BARRIERS TO CARE AND CONTROL OF HIGH BLOOD PRESSURE IN KOREAN-AMERICAN ELDERLY

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Objectives: To identify barriers to achieving optimal management of high blood pressure (HBP) among hypertensive Korean-American elderly (KAE).

Methods: This study used data on a subsample of 146 hypertensive KAE from a total of 205 KAE in Maryland who participated in a cardiovascular health assessment study. The study group consisted of 56 males and 90 females with a mean age of 69.8 ± 6.6 years. The PRECEDE-PROCEED model guided selection of study variables.

Results: Many KAE with HBP had no regular HBP care (66%) and did not achieve HBP control (92.5% of KAE with HBP and 77.6% of KAE on HBP medications). Lack of health insurance emerged as a strong barrier to receiving adequate HBP care. Other barriers to HBP care included not having a Korean doctor and not having a regular medical checkup. While 22.4% of KAE on HBP medication had controlled blood pressure (BP), those with more visits to traditional Asian medicine doctors were less likely to have achieved HBP control.

Conclusions: The study unveils some of the multilevel barriers to care and control of HBP uniquely experienced by KAE and suggests the need for developing interventions to assist KAE in managing HBP. (*Ethn Dis*. 2006;16:145–151)

Key Words: Barriers, High Blood Pressure, Korean-American Elderly

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INTRODUCTION

High blood pressure (HBP) is the most common chronic illness among Koreans[1] and Korean Americans.[2] Studies of Korean Americans[3,4] report a particularly high prevalence and uncontrolled HBP in Korean-American elderly (KAE), one of the most vulnerable and understudied ethnic minorities and age groups. While a number of studies have identified barriers to care and control of HBP,[5–7] few have assessed the barriers uniquely experienced by ethnic minority populations, and particularly by Asian Americans.

Since ethnic minorities are expected to make up >47% of the total US population by 2050[8] and since Koreans are the fourth largest Asian subpopulation,[9] understanding and addressing their health needs and promoting cultural competency among healthcare workers have emerged as important public health policy tasks.[10] To respond to the national call to reduce health disparities among minority populations, we have investigated the cardiovascular health status of KAE and identified specific barriers to getting adequate care and control of blood pressure (BP) among first-generation KAE with HBP.

To respond to the national call to reduce health disparities among minority populations, we have investigated the cardiovascular health status of Korean-American elderly (KAE) and identified specific barriers to getting adequate care and control of blood pressure (BP) among first-generation KAE with HBP.

METHODS

Sample and Setting

In-depth cardiovascular health assessment of 205 KAE (≥60 years of age) residing in the greater Baltimore metropolitan area was conducted from May to July 1999. The participants were randomly selected from a sampling list of 612 KAE, which was constructed from: 1) the membership of the Korean senior center at Baltimore; 2) telephone listings with Korean surnames; and 3) a database from a previous community survey. Research assistants contacted potential participants by telephone. Once telephone contact was established, the research assistants confirmed the one eligibility criterion of this study, being a self-identified Korean American age ≥60 years, and explained the purpose of this study and asked whether the person wished to participate. A letter describing the project was sent to those who agreed to participate in the study. A week later, the potential participants were again contacted to schedule an interview and laboratory tests. A total of 205 KAE completed the study.

Institutional review board approval and consent were obtained from each participant. Of the 205 KAE, 146 were identified as having HBP (systolic blood pressure [BP]≥140 mm Hg and/or di-

astolic BP≥90 mm Hg and/or on antihypertensive medication). Data were collected from the 146 hypertensive KAE at the General Clinical Research Center (GCRC) of the Johns Hopkins Medical Institutions. Trained clinical staff collected physiologic data, including BP, while other information was collected through face-to-face interviews administered by bilingual research assistants who had been trained and monitored by the investigators. The average length of a clinic visit was 90 to 120 minutes. Details of the methods used and findings on cardiovascular health status have already been published.[4]

Measurements

The interview instruments were initially developed in English and translated into Korean, then translated back into English (see Kim et al[4] for details about equivalence testing of the two language versions). In the present study, the Korean version was exclusively used, since all participants had been in Korea and preferred using Korean.

The PRECEDE-PROCEED model,[11] as adapted by the investigators, provided the framework for conceptualizing individual factors that positively or negatively affect the status of HBP care and control. The PRECEDE-PROCEED model has been useful in investigating an individual's health-related behaviors as well as in developing educational interventions.[12,13] We focused on identifying factors that determine initiation and continuation of HBP care and, ultimately, management of HBP at an adequate level, following the three categories of factors as identified by the model: predisposing, enabling, and reinforcing factors.

Predisposing factors provide a rationale or motivation for managing HBP. Variables included demographic characteristics, acculturation stress, perceived health status, health behaviors, HBP knowledge, and adherence to medication. Demographic variables were collected on either traditional predisposing factors (eg, age, gender, marital status, education, employment status, income, and religion) or culture-specific predisposing factors unique to the KAE population (eg, length of stay in the United States; English fluency, in particular communication with English-speaking doctors without a translator; and perceived level of acculturative stress). Acculturation stress was assessed by using a 12-item, four-point Likert-type instrument originally developed by Salgado de Snyder.[14] The instrument has been tested with Korean immigrants.[15,16] Low scores were indicative of low levels of acculturation stress. Perceived health status was measured by the question, "Compared to others of your age, how do you rate your health?" Health behavior items assessed current smoking, exercise, and alcohol drinking status. High blood pressure (HBP) knowledge was evaluated by using 12 items developed by the National HBP Education Program, National Heart Lung Blood Institute.[17] This instrument has previously been used in our work with KAE.[4,16] Finally, adherence to medication was assessed by the medication subscale of the Hill-Bone Compliance Scale.[18] This subscale consists of six items; low scores indicate a high level of adherence to antihypertensive medication regimen.

Enabling factors are those related to availability and accessibility of health care. In the present study, several theoretically identified enabling factors were assessed, including medical insurance status, number of physician visits, days of hospitalization, number of visits to practitioners of traditional Asian medicine, number of outpatient center visits, and number of emergency room visits during the last six months.

Reinforcing factors are defined as available resources that help to continue or strengthen positive health behaviors for care and control of HBP (eg, social support, supportive services). Perceived social support was measured by the Personal Resource Questionnaire (PRQ)-Part B.[19] This scale consists of 25 four-point Likert-type items; high scores represent a higher level of perceived social support. In addition, the degree of participation in religious activities was collected as an indication of the availability of additional social support.

Study-dependent variables included being in HBP care and HBP control status. Being in HBP care was coded "1" if an individual was currently taking HBP medication. The indicator of HBP control status was created following the guidelines from the seventh report of the Joint National Committee on Detection, Evaluation, and Treatment of HBP.[20] Specifically, trained GCRC personnel obtained three BP measurements at one-minute intervals with a Hawksley random zero sphygmomanometer. Measurements were taken with appropriately sized cuffs after the participant was seated for five minutes. The average of the second and third BP readings was used for this analysis. Blood pressure (BP) control was defined as BP<140/90 mm Hg.

Data Analysis

Study variables were examined by descriptive statistics using frequencies for ordinal/categorical variables and means and standard deviations for continuous variables. A series of *t* tests or χ^2 tests were conducted to investigate significant differences in various explanatory variables between KAE who were on HBP medication (ie, being in HBP care) and those who were not. In addition, multiple logistic regression was performed to identify predisposing, enabling, and reinforcing factors that significantly affected the HBP care status of KAE and to calculate odds ratios. Finally, another set of *t* tests or χ^2 tests compared those KAE with controlled BP to those without controlled BP in terms of potential barriers to HBP control. Statistical significance was determined at $\alpha=.05$.

RESULTS

Predisposing Factors

The KAE sample was predominantly first-generation immigrants (99%) who could speak little or no English (97%), even though most (84%) had lived in the United States for >15 years (Table 1). Less than a quarter (15.1%) reported that they could go to an English-speaking doctor without help from an interpreter. Most were women (61.6%) with low education (57.6% less than high school) and low income (60.4% <$10,000/year).

When asked about their health status, more than half (52.1%) reported their health as better than that of their counterparts of the same age. The prevalence of current smoking and alcohol drinking was 18.4% and 34.9%, respectively, while less than one fifth of the sample (19.2%) reported exercising regularly.

Enabling Factors

More than two thirds of the KAE (70.5%) had access to care through private or public medical insurance. Medicare (53.4%) was the most common type of insurance, followed by Medicaid (21.2%) and private insurance (11%). While more than half (51.4%) reported having a regular check-up during the past six months, approximately two thirds (64.4%) reported seeing a Korean doctor.

Reinforcing Factors

In our sample, the mean score on the PRQ-Part B was 2.94, which indicates a perceived low level of social support. Most (91.8%) subscribed to some form of religion and reported actively participating in religious activities more than once a week.

Correlates of HBP Care and Control

One third of the sample (34%) reported taking antihypertensive medication (being in HBP care) at the time of this study. A series of bivariate analyses revealed that the KAE in HBP care were older and were more likely to report annual household income <$10,000, having Medicare or Medicaid, and having a Korean doctor, as compared to those who were not in HBP care.

When logistic regression was performed to calculate odds ratios, none of the predictors were found to be statistically significant, even though the variable of having medical insurance approached statistical significance (P=.08). Korean-American elderly (KAE) with any type of medical insurance were 2.41 times more likely to be in HBP care than those without insurance (95% confidence interval [CI]: 0.91–6.39).

Korean-American elderly (KAE) with Medicare and Medicaid were 2.06 (95% CI 0.66–6.42) and 3.21 (95% CI 0.89–11.61) times more likely to be in HBP care, respectively, than those without insurance, while KAE with private insurance were 1.46 times more likely to be in HBP care (95% CI 0.29–7.39).

Table 1. Barriers to HBP care in Korean-American elderly (KAE) with HBP

Variable	Being in HBP Care		
	Yes (n=49)	No (n=97)	Total (N=146)
Predisposing factors			
Age (mean ± SD)*	71.6 ± 6.5	68.9 ± 6.5	69.8 ± 6.6
Gender: male (%)	32.7	41.2	38.4
Married (%)	57.1	72.2	67.1
Education: less than high school (%)	65.3	53.6	57.6
Working full- or part-time (%)	28.5	38.1	35.0
Household income <$10,000/year (%)*	79.5†	50.0†	60.4§
Religion: none	4.1	10.3	8.2
Years in the United States (mean ± SD)	16.4 ± 5.7	16.7 ± 6.8	16.7 ± 6.4
English-speaking (%)	53.1	43.3	46.6
Need help from an interpreter (%)	85.7	84.5	84.9
Acculturation stress (mean ± SD)	2.69 ± 0.4	2.71 ± 0.4	2.71 ± 0.4
Health status: better than others of same age (%)	44.9	55.7	52.1
Health behaviors (%):			
Smoking	35.7‖	11.4¶	18.4**
Exercise	16.3	20.6	19.2
Alcohol	40.8	32.0	34.9
HBP knowledge (mean ± SD)	7.0 ± 2.0	7.2 ± 1.7	7.1 ± 1.8
Adherence to medication (mean ± SD)	1.22 ± 0.5	—	—
Enabling factors			
No health insurance (%)*	16.3	36.1	29.5
Have medical insurance (%):			
Private	12.2	10.3	11.0
Medicare*	65.3	47.4	53.4
Medicaid*	34.7	14.4	21.2
Have regular medical checkup (%)*	63.3	45.4	51.4
Have a Korean doctor for checkup (%)*	79.6	56.7	64.4
Never been told of their HBP by health care professionals (%)*	8.2	38.1	28.1
Number of visits to physician (mean ± SD)*	3.55 ± 2.48	1.98 ± 2.56	2.51 ± 2.63
Days in hospitalization (mean ± SD)	0.35 ± 1.42	0.63 ± 5.12	0.53 ± 4.25
Visits to oriental medicine doctors (mean ± SD)	0.43 ± 0.87	1.85 ± 8.50	1.37 ± 6.97
Visits to hospital outpatient center (mean ± SD)	0.59 ± 1.68	1.55 ± 7.91	1.23 ± 6.52
Visits to emergency room (mean ± SD)	0.18 ± 0.44	0.05 ± 0.22	0.10 ± 0.32
Reinforcing factors			
Social support (mean ± SD)	2.97 ± 0.45	2.93 ± 0.39	2.94 ± 0.41
Religious activities (%)	83.7	75.3	78.1

* Difference was statistically significant at P<.05.
† n=3; ‡ n=11; § n=111; ‖ n=14; ¶ n=35; ** n=49.

Table 2. Barriers to HBP control in Korean-American elderly (KAE) with HBP who were on HBP medication

Variable	HBP Control Status	
	Yes (n=11)	No (n=38)
Predisposing factors		
Age (mean ± SD)	71.5 ± 4.6	71.7 ± 7.0
Gender: male (%)	27.3	34.2
Married (%)	72.7	52.6
Education: less than high school (%)	72.7	63.2
Working full- or part-time (%)	18.2	32.4
Household income <$10,000/year (%)	88.9	76.7
Religion: none (%)	100.0	94.7
Years in the United States (mean ± SD)	15.5 ± 6.0	16.4 ± 5.6
English-speaking: none (%)	45.5	55.3
Need help from an interpreter (%)	90.0	84.2
Acculturation stress (mean ± SD)	2.53 ± 0.21	2.74 ± 0.42
Health status: better than others of same age (%)	27.3	50.0
Health behaviors (%):		
Smoking	33.3†	36.4†
Exercise	0.0	21.1
Alcohol	45.5	39.5
HBP knowledge (mean ± SD)	6.64 ± 1.50	7.08 ± 2.14
Adherence to medication (mean ± SD)	1.50 ± 0.91	1.14 ± 0.19
Enabling factors		
No medical insurance (%)	9.1	18.4
Have medical insurance (%):		
Private	18.2	10.5
Medicare	63.6	65.8
Medicaid	27.3	36.8
Have regular medical checkup (%)	63.6	63.2
Have a Korean doctor for checkup (%)	63.6	84.2
Never been told of their HBP by healthcare professionals	18.2	5.3
Number of visits to physician (mean ± SD)	3.55 ± 2.48	1.98 ± 2.56
Days in hospitalization (mean ± SD)	0.35 ± 1.42	0.63 ± 5.12
Visits to oriental medicine doctors (mean ± SD)*	0.43 ± 0.87	1.85 ± 8.50
Visits to hospital outpatient center (mean ± SD)	0.59 ± 1.68	1.55 ± 7.91
Visits to emergency room (mean ± SD)	0.18 ± 0.44	0.05 ± 0.22
Reinforcing factors		
Social support (mean ± SD)	2.78 ± 0.61	3.02 ± 0.39
Religious activities (%)	90.9	86.1

* Difference was statistically significant at P<.05.
† n=3; ‡ n=11.

Of 49 hypertensive KAE who were on HBP medication, 11 KAE (22.4%) had controlled BP (<140/90 mm Hg) (or 7.5% of 146 hypertensive KAE). When individual factors were examined in their relationships with HBP control status, only the number of visits to traditional Asian medicine doctors was statistically significant (P=.035) (Table 2).

Korean-American elderly (KAE) who had controlled BP tended to report more visits to physicians, fewer days of hospitalization, and fewer visits to hospital outpatient centers than those whose BP was not controlled, even though the differences were not statistically significant. Due to the small sample size of those in HBP care, multiple logistic regression analysis was not conducted.

In contrast to the 15% of all individuals with HBP in the United States who reported that they are not receiving care for their HBP, we found that 66% of KAE in this study were in this situation.

DISCUSSION

The findings of this study revealed that many KAE were not in HBP care and that their BP was poorly controlled. In contrast to the 15% of all individuals with HBP in the United States who reported that they are not receiving care for their HBP,[21,22] we found that 66% of KAE in this study were in this situation. In addition, BP control rate of 7.5% in our sample (or 22.4% of those who were in HBP care) was far below the national control rate of 30%.[23,24]

Several factors emerged as barriers to adequate HBP management for this ethnic group; lack of health insurance was a strong barrier to initiating treatment for HBP and subsequently achieving adequate control of BP. The rate of uninsured among KAE was ≈30%, a value that is even higher than that of 14% in non-Hispanic Whites and 21% in Asian Americans and Pacific Islanders in general.[25] In addition to a number of demographic factors that have been associated with a lack of insurance (eg, ethnicity, socioeconomic status) in elderly immigrants, duration of residence in the United States has been reported as an additional risk factor for being uninsured.[26] Specifically, elderly immigrants who have been in the United States <15 years seem to have a high

risk of lacking health insurance coverage, in particular Medicare and Medicaid.[27] The high uninsured rate among elderly immigrants may be closely related to the Personal Responsibility and Work Opportunity Reconciliation Act of 1996, which prohibits most legal immigrants from getting public assistance, including Medicare and Medicaid, for five years or until they have attained citizenship.[28] Low rates of medical insurance coverage, in turn, lead to a lack of regular medical checkups, a significant barrier to adequate HBP care and control that was identified in this study. The existence of federal restrictions on immigrants' ability to effectively access health services argues for the development of strategies to provide health services irrespective of immigration status and for further studies to investigate the health implications of welfare reform.

For KAE, not having a Korean doctor was also a barrier to being in HBP care; this situation was, in large part, due to the KAEs' lack of English language skills. Ninety-seven percent of our sample reported speaking little or no English, and ≈85% said they needed help from an interpreter when they saw a non-Korean speaking doctor. Our result is consistent with data from Census 2000, which described at least 70% of the total KA population as having difficulty with English[29,30] and also suggests the need for developing linguistically and culturally sensitive interventions to improve HBP care in this population.

Limited English language proficiency might have directed KAE toward traditional Asian medicine. In fact, KAE who were not in HBP care (or were not on HBP medication) tended to report more visits to traditional Asian medicine doctors during the last six months than did those in HBP care, although the difference was not statistically significant. Furthermore, we found that KAE with more visits to traditional Asian medicine doctors were significantly less likely to achieve HBP control. While traditional herbal medicines are popular among Asian Americans, including Koreans,[31] a recent review of the literature[32] has reported adverse reactions to traditional herbal medicines (eg, allergy, hepatitis, and anaphylaxis), and it recommended surveillance systems and proper labeling of traditional herbal medicines. The significant association of more visits to Asian medicine doctors with a lack of HBP control points to the need for a tailored education program targeting KAE with HBP.

While having a Korean doctor significantly increased the likelihood that KAE were in HBP care, the trend was for KAE who received care from a Korean doctor to be less likely to achieve HBP control. This result may be an indication of ineffective communication between a KAE patient and a Korean physician. Korean-American elderly (KAE) may not have been successful in obtaining and understanding the information necessary to help them take care of their illness. In addition, physicians may not have met their patients' information needs or been fully aware of their patients' beliefs or behaviors that could have an adverse effect on HBP control (eg, use of oriental herbal medicine). Effective communication between a physician and a patient is central to preferred healthcare outcomes.[33] Future intervention should be centered around increasing health providers' cultural sensitivity and facilitating adequate communication between KAE and their care providers.

High blood pressure (HBP) knowledge was not associated with being in HBP care or having achieved BP control. This result is partly consistent with previous studies of Korean immigrants that reported a lack of association between health knowledge and health outcomes.[34,35] Even though the data are not presented in this paper, individual item analysis revealed several areas that require special attention: in particular, when asked to respond to the statement, ''HBP usually has physical symptoms,'' almost two out of three KAE (64.4%) agreed. Thus, a lack of certain knowledge may have contributed to a delay in initiating HBP care in KAE, and hence to achieving adequate control of BP.

None of the reinforcing factors were significantly associated with HBP care and control status. Most study participants reported participating in religious activities on a weekly basis (78.1%). High rate of church attendance in ethnic minority populations has been reported in previous studies.[36–38] These studies have also reported that ethnic churches serve as an extended network of support, meeting not only the spiritual but also the educational, physical, and social needs of their members. Participating in church activities alone, however, does not seem to provide an adequate level of social support. In our sample, the mean score on the PRQ-Part B was low, which indicates a perceived low level of social support. A feeling of social isolation has previously been reported to adversely influence health outcomes in ethnic minorities[39] and older adults.[40]

The study used cross-sectional data; causal relationships cannot be drawn between the variables. In addition, study participants were all volunteers, mainly recruited from ethnic churches and groceries. Thus, the data may have been biased by the fact that we did not include KAE who were sicker and not mobile and, therefore, would have had difficulty participating in the study. In addition, our study participants resided in a metropolitan area with a relatively higher population of Korean-American immigrants; our study findings may not be applicable to KAE in rural areas.

As Hill[41] has noted, effective care and control of HBP cannot be achieved without understanding individual, provider, and community health beha-

viors, since these factors are not only part of the HBP problem but also constitute a major part of the solution. This study has identified some of the health behaviors that serve as barriers to care and control of HBP in the target population and has shown that these barriers exist at multiple levels. These data indicate that health-care professionals should acknowledge and understand these barriers to HBP control and appropriate intervention should be developed to address the critical needs of this ethnic group.

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