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Socio-demographic and Health Behavioral Correlates of Depressive Symptoms among Korean Americans

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Abstract

This study identified socio-demographic characteristics and their help seeking behaviors of depressive symptoms among adult Korean Americans (KAs). Using survey data from 230 residents of the New York City, Teaneck New Jersey, and Philadelphia areas, simple and multiple logistic regression analyses were performed to assess the association between depressive symptoms and the covariates. Women were at much lower risk of depressive symptoms than were men, even after adjusting other covariates (OR=0.45, 95% CI=0.21–0.96). Having no health insurance (OR=4.02, 95% CI=1.28–12.61) and having experience in seeking professional help for mental health problem during last year were significantly associated with depressive symptoms (OR=2.96, 95% CI=1.29–6.80). Impact of gender, lack of health insurance coverage, and previous help-seeking behavior may be possible explanations for the KA's higher prevalence of depression.

Keywords

Depression; Help-seeking behaviors; Korean American; Socio-demographic characteristics

INTRODUCTION

Asians are the fast growing racial group in the United States (US) (Hoeffel, Rastogi, Kim et al., 2010). As reported by Kalibatseva and Leong (2011), in the 2010 Census Asian Americans made up 4.8% of the US population, an increase of 43% from the 2000 Census, when Asian Americans made up 3.6% of the US population. Chinese Americans are the largest Asian American group, at 0.9% of the US population; followed by Filipino Americans, at 0.7%; Asian Indians, at 0.6%; Korean Americans (KAs), at 0.4%; and Japanese Americans, at 0.3% (Kalibatseva & Leong, 2011). However, KAs in particular are

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one of the fastest growing ethnic minorities in the US; their population has increased 500% since 1970 (US Census Bureau, 2000). In addition, a recent analysis by the Pew Research Center found that 78% of KAs ages 18 years and older were born outside of the US (Pew Research Center, 2012).

Most immigrants to the US experience significant changes in many aspects of their lives during the acculturation process, in which the culture of origin and US culture come into contact and, often, conflict—for example, learning a new language, new financial and occupational experiences, changing roles for oneself and one's family members, and new social norms (Miller & Chandler, 2002). The acculturation process, then, can lead to a transformation of immigrant identity but can also be a significant source of stress (Noh & Kaspar, 2003; Oh, Koeske, Sales, 2002). In fact, the strain of these experiences can be associated with symptoms of depression (Oh et al., 2002).

Depression is one of the most common psychological problems among Korean Americans (Bernstein, Park, Shin, et al., 2011). One study of KAs (N=304) found that they had twice the rate of higher depression scores than the general population (Bernstein et al., 2011). Another found that 23% reported having depressive symptoms, but only 8.5% used mental health services, as most did not perceive the need for psychological help, even when they had such symptoms (Park, Cho, Park, et al., 2013). A study of 860 Korean immigrants found that they reported higher levels of depressive symptoms and of psychological distress than did other Asian ethnic groups (Noh, Avison, & Kaspar, 1992). And KAs who abandoned their Korean identity, traditions, and values scored higher for depression than did those who maintained their traditional values and identity (Oh et al., 2002).

A study found that depression was often underdiagnosed and therefore not treated due to barriers that included limited access to services and lack of culturally appropriate therapies (Lee, Hanner, Cho, et al., 2008). A study of 230 older KAs reported that women scored higher on depressive symptoms than did men, and that the findings of the study indicated that the KAs' cultural background and values deeply influenced, and thus limited, their help-seeking behaviors and attitudes toward mental health services (Jang, Kim, & Chiriboga, 2011). KAs, similar to other Asian Americans, can be deterred from seeking help from mental health care providers due to structural barriers, such as a lack of awareness about available services, inability to access services (Yoo & Wood, 2013) and lack of health insurance (Yoo & Kim, 2008). Instead of seeking help, alcohol abuse among male KAs as a form of self-treatment for depression and for other mental health issues has been reported (Duranceaux, Schuckit, Luczak, et al., 2008). Furthermore, Korean culture profoundly influences how an individual KA can perceive mental health or a mental disorder. Studies indicate that KAs' cultural values and their often negative experiences with conventional mental health services can limit their use of mental health services, especially among immigrants (Lee et al., 2008). In particular, Western-style psychotherapy, which often emphasizes self-disclosure and emotional expression, may contrast with Asian preferences for receiving help, such as assistance from family or friends (Leong & Lau, 2001).

Also, there are significant differences between Western and Korean conceptions of emotion. For example, the Korean word *Han* describes a syndrome of regret or resentment about the

neglect of parents or children that would be labeled “shame” or “guilt” in Western society (Pang, 1998). However, the two conceptions differ in important ways. For example, in January 5, 2011, John M. Glionna, a reporter for the *Los Angeles Times*, wrote about the concept of *Han* as a unique Korean cultural trait of a collective feeling of oppression and isolation in the face of overwhelming odds. There is no English equivalent word to capture the concept of *Han* as it encompasses all of the following; sense of bitterness; a mixture of angst, endurance and a yearning for revenge that tests a person’s soul; a condition marked by deep sorrow; and a sense of incompleteness that can have fatal consequences. It connotes aspects of lament and unavenged injustice (Glionna, 2011).

Korean women with *Han* have a tendency to internalize their feelings and to have few emotional outlets and social supports (Cho, Bernstein, Roh, & Chen, 2013) in which can lead to develop depression. This is also the case for Korean women with the Korean culture-bound syndrome *Hwa-byung*, which translates as “fire illness” and is an anger syndrome (Min, Suh, & Song, 2009). In addition, when given an opportunity to share their life stories, Asian women, including KAs, tend to focus on relationships and family rather than on themselves (Haight, Nomura, & Nomura, 2000). Displacing their internal emotions to other than themselves may lead to avoid in dealing with unresolved issues and ultimately in leading depression.

A lack of culturally tailored therapeutic interventions has been a major barrier keeping KAs from seeking mental health services for a range of mental health problems, including depression (Bernstein et al., 2011). The consequences can be serious: for instance, the National Alliance on Mental Illness estimates the direct and indirect workplace costs of depression to be more than \$34 billion per year for all Americans (National Alliance on Mental Illness, 2011).

The National Institute of Mental Health acknowledges that Asian Americans historically have been underrepresented in mental health research, and some evidence suggests that existing mental health services are inadequate or inappropriate for them (Labbe, 2007). A better understanding of KAs’ socio-demographic factors, such as sex, age, occupation, ethnicity, marital status, and socioeconomic status, associated with depressive symptoms can contribute to the investigation and understanding of a mental health problem in order to effectively assist this population. Bernstein and her colleagues (2011) reported that 13.2% of the sample population demonstrated some symptoms of depression; they found that variables such as living alone, marital status, education, years in US and income impact high depression scores, but age, gender or neighborhood ethnic composition do not. Another study with KA older adults (60 years and older) in New York City reported that socio-demographic characteristics linked to neighborhood environment affecting physical and mental health outcomes including depression were: age, gender, marital status, and education (Roh, Jang, Chiriboga, et al., 2011). The inconsistent reports on KAs’ socio-demographic characteristics in relation to depression warrant further study.

Therefore, this study aims to examine the relationship between socio-demographic characteristics (*i.e.*, age, gender, education, household income, employment, health insurance, marital status, living arrangement, religion, length of residence in the US, English

proficiency) and help-seeking behaviors in relation to depressive symptoms among KAs residing in New York City, Teaneck, New Jersey, and Philadelphia. Greater understanding of particular socio-demographic characteristics in relation to depressive symptoms can expand our knowledge about the risk and protective factors of KAs' experiences with depression and help to develop a culturally appropriate primary depression prevention program for KAs.

METHODS

Sample and Setting

After Institutional Review Board approval, KAs aged 18 years or older who were able to read and write in Korean fluently were recruited from Korean community centers, religious organizations, and commercial entities, such as grocery stores and floral shops, in – urban settings in New York City, Teaneck, New Jersey, and Philadelphia. Before administering the survey, interviewers described the study purposes, the procedures, the scope of questions that would be asked, confidentiality precautions, the right to withdraw at any time or to refuse to answer any questions, and the overall voluntary nature of participation, as well as the benefits and risks of the study. Written consent was obtained prior to the interview, and participants were offered \$10 for their time. Data were collected in 2010. A convenience sample of 256 adult KAs completed a 20–30 minute survey packet in Korean. After deleting individuals who had missing information in their responses, the final sample consisted of 230 participants.

Measures

Depressive Symptoms—The 9-item short-form Patient Health Questionnaire Scale (PHQ-9) is a brief screening instrument that assesses depressive symptoms experienced during the prior two weeks. The 9 items are coded from 0 to 3 (0=not at all, 1=several days, 2=more than half the days, 3=nearly every day); summed scores range from 0 to 27, with higher scores indicating more depressive symptoms. Kroenke and colleagues (2001) have suggested a depression diagnosis based upon the following distribution of PHQ-9 scores: *minimal*, equal to or less than 4; *mild*, 5–9; *moderate*, 10–14; *moderately severe*, 15–19; and *severe*, 20–27.

The PHQ-9K is a direct translation into Korean of the PHQ-9; reliability was supported by a Cronbach's alpha of 0.92, and validated by factor analysis (Donnelly, 2007). In this study, the total scores of PHQ-9K were divided into 2 categories for binary logistic regression analysis: 1) no depression (<5); 2) depression (≥ 5). This method has been successfully used in a previous KA population study (Park et al., 2013).

Socio-demographic Measures—This study aimed to examine socio-demographic characteristics (age, gender, education, household income, employment, health insurance, marital status, living arrangement, religion, length of residence in the US, English proficiency), and help-seeking behaviors. Education was classified as middle school graduate or less, completed some high school or high school graduate, and completed some college or more. Annual household income was classified into 4 groups: \$50,000 or more,

\$30,000 to \$49,999, \$10,000 to \$29,999, and less than \$10,000. Current employment status was categorized into “yes” (full-time or part-time) or “no” (retired, unemployed, student, or disabled and others). Health insurance status was classified into four groups: Private insurance; Medicare, Family Health Plus, or Child Health Plus; Medicaid; and no insurance. Marital status was classified as either “married” or “single, widowed, divorced, or separated.” Living arrangements were divided into three categories: living with spouse only or living with spouse and children or elderly parents; living with friends, relatives, or others; and living alone. Religion was classified as either “Protestant, Buddhist, Catholic, or other religion” or “no religion.” Length of residence in the United States was assessed with a question, “In what year did you immigrate to the United States?,” and categorized into 4 groups: 5 years, 6–10 years, 11–20 years, and 21 years. An English proficiency scale (EPS), created to assess participants’ self-reported level of English language fluency, consisted of three items: “How well do you speak English?,” “How well do you write English?,” and “How well do you read English?,” and was measured using a 4-point Likert-type scale: 1=poor, 2=fair, 3=good, and 4=excellent. Then the response of “good” or “excellent” were recoded into “1=fluent” and the rest response of “poor” or “fair” were recoded into “0=not fluent” for each item. Finally, subjects were grouped into three categories according to the total number of fluencies in speaking, reading, and writing: “no fluent in any”, “fluent in one or two”, and “fluent in all three items”. Cronbach’s alpha of the scale was .93.

Experience in seeking professional help for mental health problems was assessed by the question, “In the past 12 months, have you been to mental health specialist for your emotional or psychiatric problems?” Possible answers were 1=yes or 2=no. We obtained information about whether participants have family members with mental health problems using a ‘yes’ or ‘no’ answer in response to the following question: “At present time, do you believe that your family member(s) has emotional problems? If yes, do you believe that the family member needs help form a mental health specialist?” Follow-up responses were classified into three categories: “none,” “having problem and need help,” and “having problem but not need help.”

Analysis

We descriptively examined the different percentage distributions of the variables of interest, and used chi-square tests to calculate the differences in depressive symptoms between different levels of each variable. Simple and multiple logistic regression analyses were performed to assess associated factors of depressive symptoms. The results are presented as odds ratios (ORs) with 95% confidence intervals (CIs). Possible multicollinearity between covariates, such as age and length of US stay, was evaluated by correlation analysis and collinearity statistics tests (tolerance and variance inflation factor (VIF) tests) as suggested for logistic regression (Tabachnick & Fidell, 2013). There was no significant collinearity between any of the covariates. We also tried to determine whether socioeconomic status buffers the relationship between gender and depressive symptoms, but we did not find any moderating effects. Therefore, we presented all results of the model without interaction. All statistical analyses were performed with SPSS 18.0.

RESULTS

The socio-demographic characteristics of the 230 Korean immigrants who participated in this study are summarized in Table 1. Respondents' mean age was 52.4 years ($SD = 16.3$); 59.6% were women. The majority were college or more educated (60.0%) and currently employed (52.2%), with an annual household income of \$30,000 or higher (50.9%). Slightly more than half of the participants were currently married (55.7%) and 13.9% lived alone. Men (64.5%) were more likely to be married than women (49.6%). Most respondents were Protestant (68.7%), followed by Catholic (10.9%) and Buddhist (7.8%). Mean years of residence in the US was 18.98 years ($SD = 10.54$). The percentage of men and women who had been in the US for 21 years or more was 47% and 39.4%, respectively, and 6.5% of men and 13.9% of women had been in US for 5 years or less. Almost half of the respondents (47.8%) rated themselves as no fluent in reading, writing, and speaking English. In addition, 27.8% reported seeking professional help for mental health problems and 21.3% reported a family member with mental health problems.

We found substantial differences between men and women regarding depressive symptoms. Men (30.5%) reported significantly higher age-adjusted prevalence of depressive symptoms than did women (19.5%). Depressive symptoms were associated with indicators of socioeconomic status in the expected direction; lower annual household income, being unemployed, and having Medicaid/no insurance were each associated with a higher prevalence of depressive symptoms. Those who had been to a mental health specialist for emotional or psychiatric problems in the last 12 months reported more depressive symptoms than those who had not. Although it was not statistically significant, both married men and women displayed lower prevalence of depressive symptoms.

Table 2 presents the results of simple and multivariate logistic regression analysis as ORs and 95% CIs to explore the correlates of depressive symptoms. Gender was significantly associated with depressive symptoms; women were at much lower risk of depressive symptoms than were men, even after adjusting other covariates ($OR=0.45$, 95% $CI=0.21-0.96$). From the result of simple logistic regression, having Medicaid ($OR=4.33$, 95% $CI=1.76-10.66$) and no health insurance ($OR=2.97$, 95% $CI=1.18-7.49$) increased the risk of depressive symptoms among KAs. In a multivariate logistic regression model, however, only having no health insurance was independently associated with depressive symptoms ($OR=4.02$, 95% $CI=1.28-12.61$). In addition, having experience in seeking professional help for mental health problems during the last year was significantly associated with depressive symptoms in both simple ($OR=3.60$, 95% $CI=1.89-6.83$) and multivariate logistic regression models ($OR=2.96$, 95% $CI=1.29-6.80$) (Table 2).

DISCUSSION

This study examined the associations of particular socio-demographic characteristics and help-seeking behaviors to depressive symptoms in KAs. Findings indicate that male gender, lack of health insurance coverage, and previous help-seeking behaviors were significantly associated with depressive symptoms. Inconsistent with prior studies (Kessler, Chiu, Demler, et al., 2005; WHO, 2004) reporting a greater prevalence of depression in women

than men, here, even after controlling for other covariates in the logistic regression model, KA women were at much lower risk of depressive symptoms than were KA men.

Possible explanations of gender differences in depressive symptoms would be cultural conflicts caused by cultural differences. Asian culture is based on collectivistic and Confucian philosophy that values traditional gender roles, family interdependence, and deference to individuals with authority, whereas American culture is characterized by individualism, equal gender roles, and self-respect (Bernstein et al., 2011). During the process of adjusting to Western culture, Korean immigrant men may feel the loss of authority and power when they deal with changes in gender roles at home (e.g., wives as the primary breadwinner) and lower socioeconomic positions in society (e.g., underemployed due to language barriers). Moreover, Korean men have been taught to avoid expressing their emotional feelings in public because such exhibition is considered a weakness or shameful for men (Shin, 2002). Consequently, many KA men tend to ignore their emotional difficulties and not to seek mental health services when needed.

On the other hand, KA women may adjust to socio-cultural stressors well and positively perceive the gender role changes in the US, which could function as a buffer against depressive symptoms. Inconsistent with other studies on socioeconomic status and depression (Kim & Chen, 2011; McGrath, Keita, Stickland, et al., 1990), KA women reported higher levels of income than KA men in this study. Considering that lower annual household income was associated with a higher prevalence of depressive symptoms across gender, KA men would be at higher risk of depressive symptoms than KA women. However, it is not certain whether the effects of financial constraints and depression depend upon gender. Future research needs to examine the interactions between gender and socioeconomic indicators on depression. Taken together, our findings suggest unclear gender dynamics on depression in KAs despite the general consensus of women's higher vulnerability to depression (Choi, Miller, & Wilbur, 2009; Jang, Kim, & Chiriboga, 2011).

The role of social support systems can be another possible explanation for gender differences in depressive symptoms among KAs. Various types of support systems (e.g., family, friends, relatives, and others) are typically considered to be protective factors for mental health among KAs (Jang, Kim, & Chiriboga, 2011; Kim, Sangalang, & Kihl, 2012; Park, Jang, Lee, et al., 2013), while lack of social support systems are associated with higher depressive symptoms in this population (Han, Kim, Lee, et al., 2007; Kim et al., 2012; Roh, 2011). This study shows that marital status is a plausible factor for predicting depressive symptoms for both men and women. Although there was no significant difference, unmarried men reported higher prevalence of depressive symptoms than married men, and the difference of depressive symptoms by marital status was more prominent for men than for women. As KAs are generally at greater risk for reduced social networks or social isolation (Jang et al., 2011), being married could be favorable to mental health status. However, the ways in which marital status as a support system has an impact on depression, and the interactive effects of various social support systems and gender on mental health outcomes in KAs, are unclear and warrant further investigation.

The study revealed significant associations between health insurance coverage and depressive symptoms. Consistent with prior research (Herrmann Farrell, 2012), KAs without health insurance coverage were more likely to have depressive symptoms than those with health insurance. Even if they are motivated to seek mental health treatment, the absence of health insurance may lead to delays in doing so or to an increase in psychological burden, which can cause higher depressive symptoms. The findings indicate that being uninsured can be one of the major obstacles to seeking help for mental health problems and accessing health care (Sohn, 2004). As the Korean health insurance system is compulsory, universal, and inexpensive (Jeong, 2011), KAs who are accustomed to it may be reluctant to use the US health insurance system with its high premiums. As KAs have a higher rate of being uninsured among Asian Americans (Kaiser Family Foundation, 2010; Kao, 2010), disparities in health insurance would lead to serious mental health outcomes, especially for KAs who lack financial and social support systems.

Furthermore, having health insurance may not guarantee mental health service utilization because of possible high deductibles, out-of-pocket healthcare expenses, or cultural values, such as shame and stigma for mental health treatment among KAs (Leong & Lau, 2001; Yoo & Kim, 2008). Koreans in South Korea also face similar challenges. Although universal public health insurance covers basic health care needs, more than 90% of mental health services in South Korea are provided by the private sector (Suh, 2005). It indicates that the number of Koreans who seek mental health care is likely to be low regardless of their health insurance status. Yet, prior research has indicated that lack of health insurance serves as a barrier to mental health care utilization and that having health insurance is an important factor in access to mental health services (Dhingra, Strine, Pearson, et al., 2010; US Department of Health and Human Services, 1998). The association between health insurance status and depressive symptoms underscores the importance of introducing more affordable health insurance options for ethnic minority groups, including KAs (Choi, 2011). It is difficult to estimate the impact of the Affordable Care Act, which was only signed into law the year that this study was conducted, but it is expected to improve the quality of care for previously uninsured populations. Future research needs to further investigate the underlying dynamics of health insurance coverage and depressive symptoms as well as the role of health care utilization on both health insurance coverage and mental health outcomes in this population.

Consistent with previous studies, help-seeking behavior as a coping mechanism was a significant indicator of predicting depression (Cheung, Leung, & Cheung, 2011; Sheikh & Furnham, 2000). KAs who sought help for their mental health problems were more likely to report depressive symptoms than those who did not. Only half of the men and a third of the women with depressive symptoms sought mental health services. These low rates of help-seeking behavior can be the result of using the low cut-off point of PHQ-9K, because people with mild levels of depressive symptoms tend not to take it seriously, attributing the symptoms to other physical problems (Bernstein, Lee, Park, et al., 2008). In fact, the most common methods of seeking help were visits to general practitioners (27.8%) or religious practice (8.7%), while visits to mental health specialists (4.8%) were a last resort in this study.

These findings suggest that KAs would be reluctant to seek treatment in mental health care due to the rooted cultural stigmatization related to mental problems and mental health service use (Kelaher, Paul, Lambert, et al., 2003), failure to recognize depression as a disease, a tendency to express depressive symptoms as somatic complaints (Donnelly, 2007; Kim, et al., 2005), or lack of access to mental health care (The Kaiser Family Foundation, 2010; Kao, 2010). Thus, it is essential to sufficiently understand cultural barriers surrounding help-seeking behaviors and depression in this population and to develop culturally appropriate mental health promotion strategies targeted at KAs to seek help from mental health professionals for early treatment and prevention.

Research has claimed that religion can serve as an important coping strategy that contributes to preventing or decreasing depressive symptoms (Pang, 2007; Roh, 2011). Religious affiliations and communities provide spiritual comfort, a variety of social services, and social networks, and help KAs successfully settle down in the mainstream of American society (Hirschman, 2004). Although religion was not a statistically significant predictor for depressive symptoms in this study, it is notable that KAs with no religion reported higher depressive symptoms than those with religion. Considering the pivotal role of churches and temples for immigrant groups, it would be interesting to further investigate how religious faith is helpful in coping with mental health problems and to what extent religious participation is effective in improving mental health disparities in KAs.

Inconsistent with previous research (Bernstein et al., 2011; Noh & Kaspar, 2003), acculturation indicators (e.g., length of stay in the US) did not play important roles in predicting depressive symptoms. Although there were no distinct patterns related to length of stay in the US, KAs with 6–10 years of stay had lower depressive symptoms than recent immigrants or those with more than 10 years of stay. These results reflect that KAs could face different kinds of challenges, such as accepting and adjusting to a new culture, dealing with discrimination or prejudice based on English proficiency or ethnicity, across their life span in the US. KAs with no command of English had better mental health than those with good command of English. Considering that the sample was mainly drawn from New York City, which has a large KA community, levels of English proficiency, might not be a significant indicator of depressive symptoms.

Several limitations of the present study should be acknowledged. The use of a convenience sampling strategy may bring a possibility of selection bias, which may impact the levels of depressive symptoms found. The current study sample was mainly recruited from KA community centers, religious organizations, and commercial entities in urban areas with established KA communities. Thus, findings cannot be generalized to other KA populations in different settings (e.g., rural areas without a Korean community). The cross-sectional design of the study limits any causal inferences or longitudinal conclusions between socio-demographic and mental health related characteristics and depressive symptoms. In addition, findings should be carefully interpreted because this study is based on self-report methods. For example, KAs who were already seeking mental health treatment might be more willing to report their symptoms than others who were not seeking treatment. However, it does not mean that the former has more depressive symptoms than the latter.

Despite its limitations, the present study provides insight on the unique contribution of socio-demographic factors and health-related behaviors on depressive symptoms among KAs. Given the higher depressive symptoms in KA men, more attention and efforts should be given to targeting this population. Future research needs to investigate the causal relationships of various predictors on depression, such as the interaction effects between socioeconomic status and gender on depression, which would contribute to facilitating early mental health screening and to developing culturally appropriate interventions and policies in mental health for KAs.

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Distribution of Socio-demographic and Mental Health related Characteristics and Prevalence of Depressive Symptoms among Korean American Adults

Table 1

	Men N (%)	Women N (%)	All N (%)	Depressive symptoms (%)		
				Men	Women	All
<i>Prevalence of depressive symptoms^{a†}</i>				30.5	19.5	23.9
Age (mean, SD)	54.9(15.43)	50.7(16.72)	52.38(16.31)			
Age						
< 45 yrs	24(25.8)	53(38.7)	77(33.5)	25.0	15.1	18.2
45–64 yrs	40(43.0)	51(37.2)	91(39.6)	37.5	17.6	26.4
65 yrs	29(31.2)	33(24.1)	62(27.0)	27.6	27.3	27.4
Educational attainment						
Completed some college or more	55(59.1)	83(60.6)	138(60.0)	27.3	18.1	21.7
Completed some high school or graduate	31(33.3)	38(27.7)	69(30.0)	32.3	13.2	21.7
Middle school graduate or less	7(7.5)	16(11.7)	23(10.0)	57.1	37.5	43.5
Annual household income						**
\$50,000	18(19.4)	39(28.5)	57(24.8)	27.8	15.4	19.3
\$30,000–49,999	20(21.5)	40(29.2)	60(26.1)	20.0	10.0	13.3
\$10,000–29,999	27(29.0)	29(21.2)	56(24.3)	25.9	20.7	23.2
< \$10,000	28(30.1)	29(21.2)	57(24.8)	46.4	34.5	40.4
Employment status						*
Full time or part time	51(54.8)	69(50.4)	120(52.2)	23.5	13.0	17.5
Unemployed	42(45.2)	68(49.6)	110(47.8)	40.5	25.0	30.9
Health insurance					*	**
Private	21(22.6)	50(36.5)	71(30.9)	14.3	10.0	11.3
Medicare/family or children health plus	17(18.3)	18(13.1)	35(15.2)	41.2	5.6	22.9
Medicaid	29(31.2)	33(24.1)	62(27.0)	37.9	33.3	35.5
No insurance	26(28.0)	36(26.3)	62(27.0)	30.8	25.0	27.4
Marital status [‡]						
Married	60(64.5)	68(49.6)	128(55.7)	25.0	16.2	20.3
Single/widowed/divorce/others	33(35.5)	69(50.4)	102(44.3)	42.4	21.7	28.4
Living arrangement						

	Men N (%)	Women N (%)	All N (%)	Depressive symptoms (%)		
				Men	Women	All
Living with spouse/spouse & children/others	80(86.0)	118(86.1)	123(53.5)	14.1	14.4	20.3
Alone	13(14.0)	19(13.9)	32(13.9)	13.8	11.5	21.9
Religion						
Christian	81(87.1)	121(88.3)	158(68.7)	29.6	17.4	25.9
No Christian or no religion	12(12.9)	16(11.7)	72(31.3)	41.7	31.3	19.4
US stay (mean,SD)	20.35(9.89)	18.04(18.98)	18.98(10.54)			
US stay						
5 yrs	6(6.5)	19(13.9)	25(10.9)	33.3	21.1	24.0
6–10 yrs	13(14.0)	27(19.7)	40(17.4)	15.4	11.1	12.5
11–20 yrs	30(32.3)	37(27.0)	67(29.1)	40.0	24.3	31.3
21 yrs	44(47.3)	54(39.4)	98(42.6)	29.5	18.5	23.5
English proficiency ^b						
Fluent in speaking, reading, and writing	38(40.9)	48(35.0)	86(37.4)	36.8	22.9	29.1
Fluent in one or two	14(15.1)	20(14.6)	34(14.8)	35.7	25.0	29.4
No fluent in any	41(44.1)	69(50.4)	110(47.8)	24.4	14.5	18.2
Seeking help for mental health problem				*	***	***
No	27(29.0)	37(27.0)	166(72.2)	22.7	13.0	16.9
Yes	66(71.0)	100(73.0)	64(27.8)	51.9	35.1	42.2
Family having any mental health problem						
No family problem	73(78.5)	108(78.8)	181(78.7)	28.8	15.7	21.0
Family having problem and needing help	13(14.0)	24(17.5)	37(16.1)	42.9	20.0	35.1
Family having problem but not needing help	7(7.5)	5(3.6)	12(5.2)	38.5	33.3	33.3

^a Age adjusted prevalence of depressive symptoms

^b English proficiency was measured using three items of fluency in speaking, reading, and writing using a 4-point scale ('excellent=1' to 'poor=4'), and was then recoded into two categories: 'excellent' or 'good'=1(fluency) and 'fair' or 'poor'=0(no fluency). Finally, subjects were grouped into three categories according to the total number of fluencies in above mentioned three items: 'no fluent in any', 'fluent in one or two', and 'fluent in speaking, reading, and writing'.

* p<0.05,

** p<0.01 for difference among different levels of each socioeconomic and health behavioral factor

[†] p<0.05 for difference between men and women

Table 2

Odds ratio (and 95% Confidence Interval) for Depressive symptoms among Korean American Adults

	<i>Unadjusted Logistic Regression</i>		<i>Adjusted Logistic Regression</i>	
	OR (95% CI)	p-value	OR (95% CI)	p-value
Gender				
Male	Ref.		Ref.	
Female	0.52 (0.28–0.95)	0.03	0.45 (0.21–0.96)	0.04
Age	1.02 (1.00–1.04)	0.06	1.01 (0.98–1.04)	0.61
Educational attainment				
Completed some college or more	Ref.		Ref.	
Completed some high school or graduate	1.00 (0.50–2.01)	1.00	0.67 (0.28–1.63)	0.38
Middle school or less	2.77 (1.11–6.94)	0.03	1.80 (0.52–6.29)	0.36
Annual household income				
\$50,000 or more	Ref.		Ref.	
\$30,000–49,999	0.64 (0.24–1.74)	0.38	0.62 (0.20–1.94)	0.42
\$10,000–29,999	1.26 (0.51–3.12)	0.61	0.67 (0.22–2.20)	0.50
\$10,000 or less	2.83 (1.22–6.58)	0.02	1.04 (0.32–3.40)	0.95
Employment status				
Full time or part time	Ref.		Ref.	
Unemployed	2.11 (1.13–3.92)	0.02	1.02 (0.44–2.34)	0.96
Health insurance				
Private	Ref.		Ref.	
Medicare/family or children health plus	2.33 (0.79–6.86)	0.12	1.59 (0.41–6.25)	0.51
Medicaid	4.33 (1.76–10.66)	0.00	1.88 (0.52–6.71)	0.33
No insurance	2.97 (1.18–7.49)	0.02	4.02 (1.28–12.61)	0.02
Marital status				
Married	Ref.		Ref.	
Single/widowed/divorce/others	1.56 (0.85–2.86)	0.15	2.27 (0.95–5.40)	0.06
Living arrangement				
Living with spouse/other families/others	Ref.		Ref.	
Alone	0.88 (0.36–2.15)	0.77	0.45 (0.15–1.37)	0.16
Religion				
Christian	Ref.		Ref.	
Non-Christian or no religion	0.69 (0.35–1.36)	0.29	2.25 (0.83–6.09)	0.11
US stay	1.00 (0.97–1.03)	0.82	1.01 (0.97–1.06)	0.60
English Proficiency ^a				
Fluent in speaking, reading, and writing	Ref.		Ref.	
Fluent in one or two	1.02 (0.42–2.43)	0.97	1.72 (0.58–5.05)	0.33
No fluent in any	0.54 (0.28–1.06)	0.07	0.93 (0.36–2.38)	0.88
Seeking help for mental health problem				
No	Ref.		Ref.	
Yes	3.60 (1.89–6.83)	p<.01	2.96 (1.29–6.80)	0.01

	<i><u>Unadjusted Logistic Regression</u></i>		<i><u>Adjusted Logistic Regression</u></i>	
	OR (95% CI)	p-value	OR (95% CI)	p-value
Family members with mental health problem				
None	Ref.		Ref.	
Having problem and need help	2.04 (0.95–4.38)	0.07	2.20 (0.89–5.44)	0.09
Having problem but not need help	1.88 (0.54–6.58)	0.32	2.07 (0.43–9.85)	0.36

^aEnglish proficiency was measured using three items of fluency in speaking, reading, and writing using a 4-point scale ('excellent=1' to 'poor=4'), and was then recoded into two categories: 'excellent' or 'good'=1(fluency) and 'fair' or 'poor'=0(no fluency). Finally, subjects were grouped into three categories according to the total number of fluencies in above mentioned three items: 'no fluent in any', 'fluent in one or two', and 'fluent in speaking, reading, and writing'.