Quality of Life among Older Patients with Chronic Illnesses and Associated Factors at the Outpatient Clinic of a University Hospital in Northeastern Thailand

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Objective: Patient quality of life (QoL) is a key factor when improving the healthcare system. Older patients with chronic illnesses in the Medicine outpatient clinic might face a poorer QoL in Thailand but the data are limited. The authors aimed to explore the level of quality of QoL and associated factors among older patients in Thailand.

Materials and Methods: This was a cross-sectional study conducted at the Medicine outpatient clinic of a university hospital between May 2019 and May 2020. The Thai version of the WHO Quality of Life-Old (WHO QoL-Old) was used to evaluate patient QoL. The authors collected baseline characteristics including (a) cognitive status assessed using the Rowland Universal Dementia Assessment Scale (RUDAS-Thai), and (b) depression assessed using the Thai Geriatric Depression Scales-15 (TGDS-15). The associated factors of QoL were explored.

Results: Two hundred and fifty participants were enrolled. The median age was 69 (IQR 64,75) and 46.4% were male. Majority of participants (74.8%) had a high QoL and 25.2% had a moderate QoL. The factors associated with a high QoL were age [OR 1.26 (1.06 to 1.53)], monthly income >30,000 bahts [OR 1,093 (6.7 to 178,384)], increased RUDAS score [OR 2.55 (1.78 to 3.65)], and increased TGDS-15 score [OR 0.29 (0.16 to 0.52)].

Conclusion: The QoL among older patients with chronic illnesses was high. Factors associated with a QoL were age, monthly income, cognitive function, and depression, so strategies focusing on these modifiable factors might improve QoL among older patients.

Keywords: Quality of life; Elderly; Older adults; End of life care; Quality of care

Well-controlled disease(s) and quality of life (QoL) are key goals when caring for patients with chronic illnesses, particularly aging persons. Age is one of the factors that determines QoL and the older the patient the greater the chance of a poorer QoL[1,2], due to age-related comorbidities such as hypertension, diabetes mellitus, and chronic kidney disease. Such persons need to have vitals and chemistry followed up regularly and to have verified that medications are being taken on schedule. According to the previous studies from various countries, QoL in older patients depends on several factors including comorbidities, polypharmacy, functional limitation, and number of hospital visits[3-5].

Healthcare providers should place importance on older patient QoL and well-being as these factors are associated with higher rates of mortality and hospitalization[6,7]. In order to improve end-of-life care, QoL is a key issue since it is the component to make patients achieve a "good death"[8] and it is crucial for healthcare providers to understand the factors that determine patient perception of QoL. Other factors—viz., physical problems, poor mental, spiritual, and socioeconomic status—are also linked to QoL[1,9,10], but in older patients, the country, type of care and setting will determine how these associated factors affect QoL. The cross-sectional, community-based study in the USA and Iran revealed that older adults reported a high QoL[9,11], while only a 'good' QoL was reported in between 50 and 40 percent of this demographic in studies from Nepal and Kerala[1,12]. In Thailand—a developing country and aging society—the majority of sampled, community-dwelling, older adults reported "fair" QoL[5,13]. Another study from a university hospital in the Central Thailand revealed a "fair" QoL among patients in a Psychiatric Outpatient Unit which was in turn associated with severe depressive symptoms, poor educational level, and unsatisfactory

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treatment outcomes[14]. The present study[14] did not, however, collect information on factors that might be related to QoL such as cognitive status, functional ability, history of admission, and medical comorbidities (including musculoskeletal disease, diabetes mellitus, and cerebrovascular disease). Patients at the Internal Medicine Outpatient Clinic who usually have many comorbidities and a high probability of frailty and functional limitation were not previously canvassed regarding their QoL. Moreover, patients from northeastern Thailand—who have a lower socioeconomic status than patients from the Central region—might have a different level of QoL. Consequently, the primary objective of our study was to examine the level of QoL in older patients and secondarily to identify the associated factors at the Internal Medicine outpatient clinic at our hospital in northeastern Thailand.

Materials and Methods
Study design and participants
This was a questionnaire-based, cross-sectional study—a subsidiary study of the project "Prevalence of medication nonadherence and adverse health outcomes of older patients". It was conducted at Srinagarind Hospital at Khon Kaen University in northeastern Thailand between March 2019 and May 2020.

The participants in the present study were older patients who attended the Internal Medicine Outpatient Clinic at Srinagarind Hospital. The inclusion criteria comprised patients: 1) 60 and over, 2) with chronic illnesses taking at least 1 medication, and 3) regularly followed-up at clinic for at least 3 consecutive months. Exclusion criteria were patients with 1) mental disease and/or 2) visual, hearing, or severe limb dysfunction that interfered with communication or self-management of medication.

Materials
The questionnaire had five parts. Part 1 included baseline characteristic and factors that might be associated with QoL (age, sex, marital status, educational level, occupations, income, underlying diseases, functional status using the Barthel index, experience of medication use, number of medication per day, frequency of medication use, experience of adverse drug reaction, history of fall and nonelective admission over the past 12 months. Part 2 was the frailty diagnostic tool for older patients, using the FRAIL scale[15] which comprised five components including Fatigue, Resistance, Ambulation, Illness, and Loss of weight. The total score was five. A score of 0 indicated no frailty, while 1 to 2 indicated a risk of frailty, and 3 to 5 that frailty was present. Part 3 provided the cognitive evaluation using the Thai version of the Rowland Universal Dementia Assessment Scale (RUDAS-Thai)[16], a global neuropsychological test consisting of assessments of 6 cognitive domains (recall memory, visuospatial, praxis, visuo-construction, judgement, and language). The scale had been previously validated in the Thai population. The total possible RUDAS score was 30. Patients with a score of ≤23 was diagnosed as having cognitive

impairment. Part 4 was the Thai version of the World Health Organization Quality of Life-Old (WHO QoL-Old)—a 24-item questionnaire using a five-category Likert scale questionnaire divided in 6 domains: 1) sensory of activity [items 1,2,10, and 20] 2) autonomy [items 3, 4, 5, and 11] 3) past, present, and future activity [items 12,13,15, and 19] 4) social participation (items 14, 16, 17, and 18] 5) death and dying [items 6, 7, 8, and 9] 6) intimacy [items 21, 22, 23, and 24][13]. In the current questionnaire, there were 17 positive and 7 negative feelings on questions. The higher scores indicate good QoL (scores 24 to 55 suggesting poor QoL, 56 to 88 moderate QoL, and 89 to 120 good QoL). Part 5 was the Thai Geriatric Depression Scales-15 (TGDS-15)[17]—a test to evaluate depressive symptoms in older patient. The total score was 15: 0 to 4 indicated no depressive symptom, 5 to 10 suggestive of depression, and 11 to 15 depression. The Thai-version of the WHO QoL-Old was validated and tested for reliability using Cronbach's alfa coefficient of 0.8.

Statistical analysis
For baseline characteristics, the categorical variables were presented as the number of participants with a percentage. The results of continuous variables with normal distribution were presented as a mean and standard deviation (SD). Non-normal distributed data were presented as a median and inter-quartile range (IQR). Factors associated with QoL—using the WHO QoL-Old—were evaluated using univariate and multivariate linear regression with logistic transformation. The results were presented as the crude odds ratio and adjusted odds ratio with a respective 95% confidence interval. All analyses were performed using STATA version 10.0 (StataCorp, College Station, Texas).

Sample size calculation
The sample size calculation was based on the primary objective of this study, which was to quantify the level of QoL in older patients. According to a previous study done in a northeastern province of Thailand, the prevalence of a high QoL for community-dwelling Thai older adults was 10.5 percent[13]. The formula for estimating the population proportion was used and the total number of participants for the primary objective was 145. We, however, collected 250 participants in order to achieve all of the objectives of the main study.

Results
Two hundred and fifty participants were enrolled in the study. The baseline characteristics of the participants are presented in Table 1. The median age was 69 years, about 46 percent were males, most participants were married, and >50 percent had quite low income (<20,000 baht/month). Only half of participants rated themselves as having good health (48%) and most were satisfied with their life (96%). After the frailty assessment using the FRAIL scale, only 3.2 percent were frail. Generally, cognitive function—determined by the RUDAS—was intact and appeared not depressed, based on a median TGDS-15. The median time of drug use

Table 1. Baseline data of studied population

Variable	n=250
Age (years); med (IQR 1,3)	69 (64,75)
Male, n (%)	116 (46.4)
Educational level, n (%)	
Primary	100 (40)
Secondary	71 (28.4)
Bachelor	79 (31.6)
Marital status, n (%)	
Single	6 (2.4)
Married	195 (78)
Divorce	10 (4)
Widow	19 (15.6)
Health and social welfare, n (%)	
Universal health coverage	31 (12.4)
Social welfare	3 (1.2)
Government welfare	210 (84)
Self-pay	6 (2.4)
Family size, n (%)	
Alone	19 (7.6)
<3	74 (29.6)
3 to 5	126 (50.4)
>6	31 (12.4)
Family income per month (baht), n (%)	
≤10,000	111 (44.4)
10,001 to 20,000	43 (17.2)
20,001 to 30,000	38 (15.2)
>30,000	58 (23.2)
Self-rated good health, n (%)	120 (48)
Satisfied life, n (%)	240 (96)
Mildly dependence, n (%) (Barthel index ≥12)	250 (100)
Being frail, n (%)	8 (3.2)
Comorbid, n (%)	
DM	123 (49.2)
HT	194 (77.6)
IHD	14 (5.6)
CVA/TIA	28 (11.2)
CKD	53 (21.2)
Arthritis	26 (10.4)
Cancer	8 (3.2)
Airway disease (COPD and asthma)	14 (5.6)

med = median; IQR = inter-quartile range, being frail using the FRAIL scales ≥3; DM = diabetes mellitus; HTN = hypertension; IHD = ischemic heart disease; CVA = cerebrovascular disease; TIA = transient ischemic attack; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; RUDAS = Rowland Universal Dementia Assessment Scale; TGDS = Thai Geriatric Depression Scales; No. = number; ADR = adverse drug reaction, significant fall defined as fallen at least twice over past 12 months.

Table 1. Cont.

Variable	n=250
RUDAS, med (IQR1,3)	26 (24,28)
TGDS score, med (IQR1,3)	1 (1,3)
Experience of drug use (years); med (IQR 1,3)	4 (3,4)
No. of daily medications; med (IQR 1,3)	5 (3,7)
Frequency of taking medications each day, med (IQR 1,3)	2 (2,3)
Experience of ADR, n (%)	68 (27.2)
Significant falls over the last 12 months, n (%)	19 (7.6)
Non-elective admission over the last 12 months, n (%)	54 (21.6)

med = median; IQR = inter-quartile range, being frail using the FRAIL scales ≥3; DM = diabetes mellitus; HTN = hypertension; IHD = ischemic heart disease; CVA = cerebrovascular disease; TIA = transient ischemic attack; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; RUDAS = Rowland Universal Dementia Assessment Scale; TGDS = Thai Geriatric Depression Scales; No. = number; ADR = adverse drug reaction, significant fall defined as fallen at least twice over past 12 months.

was 4 years; the median of number of medications per day was 5; and, more than one quarter of participants experienced adverse drug reaction (27.2%).

Most participants (74.8%) had a high level of QoL, 25.2% of participants had a moderate level of QoL, and none of participant had low level of QoL. As for subgroup divided into five facets presented in Table 2, >50% had a high level of QoL in every facet, including in death and dying where the proportion was 79.6%.

Factors associated with QoL according to the univariate and multivariate regression analyses are presented in Table 3. The univariate analysis identified the following as potentially significant factors (p-values <0.2): level of education, types of health and social welfare, family income, self-rated good health, satisfied life, being frail, comorbid HT, CVA/TIA, and arthritis, RUDAS scores, TGDS scores, number of daily medication, frequency of taking medication, significant fall, and nonelective admission over the past 12 months. After multicollinearity was checked, the factors with p-values <0.2 were entered into a model for multivariate analysis. The following factors were associated with better QoL (p<0.05): increasing age, monthly income over 30,000 bahts, higher RUDAS, and lower TGDS score.

Discussion

The present research was a cross-sectional study aimed to evaluate the level of QoL in older patients. The results showed that the majority of patients had a high QoL and older age was a factor that predicted a higher level of QoL—a result that differed from several previous studies[13,18,19]. A previous study from England[18] showed that age ≥75 years was associated with an increased risk of

poor QoL. In the same study, participants between 50 to 64 and 65 to 74 years of age had the same level of QoL. The dissimilar results to our study may be because the participants in the current study were younger in as much as the median

Table 2. Percentage of participant level of QoL divided into five facets

Facet	Low, n (%)	Moderate, n (%)	High, n (%)
Sensory activity	5 (2)	91 (36)	154 (62.6)
Autonomy	3 (1.2)	117 (46.8)	130 (52)
Past, present, and future activity	1 (0.4)	116 (46.4)	133 (53.2)
Social participation	0 (0)	102 (40.8)	148 (59.2)
Death and dying	6 (2.4)	45 (18)	199 (79.6)
Intimacy	0 (0)	92 (36.8)	158 (63.2)

Table 3. Factors associated with QoL scores after linear regression with logistic transformation

Factor	Univariate			Multivariate		
	Crude OR	95% CI	p-value	Adjusted OR	95% CI	p-value
Age	0.93	0.78 to 1.11	0.41	1.26	1.06 to 1.53	0.01*
Educational level						
Primary	1	-	-	1	-	-
Secondary	4.60	0.22 to 98.34	0.32	0.19	0.01 to 4.57	0.31
Bachelor	277.14	11.65 to 4,426.83	0.00	0.05	0.001 to 5.96	0.22
Family income per month (baht)						
≤10,000	1	-	-	1	-	-
10,001 to 20,000	6.16	0.18 to 207.66	0.31	5.25	0.21 to 183.03	0.34
20,001 to 30,000	29.05	0.73 to 1,153.3	0.07	5.07	0.1 to 525.9	0.47
>30,000	869.92	36.42 to 20,781	0.00	1,093.01	6.7 to 178,384.2	0.01*
Self-rated good health	53.94	4.38 to 663.6	0.002	6.93	0.65 to 74.07	0.11
Satisfied life	406.80	0.62 to 265,385	0.07	0.12	0.0002 to 71.02	0.51
Being frail	0.0001	1.04e-07 to 0.18	0.02	0.14	0.0001 to 114.18	0.57
Comorbid, n (%)						
HT	10.12	0.48 to 214.4	0.14	5.91	0.39 to 127.81	0.18
CVA/TIA	0.17	0.0003 to 0.95	0.05	0.09	0.002 to 3.69	0.21
Arthritis	0.003	0.00004 to 0.15	0.005	0.06	0.001 to 2.89	0.16
RUDAS	2.70	1.94 to 3.76	0.00	2.55	1.78 to 3.65	0.00*
TGDS	0.23	0.13 to 0.42	0.00	0.29	0.16 to 0.52	0.00*
No. of medications a day	0.63	0.39 to 1.03	0.06	0.88	0.57 to 1.62	0.88
How often a day	0.15	0.03 to 0.73	0.02	0.38	0.08 to 1.9	0.24
Significant falls over past 12 months	0.001	8.34e-06 to 0.11	0.004	0.03	0.003 to 2.22	0.11
Non-elective admission over past 12 months	0.05	0.002 to 1.09	0.06	0.31	0.02 to 4.94	0.40

OR = odds ratio; CI = confidence interval, being frail using the FRAIL scales ≥3; DM = diabetes mellitus; HTN = hypertension; IHD = ischemic heart disease; CVA = cerebrovascular disease; TIA = transient ischemic attack; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; RUDAS = Rowland Universal Dementia Assessment Scale; TGDS = Thai Geriatric Depression Scales; No. = number; ADR = adverse drug reaction, significant falls defined as fallen at least twice over past 12 months.

age represented the young-old age group. Further study is needed to explore the middle-old age group (70 to 79 years) and the old-old age group (≥80 years). In a similar 2013 study in the same province, QoL was studied amongst community-dwelling older adults using the same measurement tool and it showed that most (79%) reported fair QoL[13]. The finding might be explained as follows. First, participant monthly income in the current study was higher than the previous one [>90% of them earned 500 to 1,000 baht/month] and socioeconomic status could influence functional capacity and thus QoL[20]. The results of the current study support that a high level of monthly income is an important factor significantly related to a high QoL score. Second, participant education in the present study was higher than the prior one (96% of participants had ≤6 years of education). Educational achievement could positively impact QoL because education can determine decisions and guide behavior[21], and there is evidence that education improved well-being and subjective QoL[22]. Third, the percentage of married participants in the present study was higher than the previous one, supporting studies in Korea and Spain that revealed that marital status was associated with QoL[23,24].

Subdividing QoL into 5 facets reveals that more than 50% of participants had a high level of QoL in all the facet categories. Notwithstanding, the autonomy and past-present-future activity facets had a low percentage of high QoL compared with the other facets. With respect to the autonomy facet in the current study[13], only 52% of participants strongly agreed that they had autonomy to (a) make their own decisions, (b) control and plan their future, (c) attend activities of interest, and/or (d) that people respected them and their decisions. These results are consistent with two previous studies which concluded that some older adults found limited autonomy because of medical problems and/or cultural prejudices[25,26]. For the past-present-future activity facets, about 53% of participant had a high level of QoL, meaning that they appreciated their opportunity to achieve success in the future and felt happy to wait for good things to happen. To improve the QoL rating for these two facets, caregivers and healthcare providers need to provide autonomy, respect, and appreciate the values of older patients.

In the present study, cognitive status and depression were also predictors of QoL. Other researchers have also reported that high cognitive status are related to a high level of QoL[27-29]. Sharma, et al concluded that the Montreal cognitive assessment score was moderately correlated with QoL[28]. Kazazi, et al explored the correlation between the Mini Mental State Examination (MMSE) and QoL assessed by using the Short Form-36 scale (SF-36). Kazazi, et al reported a positive correlation between MMSE score and QoL[29]. The possible explanation is that QoL is associated with a capacity for daily living activities, decision making, and problem solving, which are based on cognitive status and functional and mental capacity[29].

Consistent with prior reports, depression was another significant factor related to low QoL identified in the study. Brenes[30] concluded that depressive and anxiety symptoms were significantly related with poor QoL. Treatment and prevention of depression might thus improve older adult QoL. Such a conclusion is supported by the results of a 2017 meta-analysis which showed that treatment of depression—with cognitive-behavioral therapy (CBT) and selective serotonin reuptake inhibitors (SSRIs)—was significantly associated with improvement of QoL[31].

According to the results of the study, some associated factors were modifiable. As a consequence, if the healthcare and social assistance system were improved or could prevent these factors (e.g., provide social support to improve socioeconomic status, provide adequate treatment of depression, and give intervention to improve cognition], positive impacts on QoL could accrue.

The study had some limitations. First, most of the participants were quite independent and in the younger to middle-aged elderly demographic, which might influence the impact on QoL. Further study in the oldest old or disable elderly patient is required. Second, information on the WHO-QoL-Old is subjective and the clinical researchers had to interview some of the patients because of limitations of vision, hearing, and reading. There might therefore be under-reporting in the data. Third, several data were self-reported data, thus there might be some recall bias. Last, the study was conducted in an outpatient clinic of the internal medicine department of a tertiary care hospital where there are more complex, comorbid diseases and differences in the cultural background and socioeconomic status compared to other settings, so the findings might not be generalizable to other healthcare settings.

Conclusion

The level of QoL of older patients with chronic illnesses in an outpatient setting at a tertiary care hospital was high. Several associated factors were identified with better QoL including increasing age, higher monthly income, greater cognitive function, and lower depressive score. Thus, if some modifiable risk factors can be improved—such as socioeconomic status, depression and cognitive function—patient QoL should also be improved.

What is already known on this topic?

The QoL level of older patients were vary among different residential areas. The prior study from central Thailand showed older patients had fair QoL. Physical problems, poor mental, spiritual, and socioeconomic status associated with poor QoL.

What this study adds?

The QoL among older patients with chronic illness in the Medicine out-patient clinic was high. Cognitive status associated with QoL level. Providing autonomy, respect, and appreciate the values of older patients could improve the QoL level of older patients.

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Research ethics

The study was approval the Khon Kaen University Institutional Review Board were obtained (reference number HE621115).

Potential conflicts of interest

The authors declare no conflict of interest.

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