Journals of Gerontology: Medical Sciences
cite as: J Gerontol A Biol Sci Med Sci, 2017, Vol. 72, No. S1, S76–S81
doi:10.1093/gerona/glw229

PINE STUDY II: Research Article

Elder Self-neglect and Suicidal Ideation in an U.S. Chinese Aging Population: Findings From the PINE Study

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Received June 14, 2016; Accepted October 26, 2016

Decision Editor: Stephen Kritchevsky, PhD

Abstract

Background: Self-neglect and suicidal ideations are important public health issues among the aging population. This study aims to examine the association between self-neglect, its phenotypes, and suicidal ideation among U.S. Chinese older adults.

Methods: Guided by a community-based participatory research approach, the Population Study of Chinese Elderly in Chicago (PINE) study is a population-based epidemiological study conducted from 2011 to 2013 among 3,159 Chinese older adults aged 60 years and older in the Greater Chicago area. Self-neglect was assessed by a 27-item instrument, describing five phenotypes with hoarding, poor personal hygiene, unsanitary condition, lack of utilities, and need of home repair. Suicidal ideation was assessed by the ninth item of the Patient Health Questionnaire-9 (PHQ-9) and the Geriatric Mental State Examination-Version A (GMS-A). Logistic regression is utilized to analyze the association.

Results: Higher level of self-neglect was found significantly associated with increased risk of self-reported suicidal ideation within 2 weeks (odds ratio 2.97 [1.54–5.72]); 12 months (odds ratio 2.82 [1.77–4.51]); and lifetime (odds ratio 2.74 [1.89–3.95]). For phenotypes, the study found that poorer personal hygiene and severer level of unsanitary conditions were associated with increased risk of suicidal ideation at all three time periods.

Conclusion: This study suggests that self-neglect and its phenotypes are significantly associated with suicidal ideation among Chinese older adults. Longitudinal studies are needed to explore the mechanisms through which self-neglect links with suicidal ideation.

Keywords: Self-neglect—Suicidal ideation—Chinese population—Older adults

Elder self-neglect is an increasingly prevalent public health issue affecting estimated 1.2 million older adults in the United States annually (1). Elder self-neglect is defined as a refusal or failure to (a) engage in self-care acts that adequately regulate independent living or (b) take actions to prevent conditions or situations that adversely affect the health and safety of oneself or others (2). It generally manifests itself among all important aspects of older adults' daily life, such as short of food supply, utilities, having inadequate clothing, shelter, not keeping up personal hygiene, medication (when indicated), and lack of safety precautions (3). In this study, five phenotypes are manifested by hoarding, poor personal hygiene, unsanitary conditions, lack of utilities, and need of home repair.

Although evidence suggested that self-neglect was associated with increased morbidity and increased risk of premature mortality (4), potential mediating factors or mechanisms remain unexplored. Understanding the relationship between self-neglect and suicidal ideation helps to explore a potential facet of these relationship. Dyer and colleagues' framework suggests that elders with self-neglect tend to experience failing in recognize the danger and lack of self-care (5). From the lens of self-care theory, it is important to address the relationship between self-neglect and suicidal ideation. In addition, prior works have illustrated that self-neglect phenotypes are prevalent among older adults, and are associated with adverse both physical and mental health outcomes. Through examining the phenotypes, this study can provide a more comprehensive picture of elder self-neglecting behaviors and its association with suicidal ideation.

Suicidal ideation is common among older adults due to vulnerability, experiencing physical and cognitive decline, psychological

distress, social isolation, and limited access to supportive services (6). Research has indicated that the worldwide prevalence of suicidal ideation in the previous month in older adults ranges from 2.3% to 15.9% (7,8). It is crucial to expand our knowledge of risk factors associated with suicidal ideation among older adults, in order to better prevent suicidal behaviors and protect older adults.

In addition, suicide ideation is found as a significant risk factor for both suicide attempts and completed suicide among older adults. For example, a study of a sample of 5,877 adults aged 15–54 years from the National Comorbidity Survey found that 34% of the lifetime suicidal ideation was translated into a plan, 72% from a plan to an attempt, and 26% from ideation to an unplanned attempt (2). Therefore, it is important to explore the association between self-neglect and suicidal ideation with respect to different time points.

The epidemiology of self-neglect varies among different racial ethnical groups. As one of the most rapid growing minority population group, there are more than 4 million Chinese in the United States with a 40% growth from 2000 to 2010. The population of Chinese-American adults aged 65 and older has increased 55% in the past decade, far exceeding the population growth rate of 15% of U.S. older adults (9). Dong and colleagues reported a prevalence of 29.1% of self-neglect in Chinese older adults (10,11). Due to lack of language competency, cultural barriers, and social isolation, Chinese older adults in the United States may experience greater risk of elder self-neglect and suicidal ideation (12,13). However, we are unaware of existing studies, to our best knowledge, which examined the association between self-neglect and suicidal ideation in this population. The purpose of this study is to examine the association between (a) self-neglect and suicidal ideation and (b) phenotypes of self-neglect with suicidal ideation among Chicago Chinese older adults in the United States within a context of a population-based study.

Methods

Population and Settings

The Population Study of Chinese Elderly in Chicago (PINE) is a population-based epidemiological study of U.S. Chinese older adults aged 60 and older in the greater Chicago area (14–16). Out of 3,542 eligible participants, 3,159 agreed to participate in the study, yielding a response rate of 91.9%. Based on the available census data drawn from U.S. Census 2010 and a random block census project conducted in the Chinese community in Chicago, the PINE study is representative of the Chinese aging population in the greater Chicago area with respective to key demographic attributes including age, sex, income, education, number of children, and country of origin (17).

Measurements

Sociodemographics

Basic demographic information collected included age, gender, education, annual personal income, number of children, and years in the United States. Education was assessed by asking participants the years of highest educational level completed, ranging from 0 to 17 years or more. Income groups were divided into four groups: (a) $0–$4,999 per year; (b) $5,000–$9,999 per year; (c) $10,000–$14,999 per year; and (d) more than $15,000 per year.

Medical comorbidities

Participants were self-reported regarding heart disease; stroke; cancer; high cholesterol; diabetes; high blood pressure; broken or fractured hip; thyroid disease; and osteoarthritis, inflammation, or problems with joints. The number of medical comorbidities was calculated by totaling the number of "yes" responses to the nine items mentioned earlier.

Self-neglect

Well-trained interviewers conducted systematic personal and environmental observations when visiting the participant at their homes. All interviewers went through standardized training on these items with the investigative team (for detailed description, see refs (10,18–20). Assessment includes 27 items, which were divided into five phenotypes: hoarding, poor personal hygiene, unsanitary conditions, need of home repair, and inadequate utilities. A 4-point scale (0 = none, 1 = mild, 2 = moderate, 3 = severe) was used for each item. Any response other than "none" to any of the questions identified the participant as a victim of elder self-neglect. Reliability was assessed for each of the five domains with Cronbach's alpha of .98 for hoarding, .98 for poor basic personal hygiene, .97 for unsanitary conditions, .98 for need of home repair in need of repair, and .97 for inadequate utility.

Self-reported suicidal ideation

Suicidal ideation in the previous 2 weeks was assessed by the ninth item of the Patient Health Questionnaire-9 (PHQ-9). Participants were asked how often they thought they would be better off dead or about hurting themselves in some way over the last 2 weeks by answering (a) not at all; (b) several days; (c) more than half of the days; and (d) nearly every day. Any affirmative response to options (b)–(d) was defined as having 2-week suicidal ideation. Lifetime suicidal ideation was measured by Geriatric Mental State Examination-Version A (GMS-A) (21) with the question: "Have you ever felt suicidal or wished to be dead in your lifetime?". A "yes" response to this question classifies a respondent as having lifetime suicidal ideation. A follow-up question with "yes" to the previous one, "Have you ever felt suicidal or wished to be dead in the past 12 months?" was asked to assess 12-month suicidal ideation. The Chinese version was validated in earlier studies (22).

Data Analysis

Univariate analyses were performed to characterize the sample demographic characteristics and self-neglect and its phenotypes by the suicidal ideation. Categorical variables were expressed as frequencies (%), and their comparisons were achieved by the chi-square test. The correlations between self-neglect and covariates were presented as well. The association between self-neglect and suicidal ideation was analyzed by linear regression after controlling all other covariates. We also categorized self-neglect to mild and moderate to severe to examine its association with suicidal ideation. Logistic regression was utilized, using none self-neglect as the reference group and comparing mild, and moderate to severe self-neglect, using self-neglect as a continuous measure. Results are presented as odds ratios (ORs) with 95% confidence intervals (CIs). All analyses used two-sided alternatives with p values less than .05. All analyses were carried out using SAS (SAS Institute, Cary, NC). If participants had missing data, they would be removed from the analysis of that individual measure.

Results

There were 3,159 participants (57.9% women) with a mean age of 72.8 ± 8.3 (range 60–105). Sociodemographic characteristics of this population were reported in our previous study (10). Among this population, 30.2% of the elder adults were observed having self-neglect behaviors. The most common type was unsanitary conditions (17.0%), followed by repairs needed on the home (16.3%),

hoarding (14.9%), poor personal hygiene (11.3%), and inadequate utilities (4.2%).

Prevalence and Correlation of Elder Self-neglect and Suicidal Ideation

Table 1 highlights the prevalence of elder self-neglect and suicidal ideation among this population. Elder self-neglect was found prevalent among older adults who reported having 2-week (48.3%), 12-month (47.1%), and lifetime suicidal ideation (47.6%). Among those reported having 2-week suicidal ideation, hoarding was the most prevalent self-neglect phenotype (33.3%), whereas lack of utilities the least (6.8%). Similar trends applied to elders with 12-month suicidal ideation. Among those with lifetime suicidal ideation, need of home repair was most prevalent (29.6%), whereas lack of utilities the least (4.9%). Correlations between sociodemographic characteristics, self-neglect, and suicidal ideation are showed in Table 2. Women, medical comorbidities, overall self-neglect, hoarding, personal hygiene, and unsanitary conditions were significantly correlated with suicidal ideation at all three time periods.

Association Between Elder Self-neglect and Suicidal Ideation

The association between elder self-neglect and 2-week, 12-month, and lifetime ever suicidal ideation among all participants is presented in Table 3. In the full model that controlled for age, gender, years of education, income, years in the United States, number of children, and medical comorbidities, older adults with higher level of self-neglect were more likely to report suicidal ideation (2-week suicidal ideation: OR 1.09, 95% CI 1.02–1.16; 12-month suicidal ideation: OR 1.11, 95% CI 1.06–1.16; lifetime ever suicidal ideation: OR 1.11, 95% CI 1.07–1.15). In addition, gender was significantly associated with all three self-reported suicidal ideation. Education was only associated with 2-week suicidal ideation (OR 0.94, 95% CI 0.88–1.00), but not with 12-month and lifetime suicidal ideation.

Table 4 presents the associations between phenotypes of self-neglect and suicidal ideation. Among the five phenotypes, hoarding, personal hygiene, and unsanitary conditions were significantly associated with older adult's 2-week, 12-month, and lifetime ever suicidal ideation. Further analysis was applied using logistic regression model to explore the associations between the severity of self-neglect and its phenotypes and suicidal ideation. With all covariates controlled, comparing with none self-neglect group, higher level of self-neglect was highly associated with increased risk of self-reported suicidal ideation ($OR_{2\text{-week}}$ 2.97 [1.54–5.72]; $OR_{12\text{-month}}$ 2.82 [1.77–4.51]; $OR_{lifetime}$ 2.74 [1.89–3.95]). Within five phenotypes, poorer level of personal hygiene ($OR_{2\text{-week}}$ 6.35 [2.07–19.51]; $OR_{12\text{-month}}$ 4.37 [1.72–11.08]; $OR_{lifetime}$ 5.20 [2.47–10.96]) and severer level of unsanitary conditions ($OR_{2\text{-week}}$ 2.93 [1.33–6.42]; $OR_{12\text{-month}}$ 2.50 [1.40–4.49]; $OR_{lifetime}$ 1.94 [1.19–3.15]) were found significantly associated with higher risk of self-reported suicidal ideation at all three time periods.

Discussion

This study illustrated the significant relationship between elder self-neglect and self-reported suicidal ideation among Chicago community-dwelling Chinese older adults. After controlling a wide range of potential confounding factors, we found that a higher level of self-neglect was associated with increased risk of self-reported suicidal ideation in the past 2 weeks, 12 months, and in lifetime. Phenotypes such as hoarding, poor personal hygiene, and unsanitary conditions were especially associated with increased risk of suicidal ideation. In addition, the association between self-neglect and suicidal ideation is particularly significant among the older adults with moderate to severe level of self-neglect.

To our best knowledge, this is the first population-based study that reports the association between elder self-neglect and suicidal ideation among Chinese older adults in the United States. Despite existing evidence manifested that individuals who cease to maintain the standards of cleanliness and hygiene were associated with higher level of mental health issue and risk of mortality (23), the mechanism behind elder self-neglect and suicidal ideation remains unknown. This study suggests thinking about both of these issues together in future researches.

Regarding phenotypes, hoarding, poor personal hygiene, and unsanitary conditions were found highly associated with suicidal ideation among Chinese older adults. Aging population is especially vulnerable to environmental hazards, personal or life events, and social isolation. A structured telephone interview study in 62 older adults in the United States suggested that hoarding behaviors were usually found in those who are socially impaired and living alone. What's more, being women and unmarried are found to increase the risk of hoarding, posing a serious physical threat for this population (24). Poor personal hygiene is a common observation in those with severe mental health issues and many of them are unaware of the effect of their unsanitary state on others (25). Extreme clutter interferes with basic hygiene and poses dangerous circumstances for health and safety not only for older adults but also for those surrounding them (4). Lack of utilities and need of house repair are not associated with suicidal ideation. These two phenotypes are both involved with some external parties outside the household, such as utility companies, repairing services, landlords, social security programs, and financial services. It is possible that elders with these two self-neglect phenotypes tend to attribute their status to others' responsibility, instead of internalizing as their own. Therefore, they may release some pressures from themselves and experience less factors related to suicidal ideation. However, current data are not enough to explain

Table 1. Prevalence of Suicidal Ideation by Self-neglect Among Chinese Older Adults

	Suicidal Ideation in 2 Wk			Suicidal Ideation in 12 Mo			Suicidal Ideation in Lifetime		
Self-neglect	*N* (%)	χ^2, *df*	*p* Value	*N* (%)	χ^2, *df*	*p* Value	*N* (%)	χ^2, *df*	*p* Value
Overall self-neglect	29 (48.3)	9.8, 1	<.01	64 (47.1)	19.8, 1	<.0001	128 (47.6)	43.4, 1	<.0001
Hoarding	20 (33.3)	16.2, 1	<.0001	40 (29.4)	23.4, 1	<.0001	77 (28.8)	44.6, 1	<.0001
Poor personal hygiene	20 (30.3)	24.4, 1	<.0001	44 (29.3)	51.5, 1	<.0001	80 (27.5)	84.2, 1	<.0001
Need of home repair	15 (25.0)	3.5, 1	.06	40 (29.4)	18.3, 1	<.0001	79 (29.6)	38.3, 1	<.0001
Unsanitary conditions	16 (27.1)	4.3, 1	.04	36 (26.7)	9.3, 1	<.01	68 (25.7)	15.2, 1	<.0001
Lack of utilities	4 (6.8)	0.9, 1	.34	9 (6.7)	1.9, 1	.17	13 (4.9)	0.2, 1	.62

Table 2. Correlations Between Sociodemographic Characteristics, Self-neglect, and Suicidal Ideation Among Chinese Older Adults

	Age	Gender	Edu	Income	Yrs in U.S.	NOC	MC	SN	Ho	Hy	HR	UC	Ut	SI 2 Wk	SI 12 Mo
Age	1.0														
Gender	−.01	1.0													
Edu	−.11^{+}	−.20^{+}	1.0												
Income	.05*	.05*	.02	1.0											
Yrs in U.S.	.35^{+}	.05$^{\#}$	−.10^{+}	.35^{+}	1.0										
NOC	.32^{+}	.08^{+}	−.39^{+}	−.00	.15^{+}	1.0									
MC	.24^{+}	.13^{+}	.02	.04$^{\#}$	.18^{+}	.05*	1.0								
SN	.05*	−.02	−.13^{+}	.04$^{\#}$	.08^{+}	.11^{+}	−.01	1.0							
Ho	.04$^{\#}$	−.01	−.05$^{\#}$	.06*	.08*	.07^{+}	.01	.65^{+}	1.0						
Hy	.11^{+}	−.03	−.11^{+}	.03	.09^{+}	.12^{+}	.02	.60^{+}	.48^{+}	1.0					
HR	−.01	−.03	−.08^{+}	−.00	−.01	.04$^{\#}$	−.03	.69^{+}	.45^{+}	.38^{+}	1.0				
UC	.04$^{\#}$	−.01	−.08^{+}	.04$^{\#}$	.06*	.04$^{\#}$	−.00	.71^{+}	.57^{+}	.36^{+}	.50^{+}	1.0			
Ut	.05$^{\#}$	.01	−.04$^{\#}$	−.01	.01	.03	.00	.33^{+}	.25^{+}	.18^{+}	.25^{+}	.24^{+}	1.0		
SI 2 Wk	.01	.05*	−.05*	−.05$^{\#}$	.00	.01	.05*	.06*	.08^{+}	.09^{+}	.04	.04$^{\#}$	.02	1.0	
SI 12 Mo	.05*	.09^{+}	−.05$^{\#}$	−.03	.03	.03	.07^{+}	.08^{+}	.09^{+}	.13^{+}	.08^{+}	.06*	.03	.66^{+}	1.0
SI Lifetime	.04$^{\#}$	.13^{+}	−.02	−.03	.04$^{\#}$	.01	.08^{+}	.12^{+}	.13^{+}	.17^{+}	.12^{+}	.07^{+}	.01	.46^{+}	.70^{+}

Note: Edu = education; Ho = hoarding; HR = hours need repair; Hy = personal hygiene; MC = medical comorbidities; NOC = number of children; SI = suicidal ideation; SN = self-neglect; UC = unsanitary conditions; Ut = lack of utilities; yrs in U.S. = years in the United States.

$^{*}p < .05$; $^{\#}p < .01$; $^{+}p < .001$.

Table 3. Association Between Self-neglect and Suicidal Ideation Among Chinese Older Adults

	Model A	Model B	Model C	Model D
Outcome: suicidal ideation in 2 Wk				
Age	1.01 (0.98, 1.05)	1.01 (0.98, 1.04)	1.01 (0.98, 1.05)	1.01 (0.97, 1.05)
Women	2.54 (1.35, 4.76)*	2.14 (1.12, 4.08)$^{\#}$	2.17 (1.14, 4.14)$^{\#}$	2.05 (1.07, 3.92)$^{\#}$
Education		0.94 (0.88, 1.00)$^{\#}$	0.94 (0.88, 1.00)	0.94 (0.88, 1.00)$^{\#}$
Income		0.67 (0.44, 1.02)	0.70 (0.45, 1.09)	0.71 (0.45, 1.10)
Children alive			1.04 (0.85, 1.26)	1.04 (0.86, 1.25)
Years in the United States			0.99 (0.96, 1.02)	0.99 (0.96, 1.01)
Medical comorbidities				1.16 (0.96, 1.40)
Self-neglect	1.11 (1.05, 1.18)$^{+}$	1.09 (1.02, 1.16)*	1.09 (1.02, 1.16)*	1.09 (1.02, 1.16)$^{\#}$
Outcome: suicidal ideation in 12 Mo				
Age	1.03 (1.01, 1.05)*	1.03 (1.01, 1.05)*	1.03 (1.01, 1.06)$^{\#}$	1.03 (1.00, 1.05)$^{\#}$
Women	2.81 (1.84, 4.30)$^{+}$	2.66 (1.73, 4.10)$^{+}$	2.67 (1.73, 4.12)$^{+}$	2.54 (1.64, 3.92)$^{+}$
Education		0.98 (0.94, 1.02)	0.98 (0.94, 1.02)	0.98 (0.94, 1.02)
Income		0.79 (0.62, 1.02)	0.78 (0.60, 1.02)	0.78 (0.60, 1.02)
Children alive			1.01 (0.89, 1.14)	1.01 (0.89, 1.14)
Years in the United States			1.00 (0.99, 1.02)	1.00 (0.98, 1.02)
Medical comorbidities				1.15 (1.02, 1.31)$^{\#}$
Self-neglect	1.12 (1.07, 1.17)$^{+}$	1.11 (1.06, 1.16)$^{+}$	1.11 (1.06, 1.16)$^{+}$	1.11 (1.06, 1.16)$^{+}$
Outcome: suicidal ideation in lifetime				
Age	1.02 (1.00, 1.04)*	1.02 (1.01, 1.04)*	1.02 (1.00, 1.04)$^{\#}$	1.02 (1.00, 1.04)
Women	2.75 (2.03, 3.73)$^{+}$	2.80 (2.06, 3.82)$^{+}$	2.85 (2.08, 3.89)$^{+}$	2.75 (2.01, 3.76)$^{+}$
Education		1.01 (0.99, 1.04)	1.01 (0.98, 1.04)	1.01 (0.98, 1.04)
Income		0.90 (0.77, 1.04)	0.87 (0.74, 1.03)	0.88 (0.75, 1.03)
Children alive			0.99 (0.90, 1.09)	0.99 (0.90, 1.09)
Years in the United States			1.01 (1.00, 1.02)	1.01 (0.99, 1.02)
Medical comorbidities				1.10 (1.01, 1.21)$^{\#}$
Self-neglect	1.11 (1.08, 1.15)$^{+}$	1.11 (1.07, 1.15)$^{+}$	1.11 (1.07, 1.15)$^{+}$	1.11 (1.07, 1.15)$^{+}$

Note: $^{*}p < .05$; $^{\#}p < .01$; $^{+}p < .001$.

the reasons behind the different associations. Further studies are in need to explore the mechanisms behind the associations between each self-neglect phenotypes and suicidal ideation. Our findings further demonstrated the scope of the self-neglecting behaviors in a representative community population. Understanding of the phenotypes of self-neglect within the aging population could inform practice and policy to safeguard these older adults.

Elder self-neglect was found associated suicidal ideation at all three time periods: 2 weeks, 12 months, and lifetime. Suicidal ideation is suggested as one of the most prevalent predictors for completed suicide, which calls for attention to suicidal ideation with respect to time point. The results with lifetime suicidal ideation should be interpreted cautiously. Previous studies suggest that self-neglect is associated with mortality, morbidity, and other adverse consequences. Choosing

Table 4. Associations Between Five Phenotypes of Self-neglect and Suicidal Ideation Among Chinese Older Adults

	Suicidal Ideation in 2 Wk	Suicidal Ideation in 12 Mo	Suicidal Ideation in Lifetime
	OR (CI)[a]	OR (CI)[a]	OR (CI)[a]
Hoarding	1.34 (1.14–1.58)[+]	1.31 (1.15–1.49)[+]	1.29 (1.16–1.43)[+]
Poor personal hygiene	1.45 (1.20–1.75)[+]	1.47 (1.26–1.70)[+]	1.57 (1.38–1.79)[+]
Unsanitary conditions	1.18 (1.02–1.37)*	1.21 (1.09–1.34)[+]	1.16 (1.06–1.27)[#]
Need of home repair	1.12 (0.93–1.34)	1.18 (1.06–1.33)[#]	1.21 (1.11–1.32)[+]
Lack of utilities	1.08 (0.51–2.31)	1.14 (0.70–1.86)	1.07 (0.72–1.58)
Severity of self-neglect and phenotypes			
Self-neglect: none	1	1	1
Mild	1.59 (0.82–3.10)	1.84 (1.20–2.83)[#]	2.37 (1.74–3.33)[+]
Moderate to severe	2.97 (1.54–5.72)[#]	2.82 (1.77–4.51)[+]	2.74 (1.89–3.95)[+]
Hoarding: none	1	1	1
Mild	2.65 (1.41–4.98)[#]	2.29 (1.47–3.57)[+]	2.95 (2.14–4.07)[+]
Moderate to severe	2.74 (0.95–7.95)	2.80 (1.34–5.82)[#]	1.72 (0.89–3.32)
Poor personal hygiene: none	1	1	1
Mild	2.81 (1.49–5.29)[#]	3.36 (2.21–5.09)[+]	3.78 (2.74–5.23)[+]
Moderate to severe	6.35 (2.07–19.51)[#]	4.37 (1.72–11.08)[#]	5.20 (2.47–10.96)[+]
Unsanitary conditions: none	1	1	1
Mild	1.13 (0.50–2.56)	1.43 (0.87–2.37)	1.71 (1.19–2.44)[#]
Moderate to severe	2.93 (1.33–6.42)[#]	2.50 (1.40–4.49)[#]	1.94 (1.19–3.15)[#]
Need of home repair: none	1	1	1
Mild	1.04 (0.44–2.48)	2.24 (1.41–3.57)[+]	2.66 (1.89–3.75)[+]
Moderate to severe	2.22 (0.97–5.07)	2.18 (1.18–4.03)*	2.30 (1.43–3.69)[+]
Lack of utilities: none	1	1	1
Mild	1.05 (0.25–4.43)	1.39 (0.59–3.29)	0.95 (0.45–2.01)
Moderate to severe	1.55 (0.20–11.74)	1.37 (0.32–5.93)	1.46 (0.50–4.26)

Note: CI = confidence interval; OR = odds ratio.

[a]Adjusted by age, sex, education, income, number of children alive, years in the United States, and the number of medical comorbidities.

*$p < .05$; [#]$p < .01$; [+]$p < .001$.

suicidal ideation as the outcome is to help us further understanding the relationship between self-neglect and distal outcomes. Future research is needed to explore the temporal relationships between self-neglect and suicidal ideation of different time periods.

It is very likely that self-neglect and suicidal ideation were underreported by older adults. Due to poor physical condition, loneliness, mental health issues, or cognitive dysfunction, older adults tend to neglect self-care, not to seek for proper services and be unaware of potential environmental hazards and even give up hope of life. When compared with other populations, Chinese older adults tend to underreport their self-neglect and suicidal ideation due to the belief in "Domestic shame should not be published" or the fear of disrupting family honor or losing "face" (26), which oppressed the help-seeking behaviors. Despite years of acculturation and exposure to western mainstream culture, the value of filial piety is highly respected among Chinese families (27). It has the tendency to attribute elderly self-neglect to adult children not treating their older parents well enough. Older adults who are not willing to burden their children or to cause trouble may not expose their self-neglect behaviors. This study applied a community-based participatory research approach, where trained multicultural and multilingual interviewers conducted face-to-face home interviews with the participants in their preferred language and dialects, such as English, Cantonese, Taishanese, Mandarin, or Teochew, in order to ensure cultural and linguistic sensitivity. However, few screening instruments are developed and validated through the lens of cultural sensitivity among this special population. More attention should be paid to improve assessment tools and data collection process.

Although this study provided some insight into the relationship between elder self-neglect and suicidal ideation, it also has limitations. First, because this is a cross-sectional study of elder self-neglect within the context of a population-based study, temporal relationships of the findings cannot be explored with current data. Second, whether mental health played a role (23) in the relationship between self-neglect and suicidal ideation was not discussed in the current study as it may complicate the result. Mediating effect between self-neglect and suicidal ideation can be examined in future studies. Third, there existed missing data in our study, due to limited access to participants' household. Nevertheless, this study provides a unique angle for viewing the potential risk of self-neglect and lays the groundwork for future studies of thinking about both of these issues together in research, practice, and policy (28).

Implications

First, older adults with insufficient support from family members or community have to count on better public policy and support. Providing financial support, adequate health care, and other formal support programs are essential to help elders with self-neglect (29). Second, it is important for professionals who work with self-neglecting elders to understand differences in perception by culture and cohort (30). Professionals who work with elder self-neglect are supposed to be culturally sensitive and have good understanding of the targeted population. Last but not least, community-based education programs are much needed to increase older adults' self-awareness and help them to acknowledge potential environmental hazards and needs of self-care.

Conclusion

This study suggests that self-neglect is significantly associated suicidal ideation among Chinese older adults in Greater Chicago area. Longitudinal studies are needed to explore the mechanisms through which self-neglect links with suicidal ideation. Screening instruments and effective intervention programs are in need to help improve the well-being of aging population.

Funding

X.D. was supported by National Institute on Aging grants (R01 AG042318, R01 MD006173, R01 CA163830, R34MH100443, R34MH100393, P20CA165588, R24MD001650, RC4 AG039085), Paul B. Beeson Award in Aging, The Starr Foundation, American Federation for Aging Research, John A. Hartford Foundation, and The Atlantic Philanthropies.

Acknowledgments

We are grateful to Community Advisory Board members for their continued effort in this project. Particular thanks are extended to Bernie Wong, Vivian Xu, and Yicklun Mo with the Chinese American Service League (CASL); Dr. David Lee with the Illinois College of Optometry; David Wu with the Pui Tak Center; Dr. Hong Liu with the Midwest Asian Health Association; Dr. Margaret Dolan with John H. Stroger Jr. Hospital; Mary Jane Welch with the Rush University Medical Center; Florence Lei with the CASL Pine Tree Council; Julia Wong with CASL Senior Housing; Dr. Jing Zhang with Asian Human Services; Marta Pereya with the Coalition of Limited English Speaking Elderly; and Mona El-Shamaa with the Asian Health Coalition.

Conflict of Interest

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

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