

***Cognition for eating behavior of Thai's consumer: the mirror of public health policies***

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**Abstract**

Now, Thai's consumers especially who lived in the main cities have an active concern on eating behavior, but are they know the true concept of healthy deeds? The survey results showed that more of consumers mentioned only to eat healthy food and nutritional drink, but ignore other of eating manners. Moreover, in 2012 Thailand government announced the success of public health campaign with increasing rate statistic of long expected aged with good health corrected by WHO. In 2002, Thailand has this rate about 60.1 years and continuously raised to 62 years in 2009. This rate grew up than others countries in Asia such as Brunei, Malaysia and Indonesia, however it got smaller than the developed countries. Contrast with this elevated rate, a lot of consumers think that they still have more illness and unhealthy cognition. This study aimed to test the healthy-eating behavior by using 398 surveys and focused on the high education consumers who lived in economically cities. The results showed that consumers thought that healthy-eating meant eating more vegetables or fruits (3.57 points), concerning in eating with healthy cognition (3.47 points) and having 5-categories food group (3.30 points). This behavior demonstrated that more buyers still had wrong perception by not concerns to reduce consumption on alcohols and cigarettes or avoid the chance of infection. Furthermore, this behavior showed that government still not successfully achieved the goal of good public health policies and also worked hard to stimulate the true cognition about healthy concern by giving the information on both higher education group and others.

Keywords: Eating-behavior, Healthy cognition, Public health policy

## 1. Introduction

More than half of the world's population now lives in urban areas (State of the world population, 2007). Urbanization implies “considerable changes in the ways in which people live, how they earn their livelihoods, the food that they eat, and the wide range of environmental factors to which they are exposed” (Phillips DR, 1993). There is an underlying assumption that urban populations will be healthier than their rural counterparts and that urbanization equates with modernization. However, this is rarely true. Research about the features of urban areas that influence health had been relatively sparse, but often indicated the increasing of health hazards (Judd,&et al., 2002). This means that there are some factors affect to the health of people especially for who lived in the main cities.

A conception regarding rural versus urban health was the idea of a changing in eating behavior cognition for civilization people. Nowadays, economic environment in the main cities has rapidly changed with high competition in workforce, rush-hour time, frequency stress and problematic lifestyle. This causes more people cannot have proper actions of eating. Some of them do not have full stuffs per day or eat foods that have less nutrition or take a shortest time (about 10-15 minutes) per meals. These irregular dinning behaviors contributed to symptoms such as weight concern, body shape anxiety, excessive hungry and dyspepsia that finally led some people to be the eating disorder patients (Killen, et. al. 1994; Wondwerich, Connolly&Stice, 2004). This unhealthy behavior has been suggested that a so-called “toxic environment” where highly palatable and calorically dense foods are very visible and easily available contributes to these difficulties in weight regulation and to the high prevalence of obesity (Hill&Peters, 1998; Wadden, Brownell,&Foster, 2002).

Government should be the main agent to provide the health information to the social and resolve this undesirable circumstance. Social security deeds are the cognitive policy that gives people to have full action about the eating behaviors. However, each country has different concept to implement this policy.

In this decade, the ministry of public health of Thailand is the main agent to implement the healthy cognition campaigns with social security planning. The objective of these public health campaigns is to countermeasures against nutritional issues that prevent the people from the disease. The promotions such as “5 food group: partner of good child”, “Every day eat breakfast”, “Diabetes: protect our future”, “Low salt 50%”, “Reading before eating: vitamins has both sides”, “Changing behaviors for healthy: reducing sweet fat and salt, eat more vegetables”, “Vitamin C: benefit that you do not know”, “Fiber: Good for your health”, “Amino acid from protein”, “Time for drinking water: increasing potential of your health”, “Washing hand healthy campaign”, “Giving liquor means cursing”, etc. are starting at 2002 until now. However, the results about the effect of these campaigns to consumer health do not directly reflect to the implementer.

WHO is the organization to observe the health system in each country and monitor the successful of public health policy. It provides the statistics about long expected aged with good health to tell the situation of people's health. If the rate is increasing that means people who lived in that country would be healthier than the past. For Thailand, this rate about 60.1 years in 2002 and continuously raised to 62

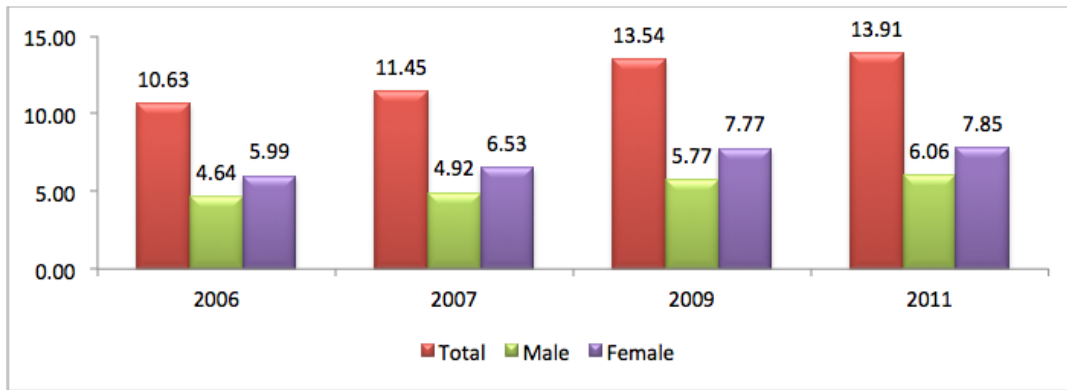
years in 2009. This rate grew up than others countries in Asia such as Brunei, Malaysia and Indonesia, however it got smaller than the developed countries.

Table1 shows long expected aged with good health (Years)

Country	Long expected aged with good health					
	2002			2009		
	Average	Male	Female	Average	Male	Female
Sri Lanka	61.60	59.20	64.00	63.00	61.00	65.00
Thailand	60.10	57.70	62.40	62.00	59.00	65.00
Indonesia	58.10	57.40	58.90	60.00	60.00	61.00
Maldives	57.80	59.00	56.60	64.00	64.00	64.00
India	53.50	53.30	53.60	56.00	56.00	57.00
Bhutan	52.90	52.90	52.90	55.00	54.00	56.00
Myanmar	51.70	49.90	53.50	50.00	48.00	52.00
Bangladesh	54.30	55.30	53.30	56.00	56.00	55.00
Nepal	51.80	52.50	51.10	55.00	55.00	55.00
Singapore	70.10	68.80	71.30	73.00	71.00	75.00
Brunei	65.30	65.10	65.50	66.00	66.00	67.00
Malaysia	63.20	61.60	64.80	64.00	62.00	66.00
Philippine	59.30	57.70	61.50	62.00	59.00	64.00
Vietnam	61.30	57.10	62.90	64.00	62.00	66.00
Lao	47.00	47.10	47.00	54.00	53.00	54.00
Cambodia	47.50	45.60	49.50	53.00	51.00	55.00
Japan	75.00	72.30	77.70	76.00	73.00	78.00
Canada	72.00	70.10	74.00	73.00	71.00	75.00
Iceland	72.80	72.10	73.60	74.00	71.00	75.00
Sweden	73.30	71.90	74.80	74.00	72.00	75.00
Switzerland	73.20	71.10	75.30	75.00	73.00	76.00
<b>World</b>	-	-	-	<b>59.00</b>	<b>58.00</b>	<b>61.00</b>

Source: WHO, World health report, 2003. WHO, World health statistics, 2010.

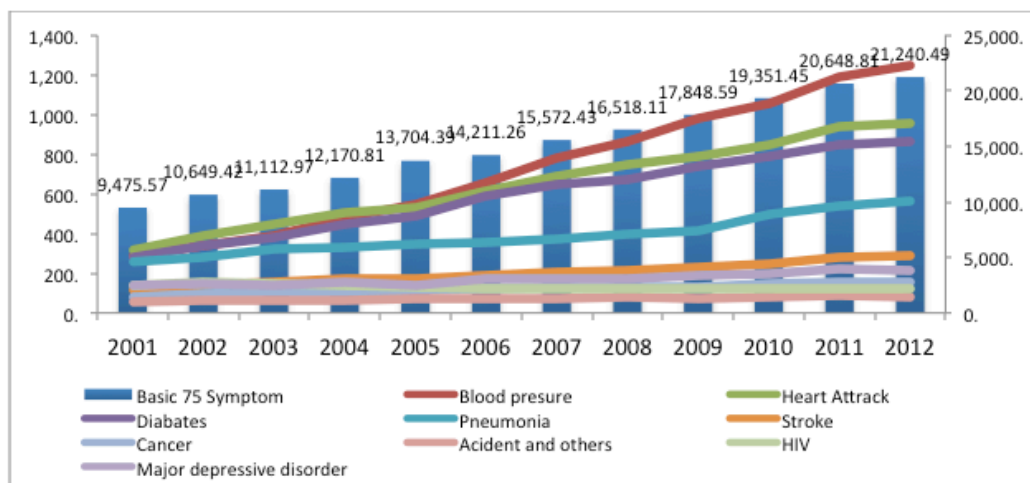
With this rate, Thai government announces for the successful campaign on public health policy, but it is contrast with another rate that corrected the health cognition by other source. For example, national statistical office (NSO) in Thailand assessed the data about cognition of unhealthy and illness, the result showed that in year 2006, there are 17.71 percent of total population (10.63 million people) still thought that they had unhealthy and illness. This ratio went up to 18.48 percent of total population (11.45 million people) in year 2007, 21.49 percent of total population (13.54 million people) in year 2009 and 21.73 percent of total population (13.91 million people) in year 2011. The data demonstrated that a lot of consumers thought that they still had more illness and unhealthy cognition.



Picture 1 shows amount of people that have unhealthy and illness cognition in 2002-2011(Million persons)

Source: National Statistical Office, Thailand

Like NSO information, the ministry of public health of Thailand accumulated the diseases' facts during 2001-2012 aimed to evaluate the health behavior of people in the country. The outcome explained that the rates of person who got the important diseases such as blood pressure, heart attack, diabetes and pneumonia were increasing. However, there were some of diseases that its rate had little grew up; such as stroke, cancer, accident and others, HIV and major depressive disorder. This means that there is some uncontrolled factors affected health of people. When determined the cause of diseases, the consequences told that eating-behavior is a major factor stimulated this illness. So, the research question is "Are people knowing the true concept of healthy deeds?"



Picture 2 shows ratio of people who have diseases in 2001-2012 (Thousands persons per 100,000 populations)

Source: the ministry of public health, Thailand

From the important action of eating behavior, this study aimed to determine the cognition of eating attitude and behavior to reflect the cognition of consumer. Next, the comparison procedure with the recognition rate of each public health policies that used to show the effect of each policy. Finally, this study tested the difference behavior of person categorized by group aimed to demonstrate the way to increases cognition of eating behavior by health campaigns that would be applied to social security system in the future.

## 2. Data and Methodology

To show the cognition of eating behavior reflected with the public health campaign. First, this study found the proper questions to verify the cognition of eating behavior that were concerned with basic pattern of healthy dinning. These questions came from variety source such as discussion outcome in seminar of Ministry of Health in Thailand, other studies such as food rule measure (Brown, et. al., 2012), eating behavior pattern (Hathaikarn and Amporn, 2007). Next, the Delphi technique with policy makers was used to match these questions with the public health campaign. In this step, each subject could be adjusted its content to reflect the policy. Then, the survey was conducted in sampling group. In this procedure, it initially asked about these eating behavior topics and latterly it asked the retention of health policy implemented by government. Finally, this study needed to understand all kinds of eating attitude and rearranged it to classify their behavior with content analysis method. If analysis of insight cognition was correctly interpreted, it would facilitate to see the effect of public health campaign that would be supported the cognition on eating behavior of people and then the outcome would lead to figure the policy in the future.

This study used questionnaire of 398 surveys and focused on people who had high education and lived in economically cities. The objective of this survey is to consider urban population behavior and attitude on eating behavior. Cronbach's alpha (a measure of internal consistency or how closely related a set of items are) was used to assess the inter-item reliability for this survey) The Cronbanch's alpha test of this survey is about 0.706, suggesting that the items had a relatively high degree of internal consistency (note that a reliability coefficient of 0.70 or higher is considered “accepted” in most social science research (Hair, et. al., 2006). The alpha's score measured acceptable for an explanatory analysis, indicating that the factors in the questionnaire are inter-related.

To analyze the health public policy, this study used in-depth interview of each participant aimed to explain the recognition rate of campaign and learnt more in deep detail of consumers' cognition on eating behavior. Furthermore, it is required to make sure that the information obtained is not just basic or general data, but it is from consumer insight.

For questions that used in this study, there are six subjects imitate with public heal policies that mainly implemented between year 2002-2013 and still demonstrated in social media. Table 2 showed the description of each question and its mirror toward public health policies.

Table 2 shows Survey questions and public health policies

Question	Description	Public health policies
Q1	I'm a person who is concerning to	“Washing hand healthy campaign”, “Everyday

Question	Description	Public health policies
	behave with healthy cognition	eat breakfast” and “Time for drinking water: increasing potential of yours health”
Q2	I choose to have a meal with 5 food groups	“5 food group: partner of good child”
Q3	In each meal, I’m preferring to eat more fruit and vegetable	“Eat more vegetables”
Q4	I’m selecting and eating healthy food with vitamin, fiber and amino acid that good for your health	“Vitamin C: benefit that you do not know”, “Fiber: Good for your health” and “Amino acid from protein”
Q5	I avoid to eat a disadvantage food and drink or something such as coffee, alcohol, food with high in fat or/and sweets and scorching meat that cause unwanted diseases	“Reducing sweet fat and salt”, “Diabetes: protect our future” and “Giving liquor means cursing”
Q6	I find myself preoccupied with though about ingredient and nutrition in everything I eat	“Low salt 50%” and “Reading before eating: vitamins has both sides”

These questions have capability to test the healthy-eating behavior of consumers in the market. Each question would be rated in scored that demonstrated the respondent healthy concerned. These scored are 5-always, 4-often, 3-sometimes, 2-rarely and 1-never. The result is derived from the highest mean score of factors of eating-behavior based on the respondents answer.

### 3. Findings

The study collected the survey that 144 respondents were male (36.2%) and 254 respondents were female (63.8%). Most of them had age between 21-40 years (80.2%), graduated with a Bachelor's degree (63.3%) and income per month between 10,000-50,000 Baht (69.7%). To classify the basic health of each sample, this study asks about what kind of disease that each respondent would be risk to plug in. The outcome demonstrated that more of them (53.52%) had no risk of disease, and then followed by kidney's diseases (20.35%), blood pressured (13.07%), diabetes (11.31%) and others.

The results in table 3 can be conducted that the sampling group has given the degree of moderate in healthy-eating cognition with the mean of 3.31 while giving the often level for preferring to eat more vegetables or fruits in each meals with the mean of 3.57; Concerning in eating with healthy cognition is considered as the often level (Mean= 3.47); Having 5-categories food group is considered as the sometimes level with the mean of 3.30; Carefully to educating the ingredient and nutrition of every food and drink is considered as the sometimes level with the mean of 3.27; Keeping away from disadvantage or unhealthy food and drink is considered as the sometimes level with the mean of 3.21; Frequency selecting and eating healthy food with vitamin, fiber and amino acid that good for your health is considered as the sometimes level with the mean of 3.07.

Table 3 shows Healthy-eating cognition of sampling groups and retention rate of public health policies

Questions	Avg. (Points)	S.D.	Level	Public health policies	Recognition rate (%)
Q1	3.47	0.75	Often	“Washing hand healthy campaign”	<b>75.13</b>
				“Everyday eat breakfast”	31.73
				“Time for drinking water: increasing potential of yours health”	39.09
Q2	3.30	0.86	Sometimes	“5 food group: partner of good child”	<b>70.81</b>
Q3	3.57	0.94	Often	“Eat more vegetables”	<b>80.20</b>
Q4	3.07	1.06	Sometimes	“Vitamin C: benefit that you do not know”	21.83
				“Fiber: Good for your health”	11.42
				“Amino acid from protein”	3.05
Q5	3.21	1.02	Sometimes	“Reducing sweet fat and salt”	41.88
				“Diabetes: protect our future”	33.76
				“Giving liquor means cursing”	<b>97.46</b>
Q6	3.27	1.1	Sometimes	“Low salt 50%”	<b>62.94</b>
				“Reading before eating: vitamins has both sides”	27.66

Source: Survey results

To imitate these results with the campaign, “Giving liquor means cursing” has highest recognition rate, which is equal to 97.46 percent. These great rates came from the long time in conducting this campaign and frequency appeared in the television media. However, when analyzing the perception in eating behavior, it shows in the sometimes level. This means that some consumers think the drinking an alcohol does not harm their body or it's not an important factor to get a disease to their wellbeing. The in-depth interview result shows that there are some factors such as traditional of community and emotional in the situations that make a difficult action to follow the healthy rules. To sum, this campaign cannot promote the successful message on healthy eating-behavior to the consumers.

The interesting point is the campaign “Eat more vegetables” that has recognition rate equal to 80.20 percent. Comparing with healthy cognition, the behavior of preferring to eat more fruit and vegetable is in the often level. This means that this campaign is successful to motivate people to act in healthy conscious. To analyze with in-depth interview demonstrates that vegetable and fruit are the symbol of healthy regime, so when this campaign sends the message, people can be completely get it and perform it in the proper way.

“Washing hand healthy campaign” is the one campaign that people can be recognized which rate is equal to 75.13 percent. This high rate come from reason that this campaign has frequency broadcast in the Influenza A(H1N1) epidemic period. So, it has directly linkages with healthy concern. Then, it motivates people to worry about their healthy cognition due to the healthy eating- behavior would be stimulated, too. Concerning to behave with healthy cognition has been behaved in the often level.

There is some public-health promotion related with education curriculum. “5 food group: partner of good child” is the one promotion to be an example. The recognition rate of this campaign is about 70.81 percent. Compared with others, this policy has the longest period in broadcasting (about 30 years ago). In primary school, this concept have been plug-in the health-education course, so children would be

more concern to have 5-foods groups in each meal. However, the cognition of having 5-foods groups in each meal has sometimes level. This means that there are some factors that would be effect this perception. Lifestyle-changing and high-competitive in workforce are the main factors that affect this eating-behavior. Some of respondents answers that they do not have more time to think what they are eating or do not capability to consume their meal in the proper ways (sometime they are eating in the meeting rooms, in the cars and take 5-10 minutes to finished their meal). However, they are concerned this eating-behavior caused more disease, but they do not have ability to solve them. This means that some campaign that they know it is good for healthy, but they do not do it well.

“Low salt 50%” is the public health policy that directly aims to reduce the kidney's diseases. The recognition rate of this campaign is about 62.94 percent. However, it creates sometimes level of motivation in caring about ingredient and nutrition of food that consumers want to eat. This means that this campaign is not successful to warning people to have good behavior of eating. Therefore, other public health policies even if they have medium recognition rate, but all of them cannot have an efficiency to motivate people to concern their healthy eating-behavior.

To summary this cognition concept, the outcomes of this survey could be demonstrated that most of sampling people still have wrong perception that neither concern on eating healthy food with vitamin, fiber and amino acid that good for your health, thinking about ingredient and nutrition nor reducing consumption on alcohols and cigarettes or reducing the chance of eating infection. These show the unsuccessful motivation promoted by campaign. Then, government should be reconsidered in these actions and conducted the new era of public health policies to promote the better beneficial to the populations.

Next, to investigate what group has more serious in healthy eating-behavior, this study used ANOVA test to measure the difference of cognition in each group of people. It provides cut-off scores by F-test for statistic significantly healthy cognition and characteristics of samplings. The characteristics classify in five dimensions by gender, age, education, income and diseases' risk. One-Way ANOVA analysis between the eating-behavior and characteristics of samplings was executed. The objective of the analysis is to find out whether there is significant difference between the dimensions of each group. The outcomes of the analysis were presented in Table 4.

Table4 shows difference of Healthy-eating cognition of sampling groups by characteristics (Points)

	N	Healthy-eating cognition													
		Q1		Q2		Q3		Q4		Q5		Q6		Total	
		Av g.	sig	Av g.	sig	Av g.	sig	Av g.	sig	Av g.	sig	Av g.	sig	Av g.	sig
<i>Gender</i>															
Female	25	3.5		3.3		3.6		3.1		3.3		3.3		3.3	
	4	2	0.04	2	0.5	3	0.06	5	0.03	3	0.00	7	0.0	9	0.04
Male	14	3.3	**	3.2	1	3.4	*	2.9	**	2.9	**	3.0	1**	3.1	**
	4	6		6		5		1		9		8		8	
<i>Age</i>															
<= 20	16	3.0	0.06	3.3	0.6	3.2	0.16	3.1	0.15	3.4	0.43	3.0	0.4	3.2	0.16



	N	Healthy-eating cognition													
		Q1		Q2		Q3		Q4		Q5		Q6		Total	
		Av g.	sig	Av g.	sig	Av g.	sig	Av g.	sig	Av g.	sig	Av g.	sig	Av g.	sig
years		6	*	8	0	5		3		4		6	9	2	*
21-30 years	17	3.4		3.2		3.5		3.0		3.1		3.2		3.2	
31-40 years	5	3		3		0		2		6		1		6	
41-50 years	14	3.4		3.3		3.5		3.0		3.1		3.2		3.3	
>= 51 years	4	7		4		8		0		9		6		1	
	39	3.6		3.3		3.7		3.1		3.1		3.4		3.4	
	2			1		4		3		8		4		0	
	24	3.7		3.5		3.8		3.5		3.5		3.5		3.6	
	1			0		8		8		4		4		3	
<i>Education</i>															
< secondary	8	2.7		2.8		2.6		2.1		2.8		2.7		2.6	
Secondary	25	3.3		3.5		3.7		3.5		3.5		3.3		3.5	
Bachelor	25	3.4	0.04**	3.2	0.2	3.5	0.04**	3.0	0.01**	3.1	0.22	3.2	0.4	3.3	0.02**
Master	10	3.5		3.3		3.6		2.9		3.2		3.2		3.3	
> Master	7	2		3		1		7		4		1		1	
	6	3.8		3.6		4.0		3.6		3.6		3.8		3.7	
	3			7		0		7		7		3		8	
<i>Income</i>															
<= 10,000 B.	35	3.1		3.0		3.2		3.0		3.2		3.0		3.1	
10,001-30,000 B.	16	3.4		3.2		3.5		3.0		3.2		3.3		3.3	
30,001-50,000 B.	11	3.4	0.04**	3.2	0.09*	3.5	0.13	3.0	0.19	3.2	0.93	3.1	0.1	3.2	0.14
50,001-70,000 B.	6	6		7		4		3		1		7		8	
>=70,000 B.	52	3.5		3.4		3.5		2.8		3.1		3.1		3.2	
	2			2		6		7		0		9		8	
	34	3.6		3.5		3.8		3.4		3.2		3.5		3.5	
	5			9		8		4		4		6		6	
<i>Risk of disease</i>															
No risk	21	3.3		3.2		3.5		3.1		3.2		3.1		3.2	
Blood pressure	3	1		7		0		5		7		0		9	
Diabetes	52	3.6	0.15	3.4	0.8	3.6	0.38	3.2	0.76	3.3	0.86	3.0	0.4	3.2	0.91
Kidney'	45	6		6		0		7		1		9		7	
	6			3		7		0		4		6		7	
	81	3.4		3.2		3.5		3.0		3.2		3.3		3.3	

	N	Healthy-eating cognition													
		Q1		Q2		Q3		Q4		Q5		Q6		Total	
		Av g.	sig	Av g.	sig	Av g.	sig	Av g.	sig	Av g.	sig	Av g.	sig	Av g.	sig
s diseases		4		7		1		0		0		3		5	
Others	7	3.29		3.29		4.00		3.14		3.00		3.57		3.38	

Remark: sig refers significant value of F-test in One-Way ANOVA

\* refers that value has statistical significant at level 0.10

\*\* refers that value has statistical significant at level 0.05

The results reveal that there is not a statistically significant difference between the influences of income and diseases' risk on consumer behavior (sig>0.10). Only age has an impact on eating-concern with significant level at 0.10 and gender and education have an impact on eating-concern with significant level at 0.05.

One-Way ANOVA give the interesting outcomes that female has significantly high healthy-eating cognition than male. This means that female has been concerning in consuming pattern than the other. However, when considers the results in detail of each question, both genders have the same with high-level of healthy-eating cognition in the dimension of having 5 food groups in each meal, but others behavior female has significantly well-behave than male.

In the same way of gender, people that have high education would be significantly has high healthy-eating cognition than the lower ones, but they still have difference only in the kind of concerning to behave with healthy cognition, preferring to eat more fruit and vegetable and selecting and eating healthy food with vitamin, fiber and amino acid that good for your health. The other questions do not have difference healthy-eating cognition by education group.

Age groups have weakly difference in healthy-eating cognition. The old age have high healthy-eating cognition level then the young. However, the difference would be found only the concerning to behave with healthy cognition. This means that some old age consumers still think that they behave on healthy cognition, but they still not concern on other health dimension. Then government should be considered in these dimensions to conduct healthy campaign.

Thus, this behavior show that government still not successfully achieves the goal of good public health policies and still works hard to stimulate the true cognition about healthy concern by giving the information on either male, people which lower education and the young group. These campaigns with targeted in the proper groups would be help to improve the eating-behavior in the future.

#### 4. Conclusion

Thailand government implements the public health policy aims to improve the population health by sending the messages seen as health-eating campaign. However, this action do not successfully recognize by the consumers. They still have uncompleted perception in eating-behavior especially in king of important consuming

such as eating healthy food with vitamin, fiber and amino acid, thinking about ingredient and nutrition and reducing consumption on alcohols and cigarettes or reducing the chance of eating infection. Furthermore, some public health policies that had high recognition rate, but still cannot made awareness to those consumers. Then, the implementers should be launch the new campaigns especially to make a basic concern to strengthening the population health for whole country consumption and should relief long time problems like diseases and unhealthy lifestyle in Thailand.

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