

# COMPARISON OF THE QUALITY OF LIFE OF GENERAL HOSPITAL OUTPATIENTS IN SOUTHWEST CHINA WITH SOUTHERN THAILAND

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**Abstract.** This is a collaborative study comparing the quality of life (QoL) and its predictors between outpatients of university teaching hospitals in southwest China and southern Thailand in terms of different domains of QoL as well as whether socio-economic variables affect the QoL of the two groups of patients to the same extent. Two hundred sixty-one and two hundred forty-eight randomly chosen outpatients were recruited at Chinese and Thai hospitals, respectively, and were interviewed using the SF-36 scale. The QoL of the Chinese patients had a higher adjusted score for 'physical functioning', but the scores for 'role limitations attributed to physical problems and emotional problems' were higher in the Thai patients. Multiple regression analysis showed that sex, marital status, education, family income and residency were predictors of the total QoL score. Age and area had significant interactions with 'country' in the general health domain.

## INTRODUCTION

Since 1995, there has been a rapidly expanding cooperation, in the sustainable socio-economic development, of the countries of the Greater Mekong Basin: Thailand, Lao PDR, Vietnam, Myanmar, Cambodia, and the province of Yunnan, in Southwest China (Mekong River Commission, 2002). As part of this development, two medical schools in the subregion, Kunming Medical College in China and Prince of Songkla University in Thailand, have initiated collaborative research in healthcare. Our study, which focuses on the quality of life (QoL) of medical outpatients, is the first collaborative exercise in this area.

The QoL of the subjects studied is of common interest to China and Thailand, as it reflects the overall health status of local residents and the provision of healthcare for them (Yu *et al*, 2001). These relate to the socio-economic status of the two geographic areas.

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The SF-36 scale was developed for the Medical Outcome Study and has been shown to have good validity and reliability in many countries (Razavi and Gandek, 1998). Several studies (Maor *et al*, 2001; Srisurapanont *et al*, 2001) have confirmed the relationship between QoL and socio-economic status.

The objectives of our study were to explore the relationship between socio-economic variables, as assessed by the SF-36 and its various domains, and to determine whether these variables influence the QoL of patients in China and Thailand. Such knowledge is important for planning further socio-economic and health development.

## MATERIALS AND METHODS

### Ethics

The ethics committee of Kunming Medical College and Prince of Songkla University approved the study. And each respondent gave his or her informed consent to participate in the research.

### Study setting

Patients were selected from those attending the outpatient department of the Second Hospital of Kunming Medical College and Songkla-

nagarind Hospital. The former is situated in Kunming, the capital of Yunnan Province. Songklanagarind Hospital is situated in Hat Yai, the most important commercial city of southern Thailand. The second Hospital of Kunming Medical College, which has 790 beds, serves the city and nearby rural areas of Kunming. Songklanagarind Hospital similarly serves the city and nearby rural areas of Hat Yai. Using the terminology of the respective hospitals, the five most common diseases in Kunming outpatients were acute upper respiratory tract infection, bronchitis, diabetes mellitus, hypertension and peptic ulceration. Those in Hat Yai outpatients were essential hypertension, non-insulin-dependent diabetes mellitus, disorders of lipoprotein metabolism, dyspepsia and chronic renal failure.

### Subjects

Outpatients of both sexes aged 18 or more years and of different socio-economic status (Table 1) were invited to participate in the study. They had a variety of diseases of differing severity. All but the very seriously ill, with diseases such as cancer or stroke, or who had severe injuries, were considered eligible for inclusion.

### Sample size

Previous research has shown that five subjects per item of the SF-36 scale are required for meaningful statistical analysis (Bonevski *et al*, 2000). As the scale contains 36 items we therefore included a minimum of 180 outpatients from each country.

### QoL scale

The SF-36 scale was designed for use in clinical research, health evaluations, and general population surveys. It has been well tested in a variety of subjects with good validity and reliability. It has been translated into many languages (Wagner *et al*, 1998). We used the Chinese (Chonghua, 1999) and Thai (Krittayphong *et al*, 2000) versions of the scale, each of which after translation, was checked against the original English version.

**Data collection.** As Chinese and Thais are generally unfamiliar with acceptable procedures for completing self-administered questionnaires, help was provided by fifth-year medical students

in Kunming and fourth-year university students in Hat Yai. These students were instructed in the purpose of the scale and on what was expected of the respondents. The data were collected in the outpatient-department waiting areas. The students told the patients the purpose of the study, developed a rapport with them, and after obtaining informed consent, helped the patients fill out the questionnaire. This was done by reading out the questions, and when necessary, explaining the meaning of the terms used, while avoiding suggestions as to what the responses should be. The patients themselves marked the relevant numbers on the scale. These were checked for completion by the research assistants. Each interview took approximately 15 minutes.

### Statistical analysis

The data from China and Thailand were evaluated using Epi-data version 2.1 and jointly analysed with Stata version 7.0. The independent variables were the demographic characteristics, including sex, age, occupation, marital status, religion, ethnicity, education, residence (urban or rural), family income (in renminbi; RMB; 1 RMB = 5 Thai baht) and method of payment for medical care. The dependent variables were the total score and the score for each domain of the SF-36 scale.

The distribution of the socio-economic variables in each of the groups was examined. To compare the QoL in the two countries, we used both the crude and adjusted means and standard deviations for each domain in each group. The adjusted means and standard deviations for each domain were computed by the adjust command in Stata 7.0, where all of the socio-economic variables were adjusted for each domain. The Student's *t*-test was used to check for significant differences between the groups based on the crude and adjusted means, standard deviations and sample sizes. To check whether the two study groups shared socio-economic predictors on the SF-36 scale, we used multiple regression analysis, initially plausible interactions between country and socio-economic variables in the model. Backward elimination of the interactions was carried out to retain only the significant interaction terms. When there was

no significant interaction, the coefficient of the socio-economic variables was taken as the common coefficient for both study sites.

## RESULTS

The demographic characteristics of the patients are shown in Table 1. There are significant differences between the two groups in education, economic level, and residence. In Kunming, a higher proportion of the patients received a secondary school education, but had a lower family income. In Kunming, a larger proportion of the patients came from the city rather than from rural areas.

The various domains of the QoL of the subjects are shown Table 2. The QoL of the Kunming patients appears significantly better than that of the Hat Yai patients in physical function (PF), bodily pain (BP), vitality (VT), social function (SF), and total score (TS).

After adjustment for socio-economic variables, the Kunming patients were found to have better physical function only. Role limitation attributed to physical problems and role limitations attributed to emotional problems were significantly higher in the Hat Yai patients.

The effects of the socio-economic variables on each of the QoL domains are shown in Table 3. The coefficients of the variables for the subjects of both countries were combined, except in the cases of age and rural area. Each of the two interaction terms was significantly greater than zero, indicating that the positive effects of age and rural area on general health were significantly greater in Kunming than in Hat Yai. In both areas the total QoL scores for the female and non-single patients were significantly lower than those of the male and single patients.

Education and income were positively associated with higher QoL scores. The positive effect of a rural residence in Kunming was higher than in Hat Yai. Age did not have a significant effect.

## DISCUSSION

We found in the crude analysis that the QoL of Kunming patients was better than the

Table 1  
Demographic characteristics of internal medicine outpatients in Kunming and Hat Yai (%).

Variable	Kunming n=261		Hatyai n=248	
	Number	Percent	Number	Percent
<b>Age</b>				
18-29	68	26.0	37	14.9
30-39	48	18.4	41	16.5
40-49	32	12.3	57	23.0
50-59	53	20.3	51	20.6
60-80	60	23.0	62	25.0
Mean $\pm$ SD	45.6 $\pm$ 16.4		49.1 $\pm$ 15.7	
<b>Sex</b>				
Male	113	43.3	109	62.5
Female	148	56.7	139	37.5
<b>Marital status</b>				
Single	44	16.9	46	18.6
Married	201	77.0	177	71.3
Widow/widower	11	4.2	20	8.1
Divorced	5	1.9	5	2.0
<b>Education</b>				
Never attended school	22	8.4	14	6.3
Primary school	29	11.1	104	40.6
Secondary school	92	35.3	45	9.4
Vocation training	42	16.1	27	15.6
College/University	76	29.1	58	28.1
<b>Occupation</b>				
Farmer	26	10.0	51	20.7
Laborer	37	14.2	36	14.4
Businessman	27	10.3	35	13.7
Student	10	3.8	11	4.3
Civil servant	34	13.0	46	19.9
Retired	88	33.7	22	8.6
Unemployed	10	3.8	14	5.5
Other	29	11.1	33	12.9
<b>Income (RMB: family/month)</b>				
<200	5	1.9	8	3.1
200-	33	12.6	19	7.8
600-	73	28.0	66	26.2
1,200-	81	31.0	42	16.8
>2,000	69	26.5	113	46.1
<b>Area</b>				
Urban	214	82.0	119	48.0
Rural	47	18.0	129	52.0

Hat Yai patients in four domains and in the total score. However, the findings were confounded by the socio-economic differences between the two populations. After adjusting

Table 2  
Comparison of various domains of QoL between outpatients in Kunming and Hat Yai  
(Mean ± Standard deviation).

Domain <sup>a</sup>	Crude			Adjusted <sup>a</sup>		
	Kunming	Hat Yai	p-value	Kunming	Hat Yai	p-value
Physical functioning	27.7 ± 2.6	24.9 ± 4.6	>0.001	27.5 ± 6.0	25.1 ± 6.0	>0.001
Role limitation attributed to physical problems	6.1 ± 1.8	6.3 ± 1.7	0.199	6.0 ± 2.8	6.5 ± 2.7	0.041
Bodily pain	9.2 ± 2.4	8.2 ± 2.7	>0.001	8.9 ± 4.2	8.5 ± 4.2	0.283
General health perception	15.4 ± 4.3	14.7 ± 4.3	0.067	15.4 ± 6.7	14.7 ± 6.7	0.239
Vitality	16.1 ± 3.8	15.4 ± 3.8	0.038	16.3 ± 6.1	15.3 ± 6.1	0.065
Social functioning	8.4 ± 1.7	7.9 ± 1.7	0.001	8.3 ± 2.8	8.0 ± 2.8	0.228
Role limitation attributed to emotional problems	4.8 ± 1.3	4.8 ± 1.2	1.000	4.6 ± 2.1	5.0 ± 2.1	0.032
Mental health	22.1 ± 4.4	22.0 ± 4.3	0.796	21.9 ± 7.0	22.2 ± 7.0	0.629
Total QoL score	109.7 ± 15.7	104.1 ± 17.1	>0.001	108.8 ± 25.9	105.1 ± 25.8	0.107

<sup>a</sup>Mean and standard deviation adjusted for sex, age, occupation, marital status, education, family income and residency.

Table 3  
Multiple regression models predicting domains of QoL from socio-economic variables (coefficient and standard error).

Variable	PF@	RP	BP	GH	VT	SF	RE	MH	TS
Kunming vs Hatyai	2.6/0.5 <sup>b</sup>	-0.3/0.2	0.7/0.4	3.4/1.8 <sup>a</sup>	0.6/0.5	0.5/0.3	-0.1/0.2	-0.4/0.6	4.4/7.0
Female vs male	-0.8/0.3 <sup>a</sup>	-0.3/0.2 <sup>a</sup>	-0.8/0.2 <sup>b</sup>	-2.0/0.4 <sup>b</sup>	-1.6/0.3 <sup>b</sup>	-0.2/0.2	-0.2/0.1	-0.9/0.4 <sup>a</sup>	-6.7/1.4 <sup>b</sup>
Age: ≥30 vs <30	-1.1/0.5 <sup>a</sup>	-0.7/0.2 <sup>b</sup>	-0.4/0.4	0.2/0.7	0.3/0.5	-0.1/0.2	0.1/0.2	1.7/0.6 <sup>b</sup>	2.3/2.7
Non-farmer vs farmer	-0.9/0.5	0.8/0.2 <sup>b</sup>	0.6/0.4	0.6/0.6	0.4/0.5	0.0/0.2	-0.0/0.2	-0.0/0.6	2.2/2.3
Other vs single	-0.8/0.5	0.1/0.2	-0.2/0.4	-1.4/0.6 <sup>a</sup>	-1.5/0.5 <sup>b</sup>	-0.2/0.3	-0.2/0.2	-1.1/0.6	-4.9/2.3 <sup>b</sup>
Other vs buddhist	0.2/0.5	-0.1/0.2	0.1/0.4	0.1/0.6	0.0/0.5	0.0/0.2	-0.1/0.2	0.6/0.6	1.0/2.2
Other vs illiteracy	1.8/0.7 <sup>b</sup>	0.6/0.3 <sup>a</sup>	0.7/0.5	1.7/0.7 <sup>a</sup>	1.5/0.7 <sup>a</sup>	-0.1/0.3	0.1/0.2	1.1/0.8	7.1/2.9 <sup>a</sup>
Family income:									
≥200 vs <200	1.5/1.0	0.8/0.5	1.4/0.7	1.0/1.1	2.3/1.1 <sup>a</sup>	1.0/0.5	0.7/0.4	1.8/1.2	10.0/4.5 <sup>a</sup>
Other vs pay by self	-0.1/0.3	-0.1/0.2	0.1/0.2	0.2/0.4	0.3/0.4	-0.1/0.2	0.2/0.1	0.9/0.4	2.0/1.5
Rural vs urban	-0.0/0.4	-0.2/0.2	-0.5/0.3	-1.2/0.5 <sup>a</sup>	-0.4/0.4	-0.2/0.2	-0.2/0.1	-0.9/0.5	-5.4/2.0 <sup>b</sup>
Kunming x age≥30 <sup>c</sup>	-	-	-	0.1/0.0 <sup>b</sup>	-	-	-	-	-0.2/0.1
Kunming x rural <sup>d</sup>	-	-	-	1.8/0.9 <sup>a</sup>	-	-	-	-	7.0/3.4 <sup>a</sup>
Constant	24.5/1.4 <sup>b</sup>	5.1/0.7 <sup>b</sup>	6.9/1.0 <sup>b</sup>	13.3/1.9 <sup>b</sup>	13.3/1.5 <sup>b</sup>	7.5/0.7 <sup>b</sup>	4.2/0.5 <sup>b</sup>	19.2/1.7 <sup>b</sup>	94.3/7.6 <sup>b</sup>

@ PF: Physical functioning; RP: Role limitation attributed to physical problems; BP: Bodily pain; GH: General health perception; VT: Vitality; SF: Social functioning; RE: Role limitation attributed to emotional problems; MH: Mental health. TS: Total score for SF-36 scale; <sup>a</sup>p<0.05 and <sup>b</sup>p <0.01 for Wald's test of different mean against the referent categories; <sup>c</sup>p <0.05 and <sup>d</sup>p <0.01 for test of interaction terms between Kunming and age, and Kunming and area, respectively.

for these, the QoL of the Kunming patients was shown to be better for physical function only, whereas the QoL for the Hat Yai patients was better for both the role limitation attributed to the physical problems and the emotional prob-

lems. The differences in the scores are small, but if extrapolated to the wider populations of Kunming and Hatyai, could have important implications. Because of a shortage of finances, manpower, and other resources, we were un-

able to carry out an extensive study as we would have liked. As a result, we cannot be sure if our results were influenced by differences in the types and/or severity of the illnesses that the patients had, differences in the current and prior treatment received, or differences in the hospital referral system. For these reasons, the interpretation and implications of our findings must remain speculative.

There are a number of possible reasons for the apparent differences between the Kunming and Hat Yai patients. A lower level of socio-economic development in many communities may result in greater physical activity. Residents within such a community may not be able to afford public transportation, so they may walk or cycle to work, with the health benefits that such activities bring.

It is also likely that there are different patterns of indigenous diseases in the two communities, which may be related to different phases of socio-economic transition. Yunnan is one of the least developing regions of China, whereas the south is a developed part of Thailand. A lower level of development is associated with a higher prevalence of endemic infectious diseases (Hanson and Kibuga, 2000), while a more highly developed country has a higher prevalence of degenerative diseases, such as the metabolic syndrome (Egwaga, 2003).

Another factor that has to be considered is the 30-baht health policy introduced by the Thai government in 2001 (Phaosavasdi *et al*, 2001). For a charge of only 30 Baht (US\$0.75), poor patients are able to see a doctor as soon as they feel ill. Earlier treatment due to removal of this financial barrier can result in better overall health care and thus a higher QoL. In our study, we found no evidence to support this. In our multiple regression analysis, most independent variables, except religion and the payment system, were shown to be predictors of QoL scores in one or more domains. This is consistent with the results of previous studies. Our results show that, after adjustment for other variables, women have a poorer QoL in all domains than men. This is consistent for both Kunming and Hat Yai populations. Sex differences in the QoL can be biological (Osborne *et al*, 1998) and/or so-

cial (Shmueli, 2003) in origin. The latter being due to poorer nutrition, education, or health care (Brzyski, 2001).

Single patients in our study had significantly higher scores on general health perception and vitality components of the QoL scale than the subjects who were married or widowed. This could be due to differences in lifestyle and attitude.

We found the QoL of literate patients was better than that of illiterate subjects in four domains: physical functioning, role limitation attributed to physical problem, general health perception, and vitality. Assuming a causal connection suggests that increased investment in the education of a community is likely to have a positive effect on health in that community. We found a higher family income was associated with QoL in the vitality domain and in the total score. The effect of income thus appears to be lower than the effect of education on the QoL.

Patients from rural areas had a lower general health perception and total score than those from urban areas. This association, like that with age, was significantly associated with the hospital in which the patients were treated. Patients in Kunming had higher general health perception scores than those in Hat Yai. The effect of aging was smaller in Kunming than in Hat Yai, as the interaction between Kunming and age was significantly positive. The effects of rural area on general health perception and in total score were smaller for Kunming, as the relationship between Kunming and rural was significantly positive.

The apparent rural-urban differences could be due to the differences in the hospital catchment areas and referral systems. Since there is a relatively good transportation in southern Thailand, the catchment area for the hospital was larger than for Kunming. The residents were from a larger rural area and were more easily able to go to the hospital for treatment (Li *et al*, 2001).

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