


Association Between Perceived Social Support and Depressive Symptoms Among Community-Dwelling Older Chinese Americans

Gerontology & Geriatric Medicine
Volume 4: 1–8
© The Author(s) 2018
Reprints and permissions:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/2333721418778194
journals.sagepub.com/home/ggm


Ying-Yu Chao, PhD, RN, GNP-BC¹, Carina Katigbak, PhD, ANP-BC²,
Ning Jackie Zhang, MD, PhD, MPH³, and XinQi Dong, MD, MPH⁴

Abstract

Purpose: This study examined the association between social support and depressive symptoms among U.S. Chinese older adults. **Methods:** Data were from the Population Study of Chinese Elderly in Chicago (PINE) study. Independent variables were positive and negative perceived social support (PSS). Dependent variable was depressive symptoms. Multinomial logistic regression analyses were performed. **Results:** A total of participants were 3,157 Chinese older adults with the mean age of 72.8 years (range 60–105 years). After controlling for confounding factors, Chinese older adults with higher positive PSS were 12% (odds ratio [OR] = 0.88, 95% confidence interval [CI] = [0.85, 0.92]) and 18% (OR = 0.82, 95% CI = [0.79, 0.86]) less likely to report mild and moderate-severe depressive symptoms, respectively, compared to reporting minimal depressive symptoms; On the contrary, Chinese older adults with higher negative PSS were 34% (OR = 1.34, 95% CI = [1.24, 1.46]) and 38% (OR = 1.38, 95% CI = [1.26, 1.52]) more likely to report mild and moderate-severe depressive symptoms, respectively. **Discussion:** The study findings corroborate previous research that social support is significantly associated with depressive symptoms. Our findings reinforce the importance of developing strategies to utilize positive social support and limit negative support in practice for the depressed older adults. Further studies should be conducted to better understand the associations between different dimensions of social support and depression among U.S. Chinese older adults.

Keywords

social support, depressive symptoms, Chinese aging, older immigrants.

Manuscript received: January 16, 2017; **final revision received:** February 23, 2018; **accepted:** April 4, 2018.

Introduction

Immigrants who migrate in mid-adulthood or later may be particularly slow to adapt to a new society (W. Kim, Kang, & Kim, 2015). Older immigrants are more likely to have depression due to limited English proficiency, cultural adjustment difficulties, stresses from changes in social status, and intergenerational differences in acculturation, breakdown of traditional support systems, financial strain, racial prejudice and discrimination (G. Kim, Jang, Chiriboga, Ma, & Schonfeld, 2010; Park & Roh, 2013; Zhang, Fang, Wu, & Wieczorek, 2013). In addition, older adults are more likely to encounter significant life changes, such as deteriorating health, reduced financial ability, or the loss of a loved partner, resulting in a higher risk of depression (W. Kim et al., 2015). Late-life depression may reduce the quality of life, worsen physical functioning and cognition, and increase health care costs (Cotrena, Branco, Kochhann, Shansis, & Fonseca, 2016; Steensma et al., 2016). More importantly, people with

depression have higher risk of suicide and a higher mortality rate (Steensma et al., 2016).

According to the stress process framework, disadvantaged individuals, such as immigrants and the elderly, are particularly vulnerable to social stressors (Pearlin, 1989). Social support is an important factor known to moderate the deleterious effects of acculturation stress (W. Kim et al., 2015; B. J. Kim, Sangalang, & Kihl, 2012). The concept of perceived social support (PSS) refers to an individual's sense that others will provide help when they

¹Rutgers, The State University of New Jersey, Newark, NJ, USA

²Boston College, Chestnut Hill, MA, USA

³Seton Hall University, South Orange, NJ, USA

⁴Rush University Medical Center, Chicago, IL, USA

Corresponding Author:

Ying-Yu Chao, School of Nursing, Rutgers, The State University of New Jersey, Ackerson Hall, 180 University Avenue, Newark, NJ 07102-1803, USA.

Email: yingyu.chao@sn.rutgers.edu



are in need (Cohen, 2004). Positive interactions refer to the degree that individuals feel that he or she can trust, rely on, or perceive support from a partner, child, friend, or relative. Negative interactions relate to the extent that an individual feels criticized, let down, or subjected to excessive demands by others (Schuster, Kessler, & Aseltine, 1990). Positive aspects of social support are associated with better life satisfaction and quality of life as well as less depression and anxiety in older adults (Ivan, Koyanagi, Tyrovolas, & Haro, 2015; LaRocca & Scogin, 2015; Park & Roh, 2013; Shen & Yeatts, 2013). In addition, social isolation is associated with adverse outcomes, and social support may play a protective role in mitigating these outcomes, such as elder mistreatment and neglect (Dong & Simon, 2008). On the contrary, engaging with others may bring negative interactions including demands, criticism, and perceived isolation (Rook, 1990). Negative aspects of social support can result in poor executive function, psychological distress, morbidity, and mortality (Bøen, Dalgard, & Bjertness, 2012; Tun, Miller-Martinez, Lachman, & Seeman, 2013).

Chinese Americans represent the largest Asian ethnic subgroup in the United States (U.S. Census Bureau, 2014). Despite increasing attention on racial and ethnic disparities, studies examining social support, and depression among elderly Chinese immigrants are limited. Asian older immigrants face a variety of challenges due to cultural differences and linguistic barriers. A study using data from the National Latino and Asian American Study (NLAAS) found that Asian Americans over 60 years old (11.0%) exhibit the highest lifetime prevalence of anxiety and mood disorders among different age groups (Hong, Walton, Tamaki, & Sabin, 2014). Cultural taboos surrounding mental health disorders precludes timely diagnosis and treatment for older adults who suffer from these conditions. To our knowledge, the Population Study of Chinese Elderly in Chicago (PINE) study is the largest epidemiological study of Chinese American older adults, and as such provides unique insights into a group that is traditionally underrepresented in research. The study investigated 3,159 community-dwelling, older Chinese Americans and found that 54.4% of older adults had some depressive symptoms in the past 2 weeks (Dong, Chen, Li, & Simon, 2014).

Social support is rooted in traditional Chinese cultural values. Traditional social relationships can be disrupted due to dramatic social, cultural, and economic changes (Wong, Yoo, & Stewart, 2006). Hence, Chinese older adults' perception of social support may change after immigration. Close relationships can entail positive and negative elements. However, negative aspects of social support have been relatively understudied compared with positive social support. In addition, the literature is scarce in terms of studies examining the role of both positive and negative aspects of relationship quality on depression in the older adult population (Chen, Simon, Chang, Zhen, & Dong, 2014; Ivan et al., 2015). There is a dearth of

relevant studies about the U.S. Chinese aging population. With the growing demographic of older Chinese population in the United States, it is important to understand how both positive and negative aspects of PSS contribute to depressive symptoms among older Chinese immigrants. Building upon prior studies (Chen et al., 2014; Dong, Chen, et al., 2014), the purpose of this study is to examine the associations between positive and negative PSS with depressive symptoms among older Chinese Americans.

Method

Study Design

The study is a secondary data analysis from the first wave of the PINE study which is a community-engaged, population-based epidemiological study. The PINE study was conducted to examine key cultural determinants of health and well-being in community-dwelling Chinese older adults in the Greater Chicago area. The project was initiated by a synergistic community-academic collaboration among Rush Institute for Healthy Aging, Northwestern University, and more than 20 community-based social services agencies and organizations throughout the greater Chicago area. The PINE study implemented extensive culturally and linguistically appropriate recruitment strategies through a community-based participatory research approach (Dong, Chang, Wong, & Simon, 2011). Details of the PINE study design were published elsewhere (Dong, Wong, & Simon, 2014).

Sample

Participants were older adults aged 60 years and above who self-identified as Chinese and resided in Greater Chicago. Data in this article were drawn from the first-wave PINE study which was collected in between 2011 to 2013. Eligible participants were 3,542 Chinese older adults, with the response rate of 91.9% ($N = 3,159$).

Measurements

Depressive symptoms. The Patient Health Questionnaire (PHQ-9) was used to evaluate depressive symptoms. The PHQ-9 consists of nine items, each scored on a 4-point scale, ranging from 0 = *not at all* to 3 = *nearly every day*; with the total score ranging from 0 to 27 (Kroenke, Spitzer, & Williams, 2001). Participants were asked how often they were bothered by depressive symptoms in the last 2 weeks. According to the reported number of depressive symptoms, we categorized older adults as having *minimal depression* (0-4), *mild depression* (5-9), or *moderate to severe depression* (10-27) (Dong, Chen, et al., 2014). The validity and reliability of PHQ-9 in the PINE study was excellent (Cronbach's $\alpha = .82$; Chang, Beck, Simon, & Dong, 2014).

Social support. The 12-item social support measurement drawn from the National Social Life, Health, and Aging Project (NSHAP) (Smith et al., 2009) which was adapted from the Health and Retirement Study (Schuster et al., 1990) was used to measure perceptions of social support provided by one's spouse, family members, and friends. The items were categorized into positive support and negative support, as key indicators of the relationship quality. Positive PSS (six items) was assessed by asking the participants how often they opened up to support systems to talk about their worries, and how often they relied on support systems for help. Negative PSS (six items) was assessed by asking the participants how often they believed they had been demanded and criticized by their support systems. Each item was rated from 1 = *hardly ever* to 3 = *often*. Positive and negative support was calculated as the sum of the items within each category. Higher positive PSS scores reflected more perceived positive support. Higher negative support scores indicated greater perceived social strain. The positive PSS and negative PSS measurements had adequate validity and reliability in the PINE study (Cronbach's $\alpha = .73$ and $.63$, respectively; Chen et al., 2014).

Confounding factors. Confounding variables were chosen and categorized based on previous studies (Chen et al., 2014; Dong, Chen et al., 2014). Social demographic characteristics included age, gender, years of education completed, annual personal income, marital status, the number of children, living arrangement, years in the United States, years in the community, country of origin, and medical comorbidities. The number of medical comorbidities was calculated by summing the number of "yes" responses to the nine groups of medical conditions.

Data Analysis

Descriptive statistics were used to summarize participants' sociodemographic information. Chi-square tests were used to evaluate sociodemographic differences among participants with different levels of depressive symptoms. Spearman Correlations were used to examine social support and depressive symptoms. ANOVA *F*-test was used to examine whether depression levels differed significantly by positive PSS and negative PSS. The multinomial logistic regressions were conducted to examine the association between PSS and depressive symptoms after controlling for confounding factors. Model A examined the association between positive PSS and depressive symptoms. Model B examined the association between negative PSS and depressive symptoms. Odds Ratios (ORs), 95% confidence intervals (CIs), and significance levels were reported. All statistical analyses were conducted using SAS, Version 9.2 (SAS Institute Inc., Cary, NC).

Results

A total of 3,157 Chinese older adults with the mean age of 72.8 years ($SD=8.3$, range 60-105 years) were included in the analysis. About 58.9% participants were female (Chen et al., 2014; Dong, Chen et al., 2014). The levels of depressive symptoms differed by age ($p < .001$), gender ($p < .001$), income ($p < .01$), marital status ($p < .001$), the number of children ($p < .05$), and the number of medical comorbidities ($p < .001$; Table 1). Positive PSS was significantly negatively correlated with severity of depression ($r = -0.18, p < .001$). In contrast, the negative PSS was significantly positively correlated with severity of depression ($r = 0.12, p < .001$; Table 2). The positive PSS was 14.77 ($SD = 3.40$) among the minimal depression group, compared to 12.64 ($SD = 3.42$) among the moderate-severe group. The negative PSS was 6.53 ($SD = 1.14$) among the minimal depression group, compared to 6.92 ($SD = 1.64$) among the moderate-severe group (Table 3).

Table 4 presents the association between PSS and tertiles of depressive symptoms. After controlling for confounding factors, Chinese older adults with higher positive PSS were 12% (OR = 0.88, 95% CI = [0.85, 0.92]) and 18% (OR = 0.82, 95% CI = [0.79, 0.86]) less likely to report mild and moderate-severe depressive symptoms, respectively, compared with reporting minimal depressive symptoms (Model A); On the contrary, Chinese older adults with higher negative PSS were 34% (OR = 1.34, 95% CI = [1.24, 1.46]) and 38% (OR = 1.38, 95% CI = [1.26, 1.52]) more likely to report mild and moderate-severe depressive symptoms, respectively, compared with reporting minimal depressive symptoms (Model B).

Discussion

This study demonstrates that both positive PSS and negative PSS were significantly associated with depressive symptoms, bolstering the importance of social support on depressive symptoms among older Chinese Americans. Our findings corroborate previous studies in which greater positive social support has been found to decrease depressive symptoms and prevent relapse in depressed individuals (Chi & Chou, 2001; Eidelman, Gershon, Kaplan, McGlinchey, & Harvey, 2012; B. J. Kim et al., 2012). In addition, our results are consistent with previous findings that greater perceived distress by criticism is associated with more depressive symptoms (Chen et al., 2014; Miklowitz, Wisniewski, Miyahara, Otto, & Sachs, 2005).

Our findings expand upon existing understandings of social support and depressive symptoms in some different ways. First, given that most of the studies of social support included only positive interactions or supportive behaviors, the role of both positive and negative aspects of social support were taken into account in this study. In addition, this study is the largest population-based study

Table 1. Participant Characteristics by Severity of Depressive Symptoms ($N = 3,157$).

	Total n (%)	Minimal (0-4)	Mild (5-9)	Moderate severe (10+)	p value
Age (years), n (%)					
60-64	530 (16.88)	436 (82.26)	66 (12.45)	28 (5.28)	<.001***
65-69	679 (21.63)	561 (82.62)	78 (11.49)	40 (5.89)	
70-74	593 (18.89)	483 (81.45)	63 (10.62)	47 (7.93)	
75-79	563 (17.94)	431 (76.55)	80 (14.21)	52 (9.24)	
80 and above	774 (24.66)	589 (76.10)	96 (12.40)	89 (11.50)	
Gender, n (%)					
Male	1,318 (41.99)	1,105 (83.84)	136 (10.32)	77 (5.84)	<.001***
Female	1,821 (58.01)	1,395 (76.61)	247 (13.56)	179 (9.83)	
Education (years), n (%)					
0-8	1,527 (48.82)	1,215 (79.57)	181 (11.85)	131 (8.58)	.84
0-12	939 (30.02)	748 (79.66)	117 (12.46)	74 (7.88)	
13 and above	662 (21.16)	530 (80.06)	84 (12.69)	48 (7.25)	
Income (in US\$), n (%)					
0-4,999	1,038 (33.30)	822 (79.19)	123 (11.85)	93 (8.96)	<.01**
5,000-9,999	1,614 (51.78)	1,258 (77.94)	216 (13.38)	140 (8.67)	
10,000-14,999	310 (9.95)	263 (84.84)	28 (9.03)	19 (6.13)	
15,000 and more	155 (4.97)	139 (89.68)	13 (8.39)	3 (1.94)	
Marital status, n (%)					
Married	2,224 (71.35)	1,818 (81.74)	252 (11.33)	154 (6.92)	<.001***
Separated	56 (1.80)	41 (73.21)	8 (14.29)	7 (12.50)	
Divorced	74 (2.37)	57 (77.03)	11 (14.86)	6 (8.11)	
Widowed	763 (24.48)	570 (74.71)	105 (13.76)	88 (11.53)	
Number of children, n (%)					
0-1	468 (14.93)	350 (74.79)	71 (15.17)	47 (10.04)	<.05*
2-3	1,738 (55.46)	1,418 (81.59)	197 (11.33)	123 (7.08)	
4 and more	928 (29.61)	729 (78.56)	113 (12.18)	86 (9.27)	
Living arrangement, n (%)					
Living alone	671 (21.38)	516 (76.90)	91 (13.56)	64 (9.54)	.17
1-2	1,566 (49.90)	1,250 (79.82)	184 (11.75)	132 (8.43)	
3 or more	901 (28.71)	733 (81.35)	108 (11.99)	60 (6.66)	
Years in the United States, n (%)					
0-9	703 (22.50)	572 (81.37)	79 (11.24)	52 (7.40)	.74
10-19	936 (29.95)	737 (78.74)	125 (13.35)	74 (7.91)	
20-29	819 (26.21)	654 (79.85)	97 (11.84)	68 (8.30)	
30 and more	667 (21.34)	527 (79.01)	79 (11.84)	61 (9.15)	
Years in the community, n (%)					
0-9	1,619 (51.73)	1,270 (78.44)	214 (13.22)	135 (8.34)	.29
10-19	790 (25.24)	640 (81.01)	90 (11.39)	60 (7.59)	
20-29	461 (14.73)	381 (82.65)	47 (10.20)	33 (7.16)	
30 and more	260 (8.31)	205 (78.85)	28 (10.77)	27 (10.38)	
Country of origin, n (%)					
Mainland China	2,907 (93.02)	2,316 (79.67)	355 (12.21)	236 (8.12)	.54
Hong Kong/Macau	105 (3.36)	85 (80.95)	10 (9.52)	10 (9.52)	
Taiwan	44 (1.41)	34 (77.27)	6 (13.64)	4 (9.09)	
Vietnam/Thailand/	58 (1.86)	41 (70.69)	11 (18.97)	6 (10.34)	
Philippine/Malaysia					
United States/Canada	11 (0.35)	11 (100)	0 (0)	0 (0)	
Medical comorbidities, M (SD)					
Medical conditions		1.95 (1.42)	2.42 (1.49)	2.55 (1.59)	<.001***

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

demonstrating positive and negative PSS are significantly associated with the severity of depressive symptoms, which adds knowledge to the current understanding of the influence of PSS on depressive symptoms among U.S. Chinese older adults.

Second, immigrants who have fewer resources to cope and adapt to the new host country are at greater risk of poorer adjustment. Elderly immigrants are especially vulnerable to poorer health status, losing significant others, and experience lower economic status, limited access

Table 2. Spearman Correlations of PSS and Depressive Symptoms ($N = 3,157$).

	Depressive symptoms
Positive PSS	-0.18***
Negative PSS	0.12***

Note. PSS = perceived social support.

*** $p < .001$.

to health and social services, and social isolation (Grav, Hellzèn, Romild, & Stordal, 2012; B. J. Kim et al., 2012). In a previous longitudinal study, PSS had a prognostic significance among depressed patients who were older than 65 years (Cui, Lyness, Tang, Tu, & Conwell, 2008). The relationship of social support and depression may be different due to immigration trajectories and changing social relationships, despite cultural relevance. A study of 210 community-dwelling elderly Korean immigrants who were more than 65 years old indicated that high social network support was negatively associated with depressive symptoms (B. J. Kim et al., 2012). Another study reported that social support was related to depressive symptomatology during widowhood among 385 older Mexican Americans (Monserud & Markides, 2017). Chinese immigrants have often formed communities in the urban areas like Chicago which could buffer social losses from immigration, but this is poorly understood. In accordance with prior studies in other racial groups, the present study demonstrated that social support is a significant factor of depressive symptoms in Chinese older adult population in the Greater Chicago area. In addition, the study reported the associations between social support and the severity of depressive symptoms.

Third, the present study highlights the association between quality of social relationships and mental health in older adults. A nationally representative study of 4,642 American adults reported that quality of social relationships is an important risk factor for major depression. Higher risk of depression was significantly associated with social strain, lack of social support, and poor overall relationship quality (Teo, Choi, & Valenstein, 2013). In addition, other studies reported that supportive interactions could predict better life satisfaction and against depression, whereas negative social interactions and harmful behaviors are associated with poor mental health outcomes, such as anxiety, depression, and suicide (Ivan et al., 2015; Teo et al., 2013). When assessing social relationships, it is worthwhile to consider which type of social relationship has a strain or lacks support. Furthermore, gaining insights into which dimensions of social support (e.g., appraisal, emotional, informational, or instrumental) are more strongly associated with positive PSS compared with negative PSS may help in developing targeted strategies to nurture positive PSS. The role of cultural values such as filial piety and collectivism can influence Chinese older adults' perception

of different sources of social support. A study using data from the China Health and Retirement Longitudinal Study (CHARLS) reported that older Chinese adults receiving more social support from family members are more likely to have higher life satisfaction (Shen & Yeatts, 2013). Similarly, a cohort of the PINE study suggested that older Chinese Americans perceived higher levels of positive and negative social support from their spouse and family than friends (Chen et al., 2014). Further studies should be carried out to clarify the effects of social support from different sources (e.g., spouse, family members, and friends) on depressive symptom in Chinese older adults in the United States.

Social relationships may influence mental health outcomes through engagement in social activities, exchange of social support, health-related behaviors, and access to material resources (Berkman & Glass, 2000). Our findings reinforce the importance of developing strategies to utilize positive social support and limit negative support in practice for depressed Chinese American elders. Meta-analyses have shown the efficacy of interventions in reducing depressive symptoms, such as peer support (Pfeiffer, Heisler, Piette, Rogers, & Valenstein, 2011) and couple therapy (Barbato & D'Avanzo, 2008). Strategies emphasize that modifying one's emotional or cognitive perceptions about their interpersonal relationships are helpful for depression (Cuijpers et al., 2011; Teo et al., 2013). Strategies focused on promoting spouse/partner relationship and reducing negative interactions (e.g., abuse, demands, and criticism) may help reduce symptoms of depression as well (Barbato & D'Avanzo, 2008; Teo et al., 2013). In addition, future prevention and interventions should incorporate valuable cultural insight to improve mental health among older Chinese immigrants.

Limitations

Several limitations should be noted. First, the study only examines Chinese older adults living in the Greater Chicago area. The findings may not be generalizable to other Chinese populations in other geographic areas or other older immigrants in the United States. Second, this study only examines the associations between positive PSS and negative PSS with depressive symptoms. Social support can be measured by using different indicators, such as the size of social network, network composition, the satisfaction of social support, quality of social support, instrumental support, emotional support, and helping others (Chi & Chou, 2001). Hence, future studies should closely examine associations between different dimensions of social support and depressive symptoms. Third, literature has shown both direct and indirect effects of social support on depression. The present study only examined the direct effect of PSS on depressive symptoms. Further research is needed to examine possible mediating or moderating effects of variables

Table 3. PSS by Depression Tertiles ($N = 3,157$).

	Minimal ($n = 2,500$)	Mild ($n = 382$)	Moderate severe ($n = 256$)	F value	p value
Positive PSS ($M \pm SD$)	14.77 \pm 3.40	13.43 \pm 3.78	12.64 \pm 3.42	62.50	<.001***
Negative PSS ($M \pm SD$)	6.53 \pm 1.14	6.89 \pm 1.46	6.92 \pm 1.64	23.09	<.001***

Note. PSS = perceived social support.

*** $p < .001$.

Table 4. Association Between PSS on Tertiles of Depressive Symptoms ($N = 3,157$).

	Depression	Model A	Model B
		OR (95% CI)	
Age	Mild	1.01 [0.99, 1.02]	1.01 [0.99, 1.02]
	Moderate severe	1.03 [1.01, 1.05]**	1.03 [1.02, 1.06]***
Gender	Mild	1.44 [1.12, 1.86]**	1.38 [1.07, 1.78]*
	Moderate severe	1.81 [1.32, 2.48]***	1.66 [1.21, 2.28]**
Education	Mild	1.01 [0.98, 1.03]	0.99 [0.96, 1.01]
	Moderate severe	1.00 [0.97, 1.03]	0.98 [0.95, 1.00]
Income	Mild	0.94 [0.83, 1.05]	0.92 [0.82, 1.04]
	Moderate severe	0.71 [0.58, 0.87]***	0.71 [0.58, 0.86]***
Marital status	Mild	0.88 [0.79, 0.98]*	1.10 [0.99, 1.22]
	Moderate severe	0.82 [0.72, 0.93]**	1.11 [0.99, 1.25]
Children number	Mild	0.95 [0.88, 1.04]	0.95 [0.88, 1.04]
	Moderate severe	0.94 [0.85, 1.03]	0.94 [0.85, 1.03]
Living arrangement	Mild	1.01 [0.95, 1.08]	1.00 [0.94, 1.06]
	Moderate severe	1.00 [0.92, 1.08]	0.98 [0.90, 1.06]
Years in the United States	Mild	1.00 [0.99, 1.02]	1.01 [0.99, 1.02]
	Moderate severe	1.00 [0.99, 1.02]	1.00 [0.99, 1.02]
Years in community	Mild	0.98 [0.97, 1.00]*	0.98 [0.97, 1.00]*
	Moderate severe	1.00 [0.98, 1.01]	0.99 [0.98, 1.01]
Country of origin	Mild	1.12 [0.71, 1.79]	1.09 [0.68, 1.74]
	Moderate severe	0.88 [0.52, 1.47]	0.82 [0.49, 1.38]
Medical comorbidities	Mild	1.22 [1.13, 1.31]***	1.22 [1.13, 1.32]***
	Moderate severe	1.25 [1.14, 1.37]***	1.26 [1.15, 1.38]
Positive PSS	Mild	0.88 [0.85, 0.92]***	
	Moderate severe	0.82 [0.79, 0.86]***	
Negative PSS	Mild		1.34 [1.24, 1.46]***
	Moderate severe		1.38 [1.26, 1.52]***

Note. Outcome: Severity of depressive symptoms. Independent variable: Model A (positive PSS), Model B (negative PSS). Minimal depressive symptoms as reference group. PSS = perceived social support; OR = odds ratio; CI = confidence interval.

* $p < .05$. ** $p < .01$. *** $p < .001$.

(e.g., cultural identity or stressors) between social support on depression. Fourth, we only utilized a cross-sectional study dataset to examine the association between social support and depressive symptoms. Further studies employing longitudinal data may improve the understanding of causal mechanisms between social support and depressive symptoms.

Conclusion

In summary, our study found that positive PSS was significantly associated with decreased risk of depressive symptoms; whereas, a negative PSS was significantly associated with increased risk of depressive symptoms among older Chinese Americans in the

Greater Chicago area. Further studies should be conducted to better understand the associations between different dimensions of social support and depression as well as the causal mechanisms between social support and depressive symptoms among U.S. Chinese older adults. Social support is rooted in traditional Chinese cultural values. Future prevention and intervention programs should incorporate valuable cultural insights to improve mental health among older Chinese immigrants.

Acknowledgment

The authors thank the study participants and staff of the Chinese Health, Aging, and Policy Program (CHAPP), Rush Institute for Healthy Aging.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Dr. XinQi Dong was supported by National Institute on Aging grants (R01 AG042318, R01 MD006173, R01 AG11101, and RC4 AG039085), Paul B. Beeson Award in Aging (K23 AG030944), the Starr Foundation, American Federation for Aging Research, John A. Hartford Foundation, and the Atlantic Philanthropies.

References

- Barbato, A., & D'Avanzo, B. (2008). Efficacy of couple therapy as a treatment for depression: A meta-analysis. *Psychiatric Quarterly, 79*, 121-132. doi:10.1007/s1126-008-9068-0
- Berkman, L. F., & Glass, T. (2000). Social integration, social networks, social support, and health. In L. F. Berkman & I. Kawachi (Eds.), *Social epidemiology* (pp. 137-173). New York, NY: Oxford University Press.
- Bøen, H., Dalgard, O. S., & Bjertness, E. (2012). The importance of social support in the associations between psychological distress and somatic health problems and socio-economic factors among older adults living at home: A cross sectional study. *BMC Geriatrics, 12*, Article 27. doi:10.1186/1471-2318-12-27
- Chang, E. S., Beck, T., Simon, M. A., & Dong, X. (2014). A psychometric assessment of the psychological and social well-being indicators in the PINE study. *Journal of Aging and Health, 26*, 1116-1136. doi:10.1177/0898264314543471
- Chen, R., Simon, M. A., Chang, E. S., Zhen, Y., & Dong, X. (2014). The perception of social support among U.S. Chinese older adults: Findings from the PINE study. *Journal of Aging and Health, 26*, 1137-1154. doi:10.1177/0898264314529332
- Chi, I., & Chou, K.-L. (2001). Social support and depression among elderly Chinese people in Hong Kong. *The International Journal of Aging and Human Development, 52*, 231-252.
- Cohen, S. (2004). Social relationships and health. *American Psychologist, 59*, 676-684. doi:10.1037/0003-066x.59.8.676
- Cotrena, C., Branco, L. D., Kochhann, R., Shansis, F. M., & Fonseca, R. P. (2016). Quality of life, functioning and cognition in bipolar disorder and major depression: A latent profile analysis. *Psychiatry Research, 241*, 289-296. doi:10.1016/j.psychres.2016.04.102
- Cui, X., Lyness, J. M., Tang, W., Tu, X., & Conwell, Y. (2008). Outcomes and predictors of late-life depression trajectories in older primary care patients. *American Journal of Psychiatry, 165*, 406-415. doi:10.1097/JGP.0b013e3181693264
- Cuijpers, P., Geraedts, A. S., van Oppen, P., Andersson, G., Markowitz, J. C., & van Straten, A. (2011). Interpersonal psychotherapy for depression: A meta-analysis. *American Journal of Psychiatry, 168*, 581-592.
- Dong, X., Chang, E.-S., Wong, E., & Simon, M. (2011). Working with culture: Lessons learned from a community-engaged project in a Chinese aging population. *Aging Health, 7*, 529-537.
- Dong, X., Chen, R., Li, C., & Simon, M. A. (2014). Understanding depressive symptoms among community-dwelling Chinese older adults in the greater Chicago area. *Journal of Aging and Health, 26*, 1155-1171. doi:10.1177/0898264314527611
- Dong, X., & Simon, M. A. (2008). Is greater social support a protective factor against elder mistreatment? *Gerontology, 54*, 381-388. doi:10.1159/000143228
- Dong, X., Wong, E., & Simon, M. A. (2014). Study design and implementation of the PINE study. *Journal of Aging and Health, 26*, 1085-1099. doi:10.1177/0898264314526620
- Eidelman, P., Gershon, A., Kaplan, K., McGlinchey, E., & Harvey, A. G. (2012). Social support and social strain in inter-episode bipolar disorder. *Bipolar Disorders, 14*, 628-640. doi:10.1111/j.1399-5618.2012.01049.x
- Grav, S., Hellzén, O., Romild, U., & Stordal, E. (2012). Association between social support and depression in the general population: The HUNT study, a cross-sectional survey. *Journal of Clinical Nursing, 21*, 111-120. doi:10.1111/j.1365-2702.2011.03868.x
- Hong, S., Walton, E., Tamaki, E., & Sabin, J. A. (2014). Lifetime prevalence of mental disorders among Asian Americans: Nativity, gender, and sociodemographic correlates. *Asian American Journal of Psychology, 5*, 353-363. doi:10.1037/a0035680
- Ivan, S. Z., Koyanagi, A., Tyrovolas, S., & Haro, J. M. (2015). The association of relationship quality and social networks with depression, anxiety, and suicidal ideation among older married adults: Findings from a cross-sectional analysis of the Irish Longitudinal Study on Ageing (TILDA). *Journal of Affective Disorders, 179*, 134-141. doi:10.1016/j.jad.2015.03.015
- Kim, B. J., Sangalang, C. C., & Kihl, T. (2012). Effects of acculturation and social network support on depression among elderly Korean immigrants. *Aging and Mental Health, 16*, 787-794. doi:10.1080/13607863.2012.660622
- Kim, G., Jang, Y., Chiriboga, D. A., Ma, G. X., & Schonfeld, L. (2010). Factors associated with mental health service use in Latino and Asian immigrant elders. *Aging and Mental Health, 14*, 535-542. doi:10.1080/13607860903311758
- Kim, W., Kang, S. Y., & Kim, I. (2015). Depression among Korean immigrant elders living in Canada and the United States: A comparative study. *Journal of Gerontological Social Work, 58*, 86-103. doi:10.1080/01634372.2014.919977
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine, 16*, 606-613.
- LaRocca, M. A., & Scogin, F. R. (2015). The effect of social support on quality of life in older adults receiving cognitive behavioral therapy. *Clinical Gerontologist, 38*, 131-148.
- Miklowitz, D. J., Wisniewski, S. R., Miyahara, S., Otto, M. W., & Sachs, G. S. (2005). Perceived criticism from family members as a predictor of the one-year course of bipolar disorder. *Psychiatry Research, 136*, 101-111. doi:10.1016/j.psychres.2005.04.005
- Monserud, M. A., & Markides, K. S. (2017). Changes in depressive symptoms during widowhood among older Mexican Americans: The role of financial strain, social support, and church attendance. *Aging and Mental Health, 21*, 586-594. doi:10.1080/13607863.2015.1132676
- Park, J., & Roh, S. (2013). Daily spiritual experiences, social support, and depression among elderly Korean immigrants. *Aging and Mental Health, 17*, 102-108. doi:10.1080/13607863.2012.715138

- Pearlin, L. I. (1989). The sociological study of stress. *Journal of Health and Social Behavior*, *30*, 241-256.
- Pfeiffer, P. N., Heisler, M., Piette, J. D., Rogers, M. A., & Valenstein, M. (2011). Efficacy of peer support interventions for depression: A meta-analysis. *General Hospital Psychiatry*, *33*, 29-36. doi:10.1016/j.genhosppsych.2010.10.002
- Rook, K. S. (1990). Parallels in the study of social support and social strain. *Journal of Social and Clinical Psychology*, *9*, 118-132. doi:10.1521/jscp.1990.9.1.118
- Schuster, T. L., Kessler, R. C., & Aseltine, R. H., Jr. (1990). Supportive interactions, negative interactions, and depressed mood. *American Journal of Community Psychology*, *18*, 423-438.
- Shen, Y., & Yeatts, D. E. (2013). Social support and life satisfaction among older adults in China: Family-based support versus community-based support. *International Journal of Aging & Human Development*, *77*, 189-209.
- Smith, S., Jaszczak, A., Graber, J., Lundeen, K., Leitsch, S., Wargo, E., & O'Muircheartaigh, C. (2009). Instrument development, study design implementation, and survey conduct for the national social life, health, and aging project. *The Journals of Gerontology, Series B: Psychological Sciences & Social Sciences*, *64B* (Suppl. 1), i20-i29. doi:10.1093/geronb/gbn013
- Steensma, C., Loukine, L., Orpana, H., McRae, L., Vachon, J., Mo, F., . . . Choi, B. C. (2016). Describing the population health burden of depression: Health-adjusted life expectancy by depression status in Canada. *Health Promotion and Chronic Disease Prevention in Canada*, *36*, 205-213.
- Teo, A. R., Choi, H. J., & Valenstein, M. (2013). Social relationships and depression: Ten-year follow-up from a nationally representative study. *PLoS ONE*, *8*(4), Article e62396. doi:10.1371/journal.pone.0062396
- Tun, P. A., Miller-Martinez, D., Lachman, M. E., & Seeman, T. (2013). Social strain and executive function across the lifespan: The dark (and light) sides of social engagement. *Aging, Neuropsychology, and Cognition*, *20*, 320-338. doi:10.1080/13825585.2012.707173
- U.S. Census Bureau. (2014). *American Community Survey*. Washington, DC. Retrieved from <http://www.census.gov/programs-surveys/acs/>
- Wong, S. T., Yoo, G. J., & Stewart, A. L. (2006). The changing meaning of family support among older Chinese and Korean immigrants. *The Journals of Gerontology, Series B: Psychological Sciences & Social Sciences*, *61*(1), S4-S9.
- Zhang, J., Fang, L., Wu, Y.-W., & Wiczorek, W. (2013). Depression, anxiety, and suicidal ideation among Chinese Americans: A study of immigration-related factors. *Journal of Nervous and Mental Disease*, *201*, 17-22. doi:10.1097/NMD.0b013e31827ab2e2