DISABILITY AS A RISK FACTOR FOR PSYCHOLOGICAL DISTRESS

AMONG ASIAN-AMERICAN ELDERS

by

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ABSTRACT

Research has shown a strong association between disability and psychological distress (PD) among older adults. However, little is known about how this relation varies among different subgroups of Asian-American elders. The present study aims to examine the relation between disability and PD within five subgroups of Asian Americans age 60 and older (N=1398): Chinese (n = 291), Japanese (n = 175), Koreans (n =383), Filipinos (n = 149), and Vietnamese (n = 400). Data were drawn from the 2009 California Health Interview Survey (CHIS). A generalized linear model (GzLM) analysis was conducted to assess the overall relations of disability with PD, as well as how these effects were moderated by ethnicity. The three types of disabilities being examined (vision/hearing, cognitive, and ADL functional disabilities) were all associated with increased PD. It was also found that the effects of having cognitive or ADL functional disabilities depended on the elder's ethnicity. Having a cognitive or an ADL functional disability led to notably more distress among Filipinos than among those from other Asian subgroups. In addition, the effect of having an ADL functional disability was not significant for Japanese, even though it was significant for all of the other ethnicities. This current study sheds light on understanding disability as a risk factor for poor mental health among the five subgroups of Asian-American elders. The findings can be applied to enhance the psychological wellbeing of disabled Asian American elders by providing culturally-sensitive mental health services tailored to their specific needs.

DEDICATION

This thesis is dedicated to my parents, Mr. and Mrs. Haw Huang, and everyone who has

helped me and encouraged me through the process of creating this manuscript.

LIST OF ABBREVIATIONS AND SYMBOLS

α Cronbach's index of internal consistency

b Estimated values of regression coefficients

df Degrees of freedom: number of values free to vary after certain restrictions have been placed on the data

M Mean: the sum of a set of measurements divided by the number of measurements in the set

p Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value

SD Standard Deviation

t Computed value of t test

$<$ Less than

$=$ Equal to

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INTRODUCTION

The relations between disability and mental health have garnered increasing attention in health and aging research in recent years (Bruce, 2001; Honey et al., 2012; Norton et al., 2005; Preuper, et al., 2011; Truchon et al., 2008). The presence of a disability has been found to be associated with higher levels of psychological distress among older adults (Kim, Bryant, & Parmelee, 2011; Huber et al., 2007; Olkin & Pledger, 2003). Meanwhile, the 'disablement process' has been recognized as be a dynamic interaction deeply intertwined with sociodemographic factors and cultural norms (Chappell & Cooke, 2012; Mills & Henretta, 2001). However, little empirical work has examined the relations between disability, mental health, and ethnicity, especially from a comparative perspective. To better understand risk factors associated with poor mental health, this study purports to investigate the impact of disability and psychological distress among five subgroups of Asian-American elders: Chinese, Japanese, Korean, Filipino, and Vietnamese.

Psychological distress includes symptoms of depression and anxiety and is associated with considerable emotional suffering, social dysfunction and, often, with problematic alcohol use (Kessler, et al, 2003; Min et al., 2005). Serious psychological distress (SPD) is indicated by a score of 13 and above on the Kessler 6 (K6) scale that was designed to discriminate cases of serious mental illness from non-cases (Kessler et al., 2003). The National Survey on Drug Use and Health Report indicated that an annual average of 7 percent of persons aged 50 or older experienced SPD in the last year, with 8.8 percent of those aged 50 to 64 years and 4.5 percent of

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those aged 65 or older having experienced SPD (NSDUH, 2008). When compared with the general population, Sorkin et al. (2009) found that older Asian Americans had higher odds of having mental distress and worse access to mental health services than non-Hispanic Whites. Trihn and Ahmed (2009) also suggested that Asian-American older adults face multiple acculturation stressors and are susceptible to depression, anxiety, and suicide.

Increased age is associated with increased likelihood of disability. With the advance of medical technology and treatment options, older adults live longer yet may also live with more chronic conditions and suffer from functional impairments (Chappell & Cooke, 2011). Minorities, in general, are more susceptible to becoming disabled than their Non-Hispanic White counterparts (Schoeni, Freedman, & Martin, 2005). By 2009, the prevalence rate of having one or more basic disability (i.e., movement, emotional, vision/hearing or cognitive disability) among Asian Americans age 65 and older has reached 66% (National Center for Health Statistics, 2011). Between 1997 and 2009, the percentage of older Asians who experience difficulties with activities of daily living (ADL), instrumental activities of daily living (IADL), social, and work impairment has also drastically increased from 14.8% to 23.3% (National Center for Health Statistics, 2011).

It is worth noting that a growing body of literature has identified the need to accurately represent the health profiles of Asian-American elders (Cook, McGurie, & Miranda, 2007; Kim, et al., 2010; Kim, et al., 2011; Safran, et al., 2009, Sorkin, Nguyen, & Ngo-Metzger, 2011). With more than 40 ethnic groups and 100 distinct languages, there is notable diversity within the Asian-American populations in terms of nativity, immigration status, educational level, English proficiency, income, cultural values, length of residence in the U. S., physical and mental health

status, and risk profiles for diseases (NAMI, 2011; U.S. Census, 2009). While most previous research examined Asian-American health followed the common convention of aggregating all Asians into one unifying category without noting the inherent subgroup variations, recent studies have indicated that this aggregated approach may obscure potential variation across the subpopulations and fail to identify the particularly vulnerable groups (Kim et al., 2010; Fustos, 2011).

Recent health disparity research found that Asian-American elders of various ethnic subgroups differed significantly not only in mental health conditions but also in their disability status (Kim et al., 2010; Kim et al., 2011; Sorkin et al., 2011; Fuller-Thomson, Brennenstuhl, & Hurd, 2011; Mutchler, Prakash, & Burr, 2007). For example, while the best mental health profile was found in Japanese elders, Koreans reported the poorest self-rated mental health compared to other elderly Asian subgroups (Kim et al., 2010). In addition, while Asian older adults had, on average, lower prevalence rates of disability than their non-Hispanic counterparts (Mutchler, et al., 2007), this positive profile did reflect an accurate picture of the unique situation in various Asian subpopulations as some ethnic groups such as Japanese and Chinese are more advantaged than others (Fuller-Thompson, et al., 2011; Mutchler, et al., 2007).

Despite the importance of addressing health disparities, there is comparatively scant research addressing issues of intra-group differences among minority elders. Research on disability and psychological distress is especially needed given the projected growth of Asian-American populations and the rising disability rates among older adults (U. S. Census Bureau, 2009). While marked differences were found in mental health status and disability rates among Asian-American subgroups, a substantial knowledge gap exists regarding how the relations

between the two vary by ethnicity (Kim et al., 2010; Fuller-Thompson et al., 2011; Mutchler, et al., 2007). To fill the gap and better understand risk factors associated with poor mental health, this study purports to investigate the relation between disability and psychological distress within five major subgroups of elderly Asian Americans: Chinese, Japanese, Korean, Filipino, and Vietnamese.

Conceptual Model

Existing literature has suggested a strong relationship between the self-reported disability and psychological distress (Bruce, 2001; Kim, Bryant, & Parmelee, 2011; Huber et al., 2007; Norton et al., 2005; Preuper, et al., 2011; Truchon et al., 2008). For example, Huber et al. (2007) found that higher psychological distress was uniquely predicted by older age and more physical disability. Kim and colleges (2011) found that disability was significantly associated with past year serious psychological distress among Whites, Latinos, and Asian older adults. With regard to the relations between common late-life disabilities and mental health, it was found that vision and hearing disability were both strongly correlated with psychological distress in older Dutch persons (Ormel et al., 1997). Specifically, vision disability was found to be a consistent predictor of depression among older adults (Chou, 2008). Poor cognitive functioning was associated with higher levels of depressive symptomatology (Dotson, Resnick, & Zonderman, 2008; Starkstein et al., 2008). Functional disability was found to amplify depressive symptoms in late life (Ormel, et al., 2002; Yang, 2006) and was also significantly associated with psychological distress in older Korean immigrants (Min, Moon, & Lubben, 2005). In addition, literature has suggested that ethnicity may play a significant role in terms of how older adults perceive mental health and disability diverse ethnic groups adapt to disability in their own unique fashion as attitudes,

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values, and coping strategies may vary from one ethnic group to another (Braun & Brown, 1998; Kang, 2000; Chiriboga et al., 2005; NAMI, 2011).

Based on the literature discussed above, a theoretical model was proposed to examine: 1) the relationship between three types of disability (i.e., vision/hearing, cognitive, and ADL functional disabilities) and psychological distress, and 2) the moderating effect of ethnicity on the relationship between disability and psychological distress (Figure 1).
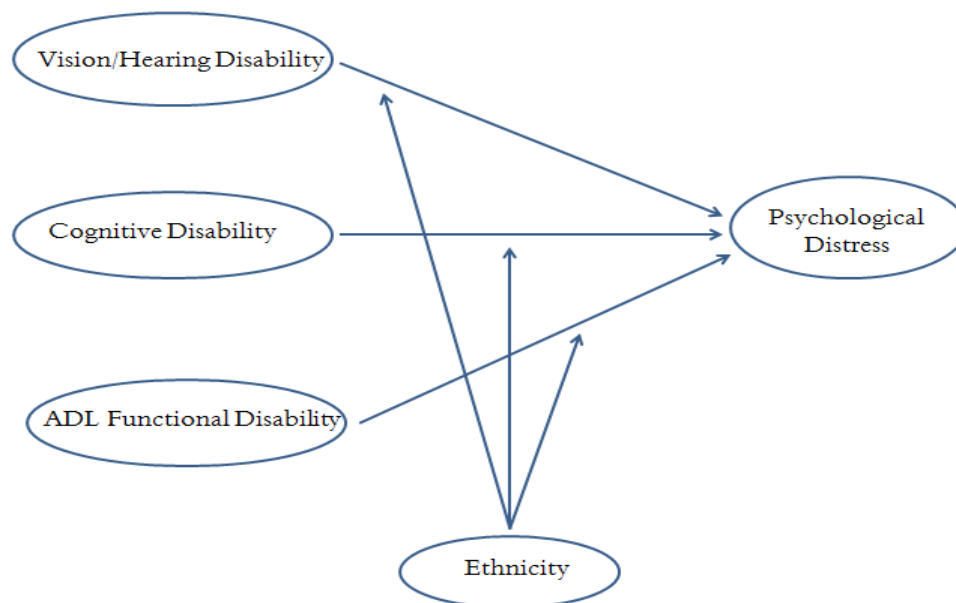
Figure 1. Theoretical model for relationships between disability, ethnicity, and psychological distress

Based on previous research, it is hypothesized that: 1) the five subgroups will differ significantly in disability status and levels of psychological distress (Kim et al., 2010); 2) the presence of a disability will be positively correlated with higher levels of psychological distress across the five Asian-American subpopulations (Olkin & Pledger, 2003; Preuper, et al., 2011); 3) the three types of disabilities being examined (i.e., vision/hearing, cognitive, and ADL functional

disabilities) will be significant predictors for psychological distress within each of the subgroups (Chou, 2008; Dostson, et al., 2008; Min, et al., 2005), and 4) ethnicity will moderate the relations between disability and psychological distress (Chappell & Cooke, 2012; Mills & Henretta, 2001).

METHOD

Study Sample

The data were drawn from the 2009 California Health Interview Survey (CHIS, n=47,614). CHIS is a random-digit dial (RDD) telephone survey of Californian households that has been conducted every two years since 2001 on a wide range of health topics (CHIS, 2009). CHIS is chosen for the current study because it interviews ethnic groups underrepresented in most other health surveys and contains rich data of large samples from various Asian-American subgroups, making this dataset exceptionally suitable for examining subgroup differences among Asian Americans. The CHIS dataset is approved for use by the University of Alabama without seeking Institutional Review Board (IRB) approval.

Respondents who were eligible for inclusion in the proposed study had self-reported that they were 60 years or older and fell into one of the Asian American subgroups of Chinese, Japanese, Korean, Filipino or Vietnamese. While CHIS offered the option for proxy reporting, all interviews with the study sample were conducted via self report rather than proxy report. Languages used in the interviews included English, Mandarin, Cantonese, Korean, and Vietnamese. These five subgroups include five out of the six largest Asian groups in the US (U. S. Census, 2009). The third largest Asian subgroup, Asian Indians, was not included in the current study because they were lumped into the "South Asian" category in the CHIS dataset. The "South Asian," "Southeast Asian" and "Other Asian" categories in CHIS dataset were not included in the current analyses because the grouping strategy made it difficult to identify ethnic-

specific risk profiles for individual subgroups. A total of 1,398 respondents met the inclusion criteria and were included in the study. The study sample is comprised of the following five subcategories of Asian American elders: Chinese (n = 291), Japanese (n = 175), Koreans (n =383), Filipinos (n = 149), and Vietnamese (n = 400).

Measures

Dependent variable. *Psychological distress* was assessed with the K6 Scale, which is designed to maximize the ability to discriminate cases of serious mental illness from non-cases (Kessler et al., 2003). The K6 scale includes six items assessing the frequency of feeling nervous, hopeless, restless, depressed, worthless, or everything an effort during the past 30 days. Respondents were asked "About how often during the past 30 days did you feel [nervous, hopeless, restless, depressed, worthless, or that everything was an effort]—would you say all of the time, most of the time, some of the time, a little of the time, or none of the time?" The answers were coded on a five-point Likert scale ranging from 0 (none of the time) to 5 (all of the time). A respondent's level of psychological distress will be calculated as the sum of ratings of the 6 items with the possible total score ranging from 0 (no psychological distress) to 30 (most severe psychological distress). The overall internal consistency of the K6 was satisfactory ($\alpha =$ .82) in the study sample. Internal consistency of the K6 for each subgroup ranges from .76 to .86, where the Korean sample had the highest internal consistency and the Japanese showed the lowest.

Independent variables. Disability status was assessed in the following three areas: (1) *vision/hearing disability*, (2) *cognitive disability*, and (3) *ADL functional disability*. To assess the presence of vision/hearing disability, respondents were asked "Are you blind or deaf, or do you

have a severe vision or hearing problem?" The presence of cognitive disability was measured by asking respondents "Because of a physical, mental, or emotional condition lasting 6 months or more, do you have any difficulty learning, remembering, or concentrating?" In terms of ADL functional disability, respondents were asked "Because of a physical, mental, or emotional condition lasting 6 months or more, do you have any difficulty dressing, bathing, or getting around inside the home?" Although it would be desirable to report the psychometric properties of these predictor variables, no existing data can be found in previous literature.

Moderating variable. *Ethnicity* (Chinese/Japanese/Korean/Filipino/Vietnamese) was assessed by asking respondents, "You said Asian, and what specific ethnic group are you, such as Chinese, Filipino, or Vietnamese?"

Covariate variables. This study includes the following sociodemographic variables: *age* (years), *sex* (male/female), *marital status* (married/other than married/), *educational attainment* (less than high school education/high school graduation/some college education or more), *percent life in the U. S.* (0-20% / 21-40% /41-60 % / 60-80% / 81+%), *English proficiency* (English only/very well or well/fair or poor), and *household's total annual income* (actual figures of income). *Self-rated health* was measured by asking respondents: "Would you say that in general your health is excellent, very good, good, fair, or poor?" The score ranged 1 to 5 with higher scores indicating poorer self-rated health. *Number of chronic diseases* was measured using the total number of chronic diseases including asthma, diabetes, high blood pressure, and heart disease. The total score ranges from 0 (no comorbidity) to 4. Although older adults may suffer from other types of chronic diseases that do not appear in the above-mentioned categories

such as arthritis, osteoporosis, and chronic obstructive pulmonary disease (COPD), the CHIS data set only contains these four types of chronic conditions.

Data Analysis

Analyses were conducted using IBM SPSS version 19.0.0. Data analysis proceeded in three steps: Analysis of Variance (ANOVA) tests were conducted to test hypothesis (1), which examines differences in background variables, disability status, and the level of psychological distress across the five subgroups of Asian Americans. Second, point-biserial analyses were conducted to test hypothesis (2), which assesses the degrees of association between the presence of a disability and psychological distress in each Asian-American subgroup. Third, a generalized linear model analysis (GzLM; McCullagh & Nelder, 1989) was conducted to test hypothesis (3), which assess whether the three types of disabilities being examined (vision/hearing, cognitive, and ADL functional disabilities) are predictive of psychological distress and also to test hypothesis (4), which examines whether ethnicity moderates the relation between disability and psychological distress. GzLM analysis is exceptionally suitable in handing non-normal data (Hardin & Hilbe, 2001; Kauermann & Norrie, 2007) and it was chosen for the current study because the distribution of the dependent variable, *psychological distress*, is positively skewed in the study sample. In the GzLM, sociodemographic variables, health variables, disability variables, and ethnicity variable were entered in step 1 of GzLM to test the main effects of the three types of disability and ethnicity. Interaction terms including vision/hearing disability $\times$ ethnicity, cognitive disability $\times$ ethnicity, and ADL functioning disability $\times$ ethnicity were entered in step 2 to examine the interaction effect of disability and ethnicity on psychological distress. Post-hoc comparisons were conducted using Fisher's least significant difference (LSD)

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tests. Japanese was set as a referent group in pair-wise comparisons as it exhibited the best

mental health profiles among all subgroups (Kim et al., 2010; Sorkin et al., 2011)

RESULTS

Background Characteristics of Asian-American Elders

As summarized in Table 1, the five subcategories of Asian-American elders were significantly different in all of their background characteristics except for the number of chronic conditions. Among the five subcategories, the Japanese were the oldest (73.70 years) and the Filipinos (68.86 years) were the youngest. More than half of the study sample was female except within the Vietnamese sample. With the exception of Japanese elders, more than half of the study sample was married. The Filipino and Japanese samples had the highest levels of educational attainment, whereas the Japanese and Chinese samples had the highest household income. The Vietnamese and Korean samples had lower levels of educational attainment and household income compared to other subgroups. Japanese elders reported significantly greater percentage of time lived in the U. S., with 82.9% indicating that they had lived in the U. S. for more than 80% of their lives. Significant heterogeneity also existed across the five subgroups in terms of English proficiency, such that those in the Japanese subgroup were the most proficient at English, whereas those in the Vietnamese and Korean samples were the least proficient at English. Disability rates also varied significantly among the five subcategories of Asian American elders. Vietnamese elders reported the highest rates in the three types of disability. Chinese elders had the lowest vision/hearing disability rate, Filipino elders had the lowest cognitive disability rate, and Japanese and Korean elders had the lowest ADL functional disability rates. The highest level of psychological distress was reported by Koreans ($M = 3.85$,

SD = 4.51). The next most distressed groups were Vietnamese (*M* = 2.47, *SD* = 3.54). The psychological distress of Japanese participants (*M* = 1.75, *SD* = 2.71) was significantly lower than all of the other groups. It is worth noting that Korean elders also had the highest rate of serious psychological distress (K6≥13), while the Japanese reported the lowest rate.

Bivariate Relations of Disability with Psychological Distress

Table 2 presents the point-biserial correlations of the three types of disability with psychological distress (PD) in each subcategory of Asian-American elders. The relation between vision/hearing disability and PD was substantially stronger in the Filipino sample than in the other samples. Cognitive disability status showed medium-sized relations based on the conventions of Cohen (1998) with PD across all five samples. The relation between ADL disability and PD was not significant in the Japanese sample, but showed medium-sized relations in all of the other samples.

Independent Relations of Disability with Psychological Distress

Table 3 summarizes the results of a generalized linear model examining how the relations between disability and psychological distress vary between the five Asian-American subgroups. Significant main effects were found for all of the sociodemographic and health variables with the exception of gender and the number of chronic diseases. Being younger (*b*=-.029, *p* < .001), being unmarried (*b*=.047, *p* < .001), having higher education (*b*=.080, *p* < .05), having smaller percentage of time lived in the U. S. (*b*=-.051, *p* < .05), having lower English proficiency (*b*=.097, *p* < .05), having lower income (*b*=-1.844E-6, *p* < .001), and having poorer general health (*b*=.232, *p* < .001) were significantly associated with elevated levels of psychological

distress. In this model, all three disability types including vision/hearing disability (b=-.186), cognitive disability (b=-.555), and ADL functional disability (b=-.352) were able to independently explain variability in psychological distress ($p < .001$).

Ethnicity as a moderator of the relation between disability and psychological distress

Although there was a significant main effect of having a vision/hearing disability on psychological distress, the effect of this did not significantly vary among the different Asian subgroups ($p > .05$). Figure 2 illustrates the significant interaction between Asian subgroup and the presence of a cognitive disability. While LSD post-hoc comparisons revealed that those with a cognitive disability were significantly more distressed in every Asian subgroup ($p < .001$), the effect of having a cognitive disability was notably larger for Filipinos than for the other subgroups. Figure 3 illustrates the significant interaction between Asian subgroup and the presence of an ADL functional disability. LSD post-hoc comparisons indicated that having an ADL functional disability led to significantly more psychological distress for every Asian subgroup except for Japanese, who showed a nonsignificant trend ($p = .10$) for those with ADL functional disabilities to have less distress. Similar to the finding for cognitive disabilities, having an ADL functional disability led to notably more distress among Filipinos than among those from other Asian subgroups.

Table 1

Background Characteristics of Asian American Elders (N=1,398)

Variables	% or M±SD				
	Chinese (n=291)	Japanese (n=175)	Korean (n=383)	Filipino (n=149)	Vietnamese (n=400)
Age (range 60-85) **	69.26±7.83	73.70±8.08	70.41±6.52	68.86±6.98	68.94±7.03
Female **	56.4	57.7	61.6	73.8	45.8
Married**	63.6	45.1	65.3	55.0	69.8
Percent life in U. S.**					
0-20%	11.7	.6	11.5	8.1	11.8
21-40%	22.7	1.1	29.8	20.8	57.5
41-60%	28.2	4.0	46.0	35.6	29.0
61-80%	15.5	11.4	8.4	21.5	1.8
81+%	22.0	82.9	4.4	14.1	0
Education**					
Less than high school graduate	16.2	3.4	14.9	5.4	32.0
High school graduate	15.5	26.3	24.5	12.1	32.3
Some college or more	68.4	70.3	60.6	82.6	35.8
English Proficiency**					
English only	19.9	69.1	5.0	24.8	.5
Very well/well	35.7	26.9	21.4	65.8	19.8
Fair/poor	44.3	4.0	73.6	9.4	79.8
Household Income**	59653.55± 61146.17	61294.38± 53259.54	37564.03± 45677.44	57650.58± 48456.55	26772.59± 27976.56
General Health Condition**	3.04±1.10	2.55±1.00	3.34±1.26	2.79±1.11	3.94±1.03
Excellent/very well/well	61.9	85.1	53.0	75.8	31.0
Fair/poor	38.1	14.9	47.0	24.2	69.0
Number of Chronic Conditions	.86±.76	.97±.76	.94±.79	.98±.78	1.08±.94
0	36.8	30.9	33.9	29.5	31.0
1	40.9	41.7	38.1	46.3	39.8
2+	22.3	27.4	27.9	24.2	29.3
Vision/hearing disability**	8.9	17.1	10.4	12.8	28.0
Cognitive disability**	16.2	17.1	18.5	13.4	31.5
ADL functional disability*	9.3	4.6	10.7	4.7	10.8
Psychological Distress (range 0-24) **	2.12±3.18	1.75±2.71	3.85±4.51	2.47±3.54	2.08±3.39
Serious Psychological Distress (K6≥13) *	2.4	.6	6.5	2.0	2.5

Note. *M*=mean, *SD*=standard deviation.

* *p* < .05. ** *p* < .001.

Table 2

Point-biserial Correlations between Disability Type and Psychological Distress by Ethnicity

Disability Type	Psychology Distress				
	Chinese	Japanese	Korean	Filipino	Vietnamese
Vision/Hearing Disability	.16**	.09	.13*	.31**	.15*
Cognitive Disability	.34**	.32**	.23**	.35**	.30**
ADL functional Disability	.37**	.05	.21**	.31**	.23**

Note. $* p < .05$, $** p < .001$

Table 3

Generalized Linear Model Predicting Psychological Distress from Disability and Ethnicity

Predictor	Psychological Distress		
	Wald Chi- Square	*df*	*p* value
Step 1			
Age	127.20	1	.000**
Gender	1.54	1	.214
Marital Status	18.70	1	.000**
Education	10.59	1	.001*
Percent life in U. S.	5.00	1	.025*
English Proficiency	5.37	1	.021*
Household Income	14.24	1	.000**
General Health Condition	150.35	1	.000**
# of Chronic Conditions	4.08	1	.044*
Vision/Hearing Disability	16.14	1	.000**
Cognitive Disability	249.42	1	.000**
ADL Functional Disability	37.87	1	.000**
Ethnicity	247.86	4	.000**
Step 2			
Vision/Hearing Disability × Ethnicity	5.37	4	.251
Cognitive Disability × Ethnicity	36.19	4	.000**
ADL Functional Disability × Ethnicity	47.18	4	.000**
Omnibus Test (Likelihood Ratio Chi- Square)	1536.34	28	.000**

Note. * *p* < .05, ** *p* < .001

Note. GzLM analysis was performed for testing the main and interaction effects using a Poisson error structure and a logarithmic link function.

Figure 2. Cognitive disability × ethnicity interaction effect on psychological distress

Note. GzLM analysis was performed for testing the interaction effect using a Poisson error structure and a logarithmic link function.

Figure 3. ADL functional disability × ethnicity interaction effect on psychological distress

Note. GzLM analysis was performed for testing the interaction effect using a Poisson error structure and a logarithmic link function.

DISCUSSION

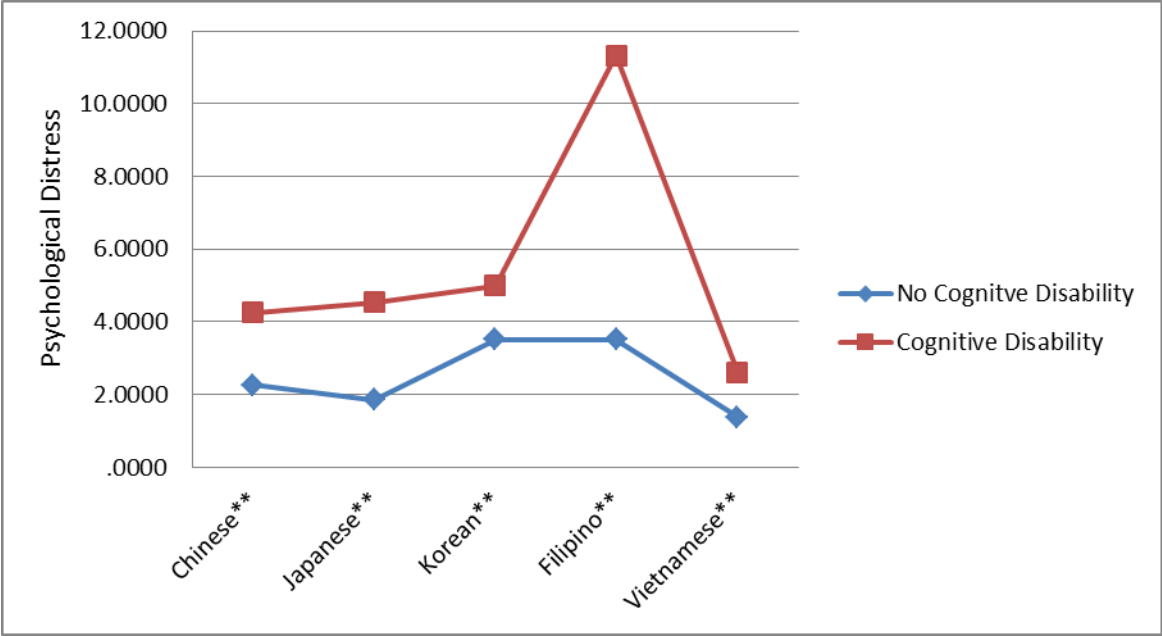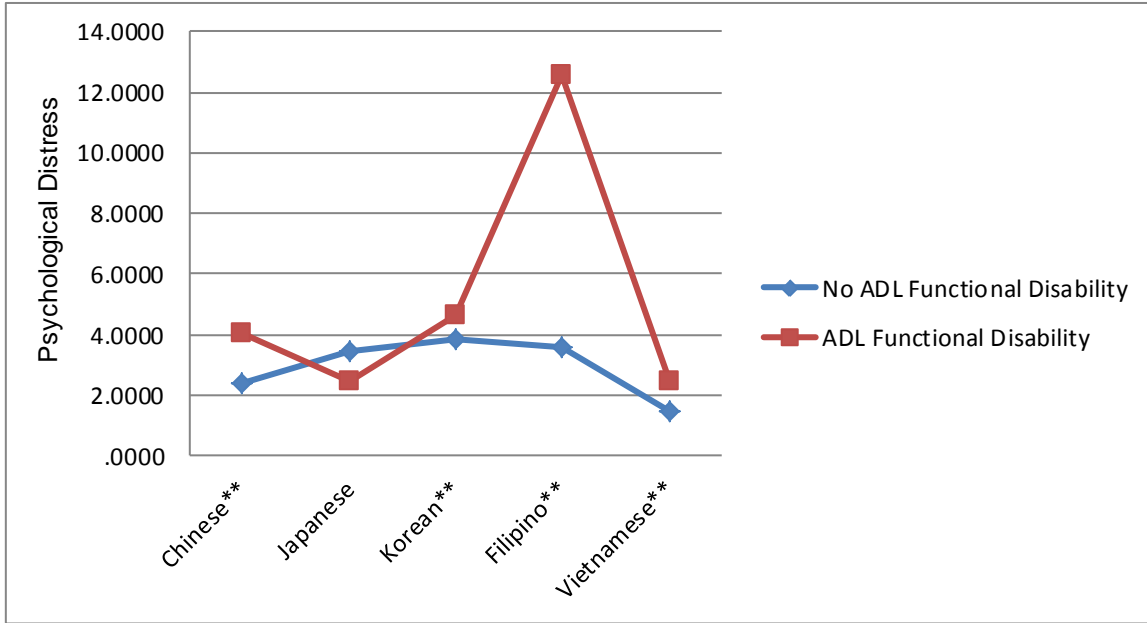The relations between disability and psychological distress have not been explored extensively in the ethnic minority populations, especially among Asian-American elders. Given the rapid population growth of and the rising disability rates among older Asian Americans, the need to identify risk factors of poor mental health outcomes is urgent. This study aimed to investigate the relations of three common late-life disabilities with psychological distress, and how these relations varied among five subgroups of Asian-American elders: Chinese, Japanese, Korean, Filipino, and Vietnamese. To our knowledge, this may be the first study to examine the disability-related risk profiles of psychological distress using a publically available data set that includes large samples of Asian-American subgroups.

Significant subgroup differences were found for age, marital status, educational attainment, percent of life lived in the U.S., English proficiency, household income, and general health condition. These findings are in concordance with previous research assessing the health characteristics of these five subgroups of Asian elders (Kim et al., 2010; Sorkin et al., 2011), highlighting the diversity among elderly Asian-Americans and the importance of examining the unique characteristics and risk profiles of individual subgroups. Special attention should be paid to the most vulnerable subgroups such as Korean and Vietnamese. In line with previous research (Kim et al., 2010; Fuller-Thomson et al, 2011), Korean older adults were most vulnerable to psychological distress while Vietnamese reported the worst disability profiles among all Asian subgroups. Both groups reported the shortest length of time lived in the U. S. and significantly

higher proportion of limited English proficiency compared to other subgroups, suggesting that acculturation factors may play a significant role in older adults' mental health and disability status. In addition, the high disability rates reported by the Vietnamese subgroup may reflect the unique immigration history of Vietnamese elders as many of them came to the U. S. as refugees who suffered from poorer health compared to other non-refugee immigrants (Hsu, 2004).

GzLM analysis revealed significant main effects of all of the sociodemographic and health variables on psychological distress with the exception of gender. Being younger, being unmarried, having higher education, having a lower percentage of time lived in the U. S., having lower English proficiency, having lower income, and having poorer general health were significantly associated with higher levels of psychological distress. It is worth noting that while younger age and higher education generally act as protective factors for better mental health (Jagger et al., 2007; Sulande et al.,2006), the current data pointed out that for Asian elders who were disabled earlier in life and those who attained higher levels of education experienced more distress compared to their older, less-educated counterparts. This finding is intriguing; however, Elder's life course theory has suggested that individuals tend to experience more distress when their life-span developmental trajectory is out of the expected sequence of life events (Elder et al., 2003). The onset of a disability may therefore exert a stronger impact for an individual who just turned 60 compared to someone who is older because most of their peers will have a greater functional level. In addition, disability may play a role in triggering a mourning process for the lost physical or cognitive function (Bruke, et al., 1992). Older adults with more education may have higher expectations about their own functional ability which, in turn, make their coping with losses associated with disability particularly challenging (Livneh & Antonak, 2005; Mui & Kang, 2006).

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A significant effect for cognitive disability was found across all subgroups, indicating that individuals with memory problems were more likely than their cognitively-intact counterparts to experience emotional distress. This is consistent with previous findings that cognitive impairment impacts every aspect of an individual's daily function and can cause significant frustration and distress among older adults (Dostson, et al., 2008; Williamson et al., 2000). A significant interaction was also found, indicating that the effect of having a cognitive disability was significantly greater for Filipino elders than for elders of other Asian subgroups. One possible explanation may be related to the gender effects of self-reported psychological distress as the Filipinos elders in the current sample had a significant higher proportion of females compared to other subgroups. Previous studies have suggested that older females are more vulnerable to psychological distress and other mental health problems (Chandra, 2011; Mui & Kang, 2006), which could provide an alternative explanation for this finding. However, this finding might also represent a true cultural difference. For Filipino elders, cognitive impairment is typically conceptualized as "nagbablik sa pagkabata" (growing old backwards), "utiana" (forgetfulness), and "wala na" (gone, there is none), which may result in feelings of "hiya" (loss of face or shame) and increased level of distress (Braun & Brown, 1998). In addition, as the majority of Filipinos are Catholic, religious values such as "bahala na" (most things are outside of personal control and in the hands of God) may also impact how Filipino elders cope with disability. It is likely that cognitive decline is perceived as part of normal aging among Filipinos elders, which contribute to delayed service use and poorer cognitive and mental health outcomes in this subgroup (Villanueva & Lipat, 2000).

A significant main effect for ADL functional disability on psychological distress indicated that older adults who suffer from ADL functional limitations had greater distress than

those who can function independently. This finding is in line with previous literature examining the relations between ADL functional disability and mental health. A significant interaction was also found, indicating that the effect of having an ADL functional disability depended on the elder's ethnicity. A significant effect for ADL functional disability was found in Chinese, Korean, Filipino, and Vietnamese elders but not in Japanese elders. A closer examination of the prevalence rate of ADL functional disability among all of the subgroups revealed that Japanese elders had the lowest rate of having ADL functional disability. Compared to other subgroups, Japanese elders reported the best mental and physical health characteristics. Previous research suggested that Japanese elders seemed to fit well with the description of a "model minority" as they had the longest length of time lived in the U. S., had the least rates of LEP, and had higher educational attainment and household income (Kim et al., 2010; Sue & Sue, 1985). These positive acculturation and socioeconomic profiles are likely to serve as protective factors when Japanese elders are in need of ADL care (Schoeni et al., 2005). Another important ethnic difference was that the effect of having an ADL disability was notably greater for Filipinos than for other ethnicities. The reasons behind such patter are not clear; however, lack of social support among Filipino elders may be one possible explanation. Previous literature indicated that as Filipinos have better understanding of the English language, they do not stay in large groups when they moved to the U. S., resulting in less family support and fewer community resources, which in turn may increase their distress level when they experience disability that requires more resources (Chase & Hill, 2006).

Some limitations of the study should be addressed. First, the cross-sectional nature of the data limits our ability to identify causal relationships between disability and psychological distress. Second, the sample only includes community-dwelling older adults. Previous research

has indicated that samples excluding institutionalized elders may underestimate the prevalence rate of late-life disabilities (Fuller-Thompson et al., 2011). Therefore, the actual impact of having disabilities on psychological distress may be even stronger than was identified in this study, especially among those who suffer from more severe functional impairments and require full-time care. Third, the data was only collected in California. As such, the current findings cannot be generalized to other regions of the United States. Forth, due the inherent design of the ethnicity categories in CHIS data set, the present investigation included only five of the more than 40 subgroups of Asians living in the United States. Finally, as the measurement equivalence of the different language versions of K6 has not been evaluated in each Asian subgroup, findings of the present study may reflect potential measurement bias (Kim et al., 2011).

Despite the noted limitations, the current study sheds light on understanding disability as a risk factor for poor mental health among the five subgroups of Asian-American elders. Findings from this study fill a gap in the literature by assessing disability-related risk factors and identifying the most vulnerable subgroups. While older Asian Americans have shown lower disability prevalence rates compared to non-Hispanic Whites as an aggregate group (Mutchler et al., 2007), our study helps identify vulnerable subgroups that can easily be hidden in collective group figures. Specifically, Filipino elders are most vulnerable to elevated distress when they suffer from cognitive or ADL functional disabilities when compared to other Asian subgroups.

While the current study includes five of the largest Asian subgroups, more studies are needed to examine the relations of disability with psychological distress among other Asian subpopulations, such as Asian Indian, Thai, Cambodian, Hmong, Malaysian, and Lao, as little research has focused on these groups. It is evident that there is an urgent need for multi-site

national surveys of Asian-American elders that include greater representation of the different

Asian subpopulations in the United States. Additionally, as the time of onset, severity, and

trajectory of a disability can affect distress, future studies would benefit from incorporating

longitudinal data to explore the specific causal relationships of disability and psychological

distress in late life while accounting for acculturation-related factors such as ethnicity, limited

English proficiency, length of time lived in the U. S., immigration status, and cohort effects.

In terms of translating current findings into clinical practice, it is recommended that a

brief mental health screening tool such as the K6 (Kessler, et al., 2003), the Geriatric Depression

Scale (GDS; Yesavage et al., 1983), or the Center for Epidemiologic Studies Depression Scale

(CES-D; Radloff, 1977) be implemented as a routine examination in primary care settings and

dementia/memory clinics. Previous research has shown that, similar to other minority groups,

Asian-American elders tend to underuse mental health care services (Sorkins, et al., 2009).

There are a number of barriers preventing access to health care such among Asian-American

elders such as the stigma associated with mental illness, lack of information and resources,

limited English proficiency, and health literacy. Adopting a proactive approach in reaching

various subgroups of older Asian-American adults such as providing accessible mental health

services via either telemedicine or home-based mental health services is therefore strongly

recommended. Given that the proportion of limited English proficiency is as high as 70% in

some Asian-American subgroups, it is also important that health care be provided in a consumer-

friendly manner that would accommodate older adults' need for language services. Health

practitioners not only need to be culturally sensitive, but they also will benefit from research-

based information and training, particularly when treating disabled older Asians. By recognizing

health disparities associated with the different sociodemographic and ethnic characteristics of

their older Asian patients, health care providers can offer culturally-competent care to meet the needs of this rapidly-growing population.

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