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RESEARCH ARTICLE

Social capital associated with quality of life among late adults and elderly population in the Northeast of Thailand [version 1; peer review: 2 approved with reservations]

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Abstract

Background: Previous studies indicated that social capital (SC) has an influence on quality of life (QOL). However, there are limited studies on how SC might associate with QOL among late adults and elderly in Thailand.

Methods: This cross-sectional study was conducted among 1,148 participants who were identified by multistage random sampling from 4 provinces in the Northeast of Thailand. A self – administered questionnaire was developed and used to assess cognitive social capital (CSC), structural social capital (SSC), accessibility to health services, and socioeconomic status (SES) and QOL. The Generalized Linear Mixed Model (GLMM) was used to determine the association between SC and QOL when controlling for other covariates.

Results: Only 41.03% (95%CI: 38.17 to 43.94) of the participants had good QOL. About half (50.26%) had high level of CSC, whereas only 36.15% had high level of SSC. The multivariate analysis indicated that having high levels of CSC and SSC was associated with good QOL. Other factors that were associated with having good QOL were aged <60 years old, monthly income $\geq$ 15,000 baht, adequate income, adequate physical activity, lived in the municipality, and had high level of accessibility to health services.

Conclusion: Less than half of late adults and elderly had good QOL and high level of SSC. About half had high level of CSC. Both CSC and SSC had influence on QOL as well as gender, age, monthly income, financial status, physical activity, residential area, and accessibility to health services.

Keywords

Social Capital, Quality of Life, Late Adults and Elderly Population, Thailand

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Introduction

Quality of life (QOL) is the extent to which personal perception on comfortable or satisfying of their life in relation to their objectives, expectancy, standards, and concerns. It involves health and happiness, rather than wealth^{1,2}. It includes all interpersonal and social capital (SC)³.

SC is considered an important imperceptible health resource⁴. With growing recognition of the socioeconomic status (SES), and the social determinants of health, SC is now considered more significant to building healthcare systems⁵⁻⁷. SC has been described as a feature of social organization, for instance, norms, reliance and networks that can enhance the performance of community by accommodate coordinated actions⁸. The measuring of SC can maybe provision worthy insights into social networks and also connections that persons and communities have and more importantly, how these networks and connections possible have been utilized to encourage the positive outcomes for the person and the community. In this manner, the measuring of SC might augment our understanding of how persons in the community can work cooperatively to manage their problems and to accomplish their common goals. In addition, previous studies indicated that SC was associated with QOL. Particularly Majid Karimzadeh *et al.* (2013)⁹ indicated that SC is considered as a significant determinant of QOL. This SC is the sum of the actual or potential resources which are linked to a durable network of institutionalized relationships of generalized trustworthiness and active involvement that lead to mutual acquaintance or recognition, which are made up of social obligations or connections. The SC could convertible into economic capital and may be institutionalized in the form of a title of nobility¹⁰. Accessibility to health services can be highly influential on QOL and is related to both health care utilization and health outcomes such as stage at diagnosis and mortality¹¹.

The Northeast of Thailand, the biggest region both in terms of areas and containing one- third of Thailand's 68 million populations. It is the poorest region in the country. Many of Northeastern migrate to work in other regions and overseas. Many of them usually leave family members include elderly at home. This socioeconomic situation might impact people way of life and their SC. The SC is importance in the culture in which they live. The National Bureau of Statistics indicated that SC matters definitely generate impact on QOL in the Northeast of Thailand, demonstrating results that will be applicable to other developing countries in the future.

There have been limited studies on SC among the Northeasterners and its association with QOL. Hence, the aims of this study were to investigate the prevalence and association between the SC and QOL in the Northeast of Thailand. The evidence from this study could be used as inputs for relevant sectors to develop measures in order to improve health and

reduce inequalities in health through healthy public policy and strengthening community actions.

Methods

This cross-sectional study was conducted during June 2016 to September 2017 in the 4 provinces of the Northeast region of Thailand include Loei, Khon Kean, Ubon Ratchathani and Nakhon Ratchasima provinces.

Study participants

The inclusion criteria for participants were those who aged 40 years old or more, have lived in the Northeast of Thailand, could verbally communicate with the researchers and agree to participate with written inform consent. The exclusion criteria were severe impairment and/or having mental illness which limited their communication with the researchers.

The multiple logistic regressions used to identify the associations between multiple independent variables and a dichotomous outcome of QOL being high¹² was used to estimate the sample size. The approximate sample size was 218. In order to control the over-fitting, we used ρ and variance inflation factor (VIF)¹³ which were 0.9 and 5.26, respectively. Therefore, the total number of samples was 1,148.

A multistage random sampling method was used to choose participants of 4 provinces in the Northeast of Thailand, include Loei, Khon Kean, Ubon Ratchathani and Nakhon Ratchasima provinces. Firstly 4 provinces were randomly selected, and then 2 districts of each province were randomly selected namely Wangsaphung, Chiang Khan, Ban Phai, Chum Phae, Mueang Ubon Ratchathani, Det Udom, Phimai, and Sikhio, respectively. Third, three sub-districts from each province were randomly selected namely Pha Bing, Pak Puan, Khok Khamin, That, Chiang Khan, Na Sao, Mueang Phia, Hin Tang, Ban Phai, Wang Hin Lat, Non Sa-at, Nong Phai, Pathum, Rai Noi, Nong Bo, Mueang Det, Som Sa-at, Kaeng, Rang Ka Yai, Nong Rawiang, Bot, Wang Hin Lat, Non Sa-at, Nong Phai, respectively. Therefore 24 sub-districts were included in the study. The fourth stage was random selection of a village in each the sub-district. Then simple random sampling was applied to select 1,148 individuals proportionate to the size of the population to be included in this study. All participants were interviewed face-to-face by trained interviewers. The interview were performed door to door.

Research tools

The research tool was a structured questionnaire which was developed from reviewing literature. The questionnaire underwent content validation by 3 experts and then it was revised to improve validity. The questionnaire was tested for reliability using Conbach alpha amongst 30 participants who had similar characteristics with the samples in Nakhon Phanom province. Its Conbach alpha coefficient was 0.96. The questionnaire consisted

of four parts: (1) socioeconomic (2) social capital; (3) accessibility to health services; and (4) quality of life ([Supplementary File 1](#)).

Assessment of quality of life

QOL was assessed using the Quality of Life scale (WHO-QOL – BREF) of WHO Thai short version¹⁴. It is consisted of 26 items within the 4 domains containing physical, psychological, social relationships and environment domains. The scores are categorized into 3 groups: poor level (26–60 scores), fair level (61–95 scores) and good level (96–130 scores). Since the multiple logistic regression analysis of Hsieh is for the dichotomous outcome¹³. Therefore, in the bivariable and multivariable analysis we dichotomized the QOL as good QOL and poor/fair QOL, using cutoff point of below 96 for poor/fair QOL and 96 or above for good QOL¹⁵.

Social capital measurement

This study applied the concept of cognition and structure SC developed by Bain and Hicks in 1998. Six dimensions of cognition social capital (CSC) were examined in this study consisted of trust, solidarity, reciprocity, attitudes, behavior and social norms. Four dimensions of structure social capital (SSC) were included: horizontal organizational structure, accountability of leaders, collective/transparent decision-making process and practices of collective action and responsibility¹⁶. The response ranged from strongly disagree (1) to strongly agree (5). The SC scores are between 50 and 250. The higher scores reflected greater SC. Since the multiple logistic regression analysis of Hsieh is for the dichotomous outcome¹³. Therefore, in the bivariable and multivariable analysis the scores of cognitive social capital and structural social capital were dichotomized, using the mean as the cutoff point, as low/moderate (<3.68 scores) and high (≥3.68 scores),

Accessibility measurement

The concept of access to health services of Penschansky & Thomas, 1981¹⁷ was utilized in this study. The accessibility to health services was determined in term of individual's satisfaction on health services covering the domains of accessibility, availability, affordability accommodation and acceptability. The scores ranged from strongly disagree to strongly agree (1 to 5 scores). The possible scores ranged 35–175. Higher scores mean higher accessibility. In the associations analysis the mean scores of accessibility to health services were dichotomized since the multiple logistic regression analysis of Hsieh is for the dichotomous outcome¹³, as low/moderate (<3.68 scores) and high (≥3.68 scores).

Socio-economic status (SES) and risk factors

Socio-economic status in this study composed of gender, age, weight, high, educational attainment, marital status, occupation, monthly income, financial status, smoking, alcohol consumption, physical activity, residential area, and chronic diseases were treated as covariates in the analysis.

To minimized information bias, we trained interviewers and standardized the data collection competency in Loei, Khon Kean,

Ubon Ratchathani and Nakhon Ratchasima provinces at our interviewer training workshop organized in Khon Kaen province. After the participants understanding of the purpose of this study and then signed consent informs. They were structured questionnaire interviewed by well-trained and standardized interviewers.

Data analysis

STATA® (ver. 13; College Station, TX, USA: Stata Corp). The categorical data were presents as frequency and percentage whereas the continuous data were explained their magnitude as mean, standard deviation, median, and range.

The GLMM was operated to model the random effects and correlations inside clusters¹⁸ since our study used multistage random sampling methods to choose the participants. In the modeling, the participant residential area was fixed whereas the aged was set as the random effect. Classification of QOL was done using univariable analysis, displayed as percentage of good QOL and its 95% confidence interval (CI).

Bivariable analysis was utilized to define the association of each independent variable with QOL. Any independent variables, in the bivariate analysis that had $p \leq 0.25$ were chosen and continue to the multivariable analysis¹³.

In order to control the random effects and correlations inside clusters, the GLMM were operated before using multiple logistic regressions to determine the association between social capitals, residential area, accessibility to health services, gender, age, monthly income, financial status, and physical activity and QOL while controlling covariates (BMI, marital status, education, smoking, alcohol consumption, chronic disease, and occupation). The final model results presented the magnitude of association of independent variables and QOL were adjusted odds ratio (adjusted OR), and 95% CI.

Ethics statement

This research proposal and tool got approval from the Khon Kaen University Ethics Committee in Human Research, the approval number, HE 602127). Written informed consent was gathered from all participants.

Results

The characteristics and SES of the participants are shown in [Table 1](#). The majority of participants were female (60.63%), married (78.05%), completed elementary school (58.01%), with the average age of 58.36±11.95 years old, live in rural areas (53.48%). As high as 41.81% had average monthly income 5,000 – 15,000, 46.34% were unemployed, 47.3% had adequate income but not saving. Majority were overweight and obesity 54.35%. Most of them did not drink alcohol (75.70%), were not smoking (81.71%), had adequate physical activity (67.86%) Almost one third had chronic disease (32.06%). About half of participants had high cognitive social capital (CSC) (50.26%). Only 36.15% had high level of SSC. About one third (35.28 %) had low level of accessibility to health care services.

Table 1. Characteristics of participants in the Northeast of Thailand (n=1,148).

Characteristics	Number	Percent	95%CI
Gender			
Female	696	60.63	57.73–63.47
Male	452	39.37	36.53–42.27
Age (years)			
40–49	334	29.09	26.48–31.82
50–59	298	25.96	23.44–28.60
60–69	293	25.52	25.52–28.15
70–79	168	14.63	12.64–16.81
≥80	55	4.79	3.63–6.19
Mean±SD	58.36±11.95		
Median (Min:Max)	57 (40:96)		
BMI			
Underweight	67	5.84	4.55–7.35
Normal	457	39.81	36.96–42.71
Overweight	244	21.25	18.92–23.74
Obese	380	33.10	30.38–35.91
Mean±SD	23.64±3.81		
Median (Min:Max)	23.44 (13.15:61.83)		
Marital status			
Single	58	5.05	3.86–6.48
Married	896	78.05	75.41–80.41
Windowed/Divorced/ Separated	194	16.90	14.77–19.19
Education			
Uneducated	39	3.40	2.43–4.62
Elementary school	666	58.01	55.10–60.89
Junior school	82	7.14	5.72–8.79
Senior high school	132	11.50	9.71–13.49
High or vocational Certificate	59	5.14	3.94–6.58
Bachelor's degree or above	170	14.81	12.80–16.70
Monthly income (baht)			
< 5,000	449	39.11	36.28–42.00
5,000–15,000	480	41.81	39.94–44.73
15,001–25,000	78	6.79	5.41–8.41
25,001–35,000	61	5.31	4.09–6.77
35,001–45,000	26	2.26	1.48–3.30
>45,000	54	4.70	3.55–6.09
Mean± SD	11,966.42±17,592.29		
Median (Min:Max)	17,592.29 (500:190,000)		

Characteristics	Number	Percent	95%CI
Occupation			
Trade	121	10.54	8.82–12.46
General hire	148	12.89	11.01–14.97
Government servant	159	13.85	11.90–15.98
Agriculture	188	16.38	14.28–18.65
Unemployed	532	46.34	43.43–49.28
Financial status			
Adequate income with saving	256	22.30	19.92–24.82
Adequate with no saving	544	47.39	44.46–50.32
Inadequate	348	30.31	27.66–33.06
Smoking			
No	938	81.71	73.11–78.15
Yes	210	18.29	16.10–20.65
Alcohol Consumption			
No	869	75.70	73.11–78.15
Yes	279	24.30	21.85–26.89
Physical activity			
Inadequate	369	32.14	29.45–34.93
Adequate	779	67.86	65.07–70.55
Residential area			
Rural areas	614	53.48	50.55–56.40
Sub-district municipality	407	35.46	32.68–38.30
Town Municipality	127	11.06	9.31–13.02
Chronic diseases			
Yes	368	32.06	29.36–34.84
No	780	67.94	65.16–70.64
Cognitive social capital			
Low	17	1.48	0.09–2.36
Moderate	554	48.26	45.33–51.19
High	577	50.26	47.33–53.19
Structural social capital			
Low	29	2.53	16.98–36.08
Moderate	704	61.32	58.44–64.15
High	415	36.15	33.37–39.01
Accessibility to health care services			
Low	405	35.28	32.51–38.12
Moderate	412	35.89	33.11–38.74
High	331	28.83	26.23–31.55

Most of the participant (58.19%) had fair level of QOL followed by good (41.03%) and poor levels (0.78%) (Table 2).

Crude odds ratio obtained from performing bivariate analysis of each factor and QOL

The bivariate analysis revealed that both cognitive and structural social capital had influences on QOL. Other factors including gender, age, education, marital status, education, monthly income, occupation, financial status, physical activity, residential area,

and accessibility to health care services also associated with QOL. The factors with $p < 0.25$ in the bivariable analysis were proceed to the multivariate analysis (Table 3).

Multivariable analysis for associated factors of QOL

MGLMM was performed to control the clustering effect of the sampling method in selecting the participants. The association between multiple independent variables and QOL was determine using multivariate analysis to control the effect of covariates.

Table 2. Number and percentage of quality of life (QOL) among participants in the Northeast of Thailand (n=1,148).

QOL	n	percent	95%CI
Poor level (26-60 scores)	9	0.78	0.36–1.48
Fair level (61-95 scores)	668	58.19	55.27–61.06
Good level (96-130 scores)	471	41.03	38.17–43.94

Table 3. Crude odds ratio obtained from performing bivariate analysis of each factor and quality of life (QOL) (n = 1,148).

Characteristics	% N	% Good QOL	OR	95% CI	P-value
Overall	1,148	41.03		38.17 to 43.94	
Cognitive social capital					<0.001
Low/Moderate	571	23.12	1	-	
High	577	58.75	5.30	4.01 to 7.00	
Structural social capital					<0.001
Low/Moderate	733	29.33	1	-	
High	415	61.69	4.83	3.63 to 6.42	
Accessibility to health care services					<0.001
Low/Moderate	817	34.15	1	-	
High	331	58.01	2.81	2.11 to 3.73	
Residential area					<0.001
Rural , Sub-district municipality	1,021	36.92	1	-	
Town Municipality	127	74.02	5.43	2.53 to 11.64	
Gender					0.005
Female	696	38.36	1	-	
Male	452	45.13	1.45	1.11 to 1.88	
Age (years)					<0.001
≥60	516	29.84	1	-	
<60	632	50.16	2.37	1.57 to 3.57	
BMI					0.914

Characteristics		% N	% Good QOL	OR	95% CI	P-value
	Overweight/obese	624	41.03	1	-	
	Normal/underweight	524	41.03	1.01	0.78 to 1.31	
Marital status						0.007
	Widowed/	252	31.75	1	-	
	Divorced/					
	Separated/Single					
	Married	896	43.64	1.55	1.12 to 2.15	
Education						<0.001
	Lower education	705	28.37	1	-	
	Higher education	443	61.17	2.73	2.02 to 3.70	
Monthly income (baht)						<0.001
	<15,000	889	32.06	1	-	
	≥15,000	259	71.81	4.09	2.80 to 5.97	
Occupation						<0.001
	Unemployed/ General hire/ Agriculture	868	32.72	1	-	
	Government servant/Trade	280	66.79	2.86	2.03 to 4.04	
Financial status						<0.001
	Inadequate	348	24.71	1	-	
	adequate	800	48.13	2.65	1.97 to 3.56	
Smoking						0.883
	Yes	210	38.57	1	-	
	No	938	41.58	1.02	0.74 to 1.42	
Alcohol Consumption						0.732
	Yes	279	45.52	1	-	
	No	869	39.59	0.95	0.71 to 1.27	
Physical activity						<0.001
	Inadequate	779	33.25	1	-	
	Adequate	369	57.45	2.25	1.71 to 2.95	
Chronic diseases						0.146
	Yes	368	35.60	1	-	
	No	780	43.59	1.24	0.93 to 1.65	

The results indicated that high levels of CSC (adj. OR = 2.83; 95%CI: 2.01 to 3.97) and high levels of SSC (adj. OR = 2.64; 95%CI: 1.84 to 3.76) were associated with QOL. Other demographic and socioeconomic factors that were also associated with good QOL were being male (adj. OR = 1.71; 95%CI: 1.27 to 2.31), aged <60 years old (adj. OR = 2.70; 95%CI: 1.72 to 4.24), monthly income ≥15,000 baht (adj. OR = 2.82; 95%CI:

1.89 to 4.23), had adequate income (adj. OR = 2.14; 95%CI: 1.54 to 2.97), lived in the town municipality (adj. OR = 2.52; 95%CI: 1.32 to 4.80). Others associated factors were had adequate physical activity (adj. OR = 1.54; 95%CI: 1.13 to 2.11) was associated with good QOL and had high levels of accessibility to health services (adj. OR = 1.53; 95%CI: 1.10 to 2.12). The results are shown in [Table 4](#).

Table 4. Multivariate analysis for factors associated with good quality of life (QOL) using GLMM (n = 1,148).

Characteristics		% N	% Good QOL	OR	Adj.OR	95% CI	P-value
Cognitive social capital							<0.001
	Low/Moderate	571	23.12	1	1	-	
	High	577	58.75	5.30	2.83	2.01 to 3.97	
Structural social capital							<0.001
	Low/Moderate	733	29.33	1	1		
	High	415	61.69	4.83	2.64	1.84 to 3.76	
Accessibility to health services							<0.001
	Low/Moderate	433	20.55	1	1	-	
	High	331	58.01	5.27	1.53	1.10 to 2.12	
Residential area							0.005
	Sub-district administrative organization/Sub-district municipality	1,021	36.92	1	1	-	
	Town Municipality	127	74.02	2.73	2.52	1.32 to 4.80	
Gender							<0.001
	Female	696	38.36	1	1	-	
	Male	452	45.13	1.45	1.71	1.27 to 2.31	
Age (years)							<0.001
	≥60	516	29.84	1	1	-	
	<60	632	50.16	2.37	2.70	1.72 to 4.24	
Monthly income (baht)							<0.001
	<15,000	889	32.06	1	1	-	
	≥15,000	259	71.81	4.09	2.82	1.89 to 4.23	
Financial status							<0.001
	Inadequate	348	24.71	1	1	-	
	Adequate	800	48.13	2.65	2.14	1.54 to 2.97	
Physical activity							0.007
	Inadequate	779	33.25	1	1	-	
	Adequate	369	57.45	2.25	1.54	1.13 to 2.11	

* Adjusted for the effects of BMI, marital status, education, smoking, alcohol consumption, chronic disease, and occupation

Dataset 1. Social capital associated with quality of life among late adults and elderly population in the Northeast of Thailand

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Zip file containing raw data and word document with coding scheme for the dataset

Discussion

The main finding was discussed according to the objective of the study as follows: QOL measured by the WHOQOL – BREF. Majority of participants (58.19%) had fair level QOL, a followed by good level (41.03%). This finding is similar to evidence indicated in Somrongsong R *et al.*¹⁹ that the majority of

participants (58.19%) were at the “fair level”. These two studies were similar in the way that they were conducted in the Northeast. However, they might share similar social economics factors. However, it was lower than study by Hongthong D *et al*²⁰. Which found that most of the samples (68.5%) had fair level of QOL. This study was conducted among rural settings which might contribute to rather lower level of QOL. About half of participants had high level of CSC and about one third had high level of SSC. It was confirmed by the results of the multivariable analysis that there was significantly association between SSC, CSC and QOL. The participants with high levels of SSC were 2.64 (95% CI: 1.84-3.76) times higher odds of having good QOL. It is possibly because people who participate in political, sports and occupation association or groups may lead to high SSC in term of scope and intenseness of links both within and outside the community. The more social connectedness, political participation, civic engagement they had the more satisfaction with life and relationships were found.

Those with high level of CSC had 2.83 (95%CI: 2.01 to 3.97) times higher QOL than those with lower CSC. A possible explanation for this finding could be the CSC indicates capability of people to obtain various resources of social particular from their family, community, society, and health sectors²¹. People with high CSC are more likely to enthusiastic to find out for information, spiritual contribute networks. They tend to perform with social norms and peer control, could establish trust and be alive with others²²⁻²⁶.

Concerning accessibility to health services, this study indicated that about one-third of participants had chronic diseases within the past year (32.06%). The participants who had better access to health services were 1.53% (95%CI: 1.10-2.12) higher odds of having high QOL. Access health services have intense effect on every aspect of quality of life. Access to quality health services is significant for promoting health, preventing disease, reducing disability and mortality which is a component of QOL.

Residential area also influenced people's QOL. In residential area, the influence of different lifestyles and stages of life have to be taken into account. The findings of this studies indicated that participant who lived in the town municipality had high QOL. This may be because the town municipality has good standard of living, good environmental health, better access to goods and health services, and better economic conditions²⁷.

Our result noted that gender was associated with QOL, of which similar with the evidence found in other studies that QOL was significantly varied with gender^{28,29}. This study has shown that females had significantly poorer QOL when compared with males. Globally, some studied also indicated that females had lower QOL than males³⁰⁻³². It was found that 60.72% and 61.41% of females who reported having lower education and monthly

income, respectively than males, of had lower QOL. In some studies, higher education and income participants usually had higher QOL scores^{30,33}. It is common in some countries that females were less privileged with inaccessibility to information and education resulting in disadvantages for employment, economic status and social position. Even though, women lived longer than men, they were more likely to suffer ill health than men³⁴.

The QOL was significantly lower among participant among older persons³⁰. Moreover, with increasing age, the QOL were decreasing, which was consistent with previous studies showed that elderly individuals suffering from poor QOL³⁵. This study provides further evidence the older the individual, the QOL decreases. As the age advances, the health related problems become more common to a person. Gradually people are more weakening and finally confined to their own houses. Loneliness is commonly present. As age increases, the chance of losing spouse becomes more, loneliness increases to a much greater extent. Therefore, overall the physical and psychological QOL becomes poorer with the advancement of age. Beside this, the social interaction decreases with increased age. So, the social relationship domain of QOL becomes worse³⁶.

This study also indicated that monthly income was associated with QOL. Those who had lower monthly income had lower level of QOL³³. A possible explanation for this finding could be that poverty causes poor health status³⁰. Different in employment status and occupation resulted in different income. Therefore, they would have different social security and health insurance which have influence on their health and wellbeing³². The increase in per capita income indicates better socio-economic status³⁶. An increase in per capita monthly income significantly improved the QOL scores.

A profound association was found between having adequate income and QOL. Participants who were poor with inadequate income faced various problems. Having sufficient income is important to QOL It help covering, meeting the basic needs of life. In addition it also increases the opportunity to participate in social activities to enjoy hobbies, holidays and luxuries³⁷.

Physical activity also had high influence on QOL and has been profoundly discussed in the literature³⁸. In this study active physical activity was associated with QOL. For instance, good QOL was found 1.54 times more among participants who had adequate practiced physical activity.

This study has indicated both the QOL and social capital situations and their association which are highly useful to planning for relevant actions. However, it is important to aware that a limitation of cross-sectional study is that because the exposure and outcome are simultaneously assessed, no causal relationship can be identified. It is important suggestion for a further study

which could identify the causal relationship using other study designs such as a cohort study.

Conclusion

This community based cross sectional found that less than half of late adults and elderly had good QOL and high level of SSC. About half had high level of CSC. Both CSC and SSC had influence on QOL as well as gender, age, monthly income, financial status, physical activity, residential area, and accessibility to health services. Relevant sectors could use the evident from this study to develop proactive strategies and measures to improve health and reducing inequalities in health through healthy public policy and strengthen community actions to improve their social capital, access to health care and socioeconomic status.

Data availability

Dataset 1: Social capital associated with quality of life among late adults and elderly population in the Northeast of Thailand.

Zip file containing raw data and word document with coding scheme for the dataset. [10.5256/f1000research.13954.d201414](https://doi.org/10.5256/f1000research.13954.d201414)³⁹

Competing interests

No competing interests were disclosed.

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The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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Supplementary material

Supplementary File 1 – Questionnaire used in the study.

[Click here to access the data.](#)

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? **Agnes Iok Fong Lam**

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This paper shows the correlation between good quality of life and social capital and some factors like gender, income, and accessibility to health services. It is an analysis of the situation of Northeast of Thailand that can inform policy needs for the community. However, it is worth to point out the following:

The "Introduction" is not comprehensive enough to understand the context, especially for readers outside Thailand. Census information on the population (the Northeast of Thailand, paragraph 2) should be more concise and specific for the denotation like "It is the poorest region in the country." Also, it would be much more convincing if studies are provided to support statements like "many of Northeastern migrate to work in other regions and overseas. Many of them usually leave family members to include the elderly at home." For status like "there have been limited studies on SC among the Northeasterners and its association with QOL," it is expected that to quote a few (like one or two) of these studies and pointed out their relevance to the topic.

The conclusion is sound, and the figures are clearly stated and shown. However, discussion into the context will be necessary — for example, demographic statistics (Table 1. Characteristics of participants in the Northeast of Thailand) shows that the percentage of employed participants that work as "Government servant" is very high, 13.85% out of the total population, it is more than one-quarter of the employed population. In Table 4 (Multivariate analysis for factors associated with good quality of life (QOL) using GLMMT), employment status was not shown as a factor associated with good quality of life. Since "Government servant" is the second largest industry among the survey population, just after agriculture, it would be worth to add some observation over the employment issues even the cross-sectional data analysis shows that employment stats is not significant. Demographic data shows that the studied area has a unique market structure, and the paper needs to elaborate if the result could be applied to the rest of Thailand or some other middle-income developing 's countries.

Is the work clearly and accurately presented and does it cite the current literature?

Partly

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are all the source data underlying the results available to ensure full reproducibility?

Partly

Are the conclusions drawn adequately supported by the results?

Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: communication, media, public policy

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 08 May 2018

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Farid Najafi

Research Center for Environmental Determinants of Health, Kermanshah University of Medical Sciences, Kermanshah, Iran

This is a cross-study on association between social capital and quality of life in Thailand. The justification of study has been provided in "Introduction". However, there are many studies on such associations that authors can cite some of them in Introduction.

While the details of multistage random sampling have been provided, justification for calculated number of participants (second paragraph under the subheading of "study participants") has been written in a wrong way and need to be re-written.

We did not know "Conbach alpha". It might be Cronbach's alpha. Justification for classification of

SC as a dichotomized variable is not correct and sufficient. This is true for accessibility to health service.

The manuscript need severe English language editing service.

The presentation of Tables is understandable and appropriate.

Is the work clearly and accurately presented and does it cite the current literature?

Partly

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

Partly

If applicable, is the statistical analysis and its interpretation appropriate?

Partly

Are all the source data underlying the results available to ensure full reproducibility?

No

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

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