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Correlates of Health-Related Quality of Life Among Korean Immigrant Elders

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Abstract

Health-related quality of life (HRQOL) is a key clinical outcome, particularly for individuals with chronic conditions such as hypertension (HTN). While no previous research has examined contributors to HRQOL among Asian Americans in the United States, this study was conducted to identify correlates of HRQOL in hypertensive Korean immigrant elders (≥ 60 years of age) to address the gap. A total of 440 Korean elders with HTN participated in the study. The hierarchical regression model for HRQOL explained 32.8% of the variance. Female gender ($\beta = .109, p = .036$), a greater number of comorbid conditions ($\beta = .183, p = .000$), lower social support ($\beta = -.240, p = .000$), and greater depressive symptoms ($\beta = .402, p = .000$) were associated with poorer HRQOL. Depression was the most potent correlate of HRQOL among elderly Korean Americans (KA) with HTN. Future intervention should consider managing depression as an essential component of comprehensive HTN care for this minority population.

Keywords

health-related quality of life (HRQOL); hypertension (HTN); depression; elderly; Korean Americans (KA)

Introduction

Health-related quality of life (HRQOL) describes a person's general well-being, which encompasses biophysical and psychological factors, symptoms, functioning, and general health perceptions (Trevisol, Moreira, Kerkhoff, Fuchs, & Fuchs, 2011; Wilson & Cleary, 1995). HRQOL is an important clinical outcome—particularly for individuals with chronic conditions such as hypertension (HTN)—which affects more than one in four adults in the United States and worldwide. According to a survey of 8,303 adults in the United States

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Declaration of Conflicting Interests

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(Hayes, Denny, Keenan, Croft, & Greenlund, 2008), individuals with HTN are more likely to report poor HRQOL than are those without HTN. Similarly, elderly patients with HTN report worse HRQOL compared to those without HTN (Banegas et al., 2007). In turn, studies have revealed that poor HRQOL results in poor adherence to medication taking (Holt, Muntner, Joyce, Webber, & Krousel-Wood, 2010) and poor HTN control (Ogunlana, Adedokun, Dairo, & Odunaiya, 2009).

Several studies have reported correlates of HRQOL among the elderly with HTN. In these studies, depression, and certain demographic- and disease-related characteristics (e.g., older age, female gender, HTN medication, comorbidity) were associated with poor HRQOL (Heyworth, Hazell, Linehan, & Frank, 2009; Holt et al., 2010; Michalsen et al., 2001; Rueda & Pérez-García, 2006; Ucan & Ovayolu, 2010). In particular, depression has been a consistent risk factor for poor HRQOL in patients with HTN (Heyworth et al., 2009; Holt et al., 2010; Michalsen et al., 2001; Rueda & Pérez-García, 2006; Ucan & Ovayolu, 2010). Few studies indicate that social support may play a protective role in promoting HRQOL in the presence of depressive symptoms. For example, Strine et al. (2009) found that a feeling of inadequate social support was associated with depression and poor HRQOL. Likewise, Huang et al. (2010) presented that higher social support was significantly less likely to improve depression than those without social support among chronic heart disease patients. One study suggested social support as a possible modifiable risk factor for HRQOL among elderly with HTN (Michalsen et al., 2001). While these studies offer some insights as to potential contributors to HRQOL among elderly, to the best of our knowledge, no previous study looked specifically at potential contributors to HRQOL among Asian immigrant elders with HTN. We found one study (Mui et al., 2007) in which HRQOL among Korean immigrant elderly was compared with the U.S. population norms for SF-36; however, the study did not specifically look at HTN patients, nor did it investigate correlates of HRQOL.

Korean American (KA) elderly are predominantly first-generation immigrants (U.S. Census Bureau, 2009). A previous epidemiological study has shown a higher prevalence of HTN (32% vs. 29%) among KAs (M. T. Kim, Kim, Juon, & Hill, 2000) than in the general U.S. population (Hayes et al., 2008). The rate was particularly high among KA elderly, when compared to that of Chinese American elderly of the same age (71% vs. 53%; Hsu, Mao, & Wey, 2010; M. T. Kim, Juon, Hill, Post, & Kim, 2001). In the case of underserved populations such as KA elderly who have limited resources and network for support, it is important to identify the possible mechanism(s) by which HRQOL can be promoted, particularly among those who are at risk for poor HRQOL. To this end, the aim of this study was to identify correlates of HRQOL, with a particular focus on social support and depression. We hypothesized that social support would positively correlate with HRQOL whereas depression would have an inverse relationship with HRQOL in KA elders with HTN.

Method

Study Design and Participants

Baseline data were obtained from a community-based, randomized clinical trial designed to promote HTN control among KA elderly in the Baltimore-Washington Metropolitan Area.

Potential participants were identified via announcements at ethnic churches and senior centers in the target region. Eligibility criteria were: (a) self-identified as a first-generation KA, (b) 60 years of age, (c) systolic blood pressure (BP) \geq 140 mmHg and/or diastolic BP \geq 90 mmHg or on antihypertensive medication, and (d) no cognitive impairment, based on the Korean version of Mini-Mental State Exam (K-MMSE; Kang, Na, & Han, 1997). A total of 440 eligible participants completed the baseline assessment and were included in this analysis.

Procedure

After all study procedures were approved by the Institutional Review Board, eligible KA elderly who agreed to participate in this study were assessed at baseline via face-to-face interview by trained bilingual research staff. Participants needed about 40 to 50 min to complete the questionnaire. Body weight, height, and BP were also measured. BP was measured three times using the A&D UA-767 (A&D Company, Ltd, Tokyo, Japan) according to published guidelines (Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure, 2003). All three readings were taken after the participant had been seated for 5 min. Baseline BP was calculated by averaging the second and third readings. BP control was defined as blood pressure $<$ 140/90 mm Hg (Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure, 2003).

Measures

The baseline survey included questions about demographic characteristics which were all self-reported, such as age, gender, years of education, years in the United States, and disease-related factors (e.g., years of HTN, antihypertensive medication, and comorbidity). In addition, several established instruments were used to measure psychosocial variables and HRQOL in the study sample. Every study instrument, including the study questionnaire, was made available in Korean because all of our study participants were monolingual.

Social support was measured by the Personal Resource Questionnaire (PRQ) 85-Part 2 (Weinert, 1987), a 25-item, 7-point (1–7) Likert-type scale. A higher score indicates a higher level of perceived social support. The PRQ 85-Part 2 has been validated in KAs with the original scale developer (H. R. Han, Kim, & Weinert, 2002). The alpha coefficient of the scale was 0.91 in this sample.

The severity of depressive symptoms was measured using the Patient Health Questionnaire (PHQ)-9 (Kroenke, Spitzer, & Williams, 2001). The PHQ-9 is based on the *Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV)*, and has nine items scored from 0 (*not at all*) to 3 (*nearly every day*). Participants were asked whether they experienced any symptom(s) over the past 2 weeks. Total scores range from 0 to 27. KA elderly were categorized as having depressive symptoms when the PHQ-9 score was \geq 5 (Kroenke et al., 2001). The validity and reliability of the PHQ-9 have been reported in primary care and obstetrical and gynecological patients (Kroenke et al., 2001) and Korean elders (Donnelly & Kim, 2008; C. Han et al., 2008). The alpha coefficient of the scale was 0.80 in the KA sample.

HRQOL was assessed by using a modified version of the HTN Battery of Scales-Reduced Version, which was designed to measure HRQOL in adults with HTN (Nelsen, Himmelberger, Morrison, Berger, & Markson, 1999). It consists of 40 items, including psychological well-being (7 items) and symptom bother (33 items) domains. Psychological well-being items (e.g., “During the last month, were you generally tense or did you feel any tension?”) are scored on a 6-point Likert-type scale (e.g., 1 = “*I never felt tense or any tension*” to 6 = “*Yes, extremely tense, most of time*”), while the symptom bother scale includes 1 = yes or 0 = no responses. Total scores can range from 7 to 40 for the psychological well-being subscale and from 0 to 33 for the symptom bother subscale, with a higher score indicating lower HRQOL. The HRQOL instrument has been validated (Nelsen et al., 1999). The original English version was translated into Korean and then back-translated into English. We used an expert panel to confirm content validity of the translated version. The alpha coefficient of the translated version was 0.84 in the KA elderly.

Data Analysis

Descriptive statistics, including means, standard deviation, and percentages, were used to summarize the study variables. Pearson’s correlation coefficients were computed to examine the relationships between study variables. Hierarchical regression was conducted to examine the significant contribution of each group of variables in explaining HRQOL. Age, gender, years of education, and length of stay in the United States were entered as covariates in the first step. In Step 2, disease-related factors—including years of HTN, antihypertensive medication taking status, comorbidity, BP control—were entered into the regression model, followed by psychosocial variables (social support and depression) in Step 3. All analyses were 2-tailed; p values $< .05$ were considered statistically significant.

Results

Sample Characteristics

Table 1 summarizes the characteristics of the sample. The mean age of the participants was 70.9 (± 5.5) years, with the majority being female (69.5%). The participants had an average of 11.1 (± 4.3) years of education and had lived in the United States for 24.1 (± 11.0) years. The mean duration of HTN diagnosis was 9.6 (± 8.9) years; 83.9% were taking antihypertensive medication. About three fourths of the respondents (75.9%) had comorbid conditions (e.g., diabetes, hyperlipidemia). Fewer than half (44.8%) had controlled BP (i.e., BP $< 140/90$ mm Hg). The mean item score of social support was 5.2 (± 0.9) and more than one in five (21.1%) reported depressive symptoms (PHQ-9 score ≥ 5). The sample had a mean item score of 2.3 (± 0.7) points for psychological well-being, indicating a generally high level of well-being. While the majority of the study sample reported eight or more unpleasant symptoms (mean \pm SD = 8.2 \pm 5.6), there was no significant difference in the number of symptom bothers reported between those on antihypertensive medication and those not on medication (8.3 \pm 5.6 and 7.2 \pm 5.1, respectively, $p = .117$).

Bivariate Analysis of the Study Variables

Table 2 presents Pearson’s correlation coefficients among the study variables. Being female ($r = 0.16$, $p = .001$), having fewer years of education ($r = -0.13$, $p = 0.007$), comorbidity ($r =$

0.18, $p = .000$), low social support ($r = -.45$, $p = .000$), and high depression scores ($r = .49$, $p = .000$) were significantly correlated with poorer HRQOL. Age, years in the United States, years of HTN, taking antihypertensive medication, and BP control were not significantly associated with HRQOL in bivariate analysis.

Correlates of HRQOL—Table 3 shows the results of hierarchical regression analysis related to HRQOL. The final model explained 32.8% of the variance. In Steps 1 and 2, gender ($\beta = .109$, $p = .036$) and comorbidity ($\beta = .183$, $p = .000$) emerged as significant correlates of HRQOL. In the final step, social support ($\beta = -.240$, $p = .000$) and depressive symptoms ($\beta = .402$, $p = .000$) were predictive of HRQOL after accounting for sociodemographic and disease-related characteristics in Steps 1 and 2. Thus, being female, a greater number of comorbid conditions, lower social support, and higher depression were associated with poorer HRQOL in the sample of KA elders with HTN.

Discussion

We found a depression rate of 21% in our sample, as measured by the PHQ-9. This rate is lower than that reported in another sample of community-residing KA elderly (27%) using the same instrument (Donnelly & Kim, 2008) and also lower than that reported in the general U.S. elderly population (26%; Li, Friedman, Conwell, & Fiscella, 2007). One possible explanation is that our study sample was recruited from ethnic churches and senior centers, where study participants can have frequent and regular social contact with others; therefore, the prevalence of depression might have been unusually low. Nevertheless, given that depression negatively influences HTN self-care behaviors such as adherence to antihypertensive medication and dietary regimens (M. T. Kim, Han, Hill, Rose, & Roary, 2003; Siegel, Lopez, & Meier, 2007), it is still important to identify and incorporate effective strategies to minimize the effects of depression in patients with HTN. Integrated care interventions such as individualized education and telephone monitoring have been shown to produce significant improvement in terms of depression and adherence behaviors in hypertensive patients (Bogner & de Vries, 2008).

More than three quarters of our sample of KA elderly reported one or more comorbid conditions, and the comorbidity was negatively associated with HRQOL at bivariate level. The result is consistent with a previous study of hypertensive patients in which comorbid conditions negatively affected HRQOL (Aydemir, Ozdemir, & Koroglu, 2005). Elderly with multiple comorbid conditions have to deal with polypharmacy (Frutos Bernal, Martín Corral, & Galindo Villardón, 2011). In addition, a sense of burden with regard to the daily management and treatment of multiple chronic conditions, worries about increased health care costs or adverse drug reactions, and challenges regarding medication adherence have been reported in elderly patients with comorbidity (Elliott, 2009; Hsu et al., 2010). All these factors can adversely contribute to HRQOL.

Little research has been done to examine the relationship between social support and HRQOL in HTN patients. In our sample of KA elderly with HTN, we observed a direct correlation between social support and HRQOL; higher social support was associated with better HRQOL. Previous studies have found that diabetic patients who have a high level of

satisfaction with social support report better HRQOL (Misra & Lager, 2008; Tang, Brown, Funnell, & Anderson, 2008). The protective role of social support in the presence of negative life adversities has been well documented. For example, in a study of Korean immigrants, greater social support was associated with less depression (Shin, Han, & Kim, 2007). Likewise, diabetic patients without depression were more likely to report receiving social support, compared to those with major depression (Egede, Grubaugh, & Ellis, 2010). Together, the findings suggest the importance of social support as part of an effective intervention program to promote HRQOL among individuals with chronic conditions such as HTN. Indeed, intervention studies focusing on social support have proven effective in promoting weight loss, lowering blood pressure, and improving adherence to antihypertensive medication among HTN patients (Bosworth et al., 2008; Criswell, Weber, Xu, & Carter, 2010; Stevens et al., 2001).

There are a number of potential limitations to consider in interpreting the results of this study. First, we used a convenience sample; the study participants were generally healthy and mobile, given that they were all recruited from Korean ethnic churches and senior centers. Hence, the results might not be generalizable to less mobile KAs or other elderly populations with different cultural backgrounds. Likewise, most of our study participants were churchgoers. Ethnic churches provide a source of social support for immigrants, as has often been reported in the literature (Leach & Schoenberg, 2008). Therefore, it is possible that the level of social support in our sample was overestimated to some extent. Some studies found that more religious involvement (e.g., church attendance) was associated with lower depression (Huang, Hsu, & Chen, 2012; Patel, Shah, Peterson, & Kimmel, 2002), larger social networks, and greater perceived quality of support (Bradley, 1995; Ellison & George, 1994). There is counter evidence, however, that religious involvement is inversely associated with greater depression in some elders (Braam et al., 2004). Future research is warranted to explore whether religious involvement plays a role in the relationships between social support, depression, and HRQOL among Korean elderly. While low income has been associated with depression among Korean immigrant elderly (Lee & Holm, 2012), we were unable to include income in the regression equation due to large missing data. Finally our data were cross-sectional in nature and hence no causal relationship can be established.

In conclusion the study contributes to our understanding of the association between social support, depression, and HRQOL among hypertensive immigrant KA elders. In particular, our findings highlight the importance of depression management as an essential component of comprehensive HTN care for hypertensive KA elderly and suggest the potential utility of social support as a way to minimize the negative impact of depression on HRQOL. Future research should focus on developing and applying effective depression management and social support strategies to improve HRQOL in this minority population. Mobilizing social network support (e.g., socializing with friends, neighbors, or group activities) available in a church setting (B. J. Kim, Sangalang, & Kihl, 2012) could be a particularly useful strategy to decrease depression and improve HRQOL in KA elderly, as a majority of KA regularly attend ethnic church.

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Biographies

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Table 1Sample Characteristics ($N = 440$).

	<i>N (%) / Mean ± SD</i>
Age (range 60–89), year	70.9 ± 5.5
Female, %	306 (69.5)
Years of education (range 0–25)	11.1 ± 4.3
Years in the United States (range, < 1–48)	24.1 ± 11.0
Years of HTN (range, < 1–50)	9.6 ± 8.9
On antihypertensive medication, %	369 (83.9)
Comorbidity, %	334 (75.9)
BP control, % †	197 (44.8)
Social support (range 1.9–7.0)	5.2 ± 0.9
Depression, % ††	93 (21.1)
QoL (range, 1.0–5.1)	2.3 ± 0.7

Note: QoL = Quality of life. HTN = Hypertension.

† (systolic blood pressure) SBP < 140 mm Hg and (Diastolic blood pressure) DBP < 90 mm Hg

†† Defined by a score on the PHQ-9 of 5 points or more

Table 2

Correlations of the Variables (N = 440).

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Age	1	-.112*	-.134**	.123**	.143**	.078	.159**	-.009	.073	-.084	-.091
2. Gender	-.112*	1	-.376**	-.100*	-.014	.072	.078	.069	.072	.149**	.155**
3. Years of education	-.134**	-.376**	1	.116*	-.036	.024	-.046	.049	.122*	-.117*	-.128**
4. Years in united States	.123**	-.100*	.116*	1	.154**	.148**	.059	.033	.035	-.057	-.053
5. Years of hypertension (HTN)	.143	-.014	-.036	.154**	1	.337**	.114*	-.020	.034	-.013	.061
6. Taking antihypertensive medication	.078	.072	.024	.148**	.337**	1	.186**	.370**	.012	.061	.052
7. Comorbidity	.159**	.078	-.046	.059	.114*	.186**	1	.112*	-.024	.096*	.180**
8. BP control	-.009	.069	.049	.033	-.020	.370**	.112*	1	.034	.026	-.021
9. Social support	.073	.072	.122*	.035	.034	.012	-.024*	.034	1	-.286**	-.444**
10. Depression	-.084	.149**	-.117*	-.057	-.013	.061	.096*	.026	-.286**	1	.489**
11. QoL	-.091	.155**	-.128**	-.053	.061	.052	.180**	-.021	-.444**	.489**	1

Note: QoL = Quality of Life.

* p .05.

** p .01

Table 3

Hierarchical Regression Analysis Predicting Quality of Life ($N = 437$).

Predictors	b	SE b	β	Adjusted R ²	R ² change
Step 1				.039***	.039**
Age	-.011	.006	-.089		
Gender	.159	.076	.109*		
Year of education	-.015	.008	-.098		
Years in United States	-.001	.003	-.020		
Step 2				.079**	.040***
Years of hypertension (HTN)	.004	.004	.048		
Taking antihypertensive medication	.069	.100	.038		
Comorbidity	.287	.076	.183***		
BP (blood pressure) control	-.073	.069	-.054		
Step 3				.328***	.249***
Social support	-.389	.069	-.240***		
Depression	.659	.069	.402***		

Note:

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Age, gender, years of education, and years in United States were controlled.

Taking antihypertensive medication: Yes = 1, No = 0

Comorbidity: Yes = 1, No = 0

BP control: Yes = 1, No = 0

Depression: PHQ-9 score 5 = 1, < 5 = 0