Original Research

Health-Related Problems and Drivers of Health-Related Quality of Life Among Community-Dwelling Older Adults

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Abstract

Purpose: The aims of this study were to explore prevalence of health-related problems and identify factors associated with health-related quality of life (HRQOL) among community-dwelling older adults (CDOAs) in rural Thailand. **Methods:** A total of 384 CDOAs with mean age of 71 years (SD = 7.6) were recruited. The Thai Ministry of Public Health's comprehensive geriatric assessment (CGA) was used to measure the CDOAs' health conditions in the primary care unit of community hospitals. HRQOL of the participants was assessed by using the EQ-5D questionnaire. **Results:** The results showed that the most common health-related problems were risk of glaucoma (89.6%) and hypertension (64.6%). The HRQOL were predicted by the incidence of falls ($\beta = -0.076$, $P < .001$), Timed Up and Go Test ($\beta = -0.087$, $P < .001$), and age ($\beta = -0.667$, $P = .002$). **Discussion:** This study highlighted the need to incorporate CGA in family practice, which included risk of falls assessment by measuring TUG test, fall prevention, and to provide resources for caring older adults at home which ultimately will improve CDOAs' quality of life.

Keywords

community health, comprehensive health assessment, family practice, older adults in Thailand, quality of life

Dates received: 15 January 2020; revised: 19 February 2020; accepted: 20 February 2020

Introduction

By 2050, there will be 2.1 billion older adults worldwide.[1] The functional decline in the aging population associated with physical frailty corresponds to decreasing social networks,[2,3] increasing depression,[4] risk of health problems[5] and poor quality of life.[2,6,7] The increasing number of older adults with medical service needs has a major impact on individual quality of life and the global economy.[8] Maintaining the health-related quality of life (HRQOL) of older adults becomes an important focus for public health policy.

Community-Dwelling Older Adults in Thailand

Nearly 20% of the Thai population are older adults (age 60 years or older) with a 10% increase projected by 2050.[9,10] In Southeast Asia, Thailand has the second largest number of older adults.[11] Community-dwelling older adults (CDOAs) in

Thailand are unique in that 98% live with their children or relatives.[12] A mixed method study found that Thai CDOAs are more likely to seek help from a folk healer or community health volunteers, perceive self as insignificant, and are less likely to report age-related problems.[13] A National Health Examination survey on frailty among 8195 Thai older adults found a high prevalence of frailty (22.1%), which significantly predicted the mortality rate (hazard ratio = 2.34, 95% CI 2.10-2.61, $P < .001$).[14] Other studies reported that the Thai CDOAs have at least one unmet need related to physical difficulty as well as a high prevalence of hypertension.[12]

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Under the health security project of the Ministry of Public Health, health care in Thailand has provided free of charge services to all Thais of all ages, including the elderly. The health care services are included prevention, promotion, treatment, and rehabilitation. The provision of care to older persons are focused on the convenient home health care to all level of health networks with multidisciplinary teams from community and provincial hospitals. Recently, the Ministry of Public Health has launched the project "community volunteer caregivers for the elderly," which was the purpose of initiating the community long-term care system in Thailand. The goal is to improve the quality of life in Thai CDOAs.[15]

Comprehensive Geriatric Assessment

The Comprehensive Geriatric Assessment (CGA), an assessment instrument for medical, psychological, and functional capability, is an accepted multidimensional interdisciplinary diagnosis criterion for diagnosis and management of frailty.[16] It has been developed as an integrative plan for treatment and follow-up to reduce functional decline, hospital readmission, and to improve quality of life.[17,18] This present study tests this comprehensive assessment in Thai CDOAs to understand the health-related problems in a way that is compatible with other older adult studies.

The objectives of the study were to (1) explore the prevalence of, and describe the health-related problems of, older adults in rural communities in Thailand and (2) identify the factors that can influence changes in HRQOL of CDOAs.

The results of this study can inform optimized health management strategies to improve the HRQOL of CDOAs.

Methods

Study Design, Setting, and Participants

A population-based cross-sectional study was conducted from January 2016 to July 2016 at Ban Sao Hin, a subdistrict in rural Northern Thailand. This subdistrict was selected by using the simple random sampling of all sub districts in rural northern Thailand, which have similar demographic characteristics, lifestyle, health care behaviors, and socioeconomic status. Participants were eligible if they were aged 60 years or older, were able to communicate in Thai and were able to provide written informed consent.

Measurements

General and Geriatric Health Conditions. The general and geriatric health conditions of the participants were measured according to an assessment and screening form developed and validated by the Thai Ministry of Public Health.[19] There are 3 parts to this screening form. Part 1 is the assessment of the general demographic data, part 2 is the general

health assessment (eg, illness, drug use, personal perception of health), and social assessment (eg, meaning of life, medical benefit, and social activities), and part 3 relates to geriatric health-related conditions that included eye health, oral health, hearing, and cardiovascular health. Other assessments included evaluations of activities of daily living using the Barthel Index,[19] fall history and falling risks using the Timed Up and Go Test (TUG)[20] and 5 times sit-to-stand[21] routine. Depression was assessed using the 2Q9Q,[19] cognitive function assessment using the MMSE (Mini-Mental State Examination) Thai 2002,[22] and screening for urinary incontinence by asking question, "Do you have urinary incontinence that disturb you activities of daily living in the last week?" (yes or no).

Health-Related Quality of Life. HRQOL of the participants was assessed by using the EQ-5D questionnaire.[23] This self-report questionnaire measured 5 domains, including mobility, self-care, usual activity, pain and discomfort, and anxiety and depression. This Thai version of this questionnaire has been validated and widely used.[24-28] The results from the EQ-5D questionnaire were converted to utility value by a previously validated Thai-specific algorithm.[29]

Data Collection

Researcher assistants were trained by geriatric experts and by the research team on how to use the assessments and screening forms. After the training, all research assistants passed the posttest evaluations and thus were able to collect data. After obtaining Naresuan University Institutional Review Board (NU-IRB) approval, all eligible participants were invited to Ban Sao Hin community hospital for comprehensive geriatric assessment. A total of 429 CDOAs population were recruited of whom 45 declined to participate in the study. After obtaining informed consents forms, the remaining 384 participants were paid 200 baht (6.38 USD) for their time and to cover transportation costs. The research assistants administered the questionnaires and other study assessments, which took about 1.5 hours in the primary care unit of community hospitals.

Statistical Analysis

Descriptive statistics were used to describe the participants' characteristics. Mean and standard deviation were used when the data were normally distributed, while median and interquartile range were used to analyze abnormally distributed data. Health factors and HRQOL were correlated using Spearman rho correlation. Univariate and multiple linear regression were used to analyze the associations and prediction values of health-related factors (age, gender, education, marital status, religion, occupation, income, health care coverage, disease status, drug utilization, self-perceived health, living arrangement, caregivers, social activity,

hobby, meaning of life, eye health, oral health, hearing status, cardiovascular risk, activity daily living, fall evaluation and fall risk screening, TUG, 5 times sit-to-stands, depression, MMSE, incontinence) and quality of life (EQ-5D-3L)). Health-related factors with $P \leq .01$ in the univariate analyses were selected into the final model using a backward stepwise approach. All analyses were performed using STATA version 15.0.

Results

General Demographic Characteristics

The average age of the 384 participants was 70.69 ±7.59 years with an overall age range of 60 to 93 years. Women were in the majority (56.1%), and 66% of participants were married. Almost all participants (99.7%) were Buddhists. Employment statistics show 45.1% unemployed, 26.8% were farmers, and 22% were laborers or self-employed. More than 90% of participants were either uneducated or only completed primary school to 6th grade level education. With the universal health care coverage of Thailand, 90% received their health care from the Ban Sao Hin subdistrict hospital and 87% were under the Universal Coverage Scheme (UCS) provided by the Thai government (Table 1).

Health and Social Status

The 3 most common medical conditions reported were hypertension (64.6%), diabetes mellitus (23.2%), and osteoarthritis (22.7%). Study participants used an average of more than 2 drugs (mean 2.38, SD 1.93), of which 17% were nonprescribed drugs. Forty-four percent of the participants perceived their health status as good and 48.4% perceived their health better than others. Participation in social activities was 36.3% with 63.3% not participating in social activities outside their homes. Unsurprisingly, given Thai tradition and culture, 94.3% lived with their families or relatives and very few lived alone. Their children were their primary caregiver in 84% of cases. Nearly half of the participants (49.2%) rated "being able to live with the family" as giving meaning to their lives (Table 2).

Geriatric Health-Related Conditions and Quality of Life

The vast majority of the participants were at risk of a cardiovascular condition (93.5%), and glaucoma (89.6%) and were suffering from dental carries (54.2%). Ninety-eight percent of the participants were able to perform activities of daily living independently. Twenty percent reported falls with 53% happening outside their homes. Common reasons for these falls include unstable chairs at homes (69%), physical obstructions, slippery floors, a steep slope and

Table 1. Demographic Characteristic of the Elderly (N = 384).

Population Characteristic	n	%
1. Gender		
Male	168	43.6
Female	216	56.1
2. Age (years)		
Mean ± SD	70.69 ± 7.59	
60-69	206	53.6
70-79	121	31.5
≥80	57	14.9
3. Marital status		
Single	11	2.9
Married	255	66.4
Widowed	104	27.1
Divorced	14	3.6
4. Religion		
Buddhism	383	99.7
Christianity	1	0.3
5. Education		
Uneducated	31	8.1
Primary school	341	88.8
Secondary school	8	2.1
Diploma	2	0.5
Bachelor's degree and higher	2	0.5
6. Occupation		
Unemployed	173	45.1
Agriculture	103	26.8
Merchant or own business/self-employed	36	9.4
Employee/laborer	52	13.5
Retired government official	3	0.8
Others	17	4.4
7. Income (Thai baht) (mean ± SD)	4472.50 ± 5342	
(US dollars[a])	(143.39 ± 171.27)	
8. Source of income (can choose more than 1)		
Elderly care allowance	374	97.4
Careers	203	59.9
Children	198	48.4
Spouse	4	1.0
Pension	3	0.8
Relatives	1	0.3
9. Health care coverage		
Universal Coverage Scheme	334	87.0
Civil Servant Medical Benefit Scheme	47	12.2
Social Security Scheme	3	0.8
10. Health care service		
Subdistrict hospital	346	90.1
Naresuan University Hospital	284	74.0

[a]1 US dollar = 31.19 Thai baht based on data from Bank of Thailand in February 2020.

pets. The TUG results showed that 19% of CDOAs were at risk for falling (TUG ≥15 S), while the sit-to-stand test (≥18S) showed only 7.1% of CDOAs were at risk for falling.

Table 2. Characteristics of Health and Social Status.

Characteristic	n	%
1. Medical conditions		
Hypertension	248	64.6
Diabetes mellitus	89	23.2
Osteoarthritis	87	22.7
Dyslipidemia	86	22.4
Cataracts	71	18.5
Glaucoma	27	7.0
2. Drug utilization		
Number of drugs used (mean ± SD)	2.38 ± 1.93	
Nonprescribed drugs	65	16.9
3. Self-perceived health		
Good	170	44.3
Fair	195	50.8
Poor	17	4.4
Missing	2	0.5
4. Self-perceived health as compared with others		
Better	186	48.4
Same	164	42.7
Worse	32	8.3
Missing	2	0.5
5. Living arrangement		
Alone	22	5.7
With elderly	73	19.0
With relatives	289	75.3
6. Having caregivers		
No	2	0.5
Yes	382	99.5
Spouse	222	57.8
Children	323	84.1
Grandchildren	159	41.4
7. Social activity[a]		
Not participate	243	63.3
Participate	141	36.7
8. Hobby		
Social meeting or having party with friends	25	6.5
Gardening or farming	95	24.7
Watching TV or listening to music	98	25.5
Do not answer	166	43.3
9. Meaning of life		
Living with family	189	49.2
Making merit	39	10.2
Peace	32	8.3
Do not answer	124	32.3

[a]Social activity indicates elderly club, charity, and so on.

Less than 10% of the participants reported depression (7.6%) and 19% were at risk of developing dementia by MMSE.

In term of quality of life, 88.8% of the participants reported no difficulty walking, 94.5% had no difficulty in self-care, with 94.5% performing usual activities (eg, work, study, housework, family, or leisure activities), and 5% reporting moderate to extreme anxiety or depression. However, 45% reported having moderate to severe pain or discomfort (Table 3).

The Association of Health Factors and Quality of Life

There was a significant, positive relationship between self-perceived health and HRQOL ($\rho = 0.29$, $P < .001$). Age, number of falls, and TUG were negatively associated with HRQOL ($\rho = -0.19$, -0.23, and -0.23, respectively, $P < .001$; Table 4).

Based on significant P values ($P < .05$), only 4 health-related factors; age, history of falls, TUG, and self-perceived health were included in the multiple linear regression model, which showed that age, history of falls, TUG, and self-perceived health correlated with HQOL (Table 5).

Discussion

This study provides additional evidence that rural CDOAs suffer from multiple chronic conditions. This finding is consistent with studies from other countries.[2,30-32] The most prevalent medical conditions are hypertension, diabetes mellitus, and osteoarthritis with many also suffering from glaucoma and dental issues. While other CDOAs in other countries reported 8% to 37% of dementia[33] and 14% to 63% of falls,[34-36] we found a modest prevalence of dementia risks (19%) and falls (20%) in this group of participants.

Another key finding was the association between the number of falls and poor basic functional mobility, as measured by TUG. The TUG is a simple test that has been used to predict falls among community-dwelling elderly,[20,37] and to assess balance and gait impairment, which are major features of frailty in the elderly.[38] The incidence of falls can lead to a state of dependency, increasing health care expenses and burden for families and communities.[39,40] While other studies focused on frequency of falls, causes of falls, and fall prevention,[41-43] our findings suggest that regularly monitoring of functional mobility using TUG could be another strategy for falls surveillance and prevention since this research showed that falls and TUG were associated with the quality of life in CDOAs.

In addition, our study found that among Thai CDOAs who had good self-perception of health were associated with better HRQOL, which is consistent to previous studies.[44,45] However, less than half of our participants perceived their health status as "good" (44%) and were socially active (36.7%). This finding suggests the need for health policy makers to focuses on strategies that maintain social activities among older adults. These strategies may include, allowing older adults to work after retirement, extending the retirement age, promoting aged-friendly environment, and providing access to transportation.

Table 3. Health Risk Assessment and Quality of Life.

Screening	n	%
1. Eyes health		
Risk of cataract	210	54.7
Risk of glaucoma	344	89.6
Risk of age-related macular degeneration	25	6.5
2. Oral health status		
Oral mucosal lesion	38	9.9
Gingival and periodontal disease	119	31.0
Dental caries	208	54.2
Chewing/swallowing	103	26.8
3. Hearing status		
Clear without hearing aid	320	83.3
Clear with hearing aid	3	0.8
Unclear without ADL problem	53	13.8
Unclear with ADL problem	6	1.6
Hearing impairment	2	0.5
4. Cardiovascular conditions risk		
Risk	197	93.5
No risk	22	5.7
Missing	3	0.8
5. ADL score[a]		
Independent ADL (≥12)	378	98.4
Partial dependent ADL (5-11)	1	0.3
Dependent ADL (0-4)	5	1.3
6. Fall evaluation and falling risk screening		
Fall history		
Yes	78	20.3
1) Places of fall		
Inside house	30	38.6
Outside house	42	53.8
Inside and outside house	3	3.8
Missing	3	3.8
2) Causes of fall		
Muscle weakness and balance	12	14.3
Visual impairment	2	2.4
Dizziness, vertigo, or syncope	12	14.3
Home hazard, eg, obstruction, slippery floor, steep climbing, pets and unstable chair	58	69.0
3) The number of falls		
1	43	11.2
2	14	3.6
3	8	2.1
4	6	1.6
5	7	1.8
Falling risk screening		
1). Timed Up and Go Test (TUG) (n = 373)		
<15 seconds	302	81.0
≥ 15 seconds	71	19.0
2). Five times sit to stands (n = 365)		
<18 seconds	339	92.9
≥18 seconds	26	7.1
7. Depression		
No depression <7	347	90.4

(continued)

Table 3. (continued)

Screening	n	%
Depression ≥7	29	7.6
Missing	8	2.1
8. Risk for developing dementia (Mini-Mental Status Examination [MMSE Thai 2002])		
No education (≤14)	10	2.6
Primary school (≤17)	61	15.9
Higher than primary school (≤22)	2	0.5
9. Incontinence		
Yes	47	12.2
No	334	87.0
Missing	3	0.8
10. Quality of life (EQ-5D-3L)		
1) Mobility problem		
No problem for walking	341	88.8
Some problems for walking	34	8.9
Confined to bed	7	1.8
Missing	2	0.5
2) Self-care		
No problem	363	94.5
Some problems of washing or dressing themselves	13	3.4
Unable to wash or dress themselves	6	1.6
Missing	2	0.5
3) Usual activities		
No problem	363	94.5
Some problems	13	3.4
Unable to perform their usual activities	6	1.6
Missing	2	0.5
4) Pain/discomfort		
No pain or discomfort	206	53.6
Moderate pain or discomfort	163	42.4
Extreme pain or discomfort	12	3.1
Missing	3	0.8
5) Anxiety/depression		
No anxiety or depression	328	94.5
Moderately anxious or depressed	50	3.4
Extremely anxious or depressed	4	1.6
Missing	2	0.5
Utility (mean ± SD)	0.80 ± 0.23	

Abbreviation: ADL, activities of daily living.
[a]The Barthel ADL test. Usual activities are work, study, housework, family, or leisure activities.

Table 4. The Correlation of Health and Social Factors as Well as the Quality of Life.

Factors	ρ	P
Number of falls	−0.231	<.001
Timed Up and Go test	−0.227	<.001
Self-perceived health	0.290	<.001
Age	−0.190	<.001

Table 5. The Analysis of Multiple Linear Regression Model for Quality of Life.[a]

Factors	β Coefficient	95% Confidence Interval	*P*
Falls			
No	Reference	Reference	Reference
Yes	−0.076	−0.123 to −0.030	.001
Timed Up and Go test			
15 seconds	Reference	Reference	Reference
≥15 seconds	−0.087	−0.140 to −0.034	.001
Self-perceived health			
Fair or bad	Reference	Reference	Reference
Good	0.691	0.031 to 0.106	<.001
Age, years			
60-69	Reference	Reference	Reference
70-79	−0.667	−0.109 to −0.249	.002
80-89	−0.030	−0.090 to 0.296	.321

[a]Covariates included age, gender, disability, income, saving, hobby, social activity, exercise, house structure, body mass index, self-perceived health, underlying diseases, Timed Up and Go test, 5 times sit-to-stand, activities of daily living, depression, and Mini-Mental Status Examination.

Another interesting finding is the idea of living with the family gives most meaningful aspect of life in the older participants. Most of them (75%) lived with their relatives which nearly half (41%) were grandchildren. Grandparenting could benefit intergeneration family relationship. According to the study,[46] they found that Buddhist teachings play an important role in the way of older adults and their family reacting to their conflicts. Our study emphasizes this phenomenon. With the idea of living with the family is very meaningful in CDOAs in Thailand and their living arrangement, we suggest that family physicians can play an important role in the leadership of a comprehensive community program for Thai CDOAs since they understand their patients and families very well. Family medicine in Thailand has been established for almost 30 years. The discipline deals with the medical practice at the family level, which is the interface between individual and community medicine.[47] Additionally, the Family Care Team project was established in 2015 by the Ministry of Public Health, Thailand.[48] Family physicians is the leader of the team that includes nurse practitioners, registered nurses, social workers, and dietitians who work together to provide health care for the community. To improve HRQOL, the comprehensive health program should be initiated and continued by family physicians including vision and dental screening as well as providing resources for the family to care for the older adults at home. Future research can be done to develop and test the feasibility of the program.

This study has many strengths, including the good sample size of the CDOAs in Thailand. All data collectors were trained and required to pass the test before using the CGA to collect the data. We found that the CGA is an effective tool to examine the health status of vulnerable populations. A causal relationship cannot be drawn because of the cross-sectional nature of the design. Longitudinal research studies investigate the long-term benefit of using the CGA and examining the predicting factors of HRQOL will provide evidence that can guide HRQOL enhanced community programs. The other limitation is that this study was conducted only in rural northern Thailand. Therefore, it may not be generalized to all rural area in Thailand.

In conclusion, this study has identified a number of important health-related issues, has described the health status of the participants as a good representation of the population, and examined the factors influenced HRQOL of CDOAs in rural northern Thailand. The study provides evidence to support the need to incorporate CGA in family practice. The role of the family physician in the community can be the key to implement health policy, which should include risk of falls assessment by measuring TUG test, fall prevention, support for an aged-friendly environment for safety mobility, promoting the postponement of retirement and to have social activities outside their homes, all of which will ultimately result in a better quality of life.

Acknowledgments

effort in editing this paper for correct English grammar and English expression.

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