LEVEL OF HEALTH LITERACY IN THAI ELDERS, BANGKOK, THAILAND

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ABSTRACT:

Background: Thailand's population is rapidly aging as a consequence of sustained declines in fertility and improvement in longevity. In spite of growing attention among Thai health practitioners for improving health literacy on health outcome across country, information about the status of health literacy in Thailand remains scarce. The objectives of this study were to assess the level of health literacy and determine the demographic characteristics associated with health literacy among Thai older persons.

Methods: The health literacy survey was conducted in 440 Thai older persons. The respondents were randomly selected. Data collection was based on the Thai elder health literacy questionnaire in paper-assisted personal interviews. The data were analyzed using descriptive statistics and the status of health literacy were categorized into three levels included functional, interactive, and critical health literacy. The Chi-square and Fisher's exact test were used to determine the associations among the factors related the health literacy.

Results: The Thai elder health literacy questionnaire covered two levels of health literacy: functional, and interactive level. The 2 in 440 (0.5%) respondents showed interactive health literacy and 438 in 440 (99.5 %) expressed functional health literacy. None of the participants had critical health literacy. Results indicated that factors significantly associated with health literacy included education (*P*-value=0.001), occupational history (*P*-value=0.020), visibility (*P*-value=0.003), and reading ability (*P*-value=0.049).

Conclusion: The status of health literacy, especially functional level were considered as having the limited literacy, among Thai older persons represents an important challenge for Thai health policies and health practitioners across Thailand. Knowledge of health literacy is needed to provide the foundation for developing strategies to mitigate effects of low health literacy on health outcome. The social gradient could be taken into account when developing public health strategies to improve health equity.

Keywords: Elderly, Health literacy, Thailand

DOI: *Received: November 2015; Accepted: February 2016*

INTRODUCTION

Thailand is among the most rapidly ageing countries in the world. In 2031, Thailand will become a Super Ageing society and by 2050 approximately 30% of the population will be seniors with aged of 65 years and above [1]. By the speed of population ageing in the world from 1980-2050, Thailand is the 6thplace; 8.5% of population aged 65 years and above increased from 1.7 million to 7 million, next to South Korea [1]. This would be attributed to sustained declines in fertility and improvement in longevity. The Foundation of Thai Gerontology Research and Development Institute (TGRI) projects that the percentage of Thai youth (aged under 15) and working-age (aged 15-59) population will decline continuously from the year 2010 to 2040 and interestingly the percentage of youth will be equal to that of the elderly population in the year 2017 [2]. This demographic change is very serious and urgently required public health policy responses. Quality of life of the elderly populations is one of the most critical issue.

In Thailand, the second National Plan for Older

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Cite this article as: Nilnate W, Hengpraprom S, Hanvoravongchai P. Level of health literacy in Thai elders, Bangkok, Thailand. J Health Res. 2016; 30(5): 315-21. DOI:

Persons (2001-2021) as a framework for long term policy intervention in support of quality of life of older persons has been implemented. Emphasis was laid on health promoting activities through temples and senior's club. However, those are underachieved and unsatisfactory, especially in term of health promotion, long term care, security, and job opportunity [2]. These could be as a consequence of differences in level of health literacy among older persons [3].

Health literacy is the degree to which individuals have the capacity obtain, process, and understand basic health information and services needed to make appropriate health decisions. The Institute of Medicine (IOM) divided the domain of health literacy into 1) cultural and conceptual knowledge, 2) oral literacy, including speaking and listening skills, 3) print literacy, including writing and reading skills, and 4) numeracy. A conceptual framework places literacy as the foundation of health literacy and health literacy as the active mediator between individuals and health contexts. Individuals bring specific sets of factors to the health context, including cognitive abilities, social skills, emotional state, and physical conditions such as visual and auditory acuity. Literacy provides the skills that enable individuals to understand and communicate health information and concerns. Literacy is defined as a set of reading, writing, basic mathematics, speech, and speech comprehension skills. Health literacy is the bridge between the literacy skills and abilities of the individual and the health context [4]. Understanding in the health literacy among the older persons is worldwide-increasing interest [5-8]. Inadequate health literacy is a major public health concern [7-9]. The elderly who tend to have inadequate health literacy are at risk for unsuccessful self-care and poor health outcome [9-17]. However, studies related to health literacy of Thai elderly remains are limited, thus the objectives of this study were to determine the level of health literacy and the demographic characteristics associated with health literacy among Thai elderly.

METHODOLOGY

Study population

Study participants were Thai older persons. The participants were selected from a random sample of Thai senior citizen clubs of Bangkok in designated area surrounding three centre subdistricts of Bangkok: the inner, the middle, and the outer subdistrict. The three senior citizen clubs within designated subdistricts were randomly selected and the members, aged of 60-year-old or greater and become one or more than one-year-member, of the selected clubs were called on to request as the study participants and assess the health literacy.

This cross-sectional study included 440 Thai elderly, eligible men and women. Participants were well functioning since the exclusion criterias included any self reported hearing impairment, speech impairment, difficulty of performing basic activities of daily life, or disability. Of participants, 61 out of 440 were men and 379 out of 440 were women. The Institutional Review Board (IRB) of Faculty of Medicine, Chulalongkorn University (IRB No.141/56), and the Bangkok Metropolitan (031/May26, 2014) approved this study.

Health literacy assessment

Thai elderly's health literacy was assessed using a tool constructed by the authors based on Nutbeam's health literacy model [7]. The model includes three sequential levels of health literacy: functional, interactive, and critical literacy. The three rounds of Delphi technique among fifteen Thai elderly experts were performed to gather and extract the essential contents suitable for Thai elderly in six aspects. Those includes: 1) knowledge of health and disease prevention; 2) access to health information; 3) health communication; 4) health decision making; 5) self-management; and 6) media literacy [7]. In the first Delphi round, the authors conducted individual face-to-face in-depth interviews with fifteen experts using open-ended questions in six aspects. In the second Delphi round, the results of the first round were analyzed and synthesized in order to create a series of questionnaires. The questionnaires were sent by post to the fifteen experts. Each question of the questionnaires was ranked by each expert. In the third Delphi round, the authors calculated interquartile range (IQR) for each question. The expert consensus on the data set was determined as follows: a narrow IQR meant that there was accordance of expert opinion, and the authors would then conclude the findings. On the other hand, a wide IQR illustrated difference of opinion among experts that needed to establish another series of questionnaires by doing the fourth Delphi round.

The substantial contents of each aspect were assembled and adopted as the tool. The total scores of this tool were of 74 in 38 items, including six aspects along with three level measured questions. The functional level (*sufficient basic skills in reading, writing, and functioning effectively in everyday situations*) refers to participants who got

Table 1 Demographic characteristics and health literacy level

Demographic characteristics	Overall (n = 440)	Level of health literacy level (n = 440)	
		Functional (n = 438)	Interactive (n = 2)
Age, mean (SD)	68.8 ± 6.0	68.8 ± 6.0	63.5 ± 2.1
Female, %	379 (86.1)	377 (86.1)	2 (100.0)
Male, %	61 (13.9)	61 (13.9)	0
Education, %			
< High school	263 (59.8)	263 (60.0)	0
Health status, %			
Hypertension	227 (51.6)	225 (51.4)	2 (100.0)
Dyslipidemia	181 (41.1)	180 (41.1)	1 (50.0)
Diabetes mellitus	93 (21.1)	92 (21.0)	1 (50.0)
Caregiver			
No	286 (65.0)	283 (64.6)	1 (50.0)
Yes	154 (35.0)	153 (34.9)	1 (50.0)
Visibility			
Fair to good	198 (45.0)	197 (45.0)	1 (50.0)
Hearing ability			
Fair to good	300 (68.2)	299 (68.3)	1 (50.0)
Speaking ability			
Fair to good	385 (87.5)	383 (87.4)	2 (100.0)
Reading ability			
Fair to good	268 (60.9)	266 (60.7)	2 (100.0)
Writing ability			
Fair to good	249 (56.6)	247 (56.4)	2 (100.0)

*Health literacy level based on the tool score: 9-33 = functional level, 34-61 = interactive level, ≥62 = critical level. Participants scoring ≤33 are considered to have limited health literacy, none of the participants had critical literacy.

more than 50 percent of the answers correct in the functional level questions (scores of 9 to 33). The interactive level *(actively participating in everyday activities, extracting and deriving information from different forms of communication and applying new information to changing circumstances)* refers to participants who scored full mark in the functional level questions and got more than 50 percent of the answers correct in the interactive level questions (scores of 34 to 61). The critical level *(critically analyzing the information and how to use this information to exert greater control over life events and situations)* refers to participants who scored full mark in the functional level and interactive level questions including getting more than 50 percent of the answers correct in the critical level questions (scores higher than 62). Participant's testing scores fall in the level of functional literacy were considered to have limited health literacy [18]. This tool was noted as the first measuring health literacy tool for Thai elderly and has not yet been implemented elsewhere.

Although this tool has not yet been correlated with other standardized health literacy, it was pre-tested among thirty Thai elderly whose characteristics were similar to the study participants, and its validity and reliability were reported as IOC = 0.93, KR20 = 0.47 in the first aspect, Cronbach's alpha coefficient = 0.88, 0.86, 0.56, 0.93 and 0.84 in the second to the sixth aspect respectively [19] (details of a health literacy tool development are not shown). Demographic data included age, sex, level of education, history of occupation, adequacy of income, history of disease (hypertension, diabetes mellitus), vision ability, hearing ability, speech ability, reading ability and writing ability were collected. The association among the demographic factors and the limit health literacy were analyzed by using Chi-square and Fisher's exact test. The probability, *p*-value < 0.05, was taken as the minimum level of significance.

RESULTS

The mean age of the participant was 68.8 (SD = 6.0) years (range 60-90). 86% of the participants were female. 59.8% of all participants reported education level of less than high school, and 85.9% reported as facing chronic diseases in the order of hypertension (51.6%), dyslipidemia (41.1%), and diabetes mellitus (21.1%) respectively. 35% of the

Table 2 Demographic characteristics and health status of study participants by limited health literacy level categorized by gender

Demographic characteristics (n, %)	Limited health literacy (n = 438)		*P*-value
	Men (n = 61)	Women (n = 377)	
Age, mean ± SD	70.2 ± 6.2	68.8 ± 6.0	0.695+
<70,	34 (55.7)	248 (65.8)	0.129
≥70,	27 (44.3)	129 (34.2)	
Education			
< High school	25 (41.0)	238 (63.1)	0.001
≥ High school	36 (59.0)	139 (36.9)	
History of occupation			
No occupation	2 (3.3)	52 (13.8)	0.020
Having occupation	59 (96.7)	325 (86.2)	
Adequacy of income			
No (debt)	7 (11.5)	27 (7.2)	0.298*
Yes (fairly+saving)	54 (88.5)	350 (92.8)	
History of disease			
No	8 (13.1)	54 (14.3)	0.802
Yes	53 (86.9)	323 (85.7)	
- hypertension	36 (59.0)	189 (50.1)	0.198
- dyslipidemia	20 (32.8)	160 (42.4)	0.155
- diabetes mellitus	13 (21.3)	79 (21.0)	0.949

*Fisher exact test +independent t-test

Table 3 Ability of vision, hearing, speaking, reading, and writing of the study participants by limited health literacy level categorized by gender

Communication ability (n, %)	Limited health literacy (n = 438)		*P*-value (Chi-square)
	Men (n = 61)	Women (n = 377)	
Visibility			
Poor	23 (37.7)	218 (57.8)	0.003
Fair to good	38 (62.3)	159 (42.2)	
Hearing ability			
Poor	18 (29.5)	121 (32.1)	0.687
Fair to good	43 (70.5)	256 (67.9)	
Speaking ability			
Poor	8 (13.1)	47 (12.5)	0.887
Fair to good	53 (86.9)	330 (87.5)	
Reading ability			
Poor	17 (27.9)	155 (41.1)	0.049
Fair to good	44 (72.1)	222 (58.9)	
Writing ability			
Poor	20 (32.8)	171 (45.4)	0.066
Fair to good	41 (67.2)	206 (54.6)	

participants were relied on family caregivers. Approximately more than 55.0% of the participants did self-rated fair to good hearing, speaking, reading, and writing ability, whereas 55.0% reported poor visibility (Table 1).

According to the health literacy level, none of the participants had critical literacy, 2 participants (0.5%) had interactive literacy, and 438 participants (99.5%) had functional level of literacy. This reflected that most participants had limited level of baseline health literacy (Table 1). Of 438 participants, 86.0 % of female participants showed the limited level of health literacy.

Participants in the limited health literacy were more likely to be female aged less than 70 year-old. Mean age, adequacy of income, and history of diseases did not differ between male and female (p>0.05) (Table 2). Stratified analyses demonstrated

the effects of education, history of occupation, visibility, and reading ability on the rate of limited health literacy (Table 2).

Among high school graduates, women had substantially higher rates of less than a high school graduation than men (63.1% for women and 41.0 % for men) (p<0.01). Of those with less than a high school education, only 17.6% of women and 4.0% of men had not been working (p<0.05). In addition, women uniformly had higher rates of poor visibility and reading ability than men (p<0.05) (Table 3). The 57.8 % of women did self-rated poor visibility and 41.1% reported poor reading ability, approximately 2/3 the proportion observed in men of similar literacy (p<0.05) (Table 3).

DISCUSSION

This study aimed at to measure the level of health literacy among Thai elderly by categorizing into three level; functional, interactive, and critical level. The participants whose health literacy remained in the functional level were considered as having the limited literacy [7]. In this study, almost elderly participants showed the limited health literacy and none of them reached the critical literacy. The prevalence of limited health literacy in the overall participants was reported as 99.5%. It was the first reported prevalence of health literacy among the elderly in Thailand. Notably, this number was higher than those found in other prevalence studies with participants aged 60 and older. For example, the results of previous studies, the elderly in Yanbian of China, the state of Pennsylvania, and New York US, had limited health literacy 31.3%, 24% and 24.3%, respectively [13, 20, 21].

This may be explain that; 1) the tool used to measure health literacy in this study was not a standard literacy tool, but was constructed by the author of which its validity and reliability was high enough to potentially use as a screening measure, 2) there may also be other socioeconomic factors that did not consider for in this study, therefore the contamination effects to the measure of participant's health literacy were not controlled, and 3) the elderly participants were selected from the elderly club solely in Bangkok, even though their baseline characteristics presumably did not different, the reported health literacy herein may not be generalized to the whole elderly in the entire country. Remarkably, these findings were not surprising to us. In the country baseline of educational attainment, the issues of inadequate knowledge and skill are still an open wound of the Thai people, especially among the elderly. The 10th year (2004-2014) reports of Thai National Statistical Office revealed the average years of education among Thais aged greater than 60 year-old as 4.7 years, which are less than those of other age groups [22] and those in other countries, the elderly(55-64 year-old) in US, UK, Japan and Korea had the average years in formal education as 13.2, 12.2, 10.9 and 9.1 years, respectively [23].

Of these, Thai elderly women uniformly had lower average years of education than men (4.3 years for old-women, 5.4 years for old-men). These evidences apparently support our study showing that the educational attainment and the limited health literacy were strongly related. However, this finding was inconsistent with other studies showing that years of education do not associate to health literacy skill [24-26].

The association between sex and educational attainment were also observed in these participants with limited health literacy. Thai elderly women showed less educational level and had more confronted with the difficulty of reading than men while speaking, writing, and hearing ability did not explain by sex difference. Similar results were found in a study revealing that female patient with limited health literacy often have difficulty reading or filling out forms needed to obtain health services [27, 28]. Furthermore, in this study, women with limited health literacy had poor visibility than men. These results may suggest that inadequate communication skills may be a marker for poor-quality education or access to education, especially for minority group with limited health literacy, partially resulting in job disparity. The disparity in access to job hiring was also observed in this study revealing that women with limited health literacy and having less education showed higher rates of no past job experiences than men. Furthermore, the elderly with limited health literacy in the lower reading ability were at greatest risk for the disparity in health status since effective management of chronic health problems requires a level of understanding of physicians and medication instructions and appropriate access and close follow-up care [29]. These were consistent with the studies of Bostock and Steptoe [14] who found that a third of older adults in England had difficulties reading and understanding basic health related written information, and higher health literacy was associated with lower mortality.

In addition, in this study many chronic illnesses were not associated with sex and limited health literacy. This may be subjected to the sufficient regular doctors or place of care. Given these, the elderly might be more likely to find interactions with their primary care physicians and to access the preventive services and medication consistently. Therefore, having access to primary care services for older people with limited health literacy may mitigate the disparity in poor health outcome [8].

Older persons with limited health literacy have commonly encountered with chronic medical conditions, including hypertension, dyslipidemia, diabetes mellitus, depression, obesity and so on. In addition, the elderly tend to suffer from greater chances of chronic health conditions and physical disability due to their improved life expectancy [2, 3]. They seem to have a greater need for complex disease management and require a lot of money for their expenditure. Remarkably, the study results also showed that the elderly with limited health literacy had sufficient money for each month although most of them were retired and had no current job. This was subjected to the financial support policy for Thai elderly such as formal retirement benefits or social security support. Additionally, their financial supports were also come from gainful employment and transfer payments from family members.

CONCLUSION

In summary, limited health literacy is prevalent in common Thai elderly. With sex difference, it is associated educational attainment, having past job, poor reading ability, and poor visibility, and therefore, women elderly with limited health literacy may be at greater risk for worse communication as a consequence of worse clinical outcomes. Health literacy may apparently be a better measure than educational attainment of elderly's ability to understand healthcare instructions and to successfully interact with the healthcare environment. Further research is needed to delineate the best ways to identify the elderly at risk of health literacy and to help develop geriatric and low literacy-focused interventions that will help narrow disparities in health for older person. Moreover, in Thailand long term policy that need to be implementation are: 1) cultivation of understanding and awareness among the youth and working-age population regarding aging process and willingness to co-exist with people of all ages, installation of positive attitude toward the elderly, and preparation for old age in the health, economic, and social aspects to mitigate negative impacts in retirement, 2) Improvement of long term care system for the elderly in the health, economic, and social dimensions to lengthen the period of co-existence with the family and community, and 3) Empowerment and capacity building for the elderly clubs and older person assembly to be a voice for the elderly.

STRENGTHS AND LIMITATIONS

To our knowledge this is the first measuring health literacy in Thai elderly by using a tool constructed by the authors based on Nutbeam's health literacy model. This study has some limitations. First, the data collection might cause bias from interview and recall bias. In addition, the cross-sectional study design does not allow us to establish causal relationships between health literacy, demographic characteristics, and health status. Additionally, assessment of vision, hearing, speaking, reading, and writing abilities of these participants just only used an interview, not particular measurement. Thus, the results of these abilities might be overestimated.

CONFLICT OF INTEREST

The authors have no conflict of interest.

ACKNOWLEDGEMENTS

The authors thank all our participants from the senior citizen clubs of Bangkok, Thailand. This study was supported by the Ratchadapiseksompotch Fund, Faculty of Medicine, Chulalongkorn University, grant number RA57/033 and CU. GRADUATE SCHOOL THESIS GRANT, Graduate School, Chulalongkorn University.

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