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ORIGINAL ARTICLE

Exploring Levels and Correlates of Depression Literacy Among Older Korean Immigrants

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Abstract

Objectives Despite the high prevalence of depression among older Korean Americans (KAs), there has been very little research on depression literacy among older KAs. This study identified specific areas of improvement in depression literacy to address mental health promotion among KAs. Twenty-two items on the depression literacy scale were grouped under five key themes: incidence and prognosis, differential symptoms, symptom recognition, non-pharmacological effectiveness, and pharmacological knowledge. This study aimed to assess the level of understanding depression literacy based on five domains and identify factors associated with depression literacy and its domains among older KAs.

Methods A cross-sectional study with 178 KAs aged 60 years and older was conducted in the Washington DC Metro area. Interviewer and self-administered questionnaires were used to collect data. Multiple linear regression analyses were conducted to identify factors associated with depression literacy and its domains. Statistical significance was set at $p < .05$ for analyses.

Results Knowledge pertaining to all 5 depression literacy domains was low, particularly on pharmacological treatment and differential symptoms were noticeably low. The majority of participants had misconceptions about antidepressants. 86% believed that antidepressants can have a rapid effect on symptoms, 82.6% believed people with depression should stop taking antidepressants as soon as they feel better, and 66.3% believed antidepressants were addictive.

Conclusion Misperception about depression and antidepressants may be associated with poor mental health outcomes among older KAs. Culturally-tailored education for older KAs with limited English proficiency could be beneficial in promoting depression literacy and reducing stigma or misconceptions regarding depression and treatments.

Extended author information available on the last page of the article

Introduction

According to the United States (U.S.) census, Korean Americans (hereafter, KA) are the fifth largest group among the American Asian population and the third-largest Asian group in the Washington, D.C. metropolitan area (U.S. Census Bureau, 2012). Along with these general trends for America's older population, older Asian Americans are also growing exponentially. Approximately 95% of KAs aged 65 and older are foreign-born (Pew Research Center, 2017). As a result of their arrival and resettlement in the new country, immigrants usually undergo varying degrees of acculturation stress. Most immigrants undergo significant changes in many aspects of their lives during the acculturation process. Acculturation measures include language, lifestyle, health behaviors, beliefs, values, cultural identity and attitudes as they are maintained or transformed by the experience of coming into contact with another culture (Cedillo et al., 2020). For first-generation immigrant older adults who have deeply embedded ethnic-cultural behaviors, beliefs, and values, their acculturation is much more complex and has significant implications for their adaptation challenges to the demands of their host society (Ando, 2014).

Older Korean immigrants in the acculturation process of adapting to a new culture have a strong adherence to the Korean culture. These individuals have perceived stressors such as limited English proficiency and social isolation that are more stressful for them than for fully acculturated individuals (Rhee, 2019). More than 70% of KAs speak Korean at home and 75% prefer to visit Korean-speaking doctors (Asian Pacific Islander American Health Forum [APIAHF], 2006; Shin & Robert 2010). According to a state-wide public survey in California, 36% of KA respondents reported problems with understanding health information provided in their doctors' offices or clinics (New California Media, 2003). The majority of KAs with intermediate-level English skills do not feel comfortable communicating with English-speaking health care professionals (Oh et al., 2011, 2012). In addition to language barriers, most mainstream health care providers are not familiar with the health needs of KA immigrants, the unique barriers they face, and their views about health (Cho, Cheon-Klessig, Gerace, & Camilleri, 2002). Late arrival (at an advanced age) in the U.S. coinciding with fewer educational opportunities in the U.S. were significant factors affecting health behaviors (Guo & Stensland, 2018). Recently immigrated KAs confront many barriers to accessing relevant health information and health services, partly due to limited English proficiency (Kim, Chen, Kim, & Brintnall, 1998; Oh et al., 2013).

Previous studies have reported that limited health literacy is associated with limited English proficiency, advanced age, ethnic minority status, poor social support, and lower education in the KA population (Baird et al., 2019; Berkman et al., 2011; Paasche-Orlow, Parker, Gazmararian, Nelson-Bohlman, & Rudd, 2005). Limited health literacy is most prevalent in ethnic minorities with limited English proficiency (Dewalt et al., 2004; Gazmararian et al., 2000; Ponce et al., 2006; Sentell & Braun, 2012). Individuals with limited health literacy levels also share common characteristics with individuals experiencing depression. Examples of characteristics include shame, guilt, low self-esteem, and negative attitudes (Baker et al., 1996; Gazmararian et al., 2000; Parikh et al., 1996). The prevalence of depression in older KAs has

been consistently higher than in Non-Hispanic White and minority ethnicities such as Chinese, Filipino, or Vietnamese (Jang et al., 2011; Jang & Chiriboga, 2010; Kang et al., 2012; Kim et al., 2015). Korean immigrants have demonstrated higher levels of depressive symptoms and rates of depression compared to other Asian ethnic groups (Lee et al., 2013; Lee & Holm, 2012). The rates of depression among Korean immigrants have also been found to be twice as high compared to the general population.[31] Previous studies of older KAs have shown a wide range of prevalence for depression (22–44%) using various instruments such as the Center for Epidemiologic Study-Depression (CES-D) and Geriatric Depression Scale (Baird et al., 2019; Jang et al., 2009; Lee & Holm, 2012; Mui, 2001).

Although depression is very prevalent among KA immigrants, mental health service utilization is low (Lee et al., 2013). There are many myths and misconceptions regarding depression among KA immigrants. Many KA immigrants do not know very much about depression including its common symptoms, coping strategies, and treatment options (Kim & Im, 2015; Sin et al., 2011).

KAs tend to somaticize their depressive symptoms rather than verbally express their feelings. KAs focus on eastern medicine oriented to somatic, body-oriented practice and a cultural emphasis on maintaining harmony within groups and in relationships. This practice leads to a cultural norm of suppressing one's personal emotions, avoiding direct confrontation, and accepting depression as a normal part of aging, but also a sign of personal weakness (Park & Bernstein, 2008). In addition, having a mentally ill family member brings shame to the whole family (Park et al., 2018). KAs feel shame with taking antidepressants, while exercise is perceived as suitable treatment for depression (Kim & Im, 2015). Considering the findings of the previous studies (Conner et al., 2010; Jimenez, Bartels, Cardenas, & Alegria, 2013), myths and misconceptions regarding depression may negatively influence help-seeking behaviors among KA immigrants.

Lack of social support upon arrival and during resettlement into a foreign country may explain why immigrant mental health status declines over time (Chadwick & Collins, 2015). Among various types of support, perceived availability of companionship played an important role in mediating the association between health literacy and depressive symptoms (Stewart et al., 2014). Older KAs face challenges as they try to maintain their traditional family values within the American cultural context. Previous studies have shown significantly lower levels of depression among older KAs living with their adult children compared to those who do not live with their children (Han et al., 2007; Lee & Holm, 2011). Family support and close relationships with their adult children played a critical role in adjusting to a new life and preventing and/or lessening depression among Korean immigrants (Han et al., 2007; Lee & Holm, 2011). In addition, consistent with previous studies, a recent study of older KAs found that family support was negatively associated with depression, but positively associated with health literacy (Baird et al., 2019).

Despite the high prevalence of depression among older KA immigrants, there has been very little research on how older KA immigrants understand depression in general, particularly with regard to symptoms and treatment of depression. This includes pharmacological therapy, and cognitive behavioral theray (CBT) which is considered the comparable therapy to antidepressants in treating depression (Rupke et al., 2006).

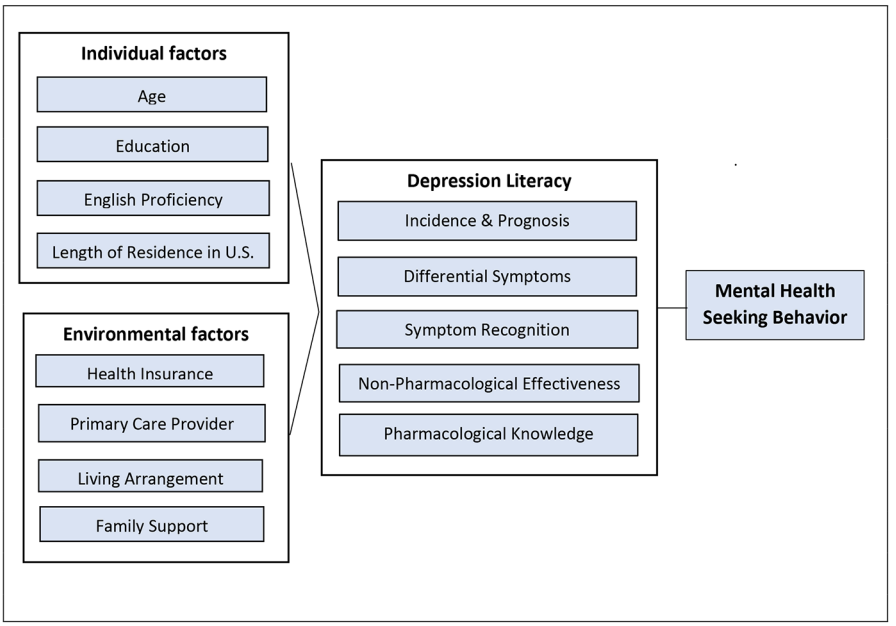

Fig. 1 Adapted Framework for Depression Literacy and Mental health Seeking Behavior. Note: Adapted from Frame of Health Literacy and Health Actions (Wagner et al., 2009)

Cognitive behavioral therapy is a form of psychotherapy examining maladaptive thought pattern that affects one's behavior, and ultimately restructuring to positive mood by recognizing the negative thought pattern (Tang, 2013).

In the study of Jung and al. (2012) that was carried out in Korea among Koreans to examine the knowledge and attitude on the antidepressant, 64.4% of adults over the age of 50 showed no knowledge of antidepressants, and over 80% of Koreans believed that antidepressants are addictive. Depression literacy (hereafter, DL) is a specific type of mental health literacy, and is defined as the ability to recognize depression and make informed decisions about treatment (Wang et al., 2007). Research on DL is important because the recognition and understanding of depression by KAs could be the first step in seeking help or appropriate mental health care, and may assist in explaining why KA immigrants are underserved by the mental health care system.

Recent studies of KAs (Baird et al., 2019; Bernstein et al., 2020) examined the understanding of depression literacy and their associated factors, but both studies were limited in the ability to assess the specific domains of DL. In addition, acculturation and social support are important explanatory factors for depression among immigrants, while DL is a significant predictor of mental health seeking behaviors (Baird et al., 2019; Bernstein et al., 2020). There is little empirical support, however, of this evidence among older KAs.

This study was guided by the adapted Health Literacy and Health Action framework which was developed by Wagner Steptoe (Wagner, von Steptoe, Wolf, & Wardle, 2009) (Fig. 1). Wagner's framework suggests that individual and external factors may influence health literacy, and consequently health action resulting in poorer health

outcomes among people with limited levels of health literacy. The adapted framework of depression literacy and mental health seeking behavior for Korean immigrants proposes a number of individual and environmental factors associated with DL in specific domains (incidence and prognosis, differential symptoms, symptom recognition, non-pharmacological effectiveness, and pharmacological knowledge).

The aims of this study were (1) to assess the level of understanding depression literacy across the five domains, (2) examine associations between demographic characteristics, acculturation, social support, and DL domains, and (3) to identify associated factors with depression literacy and its domains among older KAs. We hypothesized that both individual factors (i.e., female, younger age, higher level of education, higher level of acculturation) and environmental factors (i.e., optimal access to health care, higher level of social support) would be associated with a higher level of all DL domains in older KAs.

Methods

Study Setting and Sampling Method

A cross-sectional study was conducted in the Washington DC Metro area with 178 participants from February through April of 2016. The inclusion criteria for this study sample were: (a) Korean Americans aged 60 or older, (b) born in Korea who immigrated to the U.S. as an adult (at or over age 21) and live in the U.S. currently, (c) having the ability to speak, understand Korean language, and (d) showing no cognitive impairment when screened by the Mini-Mental State Examination (MMSE).

During recruitment, potential participants were informed that they would be screened for cognitive functions to determine eligibility by face-to-face interviews using the Short-Mini-Mental State Dementia Screening in the Korean language (S-MMSE-K) (Kim et al., 2010). This screening tool was modified from Folstein's (1975) by eliminating any item requiring motor coordination, and was translated into the Korean language. When potential participants agreed, they were placed in a quiet place for in-person cognitive screening using the S-MMSE-K. When participants were confirmed for their eligibility, a package including consent, questionnaires, and a flyer were distributed to them to complete on the spot, if they wished, or via postal mail. The packages were prestamped & addressed: The sender and recipient both were labeled the same to guarantee the anonymity of the senders in case of mailing. In the case of a face-to-face interview, the same step of cognitive screening was performed before verbal interviewing using the study surveys.

Research has shown that about 70% of ethnic Koreans living in the U.S. attend churches (Lee et al., 2013). Therefore, we recruited participants from two church-affiliated senior centers. Additionally, we recruited participants from Korean businesses (beauty shops and barber shops), recreational settings (e.g., soccer game), and business-related meetings. Moreover, to reach out to socially isolated older KAs, we recruited Meals-on-Wheels recipients and the residents in senior apartments.

Thirty-nine residents in the senior apartments and Meals-on-Wheels recipients responded to interviewer-administered surveys. Others took the survey package

home for self-administration. Three hundred eighty-five questionnaires were distributed, and 217 people (39 interviewer administered and 139 self-administered surveys) completed the surveys, yielding a moderate response rate of 56%. Thirty-nine surveys were excluded from those returned responses for not meeting the inclusion criteria, such as age, immigrated age being younger than 21, or not completing a section of questions in the survey. The reason to exclude those who immigrated at an age younger than 21 years is because they might have had an opportunity to attend secondary school education in English (Bilingual Education Act Wikipedia, 2018), and might have participated in an English Language Learning program that was implemented as part of the Elementary and Secondary Education Act ([ESEA] Wikipedia, 2018). This study was reviewed and approved by the authors' Institutional Review Board.

Measures

The primary outcome variable for this study included the measure of DL ([D-Lit] Griffiths, 2004). It consists of 22 items, and each item has three options, namely true, false, or don't know. Each correct response receives one point and 'don't know' and incorrect responses receive zero points (Griffiths, Kathy, Lead developer, 2004). The score range is 0 to 22 and higher scores indicate higher DL. The internal consistency (α) was 0.70 and the test-retest reliability (r) was equal to 0.71 (Griffiths et al., 2004). The forward and backward translation and cultural adaption were validated among KAs (Bernstein et al., 2020). The internal consistency (α) of the Korean version of the DL was 0.81 (Bernstein et al., 2020). Similarly, the internal consistency (α) of the Korean version of the DL was 0.82 in this study. Twenty-two items on the DL scale were grouped by four researchers (KMO, NA, BB, and LP) under the five key themes: (a) incidence and prognosis, (b) differential symptoms, (c) symptom recognition, (d) non-pharmacological effectiveness, and (e) pharmacological knowledge (Table 2).

The primary independent variables included acculturation, social support, and demographic characteristics. Acculturation was measured by proxy measures including English proficiency and length of residency in the US. English proficiency was self-reported for three domains: speaking, reading, and writing. Each domain was scored on a 5-point Likert scale: not at all (1), little, fair, well, and very well (5), summing up to a maximal score of 15 points from three domains. Higher scores on this scale indicated higher proficiency in English. Social support was measured by the Multidimensional Scale of Perceived Social Support ([MSPSS] Zimet et al., 1988). The instrument originally consists of 12 items on a 5-point Likert (1 to 5 points) scale to assess the level of social support by family, friends, and significant others. However, we used 8 items only to assess the social support from family and significant others. The total score ranged from 8 to 40 and higher scores indicate higher social support. In the original tool by Zimet et al., (1988), the internal consistency (α) was 0.87 and the test-retest reliability (r) was 0.72 for family support; the internal consistency (α) was 0.91 and the test-retest reliability (r) was 0.72 for spouse support. In this study, the internal consistency (α) was 0.88 for family support and 0.97 for

Table 1 Characteristics of Study Sample (N = 178)

Variable (Range)		Total *n* (%) or Mean ± SD
Demographics		
Sex	Male	60 (33.7%)
	Female	118 (66.3%)
Age (60–99 years)	60–69	73(41.0%)
	70–79	60(33.7%)
	80 & older	45 (25.3%)
Education (0–26 years)	0–6	16 (9.0%)
	7–9	14 (7.9%)
	10–12	46 (25.8%)
	13 +	102 (57.3%)
		13.4 ± 4.10
Living Arrangement	alone	40 (22.5%)
	with spouse	111 (62.4%)
	with adult child	27 (15.2%)
Acculturation		
Length of Residency in US. (6–54 years)	1–10	11 (6.2%)
	11–20	22 (12.4%)
	21–29	33 (18.5%)
	30 +	112 (62.9%)
		31.5 ± 10.82
English Proficiency(3–15)	not at all or little (3–6)	67 (37.6)
	Fair (9)	88 (49.4)
	Well or very well (12–15)	23 (12.9)
		7.9 ± 2.83
Social support (12–60)		30.7 ± 8.56
Health Care Access		
Health Insurance	Yes	172 (96.6)
	No	6 (3.4)
Primary Care Provider	Yes	169(94.9)
	No	9 (5.1)

spouse support. Demographic characteristics included gender, age, education, living arrangement, health insurance, and primary care provider status (Table 1).

We translated the survey into Korean using the linguistic translation by two independently trained bilingual (Korean–English) translators. First, they translated the survey from the source language (English) into Korean, and then back-translated into English from Korean to ensure equivalence in meaning. An expert panel consisting of a bilingual health professional faculty member and two bilingual non–health care professionals then compared the translations. All discrepancies of translation were resolved by the panel.

Data Analysis

Statistical analyses were performed using the SPSS 25.0 program. As noted earlier, this study used the domains of DL in the analyses to identify specific areas

of improvement in DL in order to address mental health promotion among KAs. Descriptive statistics (frequencies, percentages, mean, and standard deviations) were performed to describe the demographic characteristics of the study sample, acculturation, social support, and DL. Correlations were used to examine the associations between acculturation, social support, and the five DL domains. Simultaneous multiple linear regression analyses were performed to identify associated factors for DL and each domain of DL among older Korean immigrants. Demographic characteristics, acculturation, and social support were included as predictors in the multiple linear regression models. Health care access variables including health insurance and primary care provider status were not controlled in the regression models since older people (95% in the study sample) have private insurance and/or Medicaid coverage to supplement their Medicare coverage. Statistical significance was set at $p < .05$ for all analyses.

Results

Demographic Characteristics, Acculturation, and Social Support

Table 1 displays the sample characteristics. Two-thirds of the participants (66.3%) were female. A third of the participants (33.7%) were between the age of 70 and 79 years old. More than half of the sample (57.3%) had 13 or more years of education. Almost two-third (62.4%) were living with a spouse. Regarding acculturation, 62.9% of the sample have lived in the US for 30 years or more with an average of 31.5 years (SD = 10.82). Nearly half of the sample (49.4) had fair English proficiency skills with an average score of 7.9 (SD = 2.83). The participants had a moderate level of social support (M = 30.7, SD = 8.56). The majority of the sample had health insurance (96.6%) and access to a primary care provider (94.9%).

Depression Literacy

Levels of DL are shown in Table 2. Levels of all 5 DL domains were low, but particularly low on pharmacological treatment and differential symptoms. Regarding pharmacological knowledge, the majority of the participants had misconceptions about antidepressants. 86% believed that antidepressants do usually have a rapid effect on symptoms, 82.6% believed people with depression should stop taking antidepressants as soon as they feel better, 66.3% believed antidepressants were addictive, and more than 76% of the sample believed that clinical psychologists can prescribe antidepressants.

Older KA had difficulties distinguishing depression from other illnesses. For instance, the majority of participants (90.4%) answered incorrectly to the item "Not stepping on cracks in the footpath may be a sign of depression". In addition, more than 74.7% chose the incorrect answer for the item "Depression does not affect your memory and concentration", 68.5% for "Reckless and foolhardy behavior is a common sign of depression", 63.5% for "People with depression often hear voices that are not there", 53.4% for "Having several distinct personalities may be a sign of

Table 2 Levels of Depression Literacy by Five Domains

Depression Literacy Domains (Possible score range; Mean ± SD)	Correct N(%)	Incorrect Or Don't know N(%)
Incidence and Prognosis (0–3; 1.4 ± 0.9)		
Many famous people have suffered from depression. (True)	135(75.8)	40(22.5)
Moderate depression disrupts a person's life as much as multiple sclerosis or deafness. (True)	83(46.6)	95(53.4)
Most people with depression need to be hospitalised. (False)	23(12.9)	154(86.5)
Differential Symptoms (0–5; 1.7 ± 1.4)		
People with depression often speak in a rambling and disjointed way. (False)	86(48.3)	90(50.6)
Reckless and foolhardy behavior is a common sign of depression. (False)	55(30.9)	122(68.5)
Not stepping on cracks in the footpath may be a sign of depression. (False)	16(9.0)	161(90.4)
People with depression often hear voices that are not there. (False)	65(36.5)	113(63.5)
Having several distinct personalities may be a sign of depression. (False)	81(45.5)	95(53.4)
Symptom Recognition (0–6; 2.9 ± 1.8)		
People with depression may feel guilty when they are not at fault. (True)	105(59.0)	73(41.0)
Loss of confidence and poor self-esteem may be a symptom of depression. (True)	118(66.3)	60(33.7)
Sleeping too much or too little may be a sign of depression. (True)	75(42.1)	103(57.9)
Eating too much or losing interest in food may be a sign of depression. (True)	82(46.1)	96(53.9)
People may move more slowly or become agitated as a result of their depression. (True)	97(54.5)	80(44.9)
Depression does not affect your memory and concentration. (False)	44(24.7)	133(74.7)
Non-pharmacological Effectiveness (0–4; 1.6 ± 1.2)		
Many treatments for depression are more effective than antidepressants. (False)	64(36.0)	113(63.5)
Counselling is as effective as cognitive behavioural therapy for depression. (False)	115(64.6)	62(34.8)
Cognitive behavioural therapy is as effective as antidepressants for mild to moderate depression. (True)	82(46.1)	95(53.4)
Of all the alternative and lifestyle treatments for depression, vitamins are likely to be the most helpful. (False)	16(9.0)	161(90.4)
Pharmacological Knowledge (0–4; 0.9 ± 1.0)		
People with depression should stop taking antidepressants as soon as they feel better. (False)	30(16.9)	147(82.6)
Antidepressants are addictive. (False)	59(33.1)	118(66.3)
Antidepressant medications usually work straight away. (False)	20(11.2)	153(86.0)
Clinical psychologists can prescribe antidepressants. (False)	40(22.5)	136(76.4)

depression", and 50.6% for "People with depression often speak in a rambling and disjointed way".

The majority of the sample demonstrated a lack of knowledge about non-pharmacological effectiveness. For example, 90.4% considered vitamins to be the most helpful option to treat depression, and 63.5% considered antidepressants as the least effective treatment option for depression compared to many treatment options. More-

Table 3 Association of Social Support, Acculturation, Health Literacy and Depression Literacy

Variable (Possible range)			1	2	3	4	5	6	7	8
Acculturation	Length of Residency in US (6–54)	**1**	**1**							
	English Proficiency (3–15)	**2**	0.4***	1						
Social Support (8–40)		**3**	−0.1	0.2**	1					
Depression Literacy	Incidence and Prognosis	**4**	−0.1	0.0	−0.2*	1				
	Differential Symptoms	**5**	−0.1	−0.2*	−0.1	0.4***	1			
	Symptom Recognition	**6**	−0.1	0.1	−0.0	0.4***	0.6***	1		
	Non-pharmacological Effectiveness	**7**	−0.1	0.1	−0.1	0.5***	0.3***	0.4***	1	
	Pharmacological Knowledge	**8**	−0.0	0.0	−0.2*	0.4***	0.4***	0.3**	0.4***	1

Notes:

* P < .05, ** P < .01, *** P < .001

over, 53.4% did not consider cognitive behavioral therapy as effective as antidepressants for mild to moderate depression.

More than half of the sample did not recognize the following symptoms as being possible in depression: sleeping pattern (57.9%), eating habits (53.9%), movement and agitation (44.9%), and feelings of guilt when they are not at fault (41%). However, almost one-third of the respondents (66.3%) were able to recognize the depression symptoms of loss of confidence and poor self-esteem.

A low level of knowledge on depression incidence and prognosis was observed among older KAs. More than 86% thought that people with depression need to be hospitalized, and 53.4% did not think moderate depression disrupts a person's life as much as multiple sclerosis or deafness.

Association of Social Support, Acculturation, Health Literacy, and Depression Literacy

As expected, length of residency in the US was positively and significantly associated with English proficiency (r = .39, p < .001). English proficiency was positively associated with social support (r = .20, p < .01), but negatively associated with differential symptoms (r=-.20, p < .05). Social support was negatively associated with DL on incidence and prognosis (r=-.2, p < .05) and pharmacological knowledge (r=-.2, p < .05). All DL domains, including incidence and prognosis, differential symptoms, symptom recognition, nonpharmacological effectiveness, and pharmacological knowledge were positively associated with a moderate effect size (r = .3-0.6, p < .001) (Table 3).

Table 4 presents results for simultaneous multiple regression analyses. The DL total score and the five DL domains were regressed on demographic variables, acculturation, and social support, as a set. Simultaneous multiple regression analyses were performed with the DL total score and each DL domain as dependent variables, and demographic variables, acculturation, and social support as predictors (Table 4). The

Table 4 Correlates of and Depression Literacy

Predictors	Depression Literacy	Incidence and Prognosis	Differential Symptoms	Symptom Recognition	Non-pharmacological Effectiveness	Pharmacological Knowledge
	Beta	Beta	Beta	Beta	Beta	Beta
Demographics						
Males[a]	**-1.56***	−0.15	−0.25	−0.46	**−0.52***	−0.18
Age (years)	**0.10***	**0.02***	0.02	0.03	0.02	0.01
Education	0.01	0.001	−0.05	−0.003	0.04	0.01
Live spouse[b]	0.42	−0.220	0.17	0.20	0.18	0.08
Acculturation						
Length of Residency In US. (year)	**−0.09***	**−0.02***	−0.01	**−0.03***	**−0.03***	−0.01
English Proficiency	0.27	**.07***	0.01	0.11	0.07	0.02
Social Support	−0.06	−0.004	−0.01	−0.01	−0.02	**−0.02***
Cumulative R^2	0.08*	0.1*	0.07	0.04	0.1*	0.05

Notes:

* P < .05, ** P < .01, *** P < .001

a. Reference group is females

b. Reference group is live alone or with adult Child

set of predictors significantly predicted the DL total score ($R^2 = 0.08$, $p < .05$) and the DL domains of incidence and prognosis ($R^2 = 0.1$, $p < .05$), and non-pharmacological effectiveness ($R^2 = 0.1$ $p < .05$). Gender (β=-1.56, $p < .05$), age (β = 0.1, $p < .05$), and length of residency in the US (β=-0.09, $p < .05$) significantly predicted the DL total score. Male Korean immigrants demonstrated a lower level of DL compared to female Korean immigrants. Length of residency in the US was negatively associated with the DL total score, but age was positively associated. Older age (β = 0.2, $p < .05$), better English proficiency (β = 0.07, $p < .05$), and shorter length of residency in the US (β=-0.02, $p < .05$) were significant predictors of higher DL scores on incidence and prognosis. A shorter length of residency in the US significantly predicted higher DL scores on symptom recognition (β=-0.03, $p < .05$) and non-pharmacological effectiveness (β=-0.03, $p < .05$). Male Korean immigrants (β=-0.52, $p < .05$) had lower levels of DL for non-pharmacological effectiveness compared to female Korean immigrants. Social support (β=-0.02, $p < .05$) was negatively associated with DL on pharmacological knowledge among older KAs.

Discussion

The majority of Older KA immigrants had a poor understanding of depression. Their knowledge of non-pharmacological and pharmacological treatment options for depression was significantly lacking. According to a recent study (Baird et al., 2019), limited knowledge and misperception about depression are prevalent among older KAs. For example, older KAs were more likely to believe that depression stems from

emotional, behavioral, or motivational problems as if depression was the result of an undesirable characteristic rather than viewing depression as an illness.

Differential Symptoms / Prognosis

This study found that older KAs have limited knowledge that is necessary to differentiate depression from other mental symptoms and to understand the impact of depression on daily life. The majority of older KAs may not be able to differentiate between depression and other serious mental illnesses. Fifty to 90% of older KAs were unable to differentiate symptoms of depression from other mental illnesses. Common symptoms of obsessive-compulsive disorder or psychosis were considered as depression by the study sample. This finding may explain why older KAs believe that most people with depression should be hospitalized.

Symptom Recognition

Poor appetite or eating too much is one of the well-known symptoms of moderate forms of depression (Cahoon, 2012). In fact, one of the most frequently reported somatic symptoms of depression among Asians-Americans (Korean, Japanese Chinese) is indigestion, or abdominal pain (Kalibatseva & Leong, 2011) which is not a precursor to poor appetite, but rather a symptom of depression. Notably, Asian Americans report poor appetite more frequently as a symptom of depression compared to Europeans, who report increased appetite more frequently as a symptom of depression (Kalibatseva & Leong, 2011). This study indicates that a majority of older KAs (54–58%) do not recognize eating or sleeping problems as symptoms of depression. Regarding sluggishness in people with depression, it is easy to be masked due to decreased functional ability among older adults in general with common comorbidities in this group such as hip, knee pain, post-fall, stroke, etc. Thus, moving slower may be accepted as a process of normal aging regardless of ethnicity (Weaver, 2007). Poor sleeping also tends to be accepted as a normal part of aging among older KAs (Sok, 2008).

Depression in older adults often presents differently from young adults. Depression has been linked to memory problems, such as forgetfulness or confusion, poor memory, and concentration which are similar to dementia, but the symptoms are also common among depressed older adults (Butters et al., 2004). With depression, forgetfulness and confusion usually come on acutely, whereas with most forms of dementia the decline in mental acuity is insidious. However, three in four older KAs (75%) were unaware that depression can affect memory and concentration.

Non-Pharmacological Effectiveness

Cognitive-behavioral therapy (CBT), very effective and first-line therapy for depression, did not exist in Asian cultures (Yeung & Kam, 2005). Therefore, recognizing cognitive behavioral therapy as an evidence-based treatment, especially for mental illness, may be difficult for older KAs to understand. CBT is not well known in the Korean society even in clinical settings, and patients prefer pharmacological therapy

over cognitive-behavioral therapy due to a perception of more rapid results (Choi, Lee, & Cho, 2017) despite CBT being effective and congruent with Asian values such as self-effort, educating-self, etc. (Kim-Goh, Choi, &Yoon, 2015). It is not surprising that about 53% of the sample of this study labeled CBT ineffective for depression. On the other hand, older KAs may be more familiar with the term 'counseling', which is spoken more often in their language. Our findings indicate that only 35% of older KAs understood that counseling is as effective as CBT for depression. This finding raises the question if older KAs correctly understood the difference between counseling therapy and CBT.

Pharmacological Knowledge

According to the latest evidence (Cuijpers et al., 2014), the most effective and evidence-based treatment for depression is antidepressant medications combined with psychotherapy. However, KA immigrants are unlikely to use these treatments due to misconceptions surrounding mental illness and treatment, the stigma attached to mental illness and treatment, as well as lack of mental health services that suit them culturally and linguistically in the US (Shin, 2002).

Older KAs tend to seek lifestyle changes and complementary and alternative medicine, both as general self-care strategies and as a self-management strategy for depression, avoiding professional medical help and/or prescription medicine (Chung Pang, 1996). These findings are consistent with a study that examined Korean immigrants' knowledge about depression and attitudes about depression treatment options (Kim & Im, 2015). KA immigrants feel stigma toward seeking antidepressants and prefer lifestyle modifications, especially exercise or social activities. Older KAs who experienced depression and were treated were more likely to react negatively to psychiatric treatment, possibly stemming from unfamiliarity with the Western approach to psychoanalysis (Kwok, 2013). Stigma towards mental illnesses such as depression is much more pervasive among the Asian community, as it results in family shame. Maintaining the family's honor often takes priority over finding professional medical help due to this stigma (Kwok, 2013). Our findings indicate that 90% of older KAs prefer alternative and lifestyle treatments for depression with vitamins being perceived as the most helpful. Depression is unlikely to be understood as a mental illness among older KAs in general, or evidence-based treatment options for it. Rather, depression is perceived as something personal one must manage individually. This finding reflects the widespread myth and misperception about non-pharmacological effectiveness and antidepressants among older KAs. For instance, only 17–33% of older KAs endorsed that antidepressants could be effective for depression in this study compared to 54% of Latino younger men (Cabassa, 2007) and 49% of Americans (Mojtabai, 2009).

Individual and Environmental Factors Associated with Depression Literacy

Our findings indicate that older age and greater English proficiency are likely to increase DL in general, particularly the understanding of incidence and prognosis. Length of residency in the U.S. was negatively associated with the DL total score and

each depression domain except for differential symptoms. DL tends to be affected by ethnic-related cultural factors. It is also possible that older KAs who lived in the U.S. with limited English have increased acculturation stress from culture shock throughout their lives. Reportedly, a measurable portion of older KAs living in the U.S. had not changed their lifestyle from the way they lived in Korea (Min et al., 2005). Given these findings, the length of U.S. residency could be inappropriate to measure the level of acculturation among KA immigrants with limited English, but still, a critical factor influencing DL among older KA immigrants. Another possible explanation for the inverse relationship with regard to the influence of acculturation on DL among older KAs may lie in conditioning and self-attention (Chen et al., 2003; Jang et al., 2011). The aforementioned studies report that less acculturated groups of KAs or Asians showed significantly more depressive symptoms. Therefore, older KAs who lived in the U.S. longer might be more conditioned to recognize depression.

Other demographic variables including education and living arrangement were not significantly associated with depression. Older KA men overall had lower DL in all domains than older KA women, but the score of non-pharmacological effectiveness was significantly lower. Some of our findings are inconsistent with the findings of a recent study of KA adults (Bernstein et al., 2020). In KAs adults aged 18 years and older, age was negatively associated, but education level and English proficiency were positively associated with the DL total score (Bernstein et al., 2020). Gender was not a significant factor for DL in the same study. The discrepant findings on the influencing factors for DL between KA adults and KA older adults have implications for research and practice. Older KAs may have special healthcare needs that are different from KA adults.

Strength of Study

This study examined DL in older immigrants who are an underserved and underrepresented population in national studies. Moreover, mental health has been less likely to be studied compared to other areas of study among KA immigrants. Importantly, there have been limited studies exploring DL domains or observable items. In contrast, this study explored its domains and items and associated factors to fill the knowledge gap.

Limitations

Our study has several limitations. The sampling was from the Washington DC metro area which is one of the largest and most diverse Korean immigrant societies. Although this could closely represent the majority of older KAs, the generalizability of the study findings may be limited to those who were not born in the U.S. and living in metropolitan areas. There is limited information regarding comparisons of KAs living in different geographic regions. It is possible that older KAs living in the Washington, DC, metro area are different in some aspects from older KAs living in other regions of the U.S. Total explained variance for each regression model predicting total DL and each domain of DL is small to moderate. Further studies using national

probability sampling methods and including cultural factors are needed for a more complete understanding of older KA's DL level.

Implication for Practice

Depression among older KAs is not well understood in general, particularly prognosis, symptoms, and treatment options. Therefore, large proportions of older KA immigrants with depression may have negative attitudes toward treatment options, may not understand the benefits of depression treatment, and may not know how to access treatment. Misperception and cultural beliefs about depression, particularly on symptoms and pharmacological and non-pharmacological treatment options may be linked with a high prevalence of depression and poor mental health outcomes among older KAs. Recognition of depressive symptoms is the first step in helping older KAs to manage their symptoms with evidence-based treatments. Linguistically and culturally-tailored education for older KAs with limited English proficiency, including specific information on the most prevalent symptoms of depression and effective treatment options, may help improve mental health outcomes in older KA immigrants.

Declarations

Compliance with ethical standards The authors declare that they have no conflict of interest.

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