but the prevalence of overweight ( $>1$  SD) was higher in girls (8.60%) than in boys (4.50%). And Rodriguez-Martinez et al. (2020): Height and body-mass index trajectories of school-aged children and adolescents from 1985 to 2019 in 200 countries and territories: a pooled analysis of 2181 population-based studies with 65 million participants. They pooled data from 2,181 population-based studies, with measurements of height and weight in 65 million participants in 200 countries and territories. In 2019, they estimated a difference of 20 cm or higher in mean height of 19-year-old adolescents between countries with the tallest populations (the Netherlands, Montenegro, Estonia, and Bosnia and Herzegovina for boys; and the Netherlands, Montenegro, Denmark, and Iceland for girls) and those with the shortest populations (Timor-Leste, Laos, Solomon Islands, and Papua New Guinea for boys; and Guatemala, Bangladesh, Nepal, and Timor-Leste for girls). In the same year, the difference between the highest mean BMI (in Pacific island countries, Kuwait, Bahrain, The Bahamas, Chile, the USA, and New Zealand for both boys and girls and in South Africa for girls) and lowest mean BMI (in India, Bangladesh, Timor-Leste, Ethiopia, and Chad for boys and girls; and in Japan and Romania for girls) was approximately 9–10 kg/m<sup>2</sup>.

**Table 6:** Factors Associated with WHGP among students (Adjusted OR) (n = 942)

Factors	Number	% WHGP	Unadjusted			Adjusted		
			OR	95% CI	P Value	OR	95% CI	P Value
Sex								
- Female (No)	382	59.59	-	-	-	-	-	-
- Male (Yes)	259	40.41	0.692	0.525-0.911	0.009	0.660	0.480-0.907	0.010
Studying at grade level								
- Primary school 1-3	285	44.46	-	-	-	-	-	-
- Primary school 4-6	243	37.91	2.281	1.661-3.133	<0.001	1.759	0.943-3.282	0.076
- junior high school	113	17.63	2.707	1.732-4.231	<0.001	6.787	2.292-20.094	0.001
Parental level of education								
- Primary School	241	37.60	-	-	-	-	-	-
- High School	369	57.57	1.160	0.875- 1.536	0.302	-	-	-
- Bachelor	31	4.83	4.116	1.422-11.918	0.009	7.593	2.419-23.834	0.001
Knowledge of meat is a protein that helps build muscles (K5)								
- No	68	10.61	-	-	-	-	-	-
- Yes	573	89.39	1.291	0.851-1.960	0.229	1.678	1.041-2.703	0.033
Knowledge of the nutrition: food groups (K6)								
- No	46	7.18	-	-	-	-	-	-
- Yes	495	92.82	1.593	0.996-2.548	0.052	2.108	1.191-3.729	0.010
Student behavior eating breakfast before going to school (B6)								
- Never	14	2.18	-	-	-	-	-	-
- Sometimes	161	25.12	2.801	1.335-5.880	0.006	3.376	1.401-8.135	0.007
- Usually	466	72.70	3.100	1.525-6.304	0.002	4.272	1.802-10.128	0.001
Student behavior adheres to an advertised diet with an interest in the nutritional value (B13)								
- Never	63	9.83	-	-	-	-	-	-
- Sometimes	320	49.92	1.933	1.269-2.944	0.002	2.309	1.358-3.924	0.002
- Usually	258	40.25	1.800	1.172-2.766	0.007	2.310	1.334-3.999	0.003
Student behavior drinking milk every day (B15)								
- Never	45	7.02	-	-	-	-	-	-
- Sometimes	308	48.05	1.895	1.168-3.075	0.010	2.071	1.167-3.675	0.013
- Usually	288	44.93	1.707	1.052-2.768	0.030	2.388	1.330-4.208	0.003

The first factor related to WHGP among students was **sex**. It found that male students were 34.00 percent less likely to be a WHGP than females.

The second factor related to WHGP among students was **studying at grade level**. Those in junior high school were more likely to be a WHGP status than those in elementary school at 1-3 7 times (OR = 6.787) and students in elementary school at 4-6 were more likely to be a WHGP status than those in elementary school at 1-3 2 times (OR = 1.759.).

The Third factor related to WHGP among students was **the parental level of education**. The Parents with a bachelor's degree were more likely to be WHGP than those who finished primary education 7 times (OR = 7.593).

The fourth factor related to WHGP among students was ***Knowledge of meat is a protein that helps build muscles***. Students who answered correctly were more likely to be a WHGP status than those who got a wrong answer 2 times (OR = 1.678).

The fifth factor related to WHGP among students was ***Knowledge of nutrition: five food groups***. Students who answered correctly were more likely to be a WHGP status than those who got a wrong answer 2 times (OR = 2.108).

The sixth factor related to WHGP among students was ***student behavior eating breakfast before going to school***. Students who sometimes and usually eat breakfast before school were more likely to be a WHGP status than students who never eat breakfast 3 and 4 times (OR = 3.376, OR = 4.272).

The seventh factor related to WHGP among students was ***student behavior that adheres to an advertised diet with an interest in nutritional value***. Students who had this behavior sometimes and usually were more likely to be WHGP status than students who were not interested 2 times (OR = 2.309, OR = 2.310).

The eighth factor related to WHGP among students was ***student behavior drinking milk every day***. Students who drank milk every day were more likely to be WHGP status than students who did not drink milk every day (OR = 2.071, OR = 2.388).

This finding is in agreement with previous studies including Gurzkowska et al. (2017): The relationship between selected socioeconomic factors and thinness among Polish school-aged children and adolescents: The weighted prevalence of thinness and odds ratios with 95% confidence interval were estimated for gender, birth weight, level of schooling and school location, gross domestic product (GDP) per inhabitant, family income and maternal education. Body height was analyzed according to body mass and birth weight categories. The prevalence of thinness was higher among children with low birth weight and among girls. The prevalence of thinness decreased with increasing GDP per inhabitant. An analysis by the level of schooling: primary-middle-secondary, prevalence of thinness decreased among boys and increased among girls. Gyamfi et al. (2019): Weight management among school-aged children and adolescents: a quantitative assessment in a Ghanaian municipality: There was a difference in sex prevalence in unhealthy weight-behaviors; with more girls being overweight (19.4% vs 7.6%,  $P < 0.001$ ) and obese (10.2% vs. 7.3%,  $P = 0.177$ ) compared to boys. High WHTR was found in 10.5% of basic students and 5.0% of high school students, with a statistical difference. Li, Dibley, and Yan (2011) School environment factors were associated with BMI among adolescents in Xi'an City, China: After adjusted for socio-demographic factors, BMI was associated with the availability of soft drinks at school shops, the availability and the number of western food outlet in the school vicinity. School curricula such as sports-meeting and health education sessions were also associated with BMI. (Jang et al. (2017)): Factors associated with school-aged children's body mass index in Korean American families: The sample included 170 Korean American children and 137 mothers. In bivariate analyses, more child screen time, number of children in the household, greater parental underestimation of a child's weight, and children's participation in the school lunch program were significantly associated with a higher child body mass index. Rodriguez-Martinez et al. (2020): Height and body-mass index trajectories of school-aged children and adolescents from 1985 to 2019 in 200 countries and territories: a pooled analysis of 2181 population-based studies with 65 million participants. They concluded that the height and BMI trajectories over age and time of school-aged children and adolescents are highly variable across countries, which indicates heterogeneous nutritional quality and lifelong health advantages and risks. Geckil, Aslan, Deryalster, KucukkelpçeSimsek, and Sahin (2017):Prevalence and Risk Factors of Obesity and Overweight in Elementary School-Age (5 to 15 Years Old) Children in South-eastern Turkey:The children were all between 5 and 15 years old. 51.20% of the children were male, 13.40% were overweight (between 85 and 95th percentile) according to the

Body Mass Index, and 8.70% were obese (above 95th percentile). Risk factors for obesity included having moderate (OR:2.57, 95%, 95% CI: 1.10 - 6.00) or high socioeconomic status (OR:2.97, 95% CI: 1.26 - 6.98), mother's university education (OR:2.34, 95% CI: 1.16 - 4.74), overweight or obese mother (OR:2.00, 95% CI: 1.14 - 3.52), overweight or obese father (OR:1.96, 95% CI: 1.06 - 3.62), and consuming milk pudding more than 4 times per week (OR:2.76, 95% CI: 1.21 - 6.26). Consuming nuts more than 4 times per week was a preventive factor against being overweight (OR: 0.36, 95% CI: 0.26 - 0.78) and obese (OR: 0.01, 95% CI: 0.20 - 0.85). Risk factors for overweight included being male, traveling to school by car, mother with higher education levels, and overweight or obese parents.

Soltani, Ghanbari, and Hassanzadeh Rad (2013): Obesity-related factors in school-aged children: findings showed that the mean and standard deviation of birth weight (g) in case and control groups were  $3671 \pm 5.64$  and  $190 \pm 5.46$ , respectively ( $P = 0.000$ ). 82.5% of the case and 92.9% of the control group had exclusive breastfeeding for 4-6 months ( $P = 0.024$ ). Also, multivariate regression analysis indicated that birth weight, age, exclusive breastfeeding, and frequency of meals have significant effects on body mass index (BMI). It seems that more accurate interventions for primordial prevention are essential to reduce childhood obesity risk factors, including promotion of pre-pregnancy and prenatal care to have neonates who are appropriate for gestational age and also improving exclusive breastfeeding in the first 6 months of life. Besides, identifying children at risk for adolescent obesity provides physicians and midwives with an opportunity for earlier intervention with the goal of limiting the progression of abnormal weight gain.

## 5. Conclusion

Factor related well height and body of good proportion among students in Namon District Kalasin Province: Thailand, that showed including.

- 1) The Characteristic factors were sex, age, and studying at grade level.
- 2) The Literacy factors where meat's knowledge is a protein that helps build muscles, knowledge of the nutrition (food groups), and knowledge of the body's nutrient needs in adequate amounts.
- 3) Behavior factors were student behavior eating breakfast before going to school, behavior adheres to an advertised diet with an interest in the nutritional value, and behavior drinking milk every day.
- 4) Family factors were the parental level of education, parent occupation, and the economic status of their family.
- 5) Social service factors were program to milk drinking promotion for school-age children, school lunch program, and the regulating and directing nutritional advertising that is not harmful to health.

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## 8. References

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