Published in final edited form as:

Health Care Women Int. 2015 ; 36(4): 439–456. doi:10.1080/07399332.2014.924518.

Immigration Transition and Depressive Symptoms: Four Major Ethnic Groups of Midlife Women in the U.S

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Abstract

Our purpose of this study was to explore the relationships between immigration transition and depressive symptoms among 1,054 midlife women in the U.S. This was a secondary analysis of the data from two national Internet survey studies. Questions on background characteristics and immigration transition and the Depression Index for Midlife Women were used to collect the data. The data were analyzed using inferential statistics including multiple regressions. Immigrants reported lower numbers of and less severe symptoms than non-immigrants ($p < .01$). When controlling for background characteristics, self-reported racial/ethnic identity and immigration status were significant predictors of depressive symptoms ($R^2 = .01$, $p < .05$).

Keywords

Depression; Immigration; Transition; Acculturation; Women; Ethnicity

Internationally, depression has been reported to be the number one reason for disability that influences over 350 million adults, including over 14 million Americans (National Institute of Mental Health, 2011; Sin, Jordan, & Park, 2011; World Health Organization, 2013). With an increasing multicultural aging population in the U.S., depression in midlife ethnic minorities has become more significant than ever. Depression is often unrecognized and untreated especially in ethnic minorities despite its high prevalence (Lagomasino et al., 2005; Sin et al., 2011). Also, studies have indicated that ethnic minority immigrants with

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depression were 60% less likely to be diagnosed than their U.S.-born counterparts even if those U.S.-born counterparts were of the same race/ethnicity (Gwynn et al., 2008). Indeed, immigrants tend to rarely seek help for depression and prematurely stop treatment mainly due to other imminent needs during their immigration transition (Lagomasino et al., 2005; Sin et al., 2011). Furthermore, with hormonal changes during menopausal transition, midlife is a life stage of multiple changes that cause additional stress to ethnic minority women, which subsequently makes them at risk of depression (Judd, Hickey, & Bryant, 2011). However, little is known about how immigration transition influences depression experience of midlife ethnic minority immigrant women although this information would be imperative for health care providers across the globe to provide appropriate and adequate mental health care for immigrants.

To improve utilization and effectiveness of treatment for immigrant midlife women, the importance of linguistically and culturally competent services has recently been highlighted. However, the knowledge base on how immigration transition influences the women's depression experience is inconsistent and inadequate to provide directions for such services (Jimenez, Alegria, Chen, Chan, & Laderman, 2010). Some reported that immigrants are at lower risk of mental illness including depression than their U.S. born counterparts (Ortega, Rosenheck, Alegria, & Desai, 2000). The rationale for this claim is that immigrants tend to be healthy because healthy people are selectively immigrated. Others reported that those born in a country other than the U.S. were more likely to be depressed (Choi, Miller, & Wilbur, 2009; Miller et al., 2006; Sin et al., 2011). The rationale for this claim is that acculturation process due to immigration transition is inherently stressful.

Our purpose of this study was to explore the relationships between immigration transition and depressive symptoms among four major ethnic groups of midlife women across the U.S. This secondary analysis is unique because of the national scope of the original studies that recruited a comparable number of midlife women from four major ethnic groups in the U.S. Also, this analysis is also unique because the tested hypotheses were theory-driven (see the theoretical basis section). In this paper, immigrants mean those who were born outside the U.S. and moved to the U.S. (including both first and 1.5 generations of immigrants) while non-immigrants mean those who were born in the U.S. Although second and third generations of immigrants who were born in the U.S. could experience immigration transition in a broad sense, we did not include them as immigrants because they are not the actual groups who experience immediate changes by moving from one country/culture to another country/culture. First, before determining the differences by immigration status, differences in depressive symptoms by self-reported racial/ethnic identity were determined (Hypothesis 1). Before determining the influences of immigration transition on depressive symptoms, it would be essential to see if there are inherent racial/ethnic (cultural) differences in depressive symptoms because biological factors related to ethnicity could possibly influence the frequency and severity of depressive symptoms and because immigrants' perception of and attitudes toward immigration transition could be different by their culture/ethnic group. Then, differences in depressive symptoms between immigrant midlife women and non-immigrant midlife women were determined as a whole and in each racial/ethnic group (Hypothesis 2). Finally, after controlling for selected background

characteristics, the relationships among all immigration transition variables and depressive symptoms were determined as a whole (Hypothesis 3).

The Theoretical Bases: Acculturation Theories

There are a few theories that have been used to explain the influences of immigration transition on health, which could be roughly categorized into: (a) theories on the selective nature of migration and the positive effect of immigration on health; (b) theories on the negative effect of migration on health (specifically, the effect of immigration-related stress); and (c) theories on acculturation as a desired health-related outcome of immigration (Im & Yang, 2006). The theories on the selective nature of immigration and the positive effect of immigration on health are based on an assumption that healthy individuals are naturally selected as immigrants; immigrants are more likely to be healthy and resilient, willing and able to respond to possible health hazards due to migration (Organista, Organista, & Kurasaki, 2003). According to this theory, immigrants would be less likely to be depressed compared with their U.S.-born counterparts. Indeed, foreign-born immigrants tended to be healthier than their U.S.-born counterparts (Frisbie, Cho, & Hummer, 2001). The theories on negative effect of immigration are based on a premise that immigration itself is stressful and hazardous, subsequently resulting in exposing to potential health risks (Trimble, 2003). High stress level due to immigration is prevalent among immigrants, which brings in them into a new set of health risks (Cuellar, Bastida, & Braccio, 2004). According to this theory, immigrants are more likely to be depressed compared with their U.S.-born counterparts (Cuellar et al., 2004; Oh, Koeske, & Sales, 2002). We drew Hypothesis 2 from these theories; we hypothesized that there would be differences in depressive symptoms between immigrants and non-immigrants. Because the directions of the relationships were inconsistent by the types of theories, we took a non-directional hypothesis though. As mentioned above, Hypothesis 1 was also set to test if there were any inherent racial/ethnic (cultural) differences in depressive symptoms before testing Hypothesis 2 because biological factors related to ethnicity might influence the women's depressive symptoms and because immigrants' perception of and attitudes toward immigration transition could be different by their culture/ethnic group.

The theory on acculturation as a desired health-related outcome of immigration is the one that we theoretically used to draw Hypothesis 3. Acculturation frequently means "taking on the cultural values and practices of the host population" (Marmot & Syme, 1976) and has been equated with de-ethnicizing and being incorporated into the mainstream. Anglo conformity, the melting pot, pluralistic society, upward socioeconomic status, and loss of native language are also frequently equated with acculturation (Baškauskas, 1981). Currently, there are three main types of acculturation theories that include (a) single-continuum models, (b) two-culture matrix models, and (c) multidimensional models (Keefe & Padilla, 1987). The single-continuum model (Keefe & Padilla, 1987) is based on a premise that immigrants experience the acculturation process as a continuum from the unacculturated to the biculturalized and finally to the acculturated (Wallen, Feldman, & Anliker, 2002). This model has a basic assumption that all immigrants eventually accept the host culture in its entirety (Keefe & Padilla, 1987). However, the two-culture matrix model incorporates a new concept of pluralism; immigrants can accept the new culture of the host

society while simultaneously retaining their own culture (Berry, Kim, Power, Young, & Bujaki, 1989). According to this model, immigrants do not always accept the new culture of the host society, which can explain diverse acculturation situations (e.g., those who keep their own culture while they are acquiring ties to the host society, those who feel connected to neither culture). Finally, according to the multidimensional acculturation model, the acculturation process is related to individual cultural traits rather than general levels of overall acculturation (Keefe & Padilla, 1987). Thus, some individuals are more likely to acquire some new traits from the host culture than other traits. Also, immigrants' choice of their acculturation strategies could be inconsistent across areas of daily life (Berry et al., 1989). For instance, some immigrants would use the assimilation strategy in their work settings, but they would use the separation strategy in their home settings. Consequently, this model can be used to explain selective acculturation in different areas (Keefe & Padilla, 1987). Regardless of these three different types of acculturation theories, all these theories are based on an assumption that acculturation significantly influences immigrants' health including depressive symptoms. In this study, we tried to explore the influences of acculturation due to immigration transition on depressive symptoms by testing the relationships among immigration transition variables and depressive symptoms while considering multiple contextual factors that might influence the relationships (Hypothesis 3) to identify most influencing predictors of depressive symptoms.

Methods

This was a secondary analysis of the data from two national Internet survey studies. More detailed information on the studies (Authors, 2010; Authors, 2012) can be found elsewhere. These two studies were approved by the Institutional Review Boards (IRB) of the institutions where researchers were affiliated.

Sample and Settings

A total of 1,054 samples were selected from two separate datasets. Included were only those who could read and write English; were midlife women aged 40 to 60 years; and reported their ethnic identity as Hispanic, Non-Hispanic Asian, N-H African American, or N-H White. The sample size was pre-determined because this was a secondary analysis. The strategy for estimating sample size and power for the entire study is based on the methodology requiring the most strength (i.e., largest sample size), hierarchical multiple regression analyses in this study. Thus, the sample size required for the hierarchical multiple regression analyses would be adequate to address all the hypotheses (Hypotheses 1 to 3). The number of participants required to perform hierarchical multiple regression analyses was calculated using the G*Power 3.0 program. To detect a statistically significant relationship in a regression model with 10 independent variables, we assumed a moderate effect size of .02 with an alpha level of .05 at 80% power. The effect size was based on the findings of a previous study (Torres & Rollock, 2007) on the relationship between the level of acculturation and depression among Hispanics. According to the calculation, a total of 822 participants are needed to conduct the hierarchical multiple regression analyses. Hence, the pre-determined sample size of this secondary analysis was sufficient to test the hypotheses.

Instruments

The instruments used in the original studies included questions on background characteristics and immigration transition, and the Depression Index for Midlife Women (DIMW).

Background Characteristics—The data from eight questions on background characteristics (age, education, religion, marital status, family income, employment status, number of children and access to health care) were used in this secondary analysis.

Immigration Transition—Four variables were chosen to represent immigration transition in this analysis: (a) self-reported racial/ethnic identity; (b) immigration status; (c) the level of acculturation; and (d) the length of stay in the U.S. In the original studies, the level of acculturation was calculated by summing the scores from five Likert scale items (1 = exclusively own ethnic group; 5 = exclusively American) that asked participants about preferences for foods, music, customs, language and close friends. These five questions were adopted and modified from the Suinn-Lew Asian Self-Identity Acculturation Scale (Suinn, Ahuna, & Khoo, 1992); the reliability and validity of the modified questions were established among multi-ethnic groups of midlife women in previous studies (Im & Chee, 2005). The Cronbach's alpha of the modified questions was .92 in this study. The length of stay in the U.S. was measured in years in the original studies. When participants were born in the U.S., their level of acculturation was replaced with 5-points (exclusive American), and the length of stay in the U.S. was replaced with their age.

The Depression Index for Midlife Women (DIMW)—The Depression Index for Midlife Women (DIMW) was adopted from the Midlife Women's Symptom Index (MSI) (Im, 2006) that has 71 items on physical, psychological, and psychosomatic symptoms. To develop the DIMW, we reviewed the signs and symptoms of depression that were published by National Institutes of Mental Health (2011), and adopted 17 items of the MSI that matched with the signs and symptoms of depression. The DIMW consisted of 17 items and was divided into two parts: (a) depressive symptom prevalence part using dichotomous scale (1 = yes; 0 = no) and (b) depressive symptom severity part using 6-point Likert scale (0 = no symptom; 5 = extremely). The total number of depressive symptoms was calculated by summation of all items, and ranged from zero to 17. The total severity scores were also calculated by summing 17 items, and they ranged from zero to 85. Higher scores mean more prevalent and severe depressive symptoms. In this analysis, the reliability of the DIMW was .89 (Cronbach's alpha), and item-to-total correlations of all 17 items were above .20. The content validity was supported by an expert review.

Data analysis

The data from the two studies were coded with the same variable names and values. When missing data were more than 10% of the total responses of a participant, the participant was excluded in this analysis. If missing data were less than 10%, missing values were replaced with their means. Then, the data were analyzed using descriptive statistics including frequencies, percentages, means, standard deviations, and ranges. To test Hypotheses 1 to 2, the data were analyzed using one-way ANOVA with Turkey's HSD and t-tests. To test

Hypothesis 3, hierarchical multiple regression analyses were performed to identify the predictors of the total number and total severity of depressive symptoms while controlling selected background characteristics. Before performing the regression analyses, the data were screened for multicollinearity. There were no variables that showed multicollinearity. In the first step of the regression analyses, background characteristics including education, religion, marital status, employment status, family income, number of children, and access to health care were entered into the equation. Then, self-reported racial/ethnic identity and immigration status were entered in the second step. Finally, the level of acculturation and the length of stay in the U.S. were entered. Age was not entered into the equation because the length of stay in the U.S. for those who were born in the U.S. was replaced with age. Standard coefficients (β) were computed to compare the relative importance of each variable in the equation. The R^2 and change of R^2 were examined to determine relative contributions of individual variables in the equations.

Results

Background Characteristics of the Participants

Background characteristics of the participants are summarized in the Table 1. The mean age was 49.0 years old ($SD = 5.7$), and 17.6% of the total participants reported that it was very hard to pay for basics (e.g., food, housing, clothing, and health care) with their family income. About 77% were born in the U.S., and the mean level of acculturation was 3.0 ($SD = 1.8$) on a 5-point Likert scale.

The most frequently reported depressive symptoms in the total participants included: “difficulty in falling asleep” (52.7%), “being forgetful” (52.4%), “exhaustion/fatigue” (45.6%), “decreased sex interests” (44.2%), and “easily upset/irritated” (40.2%). Among these symptoms, three symptoms including “difficulty in falling asleep”, “being forgetful”, and “decreased sex interests” were reported across the four ethnic groups. The depressive symptoms that had the highest mean severity scores in the total participants (on a 6-point Likert scale) included: “difficulty in falling asleep” (mean=1.85/ $SD=1.90$), “being forgetful” (mean=1.59/ $SD=1.68$), “exhaustion/fatigue” (mean=1.54/ $SD=1.80$), “decreased sex interests” (mean=1.46/ $SD=1.81$), and “feeling anxious” (mean=1.15/ $SD=1.60$).

Differences in Depressive Symptoms by Self-reported Racial/Ethnic Identity and Immigration Status (Hypotheses 1 & 2)

There were statistically significant differences in the total number ($F = 10.43$, $p < .01$) and total severity of depressive symptoms by self-reported racial/ethnic identity ($F = 11.24$, $p < .01$) (see Tables 2 and 3). The total number of depressive symptoms in N-H White women was greater than that of any other ethnic groups in the post-hoc tests, and N-H Asian women had a smaller number of depressive symptoms than Hispanic and N-H African American women. There were statistically significant differences in the total severity of depressive symptoms by self-reported racial/ethnic identity. In post-hoc tests, N-H White women had higher severity scores than any other ethnic groups, and N-H Asian women had the lowest severity scores.

There were statistically significant differences in the frequencies of all individual symptoms except six symptoms (poor appetite, easily upset/irritated, constant restlessness, decreased sexual interests, and losing interests) by self-reported racial/ethnic identity ($p < .01$) (see Table 2). In the individual symptoms with the significant differences in the frequencies by self-reported racial/ethnic identity, Asians were more likely to report lower frequencies of the symptoms than other ethnic groups. Also, there were statistically significant differences in the severity of all individual symptoms by self-reported racial/ethnic identity except three symptoms (constant restlessness, decreased sexual interests, and losing interests) ($p < .01$) (see Table 3). In the individual symptoms with the significant differences in the severity by self-reported racial/ethnic identity, Whites were more likely to report higher scores than other ethnic groups.

There were statistically significant differences in the total number ($t = 2.73$, $p < .01$) and total severity of depressive symptoms by immigration status ($t = 3.17$, $p < .01$) (see Tables 4 and 5). Immigrants reported fewer total numbers and lower severity scores of depressive symptoms. There were significant differences in the frequencies of four individual depressive symptoms (exhaustion/fatigue, difficulty in falling asleep, feeling clumsy, and feeling grouchy) between immigrants and non-immigrants ($p < .05$) (see Table 4). In the individual symptoms with the significant differences in the frequencies by immigration status, immigrants reported lower frequencies of the symptoms than non-immigrants. There were statistically significant differences in the severity of five individual symptoms (exhaustion/fatigue, difficulty in falling asleep, feeling clumsy, often crying, and problem in concentrating) by immigration status as well ($p < .05$) (see Table 5). In the individual symptoms with the significant differences in the severity by immigration status, immigrants reported lower scores than non-immigrants.

In each ethnic group, there were no significant differences in the total number and total severity of depressive symptoms between immigrants and non-immigrants. Only among Asians, however, there were significant differences in the frequencies of four individual symptoms (feeling clumsy, feeling unhappy, feeling depressed, and worrying) between immigrants and non-immigrants ($p < .05$). Also, only among Asians, there were significant differences in the severity scores of two individual symptoms (feeling depressed and being forgetful) between immigrants and non-immigrants ($p < .05$). In the individual symptoms with the significant differences in the frequencies and severity by immigration status, Asian immigrants reported fewer total numbers and lower severity scores of depressive symptoms than Asian non-immigrants. In other ethnic groups, there were no significant differences in the frequencies and severity scores of individual depressive symptoms between immigrants and non-immigrants.

Significant Predictors of Depressive Symptoms (Hypothesis 3)

The results of hierarchical multiple regression analyses are summarized in the Table 6. When controlling for selected background characteristics (education, religion, marital status, family income, employment status, number of children, and access to health care), self-reported racial/ethnic identity and the country of birth accounted for 1% of the total variances of the total number of depressive symptoms ($p < .05$), and the length of stay in the

U.S. and the level of acculturation accounted for 3 percent of the total variances of the total number of depressive symptoms ($p<.01$). Also, when controlling for the selected background characteristics, self-reported racial/ethnic identity and immigration status accounted for 1% of the total variances of the total severity of depressive symptoms ($p<.05$), and the length of stay in the U.S. and the level of acculturation accounted for 3 percent of the total variances of the total severity of depressive symptoms ($p<.01$). Other significant predictors of the total number of depressive symptoms were education ($p<.05$; Step 1) and family income ($p<.01$). The only other significant predictor of the total severity of depressive symptoms was family income ($p<.01$).

Discussion

Overall, the theories on selective nature of immigration and positive effects of immigration on health were supported in this analysis. There were significant differences in the total number and total severity of depressive symptoms by immigration status, and immigrants reported lower numbers of and less severe depressive symptoms than non-immigrants. As mentioned above, the theories on the selective nature of immigration and the positive effect of immigration on health are based on an assumption that immigrants are more likely to be healthy and resilient, willing and able to respond to possible health hazards due to migration (Organista et al., 2003). Subsequently, according to this theory, immigrants would be less likely to be depressed compared with their U.S.-born counterparts. Thus, the findings of this study could be interpreted as supporting the assumption and propositions of this theory. Although immigration process itself is stressful, immigrants who are a naturally selected group of healthy individuals are highly motivated/driven and less depressed (Organista et al., 2003). Also, living in another country can be initially lonely/isolating and increase "depressive feelings," but the need to survive through the immigration process and to be successful in the new country probably would not allow immigrants to feel depressed (Organista et al., 2003).

Significant ethnic differences in the total number and total severity of depressive symptoms and the frequencies and severity scores of individual depressive symptoms have been reported in the current literature on depressive symptoms experienced by diverse ethnic groups (Chen, Sullivan, Lu, & Shibusawa, 2003; Rickert, Wiemann, & Berenson, 2000). As in other studies (Chen et al., 2003; Kuo, 1984), Whites tended to report higher prevalence and severity of most depressive symptoms while Asians tended to report lower prevalence and severity of most depressive symptoms. Yet, in the literature, it was also reported that there were sub-ethnic differences in depressive symptom experience within each major ethnic group (Alegria et al., 2008), which could not be determined in this analysis.

In this analysis, it was also found that self-reported racial/ethnic identity could be a better predictor of depressive symptoms than immigration status. Although both self-reported racial/ethnic identity and immigration status were significant predictors of the women's depressive symptoms, the association of self-reported racial/ethnic identity to depressive symptoms was stronger than that of immigration status to depressive symptoms. Also, there were no significant differences in individual depressive symptoms between immigrants and non-immigrants in each ethnic group except Asians. Immigration status may not be sensitive

enough to reflect the women's immigration transition in various aspects of their life that may influence their mood and emotions although more in-depth investigations are needed. They simply measure if the women were immigrants or not. Rather, self-reported racial/ethnic identity that is often linked to women's inner feelings toward their own selves and discriminative experience could be a better measure of immigration transition.

The study findings had mixed findings on associations of immigration transition variables to depressive symptoms. Again, while immigration status was one of the significant predictors of the women's depressive symptoms, there were no significant differences in individual depressive symptoms by immigration status in each ethnic group except Asians. A plausible cause for the mixed findings would be that some properties of the individual responses might have been lost or inflated in the data analysis process because composite scores were used. For example, as described above, the DIMW is a scale with 17 items of depressive symptoms, each of which includes one yes-no question and one 6-point Likert scale severity question, and two composite scores were calculated from the 17 items (total number of symptoms and total severity of symptoms). Thus, some properties of the individual responses from different items might have been lost or inflated during the data analysis process of using the composite scores. In addition, as found in this study, other contextual factors such as education and family income could possibly confound the influences of immigration transition on depressive symptoms.

This secondary analysis has several limitations to consider. First of all, as mentioned above, immigrants limitedly mean only the first and 1.5 generations who were born outside the U.S. Thus, we could not investigate differences in depressive symptoms in second and third generations of midlife women. Another limitation could be the measurements scale used to measure acculturation. Indeed, the adequacy of instruments that measure acculturation has been frequently critiqued in the literature, and many researchers have suggested multidimensional models of acculturation (Berry et al., 1989). Although we used multidimensional questions to measure the level of acculturation, the questions might not adequately reflect inconsistencies of acculturation process in various aspects of daily life. Also, some wordings in the instruments measuring depressive symptoms might not work adequately for some women depending on their language skills in English because the questionnaires were in English only.

Conclusions

Based on the findings, we conclude this paper with the following implications for future research and health care practice. First, further studies with a larger sample size of diverse groups of ethnic minority midlife women are recommended. Due to inherent nature of Internet recruitment, the women who participated in this study tended to be a selected group of ethnic minority midlife women although a national sample was recruited. Through further studies with diverse groups of midlife ethnic minority immigrant women (e.g., diverse sub-ethnic groups, diverse socioeconomic groups, diverse immigration generation groups), more generalizable findings on the associations between immigration transition and depression could be found. Second, further studies with a more comprehensive multi-dimensional acculturation scale are needed to confirm the findings reported in this study. Although the

questions used to measure the level of acculturation in this study were multidimensional, they were limited to only five dimensions. However, the women's level of acculturation in other different dimensions could vary depending on their living situations (Berry et al., 1989; Im & Yang, 2006), which subsequently results in differences in the women's depressive symptoms. Also, the adequacy of using composite scores to represent depressive symptoms needs to be further investigated. As discussed above, using composite scores could result in losing or inflating some properties of the individual responses during the data analysis process, which might have resulted in both significant and non-significant findings in this secondary analysis. Finally, health care providers need to consider that self-reported racial/ethnic identity would be a better predictor of ethnic minority midlife women's depressive symptoms than immigration status in development of their mental health interventions for the population.

Acknowledgement

The original two studies that provided the data for this secondary analysis were funded by the National Institutes of Health (NIH/NINR/NIA and NIH/NINR/ NHLBI) (R01NR008926 and R01NR010568). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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Table 1

Background characteristics of the participants (N=1,054)

Characteristics	Total, n (%) or M $\pm$ SD	Characteristics	Total, n (%) or M $\pm$ SD
Age (years)	49.0 $\pm$ 5.7	Family income ^b	
The highest academic degree		Very hard	185 (17.6)
High school diploma	141 (13.4)	Somewhat hard	405 (38.4)
Associate degree	262 (24.9)	Not hard	464 (44.0)
Bachelor's degree or above	651 (61.8)	No. of children	
Religion		None	192 (18.2)
Protestant	352 (33.4)	1–2	542 (51.4)
Catholic	273 (25.9)	>3	320 (30.4)
Others ^a	243 (23.1)	Access to Health care ^c	
No religion	186 (17.6)	Yes	913 (86.6)
Marital status		No	141 (13.4)
Married/partnered	714 (67.7)	Immigration Status	
Non-married/separated	340 (32.3)	Non-immigrants	811 (76.9)
Employment		Immigrants	243 (23.1)
Yes	790 (75.0)	Length of stay in the U.S. (years)	42.7 $\pm$ 14.2
No	264 (25.0)	Level of acculturation (1–5) ^d	3.0 $\pm$ 1.8

Note:

^a others=Buddhism, Muslim,^b difficulty paying for basics with family income,^c having a particular place to go when they are sick,^d 1=own ethnic culture to 5=American culture

Table 2

The prevalence of individual depressive symptoms by self-reported ethnic identity (only significant findings reported here).

Items n (%)	Hispanic (n=255)	NH Asian (n=232)	NH African American (n=250)	NH White (n=317)	Total (N=1,054)	χ^2 or F
Severe headache	65(25.5)	36(15.5)	46(18.4)	79(24.9)	226(21.4)	10.97 *
Exhaustion/fatigue	125(49.0)	70(30.2)	113(45.2)	173(54.6)	481(45.6)	33.77 **
Difficulty in falling asleep	136(53.3)	90(38.8)	140(56.0)	189(59.6)	555(52.7)	25.22 **
Feeling clumsy	64(25.1)	32(13.8)	61(24.4)	124(39.1)	281(26.7)	45.77 **
Feeling unhappy	88(34.5)	65(28.0)	79(31.6)	125(39.4)	357(33.9)	8.55 *
Often crying	70(27.5)	32(13.8)	48(19.2)	89(28.1)	239(22.7)	20.75 **
Feeling depressed	86(33.7)	59(25.4)	80(32.0)	121(38.2)	346(32.8)	10.03 *
Worrying	105(41.2)	65(28.0)	73(29.2)	124(39.1)	367(34.8)	15.33 **
Feeling grouchy	95(37.3)	60(25.9)	74(29.6)	135(42.6)	364(34.5)	20.34 **
Feeling anxious	106(41.6)	71(30.6)	82(32.8)	139(43.8)	398(37.8)	14.25 **
Problem in concentrating	76(29.8)	43(18.5)	73(29.2)	118(37.2)	310(29.4)	22.56 **
Total number of symptoms	5.9±4.5 ^{ab}	4.4±4.5 ^b	5.2±4.5 ^{ab}	6.5±5.0 ^a	5.6±4.7	10.43 **

Note:

* $p < .05$,

**

$p < .01$; significant differences in the post-hoc test are determined by Turkey's HSD

(marked by subgroup – c < b < a, ns = not significant)

Table 3

The severity of individual depressive symptoms by self-reported ethnic identity (only significant findings reported here).

Items (M±SD)	Hispanic (N=255)	NH Asian (N=232)	NH African American (N=250)	NH White (N=317)	Total (N=1,054)	F
Poor appetite	0.24±0.89 ^{ns}	0.18±0.72 ^{ns}	0.22±0.77 ^{ns}	0.38±1.10 ^{ns}	0.26±0.90	2.66 *
Severe headache	0.86±1.54 ^a	0.50±1.23 ^b	0.61±1.35 ^{ab}	0.89±1.61 ^a	0.73±1.46	4.36 **
Exhaustion/fatigue	1.70±1.86 ^{ab}	0.94±1.52 ^c	1.46±1.72 ^b	1.91±1.90 ^a	1.54±1.80	14.37 **
Difficulty in falling asleep	1.90±1.95 ^a	1.30±1.74 ^b	1.94±1.86 ^a	2.16±1.93 ^a	1.85±1.90	9.79 **
Feeling clumsy	0.77±1.44 ^b	0.39±1.04 ^c	0.66±1.27 ^b	1.15±1.55 ^a	0.78±1.38	14.57 **
Feeling unhappy	1.07±1.60 ^{ab}	0.84±1.43 ^b	0.99±1.56 ^{ab}	1.30±1.73 ^a	1.07±1.60	4.05 **
Often crying	0.81±1.43 ^a	0.40±1.07 ^b	0.58±1.27 ^{ab}	0.85±1.47 ^a	0.68±1.34	6.39 **
Feeling depressed	1.11±1.66 ^a	0.76±1.38 ^b	1.00±1.55 ^{ab}	1.25±1.72 ^a	1.05±1.60	4.43 **
Worrying	1.36±1.74 ^a	0.83±1.41 ^b	0.90±1.50 ^b	1.27±1.71 ^a	1.11±1.62	6.95 **
Easily upset /irritate	1.36±1.66 ^{ns}	1.07±1.48 ^{ns}	1.02±1.51 ^{ns}	1.37±1.70 ^{ns}	1.12±1.60	3.55 *
Feeling grouchy	1.10±1.55 ^{ab}	0.76±1.36 ^c	0.86±1.42 ^{bc}	1.26±1.59 ^a	1.02±1.50	6.39 **
Feeling anxious	1.30±1.67 ^a	0.93±1.48 ^b	0.94±1.45 ^b	1.37±1.68 ^a	1.15±1.60	5.70 *
Problem in concentrating	0.95±1.53 ^a	0.54±1.20 ^b	0.88±1.48 ^a	1.18±1.63 ^a	0.91±1.50	8.32 **
Being Forgetful	1.71±1.68 ^{ns}	1.38±1.61 ^{ns}	1.48±1.64 ^{ns}	1.74±1.73 ^{ns}	1.59±1.68	2.89 *
Total severity scores	19.1±17.2 ^{ab}	13.3±15.3 ^b	16.0±15.9 ^{ab}	21.3±19.0 ^a	17.7±17.3	11.24 **

Note:

* $p < .05$,

** $p < .01$; significant differences in the post-hoc test are determined by Turkey's HSD (marked by subgroup – c < b < ab < a, ns=not significant)

Table 4

The frequencies of individual depressive symptoms by immigration status (only significant findings reported here).

Items n (%)	Immigrants (n=243)	Non-Immigrants (n=811)	Total (N=1,054)	χ^2 or <i>t</i>	
Exhaustion/fatigue	91 (37.4)	390 (48.1)	481 (45.6)	8.53	**
Difficulty in falling asleep	100 (41.2)	455 (56.1)	555 (52.7)	16.77	**
Feeling clumsy	33 (13.6)	248 (30.6)	281 (26.6)	27.63	**
Feeling grouchy	68 (27.9)	296 (36.5)	364 (34.5)	5.99	*
Total number of symptoms	4.89±4.39	5.83±4.78	5.6±4.7	2.73	**

Note:

*
 $p < .05$,

**
 $p < .01$

Table 5

The severity of individual depressive symptoms by immigration status (only significant findings reported).

Items (M±SD)	Immigrants (n=243)	Non-Immigrants (n=811)	Total (N=1,054)	<i>t</i>	
Exhaustion/fatigue	1.22±1.69	1.63±1.82	1.54±1.80	3.16	**
Difficulty in falling asleep	1.35±1.74	2.0±1.92	1.85±1.90	4.73	**
Feeling clumsy	0.40±1.07	0.89±1.45	0.78±1.38	4.88	**
Often crying	0.50±1.15	0.73±1.39	0.68±1.34	2.37	*
Feeling grouchy	0.81±1.38	1.08±1.53	1.02±1.50	2.39	*
Problem in concentrating	0.71±1.36	0.97±1.53	0.91±1.50	2.36	*
Total severity scores	14.67±15.51	18.66±17.71	17.7±17.3	3.17	**

Note:

*
 $p < .05$,

**
 $p < .01$

Table 6

The predictors of the total numbers and the total severity scores of depressive symptoms.

Factors	Total numbers of depressive symptoms					Total severity scores of depressive symptoms				
	β	p value	R ²	R ²	F _{ch}	β	p value	R ²	R ²	F _{ch}
Step 1			.10	.10	10.05**			.12	.12	11.24**
Partial college	-.01	.84				.02	.68			
More than college	-.09	.03 *				-.08	.08			
Catholic	.05	.13				.05	.10			
Others religion	.02	.62				.03	.40			
No religion	.01	.84				-.01	.78			
Non-married/separated	-.01	.82				-.00	.94			
Employed	-.05	.18				-.04	.31			
Family income-somewhat ^a	-.17	.00 **				-.20	.00 **			
Family income-not hard ^b	-.34	.00 **				-.37	.00 **			
1 or 2 children	.01	.82				.00	.99			
More than 3 children	.08	.08				.06	.14			
Access to health care	.05	.08				.04	.14			
Step 2			.11	.01	2.65*			.13	.01	2.97*
Non-immigrant	.01	.83				.03	.46			
N-H Asian	-.11	.02 *				-.09	.04 *			
N-H African American	-.08	.03 *				-.08	.02 *			
Hispanic	-.04	.35				-.03	.42			
Step 3			.14	.03	13.76**			.15	.02	13.78**
Level of Acculturation	-.16	.00 **				-.16	.00 **			
Length of stay in the U.S.	.03	.58				.05	.34			

Note:

^{a, b} difficulty paying for basics with family income;

* $p < .05$,

** $p < .01$;

$R^2 = R^2$ change; $F_{ch} = F$ change

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