Food Consumption and Factors related to Nutrition status of Adults people in a village of Kuchinarai district, Kalasin Province

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บทคัดย่อ

การวิจัยเชิงวิเคราะห์แบบภาคตัดขวางครั้งนี้มีวัตถุประสงค์เพื่อศึกษาภาวะโภชนาการ การบริโภคอาหารและปัจจัยที่มีความสัมพันธ์กับภาวะโภชนาการ ของประชาชนวัยผู้ใหญ่ในหมู่บ้านแห่งหนึ่งของจังหวัดกาฬสินธุ์ จำนวน 281 คน จากการสุ่มตัวอย่างแบบแบ่งชั้นภูมิ เก็บข้อมูลโดยใช้แบบสอบถาม ทดสอบความเที่ยงของแบบสอบถามโดยการหาค่าสัมประสิทธิ์แอลฟาของครอนบาค ได้เท่ากับ 0.91 วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนาได้แก่ การแจกแจงความถี่ ร้อยละ ค่าเฉลี่ย ส่วนเบี่ยงเบนมาตรฐาน และสถิติเชิงอนุมานได้แก่ สถิติ Chi-Square และ Fisher's Exact Test

ผลการวิจัยพบว่า ดัชนีมวลกายอยู่ในระดับปกติ ร้อยละ 47.69 น้ำหนักเกินและมีภาวะเสี่ยง ร้อยละ 23.49 เพศหญิงและเพศชายมีเส้นรอบวงเอวเกินเกณฑ์มาตรฐาน ร้อยละ 43.36 และ 34.06 ตามลำดับ อัตราส่วนรอบเอวต่อรอบสะโพกที่เกินเกณฑ์มาตรฐานส่วนใหญ่เป็นเพศหญิง ร้อยละ 69.23 อัตราส่วนรอบเอวต่อส่วนสูงที่เกินเกณฑ์มาตรฐานเป็นเพศชายมากที่สุด ร้อยละ 56.52 การปฏิบัติตามหลักโภชนบัญญัติ 9 ประการ มีคะแนนเฉลี่ยระดับการปฏิบัติอยู่ในระดับดี ร้อยละ 87.19 การบริโภคอาหารตามหลัก 5 หมู่ มีคะแนนเฉลี่ยระดับการบริโภคอาหารอยู่ในระดับพอใช้ ร้อยละ 60.85 เพศและอายุมีความสัมพันธ์กับดัชนีมวลกายอย่างมีนัยสำคัญทางสถิติ (p-value=0.014 และ <0.001 ตามลำดับ) อายุ อาชีพ โรคประจำตัว ผู้จัดหาอาหารในครอบครัวและการออกกำลังกายมีความสัมพันธ์กับเส้นรอบวงเอวอย่างมีนัยสำคัญทางสถิติ (p-value<0.001, 0.018, 0.025, 0.028 และ 0.028 ตามลำดับ) เพศ

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รายได้เฉลี่ยของครอบครัวต่อเดือนและ ผู้จัดหาอาหารในครอบครัว มีความสัมพันธ์กับอัตราส่วนรอบเอวต่อรอบสะโพก อย่างมีนัยสำคัญทางสถิติ (p-value<0.001, 0.008 และ <0.001 ตามลำดับ) อายุ อาชีพ และโรคประจำตัว มีความสัมพันธ์กับอัตราส่วนรอบเอวต่อส่วนสูง อย่างมีนัยสำคัญทางสถิติ (p-value<0.001, 0.004 และ 0.003 ตามลำดับ) การบริโภคอาหารตามหลักโภชนบัญญัติ 9 ประการ มีความสัมพันธ์กับอัตราส่วนรอบเอวต่อส่วนสูงอย่างมีนัยสำคัญทางสถิติ (p-value=0.027) การบริโภคอาหารตามหลัก 5 หมู่ มีความสัมพันธ์กับอัตราส่วนรอบเอวต่อรอบสะโพกอย่างมีนัยสำคัญทางสถิติ (p-value=0.039)

คำสำคัญ : ภาวะโภชนาการ ดัชนีมวลกาย เส้นรอบ วงเอว อัตราส่วนรอบเอวต่อส่วนสูง ผู้สูงอายุ

Abstract

This cross-sectional analytical study research aimed to study Nutritional Status, food consumption(Practice with The nine principles of nutrition) and study the relationships between personal data and nutritional status, food consumption(Practice with The nine principles of nutrition) and nutritional status of Adults people in a village of Kalasin Province. 281 samples from Stratified sampling. Data was collected by questionnaire through examination content validity by 3 experts, and test the reliability by using Cronbach's alpha coefficient. The reliability was 0.91, data were analyzed using descriptive statistics including frequency distribution, percentage, mean and standard deviation. Inferential statistics are Chi-Square Test and Fisher's Exact Test. The results showed that, body mass index (BMI) was normal about 47.69% and 23.49 % overweight and had a risk. Female and male waist circumference (WC) exceeding standard criteria were 43.36% and 34.06%, respectively. Waist to Height Ratio (WHtR) exceeding in male was higher than female (56.52%). Practice with The nine principles of nutrition, average level of performance was good (score 1.52-2.27) 87.19 percent. Average level of food consumption (Practice with the nine principles of nutrition) of 5 food groups was moderate level (score 0.76-1.51) 60.85 percent. Relationships between sex and age with BMI were statistically significant at level 0.05 (p-value=0.014 and <0.001 respectively) age, occupation, underlying disease, food supplier and exercise related to WC were

statistically significant at level 0.05 (p-value<0.001, 0.018, 0.025, 0.028 and 0.028 respectively) age, occupation and underlying disease related to WHtR were statistically significant at level 0.05 (p-value<0.001, 0.004 and 0.003 respectively) and relationship between practice with the food consumption(Practice with The nine principles of nutrition) and WHtR were statistically significant at level 0.05 (p-value=0.050)

Keywords **:** Nutritional Status, Body mass index(BMI), waist circumference(WC), Waist to Height Ratio (WHtR), Adult people

1. Introduction

Overweight and obesity are the health problems around the world. The prevalence of overweight and obesity in Thailand has increased significantly in male and female populations. It is a major health risk factor according to the Thai Health Report 2014, obesity is a chronic non-communicable diseases (NCDs) that considered a cause of illness and death, such as Diabetes, Hypertension, cancer, gallbladder disease, depression, Dyslipidemia and osteoarthritis. Obesity (BMI ≥ 25 kg / m^2) have a greater chance of these diseases than those with 2-3 times of normal. In addition, obesity in Thailand likely to expand in the future (Churnrurtai Kanchanachitra quoted in Thai Health Promotion Foundation, 2014)

Adult or working age is the age between 20 and 60 years, that body was developed and lead to strengthen body. According to the age of occupation, they give a priority to a lot of work and neglecting self-care. When they enter to adulthood in the middle, their body begin to change for the worse, otherwise it combined with problems from inappropriate health behavior and other health determinant which contributing to chronic disease (Bunnarakorn, 2013)

The changes of economic and social in Thailand are critical rapid. It changes a food consumption behavior of Thai people like no Breakfast consumption, Rapidly increasing consumption of beverage, oil, sugar and salt, which is a food group that is recommended for consumption but as little as necessary. Suradej Samranjit and Chittima Soparat (2010 quote in Chaiman,

2011) that survey study of Food Consumption Behavior of Thais in 2013 found that frequency of food consumption was different in type of food.Which is a direct impact on the nutritional status of the people and it cause a malnutrition or obesity among people of different ages.

Nutritional status studies, Most are measured by BMI method. There is a previous study on nutritional status by measuring the proportion of the body, including the BMI, WC and WHtR which WC and WHtR are the alternative method of measuring the proportion of the body. A survey of the prevalence of obesity (BMI ≥ 25 kg / m^2) among people aged 15 years and over in Kalasin province, found that the prevalence of obesity in Kalasin province was 26.63 percent (Namon Hospital Health Data Center, 2016). Over weight in adult people contribute to impact more than undernutrition or malnutrition. Which overweight can cause a various diseases such as diabetes, gallstones, Dyslipidemia and Ischemic heart disease, etc. The trend of Cardiovascular death rate of Kalasin province founded that Cardiovascular death rate was 10.84 per 100,000 population in 2008 and increase to 14.42 per 100,000 population in 2014. Diabetes prevalence and High blood pressure tends to increase. 35.98 percent of Diabetic patients in Kuchinarai district could control blood sugar levels which was lower than the criteria (40 percent). Therefore, nutrition of adult people must pay special attention because it is an important factor affecting on the health of adult people. Otherwise, The correct food consumption can prevent chronic non-communicable diseases and increase lifespan.

A study of nutritional status and food consumption(Practice with The nine principles of nutrition) of adult people in Kuchinarai district, Karasin province are necessary to know the situation and nutritional problem and Including food consumption(Practice with The nine principles of nutrition) of adults people and to plan the development of model for promoting the nutritional status of the adult people, as well as information in promotion correct food consumption behavior in order to The adult people have a better nutrition status.

2. Research Objective(s)

2.1 To study nutritional status, food consumption (Practice with the nine principles of nutrition) of Adults people.

2.2 To study the relationship between person's factor and food consumption (Practice with the nine principles of nutrition) with nutritional status of Adults people.

3. Research Methodology

This cross-sectional analytical study was conducted in a village of Kuchinarai District, Kalasin Province. Samples were 281 adult people and selected by stratified sampling technique. Data were collected by using questionnaires. Independent variable included person's character(including sex, age, educational, occupational, family's average income, underlying disease, food supplier and exercise) and food consumption (Practice with the nine principles of nutrition) of adults and dependent variable was nutritional status (including Body mass index (BMI), waist circumference (WC), Waist to Height Ratio (WHtR). Content validity of measurement instrument was between 0.67 and 1.00 and reliability, by using Cronbach's alpha coefficient was 0.91. Data collection between August, 2016 and June, 2017 and analyzed by using software package STATA for windows in terms of descriptive statistics, including frequency, percentage, mean and standard deviation and Inferential statistics that was used include Chi-Square Test and Fisher's Exact Test.

4. Results

Nutrition status of adults founded that BMI was normal 47.69 percent, overweight and had a risk 23.49 percent, female had a WC exceeded standard criteria 43.36 percent, male had a WC 34.06 percent, WHtR exceeded standard criteria is mostly male 56.52 percent.Food consumption (Practice with The nine principles of nutrition), average level of performance was good (score 1.52-2.27) 87.19 percent. Average level of food consumption of 5 food groups was moderate level (score 0.76-1.51) 60.85 percent. Relationships between sex and age with BMI were statistically significant at level 0.05 (p-value=0.014 and <0.001 respectively) age, occupation, underlying disease, food supplier and exercise

related to WC were statistically significant at level 0.05 (p-value<0.001, 0.018, 0.025, 0.028 and 0.028 respectively) age, occupation and underlying disease related to WHtR were statistically significant at level 0.05 (p-value<0.001, 0.004 and 0.003 respectively) and relationship between practice with the nine principles of nutrition and WHtR were statistically significant at level 0.05 (p-value=0.050) (Table1-5)

Table1

Relationships between person's character and BMI (n=281)

person's character	BMI						χ^2	p value
	Underweight		Normal		Overweight/Obese			
	n	%	n	%	n	%		
sex								
Female	12	8.39	75	52.45	56	39.16	8.57	0.014
Male	4	2.90	59	42.75	75	54.35		
Age								
20-39 yrs.	13	11.82	58	52.73	39	35.45	17.70	<0.001
40-59 yrs.	3	1.75	76	44.44	92	53.80		
Educational								
Primary school	2	2.11	45	47.37	48	50.53	7.67	0.104
Secondary school	10	6.25	76	47.50	74	46.25		
Undergraduate and bachelor	4	15.38	12	50.00	8	34.62		
Occupational								
Farmers	4	2.92	64	46.72	69	50.36	4.47	0.107
Others	12	8.33	70	48.61	62	43.06		
Family’s Average income								
5,000 – 15,000 baht	9	6.67	63	46.67	63	46.67	-	0.141[F]
15,001 – 25,000 baht	2	1.98	55	54.46	44	43.56		
25,001 – 35,000 baht	5	12.50	14	35.00	21	52.50		
35,001 – 45,000 baht	0	0.00	2	40.00	3	60.00		

person's character	BMI						χ^2	p value
	Underweight		Normal		Overweight/Obese			
	n	%	n	%	n	%		
Underlying Disease								
No	16	6.58	117	48.15	110	45.27	3.28	0.193
Yes	0	0.00	17	44.74	21	44.74		
Food supplier								
oneself	7	5.43	61	47.29	61	47.29	0.06	0.970
Other (parents, spouse, child)	9	5.92	73	48.03	70	46.05		
Exercise								
No	5	4.03	53	42.74	66	53.23	4.29	0.117
Yes	11	7.01	81	51.59	65	41.40		

F = Fisher's exact test

Table2

Relationships between person's character and WC(n=281)

person's character	WC				χ^2	p value
	Cut-off points (≤90 cm.(M), ≤ 80 cm.(F)		Risk of metabolic complications (> 90 cm (M), >80cm.(F)			
	n	%	n	%		
sex						
Female	81	56.64	62	43.36	2.55	0.110
Male	91	65.94	47	34.06		
Age						
20-39 yrs.	84	76.36	26	23.64	17.48	<0.001
40-59 yrs.	88	51.46	83	48.54		
Education						
Primary school	58	61.05	37	38.95	4.83	0.089
Secondary school	93	58.13	67	41.88		

person's character	WC				χ^2	p value
	Cut-off points (≤90 cm.(M), ≤ 80 cm.(F)		Risk of metabolic complications (> 90 cm (M), >80cm.(F)			
	n	%	n	%		
Undergraduate and bachelor	21	80.77	5	19.23		
Occupational						
Farmers	78	56.93	59	43.07	13.58	0.018
Others	94	65.28	50	34.72		
Family's Average income						
5,000 – 15,000 baht	86	63.70	49	36.30	-	0.868[F]
15,001 – 25,000 baht	60	59.41	41	40.59		
25,001 – 35,000 baht	23	57.50	17	42.50		
35,001 – 45,000 baht	3	60.00	2	40.00		
Underlying Disease						
No	155	63.79	88	36.21	5.022	0.025
Yes	17	44.74	21	55.26		
Food supplier						
oneself	70	54.26	59	45.74	4.84	0.028
Other (parents, spouse, child)	102	67.11	50	32.89		
Exercise					4.815	0.028
No	67	54.03	57	45.97		
Yes	105	66.88	52	33.12		

F = Fisher's exact test

Table3

Relationships between person's character and WHtR (n=281)

person's character	WHtR				χ^2	p value
	Cut-off points (≤0.5 (M & F)		Risk of metabolic complications (> 0.5(M & F)			
	n	%	n	%		
sex						
Female	76	53.15	67	46.85	2.62	0.105
Male	60	43.48	78	56.52		
Age						
20-39 yrs.	78	70.91	32	29.09	36.67	<0.001
40-59 yrs.	58	33.92	113	66.08		
Education						
Primary school	39	41.05	56	58.95	5.22	0.074
Secondary school	80	50.00	80	50.00		
Undergraduate and bachelor	17	65.38	9	34.62		
Occupational						
Farmers	58	42.34	79	57.66	6.25	0.004
Others	78	54.17	66	45.83		
Family's Average income						
5,000 – 15,000 baht	69	51.11	66	48.89	-	0.779[F]
15,001 – 25,000 baht	48	47.52	53	52.48		
25,001 – 35,000 baht	17	42.50	23	57.50		
35,001 – 45,000 baht	2	40.00	3	60.00		
Underlying Disease						
No	126	51.85	117	48.15	8.58	0.003
Yes	10	26.32	28	73.68		
Food supplier						
oneself	60	46.51	69	53.49	0.34	0.560
other (parents, spouse)	76	50.00	76	50.00		
Exercise						
No	56	45.16	68	54.84	0.93	0.335

person's character	WHtR				χ^2	p value
	Cut-off points (≤0.5 (M & F)		Risk of metabolic complications (> 0.5(M & F)			
	n	%	n	%		
Yes	80	50.96	77	49.04		

F = Fisher's exact test

Table4

Relationships between food consumption (Practice with the nine principles of nutrition) and BMI (n=281)

Level of Practice	BMI						χ^2	p value
	Underweight		Normal		Overweight/Obese			
	n	%	n	%	n	%		
Very good (mean between 2.28 and 3.00)	0	0.00	13	50.00	13	50.00	-	0.242[F]
Good (mean between 1.52 and 2.27)	15	6.12	119	48.57	111	45.31		
Fair (mean between 0.76 and 1.51)	1	10.00	2	20.00	7	70.00		

F = Fisher's exact test

Table5

Relationships between food consumption (Practice with the nine principles of nutrition) and WHtR (n=281)

Level of Practice	WHtR				χ^2	p value
	Cut-off points (≤0.5 (M & F)		Risk of metabolic complications (> 0.5(M & F)			
	n	%	n	%		
Very good (mean between 2.28 and 3.00)	9	34.62	17	65.38	5.97	0.050
Good (mean between 1.52 and 2.27)	118	48.16	127	51.84		
Fair (mean between 0.76 and 1.51)	8	80.00	2	20.00		

5. Discussion

5.1 Nutritional status:

Measuring the Nutritional status by using BMI, WC and WHtR found that the percentage of abnormal or risk of metabolic complication were 52.31%, 43.36% and 46.85% respectively. In accordance with Kankhwao & kankhwao (2018) found that the percentage of abnormal or risk of metabolic complication of students at Sirindhorn college of Public Health Khon Kaen were 39.31%, 17.11% and 19.30% respectively. Its showed that BMI indicator gave a high proportion WC indicator gave a low proportion of the abnormal or risk of metabolic complication. In accordance with Ford et al. (2003) support the use of waist circumference as a measure of obesity to predict health risk. Among their arguments are that waist circumference has been shown to be a good or better predictor than body mass index

5.2 The relationship between personal data, nutritional status and food consumption (Practice with the nine principles of nutrition) with nutritional status of Adults people:

Relationships between sex and age with BMI were statistically significant, age, occupation, underlying disease, food supplier and exercise related to WC were

statistically significant while age, occupation and underlying disease related to WHtR were statistically significant. In accordance with Aungsupasakorn (2011) found that sex was related with BMI, and from a study of factors associated with WC and obesity found that age and sex related to WC (Dalvand et.al, 2015) due to male care about health less than female and increased age in which there are hormonal changes and a common decrease in physical activity such as increased animals and fat consumption but decreased fruits and vegetables consumption or lack of exercise, etc. Career or Occupational issues found that Farmers have a high an abnormal or risk of metabolic complication more than others because they having a lot of dinner after returning from their work and rest and rest or sleep immediately without feeding.

6. Conclusion

Sex and age were related to Body mass index (BMI). Age, occupation, underlying disease, food supplier and exercise were related to waist circumference (WC). Age, occupation underlying disease and practice with the nine principles of nutrition related to Waist to Height Ratio (WHtR). Findings from this study found that Waist Circumference (WC) is a measure of obesity to predict health risk more than Body mass index (BMI) and Waist to Height Ratio (WHtR).

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