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Mental health service utilization among Korean elders in Korean churches: preliminary findings from the Memory and Aging Study of Koreans in Maryland (MASK-MD)

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Abstract

Background—Korean Americans (KA) comprise the fourth largest Asian-American subgroup, with a population estimated at nearly 1.7 million, and the vast majority (up to 85%) of KA elders attends ethnic churches. Despite the rapid increase of the KA elderly population, data on mental health service utilization among KA elders are scarce.

Method—Based on a cluster sampling method, the Memory and Aging Study among Koreans in Maryland (MASK-MD) recruited and assessed 630 KA elders (mean age: 70.9 ± 6.1 years; 68.9% female) in KA churches for depression, dementia, and level of mental health service utilization. The Korean versions of the Patient Health Questionnaire (PHQ-9K) and Mini-mental Status Examination (MMSE-KC) were administered by trained community health workers.

Results—Of the 630 participants, 23.2% and 7.3% had PHQ-9 scores of 5 (‘mild depression’) or above and 10 or above (‘clinical depression’), respectively. In addition, 7.0% scored below the age- and education-specific cutoff values for probable dementia based on the MMSE-KC. Of the 92 participants with ‘clinical depression’ or having thoughts of death or self-injury, only 16 (17%) reported utilizing mental health services. Likewise, of 56 participants with probable dementia, only 3 (7.3%) sought treatment from a health care provider.

Conclusion—The prevalence of depression and cognitive impairment are high in community-dwelling KA elders attending KA churches, but the rate of mental health service utilization among depressed or cognitively impaired Korean elders is low. Further research is warranted to identify barriers to and strategies for adequate mental health care for Korean immigrant elders.

Keywords

cultural aspects; health service use; epidemiology (mental health); epidemiology (dementia)

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Introduction

According to the US Census (2010), Korean Americans (KAs) are the fourth largest Asian American subgroup, comprising 10% of Asian Americans, and numbering approximately 1.7 million people. The population of KA elders has rapidly increased during the last few decades, and several epidemiological and community-based studies have examined and reported the prevalence of psychiatric symptoms, particularly depression, among KA elders, to be higher – up to four times – than that of the general population (Jang, Chiriboga, & Okazaki, 2009; Kang, Domanski, & Moon, 2009; Roh et al., 2011). Also, the 2007 California Health Interview Survey revealed that KA elders had the highest psychological distress among Asian American sub-ethnic groups (Kim, Chiriboga, et al., 2010).

However, despite high rate of psychological distress among KA elders, data on mental health service use among KA elders are scarce. A few previous studies have measured propensity to use or attitudes toward the use of mental health services among KA elders (Jang, Kim, & Chiriboga, 2005; Jang et al., 2009), but not the actual rates of mental health service utilization. Also, Park, Jang, Lee, Haley, and Chiriboga (2013) recently examined the correlates of mental health service use among 363 KA adults (age 18 years and older) in New York City and reported that shorter duration of residence in the USA, lower income, and presence of perceived need for help were significantly related to the use of mental health services, but more specific data on correlates of mental health services among KA elders are not available. Kim, Chiriboga, et al. (2010) examined the correlates of mental health service use among Asian-American elders, but conclusions are limited as this study treated Asian Americans as a homogenous group. Therefore, little is known about the actual rate and correlates of mental health service utilization among KA elders with psychiatric issues.

A socioculturally unique aspect of the KA community is the central presence of the Korean church in the daily lives of a vast majority of KA elders. More than 70% of KA adults report attending church on a regular basis (Min & Kim, 2002) and 85% of KA elders in Maryland attend specifically Korean churches (Kim, Kim, Juon, & Hill, 2000). In addition to attending for religious purposes, KAs also prefer to receive health-related information in a church setting (Bastani, Glenn, Maxwell, & Jo, 2007; Jo, Maxwell, Yang, & Bastani, 2009). Accordingly, several studies have utilized Korean churches as the main platform for promoting health and screening for various chronic illnesses (Baruth, Wilcox, Laken, Bopp, & Saunders, 2008; Bopp et al., 2007; Jo et al., 2009). A model of mental health service delivery for KAs, with Korean churches as the central platform for screening of KAs with mental disorders, had been proposed (Lee, Hanner, Cho, Han, & Kim, 2008). In order to determine the feasibility of developing church-based mental health service programs for KA elders, we assessed the mental health service needs (i.e., depression and dementia) of KAs and the level of mental health service utilization among KA elders in Korean churches in the state of Maryland.

We also examined whether there are gender differences in prevalence and treatment rates for KA elders, as there have only been a few recent studies examining this important issue. In non-Asian populations, elderly women on Medicare tend to utilize outpatient mental health services for depression more than elderly men on Medicare (Burns, Cain, & Hussaini, 2001;

Husaini et al., 2002). In the last few years, studies have indicated potential gender differences in depressive symptoms and the rates of elderly individuals seeking depression treatment (Jang, Kim, & Chiriboga, 2010; Park et al. 2013). We examined whether our study's findings would support these recently reported gender differences in elderly KAs.

Method

Participants and data collection

The Memory and Aging Study among Koreans in Maryland (MASK-MD) is a community-based epidemiologic study that assesses the prevalence and correlates of dementia and depression in a community-representative sample of self-identified, first-generation Korean immigrant elders ages 60 and older in the greater Baltimore–Washington metropolitan area. We excluded those who could not speak Korean fluently. The recruitment of MASK-MD participants took place in two stages. The first stage dovetailed the Korean Literacy Intervention Study for High Blood Pressure sponsored by the NHLBI, which screens elderly attendees in 18 local churches selected based on denomination, size, and regional distribution out of 150 churches in the target region. The second stage, currently ongoing, consists of recruitment of KA elders at the local Korean senior centers, low-income elderly apartments, and ethnic groceries. The present analysis is limited to the 630 KA elders (mean age: 70.9 ± 6.1 years; female: 70.8 ± 6.1 years) recruited during the first recruitment stage (12/2007–6/2010). Of the 31 churches invited to participate, 18 churches agreed to participate, including Presbyterian ($n = 5$), Methodist ($n = 2$), Baptist ($n = 4$), Catholic ($n = 3$), and other denominational churches ($n = 4$). The most frequent reasons for refusal were: 'not having enough time after the Sunday service ($n = 5$)' and 'not having enough elderly members ($n = 4$)'. Membership size of the 18 churches ranged from 170 to 6000 with a mean membership size of $1122.2 (\pm 1440.0)$. Participant recruitment and data collection were conducted by trained, bilingual community health workers immediately after Sunday services when most members stay to share lunch or dessert.

Assessment

Depression: The patient health questionnaire – Korean version (PHQ-9K; Han et al., 2008)—The PHQ-9 is self-administered and easily scored, maps onto the nine symptoms from the DSM-IV classification for major depressive disorder, and can be used to track symptoms. Its reliability and validity have been demonstrated in the elderly (Lamers et al., 2008; Phelan et al., 2010). PHQ-9 scores are usually interpreted as follows: 0–4 = no or minimal depression; 5–9 = mild depression; 10 or above = moderate to severe or clinically significant depression (Kroenke, Spitzer, & Williams, 2001). The validity and reliability of the Korean version of the PHQ-9 have been previously examined among Korean elders in Korea, with a suggested optimal cutoff score of 5 when screening for depression (Han et al., 2008).

Cognitive impairment: Mini-Mental Status Examination –Korean version (Lee, Lee, Lee, Kim, Jhoo, Kim, et al., 2002)—The Mini-Mental Status Examination (MMSE) is a widely used brief, quantitative screening tool of cognitive status in adults (Folstein, Folstein, & McHugh, 1975). A cutoff score of 24 or below is often utilized to

screen for dementia (Lezak, Howieson, & Loring, 2004). We utilized the Korean version of the Mini-Mental Status Examination (MMSE-KC) included in the Consortium to Establish Registry for Alzheimer's disease assessment packet with established cutoff scores for screening dementia by age and education based on Korean elders in Korea (Lee, Lee, Lee, Kim, Jhoo, Kim, et al., 2002). The cutoff scores for screening dementia ranged from 13 (for those with <3 years of education and age >80) to 24 (for those with >12 years of education and age <70) (Lee, Lee, Lee, Kim, Jhoo, Youn, et al., 2002).

Mental health service utilization: self-report—Each participant was asked the following questions regarding mental health service utilization: (1) 'Are you currently receiving any treatment for depression or any other mood-related problems?', (2) 'If yes, what is the profession of the person treating your condition?' (e.g., primary care doctor, psychiatrist, psychologist, counselor, or others), (3) 'Please, describe the type of treatment?' (e.g., medication, psychotherapy, counseling, or other), and (4) 'Are you currently receiving any treatment for dementia or any problems related to memory loss?' Also, from the medication list provided by each subject, the presence or absence of psychiatric medications (antidepressants, antipsychotics, mood stabilizers, antianxiolytics, and cognitive enhancers) was identified.

Analysis

Statistical analyses were performed in SPSS for Windows, PASW Statistics 19 (SPSS Inc., Chicago, MA, USA). We conducted a series of internal subgroup comparisons of sociodemographic variables and mental health service-related variables using selected demographic variables, followed by *t*-tests for continuous variables and Chi-squares for categorical variables. The subgroup of Korean seniors who screened positive for depressive symptoms (PHQ-9 ≥ 5, PHQ-10, or thoughts of death) or cognitive impairment (MMSE-KC score below established cutoff) was stratified by gender and further examined to determine whether or not they were receiving mental health service for their condition.

We then identified a subgroup that had a clinical need for mental health services. The group was defined as individuals with a PHQ total score ≥ 10 or those who endorsed thoughts of death or self-injury. We calculated crude odds ratios with 95% confidence limits to identify pertinent sociodemographic (age, gender, education, US years of residency) and health-related variables (number of medications, level of depression, cognitive impairment, self-rated physical and mental health) for seeking mental health service based on a logistic regression. For the multivariate model, if a variable was significant at $p < 0.05$ or if its removal altered the multivariate model by more than 10% of the variance based on the pseudo- R^2 , we retained the variable in the final multivariate model. All statistical tests were significant at $p < 0.05$.

Results

Sample characteristics

Table 1 displays the sociodemographic characteristics, prevalence of depression, cognitive impairment, and mental health service utilization by gender.

The point-prevalence of depression among KA elders attending Korean churches was 23.2% for those with PHQ-9 scores of 5 or higher ('any depression') and 7.3% for those with a PHQ-9 score of 10 or higher ('moderate to severe depression'). Twelve percent of the participants endorsed item #9 of the PHQ-9 (thoughts of being 'better off dead or of hurting yourself in some way' on several days during the prior two weeks). Female participants were more likely to endorse depressive symptoms or ruminate about death and self-injury than male participants. A total of 19.7% of KA elders in our study scored less than 24 on the MMSE-KC. Seven percent of our KA participants scored below the age- and education-specific cutoff values for 'probable dementia'. As was the case for depression, female elders were more likely to have probable dementia than their male counterparts.

Mental health service utilization

Table 2 displays the proportion of mental health service use among participants with depression or probable dementia. Of the 146 participants who screened positive for 'any depression' (PHQ-9 ≥ 5), 18 (12.5%; all females) reported receiving treatment from a health professional for depression or any mood-related problems. Two of the participants reported treatment by a local bilingual psychiatrist, and the rest of them ($n = 16$) reported receiving treatment from their primary care physicians. Of the 46 participants who screened positive for 'clinically significant depression' (PHQ-9 ≥ 10), only 9 (20.5%; all females) reported receiving treatment from a health care provider – all by their primary care physicians. Alarming, among those who reported being 'better off dead or of hurting yourself in some way' several days or more during the last 2 weeks, only 9 (12%) reported utilizing mental health services. Similarly, mental health service utilization was also low for cognitively impaired KA elders. Of 44 participants with 'probable dementia', based on Korean MMSE-KC normative data, only 3 (6.8%) sought consultation and treatment from their primary care physicians and 2 participants reported being on an acetylcholinesterase inhibitor.

There was a significant gender difference on the pattern of mental health service utilization among depressed KAs. None of the male KA elders with any level of depression reported seeking treatment from a mental health service provider. Only 2 of the 17 male KAs with thoughts of death or self-injury reported seeking treatment from their primary care physicians, but neither of them was on an antidepressant or receiving psychotherapy. There was not a significant gender difference on mental health service utilization for participants with cognitive impairment (as determined by MMSE scores).

Correlates of mental health service use

For those participants with 'clinical' mental health service needs (PHQ-9 ≥ 10 or thoughts of death or self-injury), mental health service utilization rate was low (Table 3). Significant predictors for mental health service utilization were years of US residency, PHQ-9 total score, and self-rating of mental health. The resulting model revealed that longer years of residency in the USA (Crude Odds Ratio: 1.08; 95% CI: 1.01–1.13) and higher PHQ-9 total scores (Crude Odds Ratio: 1.12; 95% CI: 1.1–1.23) were associated with receiving mental health service for those with mental health service needs.

Discussion

The prevalence of ‘any depression’ among KA elders in church (23.2%) was substantially higher than the 13.5% in the general American elderly population (Beekman, Copeland, and Prince (1999, p. 23), but within the range of prevalence rate (7.2% and 49%) reported in a recent meta-analysis (Djernes, 2006). The prevalence of ‘clinically significant depression’ was comparable to the report of a community-based study of Australian elders that found an 8.2% prevalence of clinically significant depression based on the PHQ-9 (Pirkis et al., 2009). However, our figure was substantially higher than the 4.3% prevalence (3.7% for those older than 65) among Chinese American primary care patients in New York City (Chen, Huang, Chang, & Chung, 2006).

The high prevalence (12%) of ‘thoughts of death or injuring oneself’ among community dwelling KA elders is alarming, but seems consistent with the fact that Koreans have the highest suicide rate (160/100,000) among the World Health Organization member countries (Organization for Economic Cooperation and Development, 2012). Bartels et al. (2002) reported a higher rate of suicidal ideation among older Asian primary care patients than any other ethnic group. The suicide rate among elderly Asian American women is also highest among all ethnic groups (National Center for Health Statistics, 1997). Development of community-based strategies to reduce suicidal thoughts and prevent suicide among KA elders is urgently needed.

The low level of mental health service utilization among KA elders in church, particularly those with clinical need for mental health services for depression, requires closer attention. The rate of mental health service use for depression treatment by the KA elders in our study was found to be seeking professional help among elders with clinically significant depression in the Washington Heights-Inwood Columbia Aging Project (Grunebaum, Oquendo, & Manly, 2008) or the antidepressant treatment rate of 35.7% among depressed elderly participants in the Cache County study (Steffens, Fisher, Langa, Potter, & Plassman, 2009). Though scarce, a few available national data indicate Asian American elders as one of the least likely ethnic groups to utilize mental health services. According to the 2005 California Health Interview Survey, Asian elders were 70% less likely to utilize mental health services than non-Hispanic Caucasians (Sorkin, Pham, & Ngo-Metzger, 2009). In a recent epidemiological study of Asian elders, KA elders were more likely to report mental distress, but least likely to utilize mental health service among Asian American subgroups (Sorkin, Nguyen, & Ngo-Metzger, 2011).

Multiple barriers exist for KA elders in our study to access mental health services. The frequently cited barriers to adequate mental health care are (1) an inability to speak English or the lack of an available interpreter, (2) an inadequate number of trained mental health workers, especially psychiatrists who are bilingual and/or culturally sensitive, (3) stigmas associated with mental disorders, (4) limited awareness of mental health disorders within the Korean community, (5) a lack of awareness about available mental health services, and (6) a belief in ethnic traditional medicine for mental health (Lee et al., 2008). A more geographically specific barrier is the lack of transportation as public transportation is not readily available in the suburbs of Baltimore–Washington for the majority of our study

participants who do not possess a driver's license. Among these barriers, the language issue likely represents the biggest obstacle as the Surgeon General's Report on Mental Health states that nearly half of the Asian American/Pacific Islander population's low utilization of mental health service is attributable to a lack of English proficiency and a shortage of providers who possess appropriate language skills (US Department of Health and Human Services, 1998).

The association observed between years of US residency and mental health service utilization among those with clinical mental health service needs is also consistent with previous reports. Years of residency and English proficiency have been reported to be associated with mental health service utilization among Asian immigrants (Abe-Kim et al., 2007; Alegría et al., 2007; Lee, Martings, Keyes, & Lee, 2011). It is also notable that none of the KA male elders with any level of depression severity (including only two of nine with suicidal or self-injury ideation) reported receiving mental health services. While gender disparity in mental health service utilization has been noted previously (Koopmans & Lamers, 2007; Rhodes & Goering, 1994), our data underscore the need for the development of a targeted outreach mental health service program for elderly KA men with depression in churches.

The prevalence of probable dementia among community-dwelling KAs in church (7.0%) was similar to the 8.2% prevalence estimated by a recent nationwide survey on Korean elders in South Korea (Kim et al., 2011). Our figure is also similar to the 7.6% prevalence of dementia reported among Japanese American men in the Honolulu-Asia Aging Study (White et al., 1996), but substantially higher than the 2.8% prevalence of dementia found among community-dwelling Japanese Americans in King County, Washington (Graves et al., 1996). As is the case for depression, underutilization of mental health service among cognitively impaired community-dwelling KAs is notable. Asian Americans, in general, utilize Alzheimer's disease community resources much less than other ethnic groups (Chow, Ross, Fox, Cummings, & Lin, 2000) and minority patients with dementia (e.g., Alzheimer's disease) have been reported to have significantly lower odds (30%–40%) of utilizing community resources than non-Hispanic White patients (Hernandez, McClendon, Zhou, Sachs, & Lerner, 2010; Zuckerman et al., 2008). Our findings suggest that the dementia treatment disparity might be even more pronounced among KA elders as only 2 out of 44 participants with probable dementia reported being on a cognitive enhancer (i.e., acetylcholinesterase inhibitor).

There are several limitations to this study. First, our study relied on the self-report of participants who may not be reliable in remembering their medical conditions, medication list or the details of their health care provider interactions. However, we minimized recall bias by asking study participants to bring their medications. Second, the cluster-sampling strategy based on select Korean churches may limit generalizability to the KA community at large. As the participants in this analysis were generally healthy and mobile attendees of Korean churches in Maryland, we may have underestimated the prevalence of mental health service needs among KA elders. Efforts are currently underway during the second stage of our recruitment plan that targets KAs who are not attending church in order to ensure a more community-represented study sample. Third, we did not assess the level of alternative

medicine use or religious service use for depression and dementia among the church attendees. The Study of Women's Health Across the Nation reported that complementary and alternative medicine use among elderly women are common and that psychological symptoms were associated with the use of spiritual therapy among Chinese and Whites (Bair et al., 2002). Possibly, underutilization of formal mental health service among KAs might have been a reflection of their preference for complementary and alternative medicine use or religious services over mental health services. Fourth, even though the PHQ-9K and MMSE-KC have been validated in Korean elders in South Korea, the utility of these instruments among KA immigrant elders in the USA has not been established. We are currently in the process of inviting a subsample of the study participants for more detailed functional (e.g., ADL/IADL), psychiatric and neuropsychological examinations in order to assist in the evaluation of the validity and reliability of these screening instruments among KA elders. Fifth, our study did not assess for several crucial factors (e.g., acculturation and living arrangement) in relation to mental health service use.

Despite these potential limitations, our findings clearly support the strong and immediate need to develop strategies to improve access to mental health services among KA elders attending Korean churches. Given the central role of the KA church in the KA community, and the high prevalence of unmet need for mental health service for depression among KA elders, developing a church-based strategy to improve mental health service utilization among depressed KA elders would be a reasonable approach. As the majority of KAs attend church and the clergy are likely to serve as the first point of contact for the emotionally troubled in need of psychiatric treatment, we have previously proposed a mental health service model that assigned the clergy the role of 'gatekeeper' to mental health services (Lee et al., 2008). In addition to their accessibility, a clergy member as the 'gatekeeper' may provide other advantages such as allowing depressed KA elders to initially avoid the stigma of seeking help from a mental health professional and offers them access to a culturally sensitive professional who is experienced in dealing with a variety of spiritual and life difficulties.

However, in some cases, the clergy's spiritual conceptualization of depression might delay an appropriate psychiatric intervention. Kim-Goh interviewed 50 Korean clergymen with an average duration in ministry of more than 20 years and found that nearly half of them (44%) have never made a referral to a mental health service provider and those with religious conceptualization of psychiatric symptoms are less willing to make referrals for mental health treatment than those with a psychological conceptualization (Kim-Goh, 1993). Also, Ng, Nyunt, Chiam, and Kua (2011) reported that compared to those with no religious affiliation, while elderly people with religious affiliations showed higher prevalence of mental health problems, they reported less frequent treatment by health care professionals. In fact, Christians and Moslems were least likely to seek treatment for mental illness among various religious affiliations. Therefore, involving KA clergy in delivery of mental health service likely requires concurrent development of outreach and educational program to enhance the medical and psychological conceptualization of mental disorders among the KA clergy to increase their referral rate to mental health services (Lee et al., 2008).

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Table 1

Gender differences in demographic characteristics and prevalence of depressive symptoms, cognitive impairment and mental health utilization.

Variable	Male (<i>n</i> = 196)	Female (<i>n</i> = 434)	<i>P</i> -Value	Total (<i>N</i> = 630)
Age, years (mean ± SD)	71.3 ± 6.1	70.8 ± 6.1	NS	70.9 ± 6.1
Education, years (mean ± SD)	13.4 ± 3.6	9.9 ± 4.3	<0.000	10.9 ± 4.4
Residency in USA (mean ± SD)	27.9 ± 10.7	26.8 ± 10.9	NS	27.1 ± 10.8
Living arrangement (%)				
Alone	6.8	32.8		24.9
With spouse	80.8	44.5		55.5
With children	12.4	22.5	<0.000	19.5
Number of medical conditions (mean ± SD)	1.7 ± 1.2	2.1 ± 1.3	0.001	2.0 ± 1.3
Number of medication (mean ± SD)	2.4 ± 2.0	3.1 ± 2.2	<0.000	2.9 ± 2.2
PHQ-9 score (mean ± SD)	2.3 ± 3.0	3.5 ± 4.1	<0.000	3.1 ± 3.8
PHQ-9 score 5 (%)	14.8	27.1	0.001	23.2
PHQ-9 score 10 (%)	5.6	8.1	NS	7.3
MMSE score (mean ± SD)	26.9 ± 2.8	25.5 ± 3.7	<0.000	26.0 ± 3.5
MMSE < 24 (%)	11.7	23.3	0.001	19.7
MMSE < cutoff score* (%)	6.6	7.1	NS	7.0
Thoughts of death or self-injury, <i>N</i> (%)	17 (8.7)	58 (13.4)	NS	75 (12.0)
Several days	16 (8.2)	49 (11.3)		65 (10.4)
More than half the days	0	4 (0.9)		4 (0.6)
Nearly every day	1 (0.5)	5 (1.2)		6 (1.0)
Saw mental health service provider for mood, <i>N</i> (%)	5 (2.6)	23 (5.3)	NS	28 (4.5)
On antidepressant (<i>n</i>)	0	7(1.6)	NS	7(1.1)
On benzodiazepine (<i>n</i>)	2(1.0)	8(1.8)	NS	10(1.6)
Saw mental health service provider for cognition, <i>N</i> (%)	6 (3.1)	5 (1.2)	NS	11 (1.8)
On cognitive enhancer (<i>n</i>)	2(1.0)	4(0.9)	NS	6(1.0)

* Individual MMSE cutoff scores were calculated on the basis of age and education.

Table 2

Prevalence of mental health service use among men and women with depression or dementia diagnoses.

Sought help from health service provider for mood				
	Male	Female	Total (N= 630)	p-Value
PHQ-9 5	<i>n</i> = 29	<i>n</i> = 117	<i>N</i> = 146	
Saw mental health service provider, <i>n</i> (%)	0 (0)	18 (15.7)	18 (12.5)	0.01*
On antidepressant	0 (0)	4 (3.4)	4 (2.7)	0.41
On benzodiazepine	1 (3.4)	5 (4.3)	6 (4.1)	0.66
PHQ-9 10	<i>n</i> = 11	<i>n</i> = 35	<i>N</i> = 46	
Saw mental health service provider, <i>n</i> (%)	0 (0)	9 (25.7)	9 (20.5)	0.06
On antidepressant	0 (0)	1 (2.9)	1 (2.2)	0.76
On benzodiazepine	1 (9.1)	4 (11.4)	5 (10.9)	0.66
Suicidal thoughts	<i>n</i> = 17	<i>n</i> = 58	<i>N</i> = 75	
Saw mental health service provider for mood, <i>n</i> (%)	2 (11.8)	7 (12.1)	9 (12.0)	0.67
On antidepressant	0 (0)	2 (3.4)	2 (2.7)	0.60
On benzodiazepine	1 (5.9)	2 (3.4)	3 (4.0)	0.54
Sought help from health service provider for cognition				
	Male	Female	Total	p-Value
MMSE below cutoff	<i>n</i> = 20	<i>n</i> = 36	<i>N</i> = 56	
Saw mental health service provider for cognition, <i>n</i> (%)	2 (10.0)	2 (5.6)	4 (7.1)	0.45
On cognitive enhancer	1 (5.0)	1 (2.8)	2 (3.6)	0.59

Note: Bold face indicates statistical significance

*
p < 0.05).

Table 3

Participants who needed treatment based on a PHQ score of greater than or equal to 10 or thoughts of death/self-injury ($n = 92$).

	Patients not receiving mental health treatment ($n = 76$)	Patients receiving mental health treatment ($n = 16$)	p -Value	Crude OR	95% CI	p -Value
Age, mean (SD)	70.2 (6)	72.1 (7)	0.29	1.05	0.96–1.13	0.29
Female, n (%)	56 (74)	13 (81)	0.39	1.55	0.40–6.00	0.53
Education, mean (SD)	9.5 (5)	9.5 (5)	0.99	1.00	0.89–1.13	1.0
Years of US residency	21.4 (11)	28.3 (8)	0.02	1.08	1.01–1.15	0.03
Number of medications, mean (SD)	3.0 (2)	3.5 (2)	0.41	1.11	0.87–1.40	0.41
PHQ-9 total, mean (SD)	8.6 (5)	11.9 (6)	0.02	1.12	1.01–1.23	0.03
Thoughts of death/self-injury, n (%)	63 (83)	12 (75)	0.34	0.62	0.17–2.23	0.46
MMSE total, mean (SD)	24.8 (4)	24.2 (6)	0.72	0.97	0.85–1.10	0.61
Self-rating of physical health			0.24	2.00	0.52–7.68	0.31
Excellent/good, n (%)	24 (32)	3 (19)				
Fair/poor, n (%)	52 (68)	13 (81)				
Self-rating of mental health			0.02	8.27	1.04–66.03	<0.05
Excellent/good, n (%)	27 (36)	1 (6)				
Fair/poor, n (%)	49 (64)	15 (94)				

Note: Bold face indicates statistical significance

* $p < 0.05$.