# ASSESSMENT OF AND FACTORS INFLUENCING QUALITY OF LIFE AMONG ELDERLY THAIS IN NAKHON SAWAN PROVINCE, THAILAND

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**Abstract.** The quality of life (QoL) of elderly is an important public health concern. We aimed to determine the QoL among elderly Thais in Nakhon Sawan Province, Thailand and the factors influencing QoL at individual, family and community levels to increase the proportion of elderly accessing healthcare services and affect QoL among the elderly. Inclusion criteria for study subjects were: age 60-80 years, continuously residing with their family in Nakhon Sawan Province for at least 6 months prior to beginning the study, no diagnosis of cognitive impairment, dementia or Alzheimer's disease, no communication problems and willing to participate in this study. Exclusion criteria for study subjects were: inability to provide information during data collection due to severe illness or hospitalization and not residing in the study area during the 6 months up to and including the study period. Study subjects were selected using a 4-stage random sampling technique. The QoL of each study subject was assessed by asking them to complete a QoL in the elderly study instrument: the Older People's QoL-Brief Questionnaire (OPQOL-brief). The QoL results were categorized as good, fair and poor using the following criteria: good QoL (>54 points), fair QoL (47-54 points) and poor QoL (<47 points). The number of subjects was chosen using the estimated variables technique. The study was conducted during January-March 2019. A total of 484 subjects were included in the study, 66.1% female, 56.8% married. Eighty-six point one percent of subjects had a primary school education level and 85.6% resided in a family with 2-5 members. Among study subjects, the QoL instrument showed 22.7% had a good QoL, 55.0% had a fair QoL and 22.3% had a poor QoL. Twenty-eight point nine percent of subjects stated they received good social support, 70.5% said they received fair social support and 0.6% said they received poor social support. Twenty-three point eight percent of subjects said they had a good functioning family, 53.1% said they had a fair functioning family and 23.1% said they had a poorly function family. Factors significantly influencing QoL among study subjects were social support ($p = 0.004$), physical abilities ($p<0.001$) and participating in social activities ($p<0.001$). In summary, the majority of study subjects in the study area had either a fair or good QoL. Factors significantly influencing QoL among study subjects were social support, physical abilities and participating in social activities. In conclusion, programs to improve QoL in the elderly should take these factors into consideration. Future studies are needed to determine of these interventions can improve QoL in these areas.

**Keywords:** social support, family functioning, physical abilities, participating in social activities, quality of life, elderly Thais, HLM analysis

## INTRODUCTION

In Thailand the population is aging. It is estimated 17.9% of the Thai population in 2015 was aged ≥60 years; this percentage is expected to increase to 47.0% by 2050 (ASEAN Information Center PRD, 2015). An aging population can affect healthcare services and may affect quality of life (QoL).

Older people are more likely to have degenerative and non-communicable diseases, such as diabetes mellitus, hypertension and cerebrovascular disease (Yashin *et al*, 2007). Elderly people with chronic diseases may have difficulties in performing activities of daily living (ADL) which can affect QoL (Prachuabmoh *et al*, 2013). The elderly are often required to depend on others, such as family members. Aging is an important public health concern. The Thai Ministry of Public Health has launched policies to promote good health in the elderly in order to allow elderly Thais to live with dignity and have a good QoL (NESDC, 2011).

Many factors have been reported to be associated with QoL in the elderly, such as the ability to perform ADL (Khamvong *et al*, 2011; Gobbens, 2018), family functioning (Wang and Zhao, 2012; Lu *et al*, 2017) and social support by the community (Kiatsangworn, 2015; Unsar *et al*, 2016). However, no published studies are available on hierarchical relationship factors influencing QoL among elderly Thais.

The Hierarchical linear model (HLM) is an instrument to analyze complex hierarchical relationships (Anderson, 2012). Hierarchical relationship is nested relationship, *eg* involving individuals within households within geographic areas (Raudenbush and Bryk, 2002).

Nakhon Sawan Province, located in central Thailand, is in the top 10 provinces of Thailand with the most elderly (TGRI, 2016). In 2016, it was estimated the elderly in Nakhon Sawan Province comprised 15.4% of the population (Nakhon Sawan Provincial Public Health Office, 2017). A survey of the elderly in Nakhon Sawan Province, estimated 36.2% have hypertension and 15.0% have diabetes mellitus (Nakhon Sawan Provincial Public Health Office, 2017). Degenerative changes and disease may cause the elderly to be dependent on others, such as family members and the community. In this study we aimed to determine the QoL among the elderly and factors influencing QoL among elderly Thais living in Nakhon Sawan Province. These factors were divided into 3 groups: individual factors, familial factors and community factors. Individual factors were those specific to the individual, such as age, sex, education level, marital status, monthly income, chronic illness, physical abilities and participation in social activities. Familial factors were factors specific to the elderly person's family, such as family functioning level. Community factors were those factors specific to the community in which the

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elderly person lived, such as the level of community support.

## MATERIALS AND METHODS

### Study design

This study was a cross-sectional survey. It was conducted from January to March 2019.

### Subject selection and study location

The minimum number of subjects needed for the study was determined using the estimated variables technique suggesting multivariate analysis should be applied with a sample size of no less than 20 times the number of estimated variables (Lindeman *et al*, 1980). There were 11 variables divided into individual, familial and community factors: age, sex, education, marital status, monthly income, chronic illness, club membership, physical abilities, participating in social activities, family functioning, and social support. These variables were selected based on the concept of QoL (Bowling *et al*, 2013), social support (House, 1981), family functioning (Epstein *et al*, 1978) and a review of the literature (Jiandon *et al*, 2010; Khamvong *et al*, 2011; Baernholdt *et al*, 2012; Wang and Zhao, 2012; Seerawattana *et al*, 2013; Khan and Tahir, 2014; Yamwong, 2014; Kulprasutidilok *et al*, 2014; Kiatsangworn, 2015; Wannachart *et al*, 2015; Kaur *et al*, 2015; Unsar *et al*, 2016; Belanger *et al*, 2016; Chen and Chen, 2017; Lu *et al*, 2017; Gobbens, 2018). These 11 variables were multiplied by 40 to give the minimum number of study subjects required (440). An additional 10%, in order to account for missing data, was added to 440 to give a total of 484 study subjects. A 4-stage random sampling technique was used to select study subjects. For the first stage, there are 4 health zones in the study province; 4 districts in each health zone were randomly selected. In the second stage, in each selected district, one sub-district was randomly selected. In the third stage, two villages in each selected sub-district were randomly selected. Finally, in the fourth stage, 60 elderly subjects were randomly selected from each selected village. Inclusion criteria for study subjects were: 1) age 60-80 years, 2) the subject must have been continuously residing in Nakhon Sawan Province for at least six months prior to the study, 3) the subject must have no diagnosis of cognitive impairment, dementia or Alzheimer's disease, 4) the subject must have no communication problems and 5) the subject must be willing to participate in this study. Exclusion criteria for study subjects were: 1) the inability to provide information during data collection due to illness or hospitalization and 2) not living in the study area during the 6-month period prior to the study period.

This study was approved by the Human Ethics Committee, Faculty of Public Health, Mahidol University (COA No. MUPH 2019-002). Permission to conduct the study was also obtained from all four directors of the District Public Health Offices of the studied districts: Chum Saeng, Tak Fa, Nong Bua and Lat Yao Districts. The study was also coordinated with the chief of each sub-district hospital, community leaders and village health volunteers who obtained the subject names and contact information. Each subject gave written informed consent prior to participation in the study.

### Questionnaire

Each subject was asked to complete a structured questionnaire developed for this study and reviewed by 5 experts; the content validity was determined

to be 0.97. The questionnaire was pilot tested among 40 elderly individuals not included in the main study who resided in the study area; the Cronbach's alpha coefficient ranged from 0.75 to 0.95. The questionnaire consisted of six parts: 1) socio-demographic characteristics, consisting of age, sex, education level, marital status, number of family members, monthly income, health status, presence of health insurance, annual health checks and club membership; 2) a physical abilities assessment (NSO, 2018) consisting of 15 four-answer Likert Scale questions divided into 3 levels of good physical abilities (27-45 points), fair physical abilities (10-26 points) and poor physical abilities (0-9 points); 3) a participation in social activities (PAR) Questionnaire (Nanthamongkolchai *et al*, 2010) consisting of 10 five-answer Likert Scale items divided into 3 levels of good PAR level (>40 points), a fair PAR level (30-40 points) and a poor PAR level (<30 points); 4) family functioning assessed by a family assessment device (FAD) (Epstein *et al,* 1983) that consisted of 60 five-answer Likert Scale items divided into 3 levels of good family functioning (>214 points), fair family functioning (199-214 points) and poor family functioning (<199 points); 5) social support assessed by the multidimensional scale of perceived social support (MSPSS) (Zimet *et al,* 1988) consisting of 20 five-answer Likert Scale items divided into 3 levels of good social support (>71 points), fair social support (42-71 points) and poor social support (<42 points); 6) QoL assessed using the Older People's QoL-Brief Questionnaire(OPQOL-brief) (Bowling *et al,* 2013) consisting of 13 five-answer Likert Scale items divided into 3 levels of good QoL (>54 points), fair QoL (47-54 points) and poor QoL (<47 points).

**Data analysis**

We used descriptive statistics to categorize the data. Hierarchical linear model (HLM) was used to identify factors influencing QoL of the subjects at different levels of independent factors, namely, social support, family functioning, physical abilities, and participating in social activities. Statistical significance was set at $p<0.05$.

## RESULTS

**General characteristics of study subjects**

A total of 484 subjects were included in the study, 66.1% female. The average (± standard deviation (SD)) age of study subjects was 68 (±6) (range: 60-80) years. Eighty-six point one percent of subjects had a primary level education. Fifty-six point eight percent of subjects were married, 51.2% lived with a single family member (spouse, child or sibling) and 85.6% lived with 2-5 family members (average (±SD) 3.7 (±1.7) members). Fifty-eight point five percent of subjects had a monthly income <5,000 Thai Baht (THB). Eighty-two point nine percent of subjects had good physical abilities and 85.5% had universal health insurance coverage. Seventy-two point nine percent of subjects had a chronic disease: hypertension (57.6%), hyperlipidemia (47.7%) or diabetes mellitus (22.9%). Sixty-seven point four percent of subjects had annual medical checkups. Seventy-two point seven percent were not members of any social clubs. Ninety-six point nine percent of subjects had poor PAR. Twenty-three point eight percent of subjects had good family functioning, 53.1% has fair family functioning and 23.1% had poor family functioning. Twenty-eight point nine percent of subjects had good social support, 70.5% had fair social support and

0.6% had poor social support. Twenty-two point seven percent of subjects had a good QoL, 55.0% had a fair QoL and 22.3% had a poor QoL.

**HLM analysis on quality of life of elderly Thais**

Result of HLM analysis showed grand mean of QoL was 3.937 and three factors were significantly ($p$ <0.05) associated with QoL in the subjects: social support at the community level, physical abilities and PAR at the individual level. Increasing of social support by 1 score, resulted in an increase of 0.728 score of QoL; increasing of physical abilities by1 score resulted in an increase of 0.444 score of QoL, and increasing of PAR by 1 score resulted in an increase of resulting 0.028 score of QoL. Standard error of such were 0.163, 0.076 and 0.007 respectively. Its statistical significance at $p$<0.05 ($t$-ratio = 4.463, 5.875 and 3.900). Family functioning was not significantly ($p$ >0.05) associated with QoL in the study subjects. (Table 1).

## DISCUSSION

In our study, the majority of subjects had a good or fair QoL which could be because the majority of subjects were age <70 years, had a good level of physical abilities, lived with their families and had good or fair level functioning families. Residing with families can make a person feel safe and secure, resulting in a better QoL. Nearly all our subjects felt they had a good or fair level of social support in the community. Fewer than a quarter of subjects had a poor QoL, possibly due to the large number of subjects with chronic diseases which might require them to be dependent on others due to physical limitations.

The factors significantly influencing QoL were: social support by the community, physical abilities and participating in social activities at the individual level. Family functioning was not significantly influencing QoL.

Community level social support was significantly influencing QoL in our study, similar to other studies (Khan and Tahir, 2014; Kulprasutidilok *et al*, 2014). Receiving good social support including emotional, informational, instrumental and appraisal support (House, 1981) positively affects both mental health and QoL.

Table 1
HLM analysis showing the influence of different factors on QoL of elderly Thais in Nakhon Sawan Province.

| Factor | Coefficient | Standard error | $t$-ratio | $p$-value |
|---|---|---|---|---|
| Constant | 3.937 | 0.014 | 274.649 | <0.001 |
| Social support | 0.728 | 0.163 | 4.463 | 0.004 |
| Family functioning | 0.018 | 0.879 | 0.020 | 0.984 |
| Physical abilities | 0.444 | 0.076 | 5.875 | <0.001 |
| PAR | 0.028 | 0.007 | 3.900 | <0.001 |

QoL: quality of life; Constant: grand mean of QoL; PAR: participating in social activities; Coefficient: influence size; $t$-ratio: statistical test for significance of variable.

Family functioning was not significantly influencing QoL in our study, similar to another study (Seerawattana *et al*, 2013). This may be explained by the context of Thai culture where older people usually live with their families and family members usually provide care and show respect to the elderly. Our findings are in contrast to another study that reported family functioning was significantly influencing QoL (Andrade and Martins, 2011; Lu *et al*, 2017). Different study populations and study designs might explain these differences.

Individual level of physical abilities was significantly influencing QoL in our study, similar to several other studies (Khamvong *et al*, 2011; Yamwong, 2014; Gobbens, 2018). When the elderly is able to perform various activities on their own without relying on others, this can give a positive influence on mental health and QoL.

In our study, PAR was significantly influencing QoL similar to other studies (Jiandon *et al*, 2011; Khan and Tahir, 2014). Social activities are important for the mental health of the elderly. Social participation allows the elderly to exchange information, including health information. Participating in physical activities may help the elderly to improve their health. These physical and mental benefits can improve QoL.

In summary, the majority of subjects in our study had a good or fair QoL. The factors significantly influencing QoL in our study were social support by the community, physical abilities and participating in social activities at the individual level.

In conclusion, in our study population, subjects with poor or fair QoL may have improvement in their QoL by improving their social support, improving their physical abilities and encouraging greater participation in social activities. Programs to improve QoL in the study population need to take these into consideration. Further studies are needed to determine how best to practically apply this data to the study population in order to improve QoL.

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## REFERENCES

Anderson D. Hierarchical Linear Modeling (HLM): an introduction to key concepts within cross-sectional and growth modeling frameworks. Technical report #1308, 2012 [cited 2018 Oct 30]. Available from: URL: https://files.eric.ed.gov/fulltext/ED545279.pdf

Andrade A, Martins R. Family functionality and quality of life for the elderly. *Millenium* 2011; 40: 185-99. [in Portuguese]

ASEAN Information Centre, Government Public Relations Department (PRD). ASEAN and aging society, 2015 [cited 2017 Mar 29]. Available from: URL: http://www.aseanthai.net/ewt_news.php?nid=5102&filename=index [in Thai]

Baernholdt M, Hinton I, Yan G, Rose K, Mattos M. Factors associated with quality of life in older adults in the United States. *Qual Life Res* 2012; 21: 527-34.

Belanger E, Ahmed T, Vafaei A, Curcio CL, Phillips SP, Zunzunegui MV. Sources of social support associated with health and quality of life: a cross-sectional study among Canadian and Latin American older adults. *BMJ Open* 2016; 6: e011503.

Bowling A, Hankins M, Windle G, Bilotta C, Grant R. A short measure of quality of life in older age: The performance of the brief older people's quality of Life questionnaire (OPQOL-brief). *Arch Geriatr Gerontol* 2013; 56: 181-7.

Chen HM, Chen CM. Factors associated with quality of life among older adults with chronic disease in Taiwan. *Int J Gerontol* 2017; 11: 12-5.

Epstein NB, Baldwin LM, Bishop DS. The McMaster Family Assessment Device. *J Marital Fam Ther* 1983; 9: 171-80.

Epstein NB, Bishop DS, Levin S. The McMaster model of family functioning. *J Marital Fam Ther* 1978; 4: 19-31.

Foundation of Thai Gerontology Research and Development Institute (TGRI). Situation of the Thai elderly 2016, 2016 [cited 2018 July 18]. Available from: URL: http://www.dop.go.th/download/knowledge/en1518139087-108_0.pdf [in Thai]

Gobbens RJ. Associations of ADL and IADL disability with physical and mental dimensions of quality of life in people aged 75 years and older. *Peer J* 2018; 6: e5425.

House JS. Work stress and social support. Reading, MA: Addison-Wesley; 1981.

Jiandon C, Suwannapong N, Boonshuyar C, Howteerakul N. Quality of life of rural elderly in Wangnamkheaw District, Nakhonratchasima Province. *J Public Health* 2011; 41: 229-39. [in Thai]

Kaur H, Kaur H, Venkateashan M. Factors determining family support and quality of life of elderly population. *Int J Med Sci Public Health* 2015; 4: 1049-53.

Khamvong W, Nusawas J, Pratanworapunya W, Siripunya J. Factors relating to quality of life of elderly. *J Health Sci Res* 2011; 5: 32-40. [in Thai]

Khan AR, Tahir I. Influence of social factors to the quality of life of the elderly in Malaysia. *Open Med J* 2014; 1: 29-35.

Kiatsangworn M. The prediction of elderly quality of life in elderly club Tambol Bangnomkho, Sena District, Ayutthaya Province. *Region 4 Hospital Center Acad J* 2015; 16: 222-9. [in Thai]

Kulprasutidilok A, Jirawongnusorn S, Chitmanasak N, Supawantanakul D. Path analysis of factors affecting quality of life in the elderly in Bang Khen District, Bangkok. *J Health Sci Res* 2014; 8: 35-46. [in Thai]

Lindeman RH, Merenda PF, Gold RZ. Introduction to bivariate and multivariate analysis. Glenview, IL: Scott Foresman & Co; 1980.

Lu C, Yuan L, Lin W, Zhou Y, Pan S. Depression and resilience mediates the effect of family function on quality of life of the elderly. *Arch Gerontol Geriatr* 2017; 71: 34-42.

Nakhon Sawan Provincial Public Health Office. Annual report fiscal year 2016. Nakhon Sawan: Nakhon Sawan Provincial Public Health Office; 2017. [in Thai]

Nanthamongkolchai S, Munsawaengsub C, Taechaboonsermsak P, Powwattana A. Happiness and way of life among elderly female who take care of grandchild in northern region of Thailand. Bangkok: Vithoonkanpok, 2010. [in Thai]

National Statistical Office (NSO). Report on the 2017 survey of the older persons in Thailand, 2018 [cited 2018 Aug 17]. Available from: URL: http://www.nso.go.th/sites/2014en/Survey/social/domographic/OlderPersons/2017/Full%20Report_080618.pdf [in Thai]

Office of the National Economic and Social Development Council (NESDC). The eleventh national economic and social development plan (2012-2016), 2011 [cited 2017 May 22]. Available from: URL: https://www.greengrowthknowledge.org/sites/default/files/downloads/policy-database/THAILAND%29%20The%20Eleventh%20National%20Economic%20and%20Social%20Development%20Plan%20%282012-2016%29.pdf [in Thai]

Prachuabmoh V, Suwanrada W, Wongsith M, Pothisiri W, Asavanirandorn C, Waipunya

H, editors. Situation of the Thai elderly 2011. Bangkok: Pongpanich-charoenbhol; 2013.

Raudenbush SW, Bryk AS. Hierarchical Linear Models. Application and data analysis methods. 2nd ed. Thousand Oaks, CA: Sage Publication; 2002.

Seerawattana C, Surinya T. Self-acceptance, family relationship, community participation and quality of life of the elderly at Dindaeng Housing Community in Bangkok Metropolitan. *J Soc Sci Hum* 2013; 39: 80-94. [in Thai]

Unsar S, Erol O, Sut N. Social support and quality of life among older adults. *Int J Caring Sci* 2016; 9: 249-57.

Wang J, Zhao X. Family function and social support for older patients with depression in an urban area of Shanghai, China. *Arch Gerontol Geriatr* 2012; 55: 574-9.

Wannachart M, Nanthamongkolchai S, Munsawaengsub C, Taechaboonsermsak P. Quality of life among elderly people with chronic diseases in Ubon Ratchathani Province. *J Public Health* 2015; Special issue: S18-29. [in Thai]

Yamwong N. Quality of life and physical activities of daily living among elderly patients at HRH Princess Maha Chakri Sirindhorn Medical Center. *J Med Health Sci* 2014; 21: 37-44. [in Thai]

Yashin AI, Arbeev KG, Kulminski A, Akushevich I, Akushevich L, Ukraintseve SV. Health decline, aging and mortality: how are they related? *Biogerontology* 2007; 8: 291-302.

Zimet GD, Dahlem NW, Zimet SG, Farley GK. The multidimensional scale of perceived social support. *J Pers Assess*1988; 52: 30-41.