COMPARISON OF QUALITY OF LIFE AND MENTAL HEALTH AMONG ELDERLY PEOPLE IN RURAL AND SUBURBAN AREAS, THAILAND

Tawatchai Apidechkul

School of Health Science, Mae Fah Luang University, Chiang Rai, Thailand

Abstract. This community based cross-sectional study design assessed the quality of life, mental and physical health among people aged ≥ 60 years living in rural and suburban areas of northern Thailand. A cluster random sampling technique was used. The instruments used to assess quality of life were the Thai General Health Questionnaire (Thai-28), the WHO Quality of Life Assessment in Thai (WHOQOL-BREF-THAI), and a history and physical examination. The validity and reliability of the 2 written instruments (Thai-28 and WHOQOL-BREF-THAI) were detected and the Cronbach's alpha coefficient was 0.84 for the WHOQOL-BREF-THAI, and 0.94 for the Thai GHQ-28. The face-to face interview were conducted by trained interviewers. A chi-square test was used to determine significant differences at α=0.05. Two hundred forty-seven subjects were recruited into the study, of which 225 were used for analysis. Forty-eight point five percent and 51.5% of subjects were from rural and semi-urban areas, respectively. Forty-five point three percent were males; the main age group was 70-79 years old (46.5%). The subjects from suburban areas had a higher quality of life in aspect to physical health ($p = 0.011$), mental health ($p = 0.025$), and social relationships ($p = 0.012$). Social relationships among females from difference areas were significantly different ($p=0.01$). Subjects from rural areas had better mental health than those from suburban ($p = 0.0001$). Living in a suburban area had both positive and negative associations with quality of life that need to be further clarified to develop an elderly health care model for the community.

Keywords: quality of life, mental health, elderly population, semi-urban area, rural area, physical assessment

INTRODUCTION

The populations of both developing and developed countries are having an increase in the number of elderly (WHO, 2010). It is predicted that by the year 2025, the global population of those aged 60 years and older will more than double, from 542 million in 1995 to about 1.2 billion (WHO, 2010). The total number of older people living in developing countries will also be more than double by 2025, reaching 850 million (WHO, 2010). Twelve percent of the global population are over age 60; in Colombia, Indonesia, Kenya and Thailand, this number is expected to increase fourfold by 2025 (WHO, 2010). One million people reach age 60

Correspondence: Dr Tawatchai Apidechkul, School of Health Science, Mae Fah Luang University, Chang Rai 57100, Thailand.
Tel: +66 053 916826
E-mail: tk2516ms@hotmail.com, tk2516ms@gmail.com

years every month globally, 80% of whom are in the developing world (WHO, 2010). Most countries have accepted the age of 60 years as the definition of an elderly person; however, this does not adapt well to some countries in Africa (WHO, 2006).

As life expectancy increases, the elderly will be subject to the same chronic, often disabling diseases currently found in the elderly, such as hypertension and mental disorders. They may face environmental dangers and violence in their societies. Advances in medical science and social welfare can allow older people to enjoy longer periods without disabilities. Diseases may be avoided or their impact lessened through better health care strategies. The resulting increase in the elderly could be a boon for society, constituting a great reservoir of experience and knowledge.

Seven point four percent of the population of Thailand was elderly in 1990; this number increased to 10.7% in 2010 (Foundation of Thai Gerontology Research and Development, 2009). The Thai Ministry of Public Health estimated the proportion of elderly people in Thailand will be 20% by the year 2025, and 25% by the year 2030. Most elderly are dependent. The main cost for health care in the elderly is for the treatment of chronic diseases. More than 150,000 elderly are dependent in Thailand and this number is expected to increase to 240,000 by the year 2019; according to the Thai Ministry of Public Health, more than 70% of current dependents receive inadequate support form their family or communities (Leelapan, 2002).

The Thai Ministry of Social Development and Human Security reported in 2007 there were 7 million elderly people in Thailand, but only 43.0% of those had good health, but those aged ≥ 80 years had greater health problem than the other age groups; 7.7% of elderly lived alone in 2007 (Ministry of Social Development and Human Security of Thailand, 2009).

A study of health in the elderly in regard to quality of life and mental health is necessary to prepare health care policies and programs for the elderly.

MATERIALS AND METHODS

Study design

This was a community based analytic cross-sectional study of 7 suburban villages and 11 rural villages in Chiang Rai Province, northern Thailand evaluating people ≥ 60 years old who had lived in the study area for at least 5 years. We used Thai version of the World Health Organization quality of life questionnaire (WHOQOL-BREF-THAI) (Penpreecha *et al*, 1996; Mahatnirankul *et al*, 2002; Hawthorne *et al*, 2006), to evaluate general health and the Thai General Health Questionnaires (Thai GHQ-28) was used to assess mental health (Goldberg and Hillier, 1979; Nilchaikovit *et al*, 2002; Rush *et al*, 2008).

Study sites and study sample

Two sub-districts in Chiang Rai Province, Thailand, were selected for the study: one sub-district in a rural area and another sub-district in a suburban area. Seven villages from Pa Tung Sub-District, Mae Chan District were used for the rural area, and 11 villages from Pa Kaw Dum Sub-District, Mae Lao District were used for the suburban areas.

A total of 2,988 people were registered with the district government offices, as living in the 7 villages in Pa Kaw Dam Sub-District, and 11 villages in Pa Tung Sub-District, Chiang Rai Province, Thailand. A cluster sample random sampling

technique was used to choose subjects. The cohort was those born during or before January 1949 who had lived at the study site for at least 5 years. The subjects with severe disease or who were unable speak Thai were excluded from the study.

After calculating a standard sample size 116 subjects from Pa Tung Sub-District and 131 subjects from Pa Kaw Dam Sub-District were recruited into the study. Written informed consent was obtained from each participant, prior to inclusion in the study.

Study instruments

A physical examination form, the Thai GHQ-28, and the WHOQOL-BREF-THAI were used. The physical examination form used was obtained from the Mae Fah Luang university hospital.

The WHOQOL-BREF-THAI and Thai GHQ-28 were tested for validity and reliability before use. The internal consistency (Cronbach's alpha coefficient) of the Thai GHQ-28 was 0.84, and the sensitivity and specificity were 78.1% and 84.4%, respectively. The validity of the WHOQOL-BREF-THAI (Cronbach's alpha coefficient) was 0.84, and the reliability was 0.65.

The WHOQOL-BREF-THAI has 26 questions: 7 questions assessing physical health, 6 questions assessing mental health, 3 questions assessing social relationships, and 8 questions assessing environment health. Three items were negative questions, and 23 items were positive questions. The answers divided into 5 levels: none, little, middle, much, and very much.

The scores on the physical health assessment were divided into 3 levels: 7-16 points, low level; 17-26 points, middle level; and 27-35 points, high level quality of life. The scores of the mental health assessment were divided into 3 levels: 6-14 points, low level; 15-22 points, middle level; and 23-30 points, high level mental quality of life. The scores for the social relationship assessment were divided into 3 levels: 3-7 points, low level; 8-11 points, middle level; and 12-15 points, high level of quality of social relationships. The scores of the environmental factors were divided into 3 levels: 8-18 points, low level; 19-29 points, middle level; and 30-40 points, high level environmental factors. The overall interpretation of the quality of life was divided into 3 levels: 26-60 points, low level; 61-95 points, middle level; and 96-130 points, high level quality of life.

The GHQ-28 had 28 questions. The questions 1-7 measured somatic symptoms, questions 8-14 measured anxiety and insomnia, questions 15-21 measured social dysfunction, and questions 22-28 measured depression.

Data collection procedures

All interviewers were trained for 2 days prior to the study. All information forms were completed by the interviewers using face-to-face interviews, each lasting 45 minutes.

Data analysis

Data were double-entered and validated using Microsoft Excel. Data analysis was carried out using SPSS version 11.5, 2006 (SPSS, Chicago, IL), STATA (version 8.2 (Stata Corp, College Station, TX), and Epi-Info version 6.04d (US Centers for Disease Control and Prevention, Atlanta, GA).

Descriptive statistics. Frequencies, percentages, means and standard deviations were used to describe the general characteristics of the samples.

Inferential statistics. The chi-square test was used to identify associations between independent variables and dependent variables. Statistical significance was set at α=0.05.

Ethical consideration

This study was approved by the Committee for the Protection of Human Subjects of Mae Fah Luang University, Thailand, No.REH-51001-01/2551.

RESULTS

Two hundred forty-seven subjects were recruited into the study; 225 subjects (91.1%) completed all the assessments. One hundred nine subjects (48.5%) and 116 subjects (51.5%) were obtained from Pa Tung Sub-District and Pa Kaw Dam Sub-District, respectively. One hundred two subjects (45.3%) were male. Forty-four point seven percent of male subjects were recruited from Pa Tung Sub-District and 55.3% were recruited from Pa Kaw Dam-District. Fifty-two point nine percent of female subjects were recruited from Pa Tung Sub-District, 47.1% were recruited from Pa Kaw Dam Sub-District. Forty-six point five percent of subjects were 70-79 years old.

Table 1 shows the quality of life factors by age in a rural area and Table 2 shows the same factors in a suburban area. There were no significant differences in quality of life among the various age groups in rural or suburban areas.

Table 3 shows the univariate analysis of quality of life by area and sex. In rural areas social relationships were slightly different between males and females ($p = 0.060$). However, the overall of quality of life did not differ between sexes in rural areas or suburban areas.

Table 4 shows a comparison of the quality of life among subjects who lived in different areas. Three quality of life factors were significantly different by area. The subjects who lived in suburban areas had a higher quality of life than those who lived in rural areas in regard to physical health ($p = 0.011$), mental health ($p = 0.025$), and social relationships ($p = 0.012$). However, the factor of environment did not differ.

When comparing quality of life factors between sexes by area only social relationships ($p = 0.011$) among females was significant (Table 5).

Tables 6 and 7 show mental health status among subjects by area. There were no significant differences in mental health status (by area and age category). No subjects from suburban areas or rural areas had social dysfunction or depression.

Table 8 shows the classification of mental health by area and sex. There were no significant differences in mental health by area or sex. One hundred percentage of subjects had normal social functioning. In suburban areas no cases of severe depression were detected.

Only in social dysfunction was a significant difference found between rural and suburban areas ($p < 0.001$). Somatic symptoms, anxiety and insomnia, and severe depression were not significantly different between subjects from rural and suburban areas (Table 9).

Only social dysfunction was significantly different between males from rural and suburban areas ($p = <0.008$) (Table 10). Among females, social relationships were significantly different between urban and rural areas, but level of anxiety and insomnia were not significantly different ($p = 0.056$).

Twenty-one point four percent of respondents had a systolic blood pressure

Table 1
Univariate analysis of quality of life in rural area by age categories.

Factor	Age (years)	Quality of life levels			χ^2	p-value
		Low (%)	Middle (%)	High (%)		
Physical health	60-69	0 (0.0)	43 (72.9)	16 (27.1)	4.59	0.597
	70-79	2 (4.4)	36 (80.0)	7 (15.6)		
	80+	0 (0.0)	4 (80.0)	7 (15.6)		
Mental health	60-69	0 (0.0)	36 (61.0)	23 (39.0)	1.60[a]	0.658
	70-79	0 (0.0)	23 (51.1)	22 (48.9)		
	80+	0 (0.0)	2 (40.0)	3 (60.0)		
Social relationships	60-69	0 (0.0)	7 (11.9)	52 (88.1)	2.14[a]	0.544
	70-79	0 (0.0)	7 (13.5)	37 (84.1)		
	80+	0 (0.0)	0 (0.0)	5 (100.0)		
Environment	60-69	0 (0.0)	31 (52.5)	28 (47.6)	5.55	0.475
	70-79	2 (4.5)	19 (43.2)	23 (52.3)		
	80+	0 (0.0)	3 (60.0)	2 (40.0)		
Overall	60-69	0 (0.0)	42 (71.2)	17 (22.8)	3.79	0.705
	70-79	2 (4.4)	34 (75.6)	9 (20.0)		
	80+	0 (0.0)	4 (80.0)	1 (20.0)		

[a] Fisher exact test

Table 2
Univariate analysis of quality of life in suburban areas by age categories.

Factor	Age (years)	Quality of life levels			χ^2	p-value
		Low (%)	Middle (%)	High (%)		
Physical health	60-69	1 (2.0)	27 (55.1)	21 (42.9)	1.53	0.822
	70-79	1 (2.0)	28 (56.0)	21 (42.0)		
	80+	0 (0.0)	12 (70.6)	5 (29.4)		
Mental health	60-69	1 (2.0)	18 (36.7)	30 (61.2)	0.64	0.958
	70-79	1 (2.0)	21 (42.0)	28 (56.0)		
	80+	0 (0.0)	7 (41.2)	10 (58.8)		
Social relationships	60-69	1 (1.9)	14 (26.4)	38 (71.7)	0.34	0.987
	70-79	1 (1.7)	16 (26.7)	43 (71.7)		
	80+	0 (0.0)	5 (27.8)	13 (72.2)		
Environment	60-69	1 (2.0)	20 (40.8)	28 (57.1)	1.37	0.850
	70-79	2 (4.0)	17 (34.0)	31 (62.0)		
	80+	0 (0.0)	6 (35.3)	11 (64.7)		
Overall	60-69	0 (0.0)	16 (32.7)	33 (67.3)	4.01	0.404
	70-79	1 (2.0)	9 (18.0)	40 (80.0)		
	80+	0 (0.0)	4 (23.5)	13 (76.5)		

Table 3
Univariate analysis of quality of life by area and sex.

Area	Factor	Sex	Quality of life levels			χ^2	p-value
			Low (%)	Middle (%)	High (%)		
Rural	Physical health	Male	0 (0.0)	24 (50.0)	24 (50.0)	4.08	0.130
		Female	2 (2.9)	43 (63.2)	23 (33.8)		
	Mental health	Male	1 (2.1)	17 (35.4)	30 (62.5)	0.62	0.725
		Female	1 (1.5)	29 (42.6)	38 (55.9)		
	Social relationships	Male	0 (0.0)	7 (14.58)	41 (55.42)	5.61	0.060 [b]
		Female	2 (2.9)	21 (39.88)	45 (66.18)		
	Environment	Male	1 (2.1)	16 (33.3)	31 (64.6)	0.63	0.729
		Female	2 (2.9)	27 (39.7)	39 (57.4)		
	Overall	Male	0 (0.0)	11 (22.9)	37 (77.1)	0.94	0.624
		Female	1 (1.5)	18 (26.5)	49 (72.1)		
Suburban	Physical health	Male	1 (1.9)	37 (68.5)	16 (29.6)	3.64	0.163
		Female	1 (1.8)	46 (83.6)	8 (14.5)		
	Mental health	Male	0 (0.0)	27 (50.0)	27 (50.0)	1.54[a]	0.214
		Female	0 (0.0)	34 (61.8)	21 (38.2)		
	Social relationships	Male	0 (0.0)	8 (15.1)	46 (84.9)	0.01[a]	0.941
		Female	0 (0.0)	7 (12.7)	48 (87.3)		
	Environment	Male	1 (1.9)	23 (42.6)	30 (55.6)	1.36	0.507
		Female	2 (1.8)	30 (54.5)	24 (43.6)		
	Overall	Male	2 (3.7)	35 (64.8)	17 (31.5)	5.06	0.080 [b]
		Female	0 (0.0)	45 (81.8)	10 (18.2)		

[a]Fisher's exact test; [b]Significant at α=0.05

Table 4
Univariate analysis of quality of life by area.

Factor	Area	Quality of life			χ^2	p-value
		Low (%)	Middle (%)	High (%)		
Physical health	Rural	2 (1.8)	83 (76.1)	24 (22.0)	8.95	0.011[a]
	Suburban	2 (1.7)	67 (57.8)	47 (40.5)		
Mental health	Rural	0 (0.0)	61 (56.0)	48 (44.0)	7.34	0.025[a]
	Suburban	2 (1.7)	46 (39.7)	68 (58.6)		
Social relationships	Rural	0 (0.0)	14 (13.0)	94 (87.0)	8.87	0.012[a]
	Suburban	2 (1.5)	35 (26.7)	94 (71.8)		
Environment	Rural	2 (1.9)	53 (49.1)	53 (49.1)	3.31	0.191
	Suburban	3 (2.6)	43 (37.1)	70 (60.3)		

[a]Significant at α=0.05

Table 5
Univariate analysis of quality of life by sex and area.

Sex	Factor	Area	Quality of life			χ^2	p-value
			Low (%)	Middle (%)	High (%)		
Male	Physical health	Rural	1 (1.9)	37 (68.5)	16 (29.6)	5.04	0.081
		Suburban	0 (0.0)	24 (50.0)	24 (50.0)		
	Mental health	Rural	0 (0.0)	27 (50.0)	27 (50.0)	3.09	0.213
		Suburban	1 (2.1)	17 (35.4)	30 (62.5)		
	Social relationships	Rural	0 (0.0)	7 (13.0)	47 (87.0)	0.34[a]	0.561
		Suburban	0 (0.0)	8 (16.7)	40 (83.3)		
	Environment	Rural	1 (1.85)	23 (42.6)	30 (55.6)	1.08	0.583
		Suburban	1 (2.1)	16 (33.3)	31 (64.4)		
Female	Physical health	Rural	1 (1.8)	46 (83.6)	8 (14.5)	6.39	0.041
		Suburban	2 (2.9)	43 (63.2)	23 (33.8)		
	Mental health	Rural	0 (0.0)	34 (61.8)	21 (38.2)	4.98	0.083
		Suburban	1 (1.5)	29 (42.6)	38 (55.9)		
	Social relationships	Rural	0 (0.0)	7 (12.7)	48 (87.3)	9.02	0.011[b]
		Suburban	2 (2.9)	21 (30.9)	45 (66.2)		
	Environment	Rural	1 (1.8)	30 (54.5)	24 (43.6)	2.72	0.257
		Suburban	2 (2.9)	27 (39.7)	39 (57.4)		

[a]Fisher's exact test; [b]Significant at α=0.05

Table 6
Univariate analysis of mental health status in suburban areas by age.

Factor	Age (years)	Mental health status		χ^2	p-value
		Normal (%)	Abnormal (%)		
Somatic symptoms	60-69	58 (96.7)	2 (3.3)	0.91	0.635
	70-79	42 (93.3)	3 (6.7)		
	80+	5 (100.0)	0 (0.0)		
Anxiety and insomnia	60-69	60 (0.0)	0 (0.0)	1.46	0.482
	70-79	44 (97.8)	1 (2.2)		
	80+	5 (100.0)	0 (0.0)		
Severe depression	60-69	60 (0.0)	0 (0.0)	2.94	0.230
	70-79	43 (95.6)	2 (4.4)		
	80+	5 (100.0)	0 (0.0)		

≥150 mmHg and 17.6% had a diastolic blood pressure ≥95mmHg; all had previously been diagnosed as having hypertension. Fourteen point five percent had an abnormal mobility and 30.5% had cataracts.

Most subjects lived in safe housing conditions. Surface water (58.0%) was the

Table 7
Univariate analysis of mental health status in rural areas by age.

Factor	Age (years)	Mental health status		χ^2	p-value
		Normal (%)	Abnormal (%)		
Somatic symptoms	60-69	46 (95.8)	2 (4.2)	0.63	0.729
	70-79	46 (92.0)	4 (8.0)		
	80+	16 (94.1)	1 (5.9)		
Anxiety and insomnia	60-69	47 (97.9)	1 (2.1)	4.08	0.130
	70-79	49 (98.0)	1 (2.0)		
	80+	15 (88.2)	2 (11.8)		
Social dysfunction	60-69	30 (62.5)	18 (37.5)	0.32	0.854
	70-79	33 (66.0)	17 (34.0)		
	80+	10 (58.8)	7 (41.2)		

Table 8
Univariate analysis of mental health status by area and sex.

Area	Factor	Sex	Mental health status		χ^2	p-value
			Normal (%)	Abnormal (%)		
Rural	Somatic symptoms	Male	55 (98.2)	1 (1.8)	2.01[a]	0.364
		Female	52 (92.9)	4 (7.1)		
	Anxiety and insomnia	Male	55 (98.2)	1 (1.8)	1.39[a]	0.238
		Female	56 (100.0)	0 (0.0)		
	Severe depression	Male	54 (96.4)	2 (3.6)	2.81[a]	0.094
		Female	56 (100.0)	0 (0.0)		
Suburban	Somatic symptoms	Male	45 (95.7)	2 (4.3)	0.49[a]	0.699
		Female	63 (92.6)	5 (7.4)		
	Anxiety and insomnia	Male	46 (97.9)	1 (2.1)	0.46[a]	0.498
		Female	65 (95.6)	3 (4.4)		
	Social dysfunction	Male	32 (68.1)	15 (31.9)	0.73[a]	0.392
		Female	41 (60.3)	27 (39.7)		

[a]Fisher's exact test

major source of drinking water, followed by underground water (16.0%). Sixty-one point eight percent had a toilet near the well, or an animal pen less than 100 meters from the well. Eighty-one point one percent of households had domestic animals near their living area. Eleven point eight percent of households had solid waste and 8.5% had wastewaters in the living area.

Seventy-two point six percent had good food sanitation.

DISCUSSION

For this study we invited 3 mental health professionals to determine the mental health status of each subject. All interviewers were trained for least 3 days

Table 9
Univariate analysis of mental health by area.

| Factor | Area | Mental health status | | χ^2 | *p*-value |
		Normal (%)	Abnormal (%)		
Somatic symptoms	Rural	107 (95.5)	5 (4.5)	0.30[a]	0.584
	Suburban	108 (93.9)	7 (6.1)		
Anxiety and insomnia	Rural	111 (99.1)	1 (0.9)	1.89[a]	0.169
	Suburban	111 (96.5)	4 (3.5)		
Social dysfunction	Rural	112 (100.0)	0 (0.0)	66.47[a]	<0.001[b]
	Suburban	73 (63.5)	42 (36.5)		
Severe depression	Rural	110 (98.2)	2 (1.8)	2.84[a]	0.092
	Suburban	115 (100.0)	0 (0.0)		

[a]Fisher exact test; [b]Significant at α=0.05

Table 10
Univariate analysis of mental health by sex and areas.

| Sex | Factors | Area | Mental health status | | χ^2 | *p*-value |
			Normal (%)	Abnormal (%)		
Male	Somatic symptoms	Rural	55 (98.2)	1 (1.8)	0.56[a]	0.457
		Suburban	45 (95.7)	2 (4.3)		
	Anxiety and insomnia	Rural	55 (98.2)	1 (1.8)	0.16[a]	1.000
		Suburban	46 (97.9)	1 (2.1)		
	Social dysfunction	Rural	56 (100.0)	0 (0.0)	26.7[a]	<0.001[b]
		Suburban	32 (68.1)	15 (31.9)		
	Severe depression	Rural	54 (96.4)	2 (3.6)	2.47[a]	0.499
		Suburban	47 (100.0)	0 (0.0)		
Female[c]	Somatic symptoms	Rural	52 (92.9)	4 (7.1)	0.00[a]	0.964
		Suburban	63 (92.6)	5 (7.4)		
	Anxiety and insomnia	Rural	56 (100.0)	0 (0.0)	3.67[a]	0.056[b]
		Suburban	65 (95.6)	3 (4.4)		
	Social dysfunction	Rural	56 (100.0)	0 (0.0)	38.59	0.008[b]
		Suburban	41 (60.3)	27 (39.7)		

[a]Fisher's exact test; [b]Significant at α=0.05; [c]Severe depression was not found among females from rural and suburban areas.

before carrying out the interviews. People from northern Thailand use a different dialect than the questionnaires which could have influenced the study results.

The GHQ (Hoeymans *et al*, 2004) was used in a survey of the Dutch's population found similar results predicting mental health.

In our study no differences in quality of life by gender were seen; however, a study by Kilic *et al* (1997) found a higher score with the GHQ in women than men.

A study among elderly people in Spain (Francese *et al*, 2006) found women scored worse in health-related quality of life than men. The main factors related to worse quality of life in regard to health among females were a higher prevalence of disability and chronic conditions.

Functional disorders increased with increasing age; women were more likely to report functional problems (Lamb, 1996; Zimmer and Amornsirisomboon *et al*, 2001). In our study there were no differences by sex or age in quality of life among elderly who lived in the same area. However, 2 factors varied by area: physical health and social relationships. Elderly who lived in suburban areas had a higher quality of life than those who lived in rural areas in all aspects. However, when comparing quality of life within the same gender by area there was no significant difference except in social relationships; the score was higher among females living in suburban areas than those living in the rural areas.

The results of this study agree with those of de Belvis *et al* (2008) who found low physical health scores were associated with a low frequency of meeting with relatives and with living far from relatives, a higher education and female sex.

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