Assessment of Dietary and Exercise Behavior of aging Muslims in Thailand

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Abstract

Background: *Globally and in Thailand there are growing numbers of aging that can lead to chronic diseases. This study aim to study the dietary and exercise behavior of Muslim elderly.*

Methodology: *This cross-sectional study was conducted in a sub district of Pra-arjarn, Thailand. Total of 174 elderly Muslims were selected by simple random sampling method.*

Results: *This research reveal that the majority of them between 60-98 years old and had the illnesses, such as hyperlipidemia (85.1%), diabetes mellitus (77.6%) and hypertension (46.0%). The frequency of food consumption such as soymilk, milk, and calcium added milk ranged from 0-2times/week. Chicken, entrails, desserts, sweet beverages, and coconut milk were consumed on an average of about 3-7times/week. We found that most of the participants were health knowledge in healthy food consumption and exercise was good level (89.7%) while health behavior and belief in healthy food consumption and exercise were moderate level 60.3% and 67.8 %, respectively.*

Conclusions: *Aging Muslims in our sample were exposed to high density high fat foods and ate milk less frequently including the health behavior was moderate level. Therefore, this community should be add the various strategies for health behavior relieve the chronic diseases of people.*

Keywords: Dietary behavior, Exercise behavior, Aging, Muslim,Thailand

1. Background

At present time, more than 10%, of the total population of Thailand, are senior citizens. This is about half of the child population of the country. The number of seniors grows each year and this trend keeps going. The survey in 2014 Thai people will be aging populations from 9.4% in 2002 to 14.9% in 2014 (National Statistical Office,2014).From the above data, it suggests that our Thai society is leaning toward becoming an aging society. This trend may be a direct effect of the country's future demographic factors. The assessments of this research show that most aging Muslim havea long life expectancy, but they suffer several chronic diseases along the way. This is a public health problem that the government should try to immediately solve. Most health problems, of many communities, are on-communicable diseases such as hypertension, diabetes mellitus (Bygbjerg, 2012) and cardiovascular disease (Mangge, et al., 2013) the most common cause of death from obesity. The most prevalent disease is hypertension which has grown from 5.4% in 1991, to 11% in 1997, and to 21.4% in 2008-2009. The statistics show that diabetes mellitus has grown from 2.3% in 1991, to 4.6% in 1997, and 6.9% in 2008-2009. Moreover, dyslipidemia has climbed from 11.3% in 1997, to 19.4% in 2008-2009.

Besides, the problem of being overweight has increased from 15.3%to 19.1% or an increase of about 1.8 million people, while the obesity rate has gone up from 2.6% to 3.7% or an increase of about 0.5 million people (Ministry of Public health, 2011).

This information shows that there is an expansion of non-infectious diseases among Thai population, and more importantly it was found that the big proportion of patients is not properly diagnosed by any physician and that may subsequently result in insufficient treatments which later cause many complications of existing diseases (Ministry of Public health, 2011).Islam is the second largest religion that people practice in Thailand, about 5.4% of the population, after the first which is Buddhism. Food consumption behavior of Muslim shere is different from Muslims in other regions of the world. Following religious dietary restrictions of their faith, Thai Muslimsaccept2 types of foods: Halal (which they can eat), and Haram (which they do not eat) (Dalun, 2007). From a previous study it shows that, health-wise, the Thai Muslims lack awareness and facts about dangerous diseases (Menakanit, 2008).Muslims' food preparations before consumption is also another factor that adds to the risk of illnesses. For example:84% of responding subjects use cooking oil with high saturated fat (e.g. palm oil); 47% add salt or fish sauce to food before eating;59% sometimes consume fatty food; and 52.5% (Siriphan and Songwanthana, 2014)sometimes eat salty food. Another downside, the music for exercising or working out purposes, the aerobics dancing styles, and workout costumes, do not agree with religious principles. To make matters worse, the religious heads of the communities do not approve or give support to the idea of having exercise activities in places where they have influence (Laoman CH, 2010). All these reasons are a major contribution to Muslim getting insufficient exercise.

From the healthcare costs standpoint and the well-being factor of elderly Muslims, health support is necessary and needed. As a researcher, I have been interested in the "food consumption behavior and exercise for health" promotion, and the selection of appropriate and effective healthcare for elderly Muslims.

2. Purpose

The purpose of this descriptive study is to study the food consumption and exercise behavior of elderly Muslims for further development of health supports to promote healthy living, and relieve chronic diseases of the people in this group.

3. Methods

3.1 Design

A descriptive design was used.

3.2 Ethical considerations

Ethics approved was obtained from the Research Ethics Committee of the Srinakharinwirot University, (SWUEC/E-137/2014).The participants who were elderly Muslims, were gave informed consent and participant anonymity was assured. All participants were informed the research background, objectives, and procedures were explained to participants, whom were then asked to give written consents to being part of the research. Participants were also informed that they were free to quit or withdraw from the study at any time.

3.3 Settings and participants

Participants for this research who elderly Thai Muslims and had been living in sub district of Pra-arjarn, Nakhornnayok Province, Thailand. Participants were purposely recruited for the research and had to be elderly Thai Muslims aged ≥ 60 years. They also had to be able and willing to participate in this study on their own freewill. A total of 174 persons finally participated in the study.

3.4 Data collection

Each participant was required to complete a basic survey such as demographic characteristics, food consumption behaviors, exercise behaviors, health knowledge, behavior and general beliefs in accordance with his/her faith.

3.5 Instruments

The questionnaires were created by researchers with the help of community experts, and nutrition professionals, and were reviewed for having face and content validity. The Cronbach's alpha reliability coefficient for the knowledge construct was 0.81, the behavior construct was 0.77, and the belief construct was 0.85, and the overall total scores including the health knowledge, behavior and belief construct was 0.83.

The one-time-use survey tools had 3-part questions: 1- Demographic characteristics, 2- Consumption behavior, and 3-Health knowledge, belief in food consumption and exercise. Questions were multiple-choice type, where the respondents had to circle the best options or answers.

3.5.1 The Consumption Behavior Instrument (CBI) was used to assess elderly Muslim's food consumption behaviors. The participants were asked about the number of meals they had per day, the frequency of snacks or food between meals per day, food for consumption, methods of cooking, and taste preferences of their food. Moreover, the food frequency questionnaires were used to calculate the frequency of the food consumption and classified into three categories: daily, sometimes and none.

3.5.2 The Health Knowledge, Behavior and Belief in Healthy Food Consumption and Exercise Instrument (HKBHFCEI) were used to assess elderly Muslim's food consumption knowledge, actual practice and belief in healthy food consumption. The knowledge of food consumption and exercise was measured with the score of 1-10, i.e., 1-5 score = moderate and 6-10 score = good. The healthy food consumption and exercise was measured with the score of1-30, i.e., 1-10 score = fair, 11-20 score= moderate and 21-30 score = good. The belief in healthy food consumption and exercise was measured with the score of 1- 20 score, i.e., 1-7 score = fair, 8-14 score= moderate and 15-20 score = good.

3.6 Data analysis

Demographic characteristics data were analyzed by using descriptive statistics (frequency distribution, mean, and standard distribution) for demographic characteristics, food consumption behaviors, health knowledge, behavior and belief in healthy food consumption and exercise in elderly Thai Muslims.

4. Result

4.1 Demographic characteristics:

The average age of all 174Thai Muslim seniors between 60 - 98 years, was69.12 years (SD= 7.45). The majority were female (56.9%, n=99), married (58.6%, n=102), educated to primary level (88.5%, n=154), unemployed (37.4%, n=65). Most of them had excessive belly fat (59.2%, n=103) and history of physical illnesses (66.1%, n=115). The majority also had existing illnesses (66.1%, n=115), with hyperlipidemia (85.1%, n = 148), diabetes mellitus (77.6%, n=135), and hypertension (46.0%, n = 80). The details are presented in Table 1.

Table 1. Sample characteristics of elderly Thai Muslim with consumption behavior (N=174)

Characteristic	N	%†
Gender		
Male	75	43.1
Female	99	56.9
Marital status		
Single	9	5.2
Married	102	58.6
Widow/Divorced/Separate	63	36.2
Education		
Uneducated	16	9.2
Primary level	154	88.5
High level	4	2.3
Occupation		
Unemployed	65	37.4
General employee	35	20.1
Farmer	60	34.5
Merchant	14	8.0
Obesity		
Excessive belly fat	103	59.2
Normal or Slender	71	40.8
History of present illness		
Yes	115	66.1
No	59	33.9
Present illness with hypertension		
Yes	80	46.0
No	94	54.0
Present illness with diabetes mellitus		
Yes	135	77.6
No	39	22.4
Present illness with hyperlipidemia		
Yes	148	85.1
No	26	14.9

†Data are number for continuous variables and % for categorical variables.

4.2 Consumption behavior of elderly Thai Muslims:

As shown in Table 2, most of the subjects (71.3%) had three meals per day (breakfast, lunch and dinner) and one snack per day. The majority of the subjects (55.7%) ate food that they cooked in their home, and the methods of cooking were by boiling, stir-frying and deep-frying 67.8%. Some of the subjects (39.2%) had various tastesfor their food.

Table 2. Consumption behavior of elderly Thai Muslim (N=174)

Consumption behavior	N	%†
Number of meal		
-3 meals (Breakfast, Lunch and Dinner)	124	71.3
-2 meals (Breakfast and Dinner)	36	20.7
-2 meals (Lunch and Dinner)	8	4.6
-1 meal	6	3.4
Number of snack/day		
-1 time	97	55.7
-2 times	65	37.4
-3 times	10	5.7
-More than 3 times	2	1.1
Food for consumption		
-Cooked in home	173	99.4
-Buying	1	0.6
Method of cooking		
-Boiling, stir-frying and deep-frying	118	67.8
-Boiling and deep-frying	12	6.9
-Boiling and stir-frying	9	5.2
- Stir-frying and deep-frying	6	3.4
-Others	35	16.7
Taste		
-Insipid	46	26.4
-Salty	18	10.3
-Spicy and salty	18	10.3
-Salty and sweet	13	7.5
- Spicy, sour and salty	11	6.3
-Others	68	39.2

†Data are number for continuous variables and % for categorical variables.

4.3 Food consumption behavior of elderly Thai Muslims:

As a result of food consumption behavior of Thai Muslim seniors, it was found that the frequency of food consumption of soy milk, milk, calcium added milk, and meat rangedfrom none to twice a week (0-2 time/week) 63.3%, 57.4%, 94.3%, and 57.4% respectively. The frequency of food consumption ofchicken, fish, entrails, desserts, sweet beverages, vegetables, fruits, and coconut milk were at3-7 times/week; 66.7%, 99.4%, 79.3%, 62.7%, 94.3%, 94.3%, and 83.9%, respectively. (Table 3)

Table 3. Food consumption behavior of elderly Thai Muslim (N=174)

Food consumption	Normally (%)†	Sometimes or none (%)†
-Soy milk	64 (36.7)	110 (63.3)
-Milk	74 (42.6)	100 (57.4)
-Calcium added milk	10 (5.7)	164 (94.3)
-Beef	74 (42.6)	100 (57.4)
-Chicken	116 (66.7)	58 (33.3)
-Fish	173 (99.4)	1 (0.6)
-Entrails	116 (66.7)	58 (33.3)
-Dessert	138 (79.3)	36 (20.7)
-Sweet beverage	109 (62.7)	65 (37.3)
-Vegetables	164 (94.3)	10 (5.7)
-Fruits	164 (94.3)	10 (5.7)
-Coconut milk-	146 (83.9)	28 (16.1)

†Data are number for continuous variables and % for categorical variables.

4.4 Health Knowledge, Behavior, and Belief in Healthy Food Consumption and exercise in elderly Thai Muslims

For this aspect, HKBHFCEI questionnaire was used in this part to assess elderly Muslim's food consumption knowledge, actual practice and belief in healthy food consumption. The results showed that most Thai Muslim seniors had good level (6-10 score) of health knowledge in healthy food consumption and exercise (89.7%), while the health behavior in healthy food consumption and exercise had moderate level (11-20 score) as 60.3%. The health belief in healthy food consumption and exercise had moderate level (8-14 score) as 67.8 % (Table 4).

Table 4. Health knowledge behavior and belief in healthy food consumption and exercise in elderly Thai Muslims (N=174)

Food consumption †	Good (%)	Moderate (%)	Fair (%)
Knowledge	156(89.7%)	18(10.3%)	-
Behavior	66 (37.9%)	105 (60.3%)	3(1.7%)
Belief	52 (29.9%)	118 (67.8%)	4 (2.3%)

†Data are number for continuous variables and % for categorical variables.
Knowledge score: good=6-10 score, moderate=1-5 score
Behavior score: good=21-30 score, moderate=11-20 score, fair= 1-10 score
Belief score: good=15-20 score, moderate= 8-14 score, fair= 1-7 score

5. *Discussion*

The results of this study revealed that out of one hundred and seventy-four Thai Muslims with the mean age of 69.12 years,148 (85.1%) had hyperlipidemia, 135 (77.6%) had diabetes mellitus and 80 (46.0%) had hypertension. The results were consistent with other studies which have shown similar percentages of Muslim seniors with existing afflictions. Out of Six hundred and eighty-nine Muslim patients, from 49 countries, with a mean age of 62 years; 256 (37.2%) had hypertension, 220 (31.9%) had diabetes mellitus, and 219 (31.8%) had cardiovascular disease (Nasi,et al., 2006).

Furthermore, diabetic Muslim patients change their lifestyle during Ramadan. This minimizes the risk of hypoglycemia and prevents weight gain, which potentially benefits the body's metabolic control (Bravis, et al., 2010).The preventive healthcare strategies in these Muslim demographics did exist. They included: personal hygiene, dietary measures such as the restriction in eating specific ingredients (e.g., pork and its byproducts, and drinking alcohol), and the avoidance of addictive habits such as smoking tobacco or over-consumption of food (Nayer, 2008).Most of primary health cares were lacking in the provision of some particular medical procedures, management and follows up of acute and chronic conditions, and preventive medicine and health education. Improvement of primary health care has been seen globally as necessary effort in health systems reform and this information could provide guidance toward the efforts to improve the quality of primary care (Widyahening, et al., 2014).

In this study, the majority of the subjects (118, 67.8%) used various methods of cooking which included boiling, stir-frying, deep-frying; and most of the subjects (39.2%) preferred various tastes of diets. Similar studies have shown various taste preferences conforming to different traditional cooking ingredients, e.g., for the Malaysians, ingredients are usually comprised of lemongrass, *pandan* (screwpine) leaves and *kaffir* (lime) leaves as well as fresh herbs such as *daunkemangi* (a type of basil), *daunkesum* (polygonum or laksa leaf), nutmeg, turmeric and *bungakantan* (wild ginger buds). A blend of traditional spices such as cumin and coriander are combined with Indian and Chinese spices including pepper, cardamom, star anise and fenugreek. However, this study did not include questions about the use of extra cooking ingredients when the meals were being prepared (Hamzah and Yusof, 2003).

The frequency of food consumption of elderly Thai Muslims was none to twice a week in calcium added milk, soy milk, milk, and beef, which are 94.3%, 63.3%, 57.4%, and 57.4% respectively; and the frequency of food consumption was about at3-7 times/week in fish, fruits and vegetable, coconut milk, desserts, chicken and entrails, and sweet beverages99.4%, 94.3%, 83.9%, 79.3%, 66.7, and 62.7%, respectively. For meat consumption, most participants normally consumed fish (99.4%), chicken and entrails (66.7%), and beef (42.6%). These results are consistent with other studies which show similar figures of participants who consume meat; most of the respondents eat meals with chicken (37%), beef (31%), and lamb (23%) 1-2 times/ weeks. The overall results indicate four motivational structures of ladders with respect to meat consumption: craving sense, health choice, faith and respect (for animals). For Muslims, meat consumption has a perceived effect that it is good for their health and that of their family members, especially the children. All these factors lead indirectly to healthy living (Bonne and Verbeke, 2006).In this study, the reason for meat consumption was not asked therefore the reason for meat consumption in elderly Thai Muslims will not be included in the discussion. However, future studies should include this important point. Understanding the different impacts of globalization on cultures, which is the most profound shaper of consumption, is fundamentally important (Cleveland, 2013).The majority of Muslims are born into the cultural practices of their societies which are intermingled with religion that shape their everyday lives, personal and interpersonal relations, and world views. Therefore, the lifestyles embedded in these cultural settings can also resemble a diversity of such dynamics (Jafari and Süerdem, 2012).

On the issue of health knowledge and belief in food consumption and exercise in elderly Thai Muslims: the results showed that the number of participants with knowledge of healthy food consumption and exercise is at good level (89.7%) but their actual practices of those beliefs of healthy food choice and exercise are at moderate levels (60.3 and 67.8%, respectively). Furthermore, according to Hasnah Hassan (2011), it is apparent that culturally based values are the pervasive foundation of practicing values, such as ethnic background, dietary restrictions by faith, level of health knowledge, and family tradition. A study confirms that religiosity acts as a full mediating role in the relationship between relative and contextual variables, and the purchase behavior of Muslim consumers. Therefore, we have to remind the entrepreneurs that they cannot neglect the element of religion in their marketing activities, particularly in the development of products (Shah Alam, 2011).

6. Limitation

In this descriptive study of food consumption and exercise behavior of aging Muslims in Tambon Bungpra-arjarn, Ongkharak District, Nakhonnayok Province, Thailand. These were a basic and small participants study in demographic characteristics of consumer behavior, food consumption behavior, and health knowledge and belief in healthy food consumption and exercise in elderly Thai Muslims. Therefore, the results in this study may not be applicable in general Muslim people.

7. Conclusion

Findings indicated that Thai Muslim also had existing illnesses, with hyperlipidemia, diabetes mellitus, and hypertension. Most of the subjects had three meals per day (breakfast, lunch and dinner) and one snack per day by cooking their food by themselves. The methods of cooking were by using all methods of boiling, stir-frying and deep-frying 67.8%. Some of the subjects (39.2%) had various tastes for their food. The results found that the frequency of food consumption of soy milk, milk, calcium added milk, and meat ranged from none to twice a week (0-2 time/week) 63.3%, 57.4%, 94.3%, and 57.4% respectively. And the frequency of food consumption of chicken, fish, entrails, desserts, sweet beverages, vegetables, fruits, and coconut milk were at 3-7 times/week; 66.7%, 99.4%, 79.3%, 62.7%, 94.3%, 94.3%, and 83.9%, respectively. For health knowledge in healthy food consumption and exercise had good level while health behavior and belief in healthy food consumption and exercise had moderate level. This study had benefit for all nurse especially community health in Muslim areas. Results of this study can be used to guide management and development of training health behavior programs in elderly Muslims. The guideline should emphasize food and exercise behavior to evaluate the effectiveness of the healthy life outcome. The further research needs to consider increasing the group sizes and developing the health program in order to promote good health and reduce chronic diseases and improve their quality of life.

8. Acknowledgement

9. Author disclosures

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