

# RELATIONSHIP BETWEEN ACTIVE INFORMATION EXCHANGE AND THE QUALITY OF LIFE (QOL) OF WOMEN LIVING IN LAO PEOPLE'S DEMOCRATIC REPUBLIC

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**Abstract.** Information exchange is popular among local Laotian women where the infrastructure is insufficient and health interventions often use existing local networks or information exchanges. In this study, we explored the relationship between quality of life (QOL) among Laotian women and their active or passive relationship with their neighborhood. A total of 666 households were randomly selected in four villages in Vientiane Capital. The housewife or equivalent in each household was asked for both face-to-face interview and self-administered questionnaire regarding her health condition and communication over the past four weeks. A Lao translation of the brief version of the World Health Organization QOL questionnaire (WHOQOL-BREF) was used to measure the subjects' health-related QOL scores. The participants were divided into active and passive communication groups based on their information exchange style. The WHOQOL-BREF scores were compared between the two groups. The active communication group had significantly higher QOL scores compared with the passive communication group ( $3.44 \pm 0.36$  vs  $3.35 \pm 0.36$ ; mean  $\pm$  standard deviation,  $p=0.003$ ). The statistical significance remained unchanged ( $p=0.037$ ) even after adjusting for age, education, occupation, and illness. In a multiple regression analysis, the standardized regression coefficient for communication style was the third largest (0.081), following education (0.189) and occupation (0.086). In conclusion, QOL related to individual health was associated with active communication among women. Besides the effects of education and occupation, QOL can be affected by active communication. Further study regarding the association between social capital and network analysis is needed.

**Keywords:** health communication, health education, information exchange, neighborhood, social network, social support, WHOQOL-BREF, Lao PDR

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## INTRODUCTION

Information is often exchanged through daily communications using neighborhood networks in a community.

Important information, social support, and knowledge are often transmitted through neighborhood networks (Finfgeld-Connett, 2005; Jung *et al*, 2013). In the literature, the concept of health information exchange mostly focuses on the relationship between health services and the public; however, information exchange between individuals regarding health at various levels has been regarded as an important issue in terms of community building (Kretzmann and McKnight, 1997, 1998), and as important in improving the health of individuals in a community.

Lao People's Democratic Republic (Lao PDR) is a landlocked country in central Southeast Asia with a population of approximately 6 million and one of the least developed countries in the world (UNCTAD, 2013). Although the health situation is improving due to efforts aimed at achieving the Millennium Development Goals (WHO, 2012, 2103), health services and health education are lacking. Many organizations inside and outside the country have implemented health interventions to improve health status.

Information exchange is popular among residents, especially local Laotian women, because the infrastructure is insufficient. Existing local networks or information exchanges have often been used as a health intervention. However, data related to individual health and information exchange among residents and local women in Lao PDR has not been reported; therefore, what elements of information have an impact on their health remain unclear. A lack of evidence exists regarding whether health intervention via information exchange is associated with individual health in an existing resident organization of a developing country such as Lao PDR.

Social ties and networks are known to promote the health of local residents (Berkman and Kawachi, 2000). Abundant personal networks between neighborhoods and support from others can exert a positive effect on individual health as measured by quality of life (QOL), well-being, and self-rated health scores (Nilsson *et al*, 2006; Shin *et al*, 2008; Mohnen *et al*, 2011, 2012, 2013; Aminzadeh *et al*, 2013; Cramm *et al*, 2013; Kobayashi *et al*, 2013; Soares *et al*, 2013), although several issues regarding the negative impact of social interaction have been raised (Prentice, 2006; Christakis and Fowler 2007; Poortinga *et al*, 2007; Christakis and Fowler, 2013; Vyncke *et al*, 2013).

As indicated in the literature, the impact of neighborhoods and social networks may be significant with either positive or negative effects on the health of individuals. Social support, including informational support, is always intended (by the sender) to be helpful, in contrast to intentional negative interaction (Glanz *et al*, 2008). Social support including informational support may contribute to improvement in residents' health. Moreover, as suggested by the widely applied PRECEDE-PROCEED model and empowerment approach for health promotion, the active participation of residents in the intervention encourages self-determination and promotes effective results (Cargo *et al*, 2003; Green and Kreuter 2004; Glanz *et al*, 2008; Nadrian *et al*, 2011; Kwon *et al*, 2012). A previous study regarding 'social support' reported that not passive (support receiver) but active practice (support provider) positively affected an individual's health-related QOL (Kim *et al*, 2000).

In health education and other health-promoting activities, existing resident organizations or networks have been used

to assess effective impact; although the informant and recipient roles have not been considered. According to the above literature, health outcomes can potentially be affected by whether the informational support within a neighborhood is active or passive. Therefore, in this study, we explored whether the QOL of Laotian women living in a community differed based on their active or passive relationships within their neighborhoods. Knowing the difference between passive and active communication for information exchange and its effect on health may contribute to the utilization of limited medicines.

## MATERIALS AND METHODS

### Population and study design

This was a cross sectional study using both face-to-face interviews and a self-administered questionnaire. The investigation was conducted in December of 2007, in four suburban villages of Vientiane Capital, Lao PDR.

The villages had a population of approximately 2,000 (350 households) and were similar in size and environment. All of the households were selected with the cooperation of the village heads, and 166 of 167 households were selected using a random number table in each village. Ultimately, a total of 666 households were selected. The housewife or equivalent in each household was chosen for the investigation.

### Measures

Two measures were used in this study. The first was a two-item question regarding health-related information exchange. The participants were questioned about whether they had asked neighbors and whether neighbors had asked them about health-related issues during the

past 4 weeks. The questions for measuring information exchange regarding health between neighborhoods were originally developed drawing on a literature review and expert opinion (Ziersh *et al*, 2005; Glanz *et al*, 2008; Fujisawa *et al*, 2009).

Each question was answered by 'Yes' or 'No' and the answers were categorized into four groups: 'Yes/Yes' (interactive), 'Yes/No' (only from participants), 'No/Yes' (only from neighbors), and 'No/No' (no communication). The participants were divided into active and passive communication groups based on their information exchange style. Those who communicated 'interactively' and 'only from participants' were assigned to the active communication group while those subjects who received communication 'only from neighbors' or did 'not communicate' interactively were assigned to the passive communication group.

The second measure was a brief version of the WHO QOL instrument (WHO-QOL-BREF) developed to be a cross-culturally applicable tool for the subjective evaluation of health-related QOL in 1997 (WHO, 1996, 1998) as a shortened version of the WHOQOL-100 (Kuyken *et al*, 1995). The WHOQOL-BREF consists of 26 items, including two general questions and four domains: physical, psychological, social relationship, and environmental.

Each question has five answer choices and a higher score indicates a better QOL. The WHOQOL-BREF was self-administered by the respondents, but occasionally an experienced interviewer assisted in administering the instrument by reading items (for example, in cases when self-completion was not possible, usually due to illiteracy or disability) (Skevington *et al*, 2004).

The WHOQOL-BREF, which is avail-

able in several languages, can be used to satisfy measurement requirements for certain diseases (Tsutsumi *et al*, 2006; Gureje *et al*, 2008; Liang *et al*, 2009; Hill *et al*, 2010), and its usefulness has been verified globally. The WHOQOL-BREF Lao version used in this study was translated from the English version. Two independent bilingual translators conducted translation and back-translation, and three people verified a final check. A pretest of the WHOQOL-BREF Lao version was administered to 53 local women in a different area (Cronbach's  $\alpha = 0.74$ ), and then the translated version was adjusted. Cronbach's  $\alpha$  for the final version was 0.81.

### Statistical analysis

The data were entered twice by two independent researchers, and a third independent researcher confirmed mismatched data. Incomplete answers in the questionnaire were regarded as missing data (total = 17 missing data). The WHOQOL-BREF scores were compared between the two groups by Student's *t*-test and a multiple regression analysis using age, educational background, occupation, and current health condition as covariates. The association between the covariates and the two communication groups was examined using Student's *t*-test and chi-square test. Covariates in the multiple regression analysis were selected based on a simple correlation to the WHOQOL-BREF.

A multiple regression analysis was performed in the three models based on the difference in input number of the adjustment covariates. In Model 1, age and health condition were used as covariates; education was added to Model 2, and occupation was added to Model 3 (final model). SPSS® (version 16; SPSS, Tokyo, Japan, 2007) was used for all statistical

analyses; the significance level was set at 0.05 (two-tailed).

### Ethical considerations

Before beginning this study, formal approval was obtained from the National Ethics Committee for Health Research in Lao PDR (Ref N° 043/NECHR; 2005 Oct 31), and additional approval was obtained from the Ethics Committee of Faculty of Medicine, Teikyo University, Tokyo, Japan for the data analysis (Ref No. Teirin 13-40; 2013 Oct 19). Before conducting the field survey, we explained to each participant orally and in writing that the answers would not be forced and the survey was not to their disadvantage. Written approval was obtained; four subjects chose not to participate. There was no conflict of interest in this study.

## RESULTS

### Basic characteristics

Each interview was conducted using a questionnaire by two trained interviewers, and a reciprocal check was performed during the interview. When the participants had difficulty answering, the interviewer provided support by reading the question out loud to minimize missing data. Two hundred fifty-three respondents completed the questionnaire; 197 required assistance for all items, and 207 needed partial help.

Six hundred forty-five participants were included in the analysis, excluding 17 participants with missing data and four participants who refused to answer the two measurements. Table 1 describes the basic respondent characteristics. The average age of the participants was nearly equal between the active and passive communication groups.

Regarding educational background,

Table 1  
Basic characteristics of 645 women in Vientiane Capital.

Variables	Total (N = 645)		Active communication group (n = 326)		Passive communication group (n = 319)		p-value <sup>a</sup>
	n	%	n	%	n	%	
Age, years, mean (SD)	38.7	(11.7)	38.7	(10.9)	38.6	(12.5)	0.946
Education							
Secondary or higher (> 5 years)	325	50.4	182	55.8	143	44.8	0.005
Primary or lower (≤ 5 years)	320	49.6	144	44.2	176	55.2	
Occupation							
Salaried worker or self-employed	522	80.9	277	85.0	245	76.8	<0.001
Farmer or no occupation	123	19.1	49	15.0	74	23.2	
Health condition							
Healthy	463	71.8	232	71.2	231	72.4	0.725
Currently ill <sup>b</sup>	182	28.2	94	28.8	88	27.6	

<sup>a</sup>Analysis using Student's *t*-test (age) or chi-square test (other variables) between the two communication groups (two-tailed).

<sup>b</sup>"Currently ill" was self-reported as any physical or psychiatric discomfort, including mild symptoms.

Table 2  
WHOQOL-BREF scores according to health communication style (N = 645).

WHOQOL-BREF scores, mean (SD); score range, 0-5	Active communication (n = 326)			Passive communication (n = 319)			p-value <sup>a</sup>
	Total	Subgroups		Total	Subgroups		
		Interactive	Only from participants		None	Only from others	
Total scores	3.44 (0.36)	3.44 (0.37)	3.45 (0.34)	3.36 (0.36)	3.36 (0.37)	3.28 (0.43)	0.003
Physical	3.45 (0.47)	3.43 (0.46)	3.50 (0.50)	3.33 (0.47)	3.34 (0.46)	3.29 (0.53)	0.002
Psychological	3.47 (0.51)	3.47 (0.51)	3.46 (0.50)	3.40 (0.49)	3.40 (0.50)	3.28 (0.55)	0.042
Social	3.66 (0.54)	3.64 (0.55)	3.72 (0.51)	3.51 (0.52)	3.52 (0.52)	3.42 (0.55)	<0.001
Environmental	3.32 (0.42)	3.33 (0.44)	3.30 (0.37)	3.28 (0.46)	3.28 (0.45)	3.25 (0.54)	0.268

<sup>a</sup>Comparison between the active and passive communication groups by Student's *t*-test (two-tailed).

Table 3  
Variables associated with the WHOQOL-BREF total score (N = 645): results of multiple regression analysis.

Exploratory variables	Model 1		Model 2		Model 3	
	Standardized regression coefficient	p-value	Standardized regression coefficient	p-value	Standardized regression coefficient	p-value
Health communication style (1=active, 0=passive)	0.117	0.003	0.093	0.015	0.081	0.037
Age, years	-0.121	0.003	-0.035	0.417	-0.035	0.412
Health condition (1=healthy, 0=current ill)	-0.050	0.215	-0.038	0.335	0.036	0.355
Education (1=secondary or higher, 0=primary or lower)	-	-	0.210	<0.001	0.189	<0.001
Occupation (1=employee, 0=farmer or no occupation)	-	-	-	-	0.086	0.030

'secondary school or higher' was significantly greater in the active communication group than in the passive communication group. In the occupation category, the percentage of salaried workers and self-employed people was significantly higher in the active communication group than in the passive communication group. Regarding current health condition at the time of the study, the percentage of participants who answered 'healthy' was not significantly different comparing active and passive communication groups.

Although not listed in Table 1, the ethnic composition was 96.4% lowland Lao, which was not significantly different between the two groups. In the average WHOQOL-BREF total QOL scores, according to the basic characteristics, significant differences were observed in 'occupation' and 'educational background.' Concerning 'education,' the average WHOQOL-BREF total scores were 3.48 for 'secondary or higher' and 3.31 for 'primary or lower' ( $p < 0.001$ ). Regarding 'occupation,' the scores were 3.43 for salaried workers and 3.27 for farmers or those with no occupation ( $p < 0.001$ ).

#### **Verification of the influence of communication style**

Table 2 shows the results of a univariate analysis of the differences in WHOQOL-BREF scores between the two groups of communication style. The active communication group had significantly higher WHOQOL-BREF total scores compared with the passive communication group. Concerning the four subscales on the WHOQOL-BREF, the active communication group had significantly higher scores in the physical, psychological, and social domains compared with the passive communication group.

The significant differences in the

WHOQOL-BREF total scores between the two groups of communication style were consistently observed by three models of multiple regression analysis (Table 3). Statistical significance was observed ( $p = 0.037$ ), even after adjusting for age, education, occupation, and health condition (Model 3). The standardized regression coefficient of communication style was the third largest (0.081), following education (0.189) and occupation (0.086).

#### **DISCUSSION**

In this study, active information exchange was closely associated with the health-related QOL of women living in the suburban area of Vientiane, Lao PDR, even after adjusting for the independent effects of educational background and occupation. The strong association of health-related QOL with education or occupation in this study was reasonable, because educational background and occupation are known to affect health or health-related QOL (Berkman and Kawachi, 2000; Link *et al*, 2008; Ng *et al*, 2010). However, educational background and occupational changes are often difficult after becoming an adult. Conversely, the influence of active information exchange on individual QOL scores is considered a relatively easily changeable element, although people may have a lower educational background or occupational status.

In this study, the QOL scores were not significantly different between 'interactive' and 'only from participants' within the active group and between 'none' and 'only from neighbors' within the passive group. As a result, our group categorization of active and passive communication style appears to be adequate. Interestingly, the average QOL scores in the 'only from participants' group was almost identical

to or higher than that in the 'interactive' group. The importance of having interactive communication in a community was shown previously (Mahmud *et al*, 2013), and our results indicate the importance of asking someone about health issues regardless of the neighborhood population.

Health promotion and health education often utilize costly methods such as the media. A representative for residents with a specific role may be useful; however, implementing this concept can be difficult due to such problems as sustainability, continuity of motivation, limited skills, and recognition and acceptance from the villagers (Nkonki *et al*, 2011; Pallas *et al*, 2013; Vichayanrat *et al*, 2013). Therefore, it may possibly be more useful to strengthen existing resident-based information networks in which residents are interested in health and actively ask neighbors regarding their health rather than utilizing costly media outlets or controversial representatives.

These alternative strategies for active health communication may contribute to better health promotion and health education outcomes. Our results are important because of the possibility of changing the paradigm of intervention for health education, which is currently not very effective. When promoting active information exchange, changing only the methodology without monetary costs such as the use of media is needed. Changing the purpose and theme of health education, such as the type of disease, disease prevention method, or health-seeking behaviors, are not necessary. Effective implementation of health interventions based on evidence is important for improving the efficiency of limited medical resources and effectively using the valuable funds contributed by foreign nations.

The present study has several limitations. Because of the cross sectional study design, a possibility of reverse causation exists in that women with a better QOL were more willing to engage in active communication regarding their health; this should be confirmed in a larger cohort study or randomized control study. Another limitation is the lack of information regarding socioeconomic status (SES), such as income status and measured health outcomes, including blood pressure and body weight. However, self-rated health and QOL are significantly associated with actual health outcomes (Idler and Benyamini, 1997). Although income inequality affects health (Brennan *et al*, 2009; Nejhad *et al*, 2013), the variables used in the multiple regression analysis in this study (educational background and occupation) were the main measures of SES; therefore, overall economic disparity was adequately reflected in this study.

Finally, differences in the QOL scores based on social dimensions among the four villages are possible; however, each village was similar in size and environment. Additional studies should be conducted to assess the influence of daily communication regardless of health topics to clarify the impact of active communication unrelated to health. In addition, when considering information exchange as part of a larger context of the social capital, analyses of social capital and networks are needed to improve the health of individuals and their community.

In conclusion, QOL related to individual health may be associated with active communication in Laotian women living in a community. In addition to the effects of education and occupation, improvement in the QOL of individuals through active information exchange remains



possible; therefore, a simple action such as asking a neighbor health-related questions can contribute to the improvement and maintenance of one's health-related QOL. Further study is needed regarding the causal relationship between active health communication and QOL and the association of social capital and networks with QOL.

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