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Socioeconomic and Health Status Affecting Quality of Life among Older Adults in the Rural Areas in Northeastern Thailand during COVID-19 pandemic: A Cross-Sectional Study

By

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Abstract

Globally, aging populations result from declining birth rates and rising life expectancy. This study aimed to investigate the association between socioeconomic factors, health status, and quality of life (QoL) among older adults in the rural areas of Northeastern Thailand. The cross-sectional socioeconomic background, health knowledge, psychological stress, and QoL (World Health Organization Quality of Life, WHOQOL) data were collected from 8,348 older persons. Chi-square (χ^2) and generalized linear models (GLM) were used for data analysis. The χ^2 study showed that >50 were female in the early age group (60-79 years). The significant factors related to the QoL were age difference, marital status, living styles, education levels, ability to read and write, working situations, economic status, present illness, health knowledge levels, and psychological stress levels. Further analysis with the GLM showed that the QoL could be predicted by education levels, reading ability, working statuses, present illness, health literacy, and psychological stress levels. Healthcare professionals must consequently be aware of these population disparities to promote QoL. Stress reduction combined with psychosocial support intervention is a potential application. Additionally, psychological support may help them recover from their current mental problem.

Keywords: Quality of life, older adults, health literacy, employment, psychological stress

Introduction

The number of older persons aged over 60 years is growing worldwide and is expected to be doubled by 2050 (Jerusalem & Hudtohan, 2022). Aging results from increased longevity, decreased mortality, and declining fertility (Phillips & Feng, 2017). Socioeconomic and health status are closely related. According to traditional definitions of socioeconomic status, differences in access to resources such as capital, educational opportunities, material possessions, social networks, and potential power are among the most critical characteristics of socioeconomic status (Beswick et al., 2019). On the other hand, health is the state in which a person can continue to control their physical, emotional, mental, and social environments (Santhalingam et al., 2022). As a result, a person's socioeconomic condition significantly impacts their health and general QoL. Therefore, numerous studies have examined the associations between socioeconomic characteristics (gender, age, marital status, income, and education) and older adults' QoL (Santhalingam et al., 2022).

In healthy older adults, health characteristics that influence the physical aspect of QoL include higher numeracy and knowledge levels in health literacy, physical activity that promotes health, perceived emotional-informational support, and fewer comorbidities. On the other hand, health characteristics affecting a mental component of QoL include higher numeracy and understanding levels in health literacy, self-efficacy, physical health-promoting actions, perceived emotional-informational support, and a lower number of comorbidities (Lee & Oh, 2020). While getting older, the functioning of the body's various systems gradually deteriorates (Kyriazis, 2020). An illness with incurable diseases results in a decreased level of self-help and a dependency condition that needs ongoing care and long-term care from others (Seica Cardoso et al., 2022).

Coronavirus disease 2019 (COVID-19) differentially affects QoL among people in different age. In a European study, older persons reported higher levels of QoL and well-being throughout the pandemic than younger age groups (Bidzan-Bluma et al., 2020). They also reported lower levels of trait anxiety and the threat posed by the coronavirus. In addition, they were more risk-tolerant, had a night of better sleep, were more optimistic, and found it easier to unwind than responders in their mid-40s. In rural Thailand during the pre-pandemic, a significant fraction of the elderly population is shown to be suffering from mental health issues (Seangpraw et al., 2019). A study in the Eastern region of Thailand showed that positive behaviors were correlated to higher QOL in older persons and more positive views toward the "new normal" criteria (Waewwab et al., 2022). In addition, high QOL was associated with older age and higher education. However, the impact of COVID-19 on QoL in older adults in rural areas of Northeastern Thailand has not been elucidated.

The QoL also varies between rural and urban inhabitants. Although subjects' QoL ratings differ by location, psychological stress among people in rural areas may cause lower QoL scores in rural regions of Turkey (Oguzturk, 2008). While there is minimal evidence of major urban-rural inequalities among the wealthiest nations of the European Union, rural areas have much lower levels of perceived welfare and QoL in the poorer countries of the east and south (Shucksmith et al., 2009). A study in rural regions of Vietnam showed that the decline in QoL at later ages is mainly influenced by aging, primarily by a reduction in physical rather than mental functions (Hoi et al., 2010). The difference in QoL between basic and higher education levels is relatively small. A better physical than psychological QoL can be attained by being the head of the household and working into old age. The QoL is impacted by economic situations rather than physical status through utilities. Lastly, short-term economic conditions

are less likely to impact QoL than long-term living conditions. In Thailand, it was reported that older persons from suburban regions had a higher QoL regarding their physical and mental well-being and social contacts (Apidechkul, 2011). The older adults from rural settings exhibited better mental health than those from suburban neighborhoods. In urban dwellers, a high perceived health status indicated an improvement in QoL, whereas comorbidity effects predicted a decline in QoL (Chantakeeree et al., 2022). Therefore, this study investigated the association of socioeconomic factors and QoL among older adults in the rural areas of Northeastern Thailand.

Materials and Methods

Study design

A descriptive cross-sectional study was applied to carry out the study among older adults in 7th regional health promotion center (Roi-Et, Khon Kaen, Maha Sarakham, and Kalasin provinces), Thailand. Data were collected in 2020. This sub-project was a part of the project "Development of Mobile Application of Database of Older Persons Using Geographic Information System (GIS) to Detect and Analyze Risks of Chronic Diseases, Quality of Life, and Mental Illness by Village Health Volunteers in 7th Regional Health Office Territory" (Tudpor et al., 2022). The STrengthening the Reporting of OBservational studies in Epidemiology (STROBE) checklist has been uploaded to the Open Science Framework (OSF) with DOI 10.17605/OSF.IO/FJ8MD.

Participants and ethical issues

A total of 8,348 older adults were recruited from 8 districts within the four provinces in the Northeast of Thailand in 2020. Written and oral consent from the older adults was obtained after researchers thoroughly explained the research purpose and procedures. All of them participated in the study; however, older adults had the right to refuse participation at any time. Approval letters for this study were obtained from the Ethics Committee of Provincial Public Health Offices as No.6/2564, KLS.REC07/2564 and HE2564-02-05-016. The research was carried out under the Declaration of Helsinki.

Research instruments

This study employed four parts of the questionnaires: (1) the socioeconomic background of the older adults, (2) health knowledge, (3) psychological stress, and (4) the QoL (WHOQOL-OLD). The health knowledge questionnaire measured thirteen items to capture detailed and specific information about health risk factors and prevention. First, the psychological stress questionnaire was used for evaluating psychological stress levels using a 5-point Likert scale. Each of the 24 questions in the questionnaire is scored from 1(no psychological stress) to 5 (extremely psychologically stressed), with the total scores range for the psychological stress level ranging from 24 to 120. The total scores were categorized into four groups of psychological stress (24-48 = mild, 49-72 = moderate, 73-96 = high, and 97-120 = severe).

Statistical analyses

The data were collected, entered, coded, and transferred to SPSS IBM version 18 software to analyze data. Descriptive statistics included frequency, percentage, mean, and standard deviation to analyze the demographic variables. The normality of sample data was tested by the Shapiro-Wilk test. The relationship between sociology background items and QOL variables was measured using χ^2 tests. Finally, generalized linear models (type of model

ordinal logistic regression analysis) were used to find the independent predictors on QOL. The significance level for P was set as 0.05.

Results

Socioeconomic variables showed the total of older adults who participated (n = 8,348). More than half of them were female. Most were in the early age group (60-79 years). The relationship between sociodemographic factors and QoL was analyzed using χ^2 tests. The factors significantly related to the QoL comprised age difference, marital status, living styles, education levels, ability to read and write, working situations, economic status, present illness, health knowledge levels, and psychological stress levels. Details are illustrated in Table 1.

Table 1 *Relationship between socioeconomic factors and quality of life*

Variables	QoL [n (%)]			df	χ^2	P-value
	Poor	Average	Good			
Gender						
Male	4 (0.04)	476 (5.70)	3107 (37.22)	4	4.124	0.389
Female	6 (0.07)	566 (6.78)	4185 (50.13)			
LGBTQ+	0	1 (0.01)	3 (0.03)			
Age (years)						
Early old (60-79)	8 (0.09)	875 (10.48)	6395 (76.61)	2	12.070	0.002*
Late old (80 and over)	2 (0.02)	168 (2.01)	900 (10.78)			
Mean = 69.91±7.71, Max = 105, Min = 60						
Marital status						
Single/widowed/divorced/separate	5 (0.05)	420 (5.03)	2570 (30.79)	2	10.939	0.004*
Married	5 (0.05)	623 (7.46)	4725 (56.60)			
Living status						
Living alone	0	75 (0.89)	378 (4.53)	2	7.752	0.021*
Living with others	10 (0.12)	968 (11.60)	6917 (82.86)			
Education level						
No schooling	1 (0.01)	46 (0.55)	182 (2.18)	2	14.526	0.001*
Primary school or above	9 (0.11)	997 (11.94)	7113 (85.21)			
Ability to read						
Poor	7 (0.08)	596 (7.14)	3547 (42.50)	2	28.149	< 0.001*
Good	3 (0.03)	447 (5.35)	3748 (44.90)			
Ability to write						
Poor	8 (0.09)	617 (7.39)	3793 (45.44)	2	21.732	< 0.001*
Good	2 (0.02)	426 (5.10)	3502 (41.95)			
Current liabilities						

Variables	QoL [n (%)]			df	χ^2	P-value
	Poor	Average	Good			
None	5 (0.05)	462 (5.53)	3114 (37.30)	2	1.170	0.557
In debt	5 (0.05)	581 (6.95)	4181 (50.08)			
Working status						
Not working	5 (0.05)	393 (4.71)	2051 (24.60)	2	42.332	< 0.001*
Working	5 (0.05)	650 (7.80)	5244 (62.82)			
Economic status						
Enough income to living	1 (0.01)	236 (2.83)	1262 (15.12)	2	18.011	< 0.001*
Not enough income to living	9 (0.11)	807 (9.70)	6033 (72.27)			
Body mass index (BMI, kg/m^2)						
> 18.5	1 (0.01)	120 (1.44)	752 (9.05)	8	8.949	0.347
18.5 to 22.99	3 (0.03)	495 (5.95)	3235 (38.92)			
23.0 to 24.99	3 (0.03)	208 (2.50)	1604 (19.30)			
25.00 to 29.99	3 (0.03)	184 (2.21)	1403 (2.21)			
≥ 30.0	0	32 (0.38)	269 (3.24)			
Present illness						
No underlying disease	6 (0.07)	521 (6.24)	4232 (50.69)	4	61.053	< 0.001*
≥ 1 **underlying disease**	1 (0.01)	190 (2.28)	1523 (18.24)			
No data	3 (0.04)	332 (4.00)	1540 (18.45)			
Drinking status						
Non-alcohol drinker	10 (0.12)	849 (10.17)	5915 (70.86)	2	2.386	0.303
Alcohol drinker	0	194 (2.32)	1380 (16.53)			
Smoking status						
Non-smoker	9 (0.11)	919 (11.01)	6422 (76.93)	2	0.042	0.979
Smoker	1 (0.01)	124 (1.50)	873 (10.50)			
Health knowledge levels						
Poor	5 (0.05)	742 (8.89)	4565 (54.68)	4	30.436	< 0.001*
Average	1 (0.01)	107 (1.28)	965 (11.56)			
High	4 (0.04)	194 (2.32)	1765 (21.14)			
Psychological stress levels						
Mild	3 (0.03)	404 (4.84)	4239 (50.78)	6	163.421	< 0.001*
Moderate	7 (0.08)	510 (6.11)	2625 (31.44)			
High	0	122 (1.46)	409 (4.90)			

Variables	QoL [n (%)]			df	χ^2	P-value
	Poor	Average	Good			
Severe	0	7 (0.08)	22 (0.26)			

*, P-value < 0.05

Results of health knowledge scores showed that they realized the importance of exercise; and the harm of alcohol drinking and cigarette smoking, as shown by the highest scores (86.72 and 85.84%). While they have known 'running or walking is considered exercise' (86.72%). The scores of other items are displayed in Figure 1.

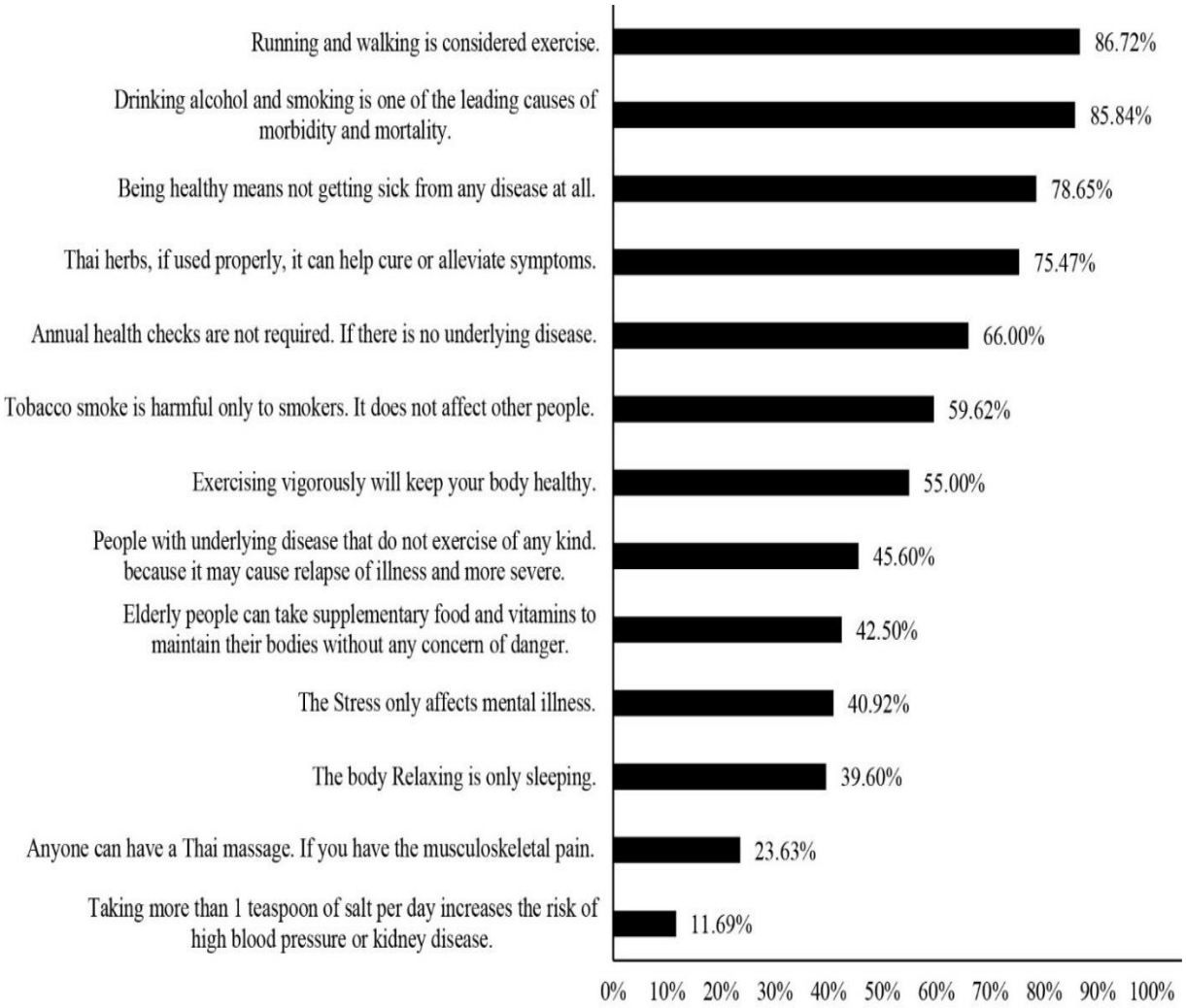

Figure 1 *Health knowledge of older adults of health risk factors and health prevention*

Generalized linear models (a type of model ordinal logistic regression analysis) were used to analyze further the related factors (age difference, marital status, living styles, education levels, reading and writing abilities, working groups, economic status, present illness, health knowledge levels, and psychological stress levels) to explore the independent predictors on QoL. Results showed significant predicting factors for QoL education levels, ability to read, working statuses, present illness, health knowledge, and psychological stress levels. Details are illustrated in Table 2.

Table 2 *Ordinal logistic regression analysis of independent predictors for quality of life*

Dependent variable	Covariate	Wald	Adj OR	95% CI [lower, upper]	P-value
QoL	Age	1.689	0.878	[-0.327, 0.066]	0.194
	Marital status	0.166	1.032	[-0.118, 0.181]	0.683
	Living status	3.553	1.300	[-0.010, 0.535]	0.059
	Education level	9.151	1.696	[0.186, 0.870]	0.002*
	Ability to read	4.985	1.356	[0.037, 0.572]	0.026*
	Ability to write	0.760	0.887	[-0.389, 0.149]	0.383
	Working status	9.132	1.264	[0.082, 0.386]	0.003*
	Economic status	1.249	1.098	[-0.071, 0.258]	0.264
	Present illness	30.902	0.801	[-0.301, -0.144]	< 0.001*
	Health knowledge level	22.782	1.226	[0.120, 0.287]	< 0.001*
	Psychological stress level	124.334	0.577	[-0.647, -0.43]	< 0.001*

Adj OR, adjusted odds ratio; 95% CI, 95% confidence interval

Discussion

The sociodemographic factors related to the QoL were education levels, ability to read (literacy), health knowledge levels (health literacy), working statuses, present illness, and psychological stress levels.

First, our findings were consistent with the study by Bhandari and colleagues, reporting that having less education is more likely to be linked to worse QoL (Bhandari et al., 2016). It is recognized that health literacy has a substantial, adjustable role in how effectively older individuals manage their health (Kosicka et al., 2020). In addition, according to a recent paper by Chantakeeree and colleagues, improving the quality of life for older Thai persons, especially those with hypertension, requires self-management interventions and healthy habits (Chantakeeree et al., 2022). Therefore, self-management ability and healthy habits need health literacy. Unfortunately, more than half of the seniors assessed had unsatisfactory levels of general health literacy and various elements of health literacy, including health promotion, illness prevention, and health care (Kosicka et al., 2020). However, our study did not investigate health promotion, illness prevention, and healthcare components of health literacy. For example, health literacy has been necessary as a protective factor against depression during the COVID-19 pandemic. Moreover, the persons with suspected COVID-19 symptoms had lower levels of physical activity and QoL (Nguyen et al., 2020). Additionally, people with higher scores of healthy diet literacy and healthy eating behaviors had lower scores of fear of COVID-19 (Vu et al., 2021). Therefore, further investigations on the protective effects of nutrition and physical activity on QoL during the pandemic are of interest to unravel these dimensions of health literacy.

Secondly, it may be beneficial for mental health to continue working after the conventional retirement age (Maimaris et al., 2010). The reverse causal hypothesis, on the other hand, postulates that unemployment can result from poor mental health and well-being (Paul & Moser, 2009). In the present study, we also found that the QoL was related to employment status. This finding is in line with Chia and co-workers reporting that greater well-being in older adults, specifically in the meaningfulness of society and personal growth, was associated with employment (Chia & Hartanto, 2021). All notwithstanding, getting a job after a conventional retirement may enhance the quality of life for older persons.

Thirdly, chronic illnesses, such as gastrointestinal disease, rheumatoid arthritis, hypertension, and diabetes, are the leading causes of mortality and degrading QoL (Han et al., 2003). For example, in Greece, adult patients with hypertension and dyslipidemia, medication noncompliance, and more complex treatment plans were associated with lower QoL (Souliotis et al., 2022). In addition, the QoL was down for Asian hypertension patients with complications (renal disease, myocardial infarction, cerebrovascular accident, et cetera) than those without complications (Lolo et al., 2022). Similarly, the QoL of diabetes patients in Northern Thailand was reported to be low to moderate; this can be improved by emphasizing socioeconomic issues, family support, and increasing information about diabetes prevention and care (Tamornpark et al., 2022). Recently, Goyal and Mohanty reported that pain contributed to lower QoL in older adults (Goyal & Mohanty, 2022). Hence, pain-related diseases like gastrointestinal disease and rheumatoid arthritis should also be monitored and improved, particularly during the pandemic.

Lastly, during the COVID-19 pandemic, psychological stress significantly reduced QoL due to long-term social distancing and unnecessary fears (Khorani et al., 2022). In addition, poor QoL can be exacerbated by physical and mobility disabilities (Nanthamongkolchai et al., 2022). Therefore, health professionals can improve the QoL for the aged by health-promoting interventions that maintain and increase physical activity, stress management, and spiritual development (Rakhshani et al., 2014). However, most of our population has an average level of activity in daily living. Therefore, the psychological stress might be due to other factors like working status and chronic illness. In addition, there are limitations to our study. Due to time restrictions during the COVID-19 pandemic, we failed to perform in-depth interviews for more details on the older person's opinions. Furthermore, it should be noted that this study focused only on the population in the Northeastern region of Thailand at a specific time. As a result, it's crucial to exercise caution when giving additional specifics to a more significant number of individuals. Of note, the living situation is another encouraging element. Even though it was not significant after adjusting the confounders, the Chi-square test signified its significant correlation with the QoL. Our finding was in line with the study by Zhou and colleagues (Zhou et al., 2018). The results showed that older adults who live differently in urban and rural locations have different QoL than older adults who live similarly in urban and rural areas. Moreover, older adults living alone in urban areas had a lower quality of life than those living with a spouse or adult children.

In conclusion, our study pinpoints that education levels, ability to read (literacy), health literacy, employment, present illness, and psychological stress are involved with the level of QoL in older adults in the Northeastern region of Thailand. Healthcare professionals must therefore be aware of these population disparities to support QoL. Stress management combined with psychological support intervention is one potential application. Aside from that, getting psychological counseling might help them overcome their current mental health problem.

Further study recommendations

1 Longitudinal study on related factors in the larger older adult population.
2 Psychosocial support from families and social service bodies should be intervened.

Acknowledgments

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