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Elder Self-Neglect in a Community-Dwelling U.S. Chinese Population: Findings from the Population Study of Chinese Elderly in Chicago (PINE) Study

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Abstract

Objectives—To examine the prevalence of self-neglect and its specific behaviors in a community-dwelling U.S. Chinese aging population.

Design—Population-based cohort study.

Setting—Community-dwelling population of Chinese older adults.

Participants—3,159 Chinese older adults in the greater Chicago area interviewed from 2011-2013.

Measurements—Participant's personal and home environment was rated based on prevalence of hoarding behavior, personal hygiene, repairs needed on the home, sanitary condition of the home, and adequacy of utilities. Prevalence estimates were presented across self-reported quality-of-life.

Results—Prevalence of self-neglect was 18.2% for mild self-neglect and 10.9% for moderate/severe self-neglect among Chinese older adults. In terms of specific phenotypes, unsanitary conditions (17.0%) was the most prevalent, followed by need of home repair (16.3%), hoarding behavior (14.9%), poor personal hygiene (11.3%), and inadequate utilities (4.2%). The prevalence of elder self-neglect of all severities and its phenotypes was higher among older adults with fair or poor quality-of-life as compared to that of older adults with good or very good quality-of-life. Lower quality-of-life was significantly associated with and increased risk for self-neglect of all severities (mild self-neglect: OR 1.93, 95% CI 1.26-2.96, $p < 0.001$; moderate/severe self-neglect: OR 3.58, 95% CI 1.79-7.13, $p < 0.001$) and specific personal and environmental hazards.

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Conclusion—Elder self-neglect is prevalent, especially among those with lower levels of quality-of-life. Future research is needed to examine risk/protective factors associated with elder self-neglect.

Keywords

Self-neglect; hoarding; hygiene; squalor; environmental hazards; Chinese aging; population-based study

INTRODUCTION

The aging population in the United States is increasing rapidly, yet very little is known about the personal and home environments of older adults in diverse community populations. Recent media attention and popular television shows such as *Hoarders*, has opened a window into the private lives of Americans and sensationalized these egregious cases while, at the same time, triggered much discussion about the health and safety of older adults in their home environment. Concurrent with hoarding behaviors, older adults are often found to neglect their personal hygiene and dwell in the presence of other environmental hazards that could threaten their independence, health, and safety. These cases are frequently referred to Adult Protective Services to assess and to ensure the safety and wellbeing of the older individual. Elder self-neglect is the most commonly reported issue to Adult Protective Services. In 2004, the U.S. spent nearly \$500 million on these services agencies; of which the self-neglecting behaviors of hoarding, poor basic hygiene, and other environmental hazards are most commonly reported ¹.

Despite the magnitude of the problem, the research progress of elder self-neglect has lagged behind other forms of mistreatment, mainly due to difficulties of detecting and assessing the problem. A lack of systematic studies has led to various definitions being postulated for the syndrome of elder self-neglect. The sociological and psychological theories of self-neglect suggest that self-neglect is the failure to maintain a socially acceptable standard of personal and household hygiene and/or the failure to adequately care for one's own health ². In reviewing literature relevant to elder self-neglect, Pavlou et al, from healthcare providers' perspectives, described self-neglect as the phenomenon characterized by persistent inattention to personal hygiene and/or environment, repeated refusal of some/all indicated services which may improve quality of life, or self-endangerment through the manifestation of unsafe behaviors³. The National Centers on Elder Abuse defines elder self-neglect as, "...the behavior of an elderly person that threatens his/her own health and safety. Self-neglect generally manifests itself in an older person as a refusal or failure to provide himself/herself with adequate food, water, clothing, shelter, personal hygiene, medication (when indicated), and safety precautions" ⁴. Despite its complex manifestations and inconsistent definitions, elder self-neglect is generally featured by the older adults' inability to maintain personal needs and environmental hygiene.

Our existing knowledge about these personal and environmental hazards has mostly relied on case studies and case reports submitted to social services agencies ^{5, 6}. Although such reports make an invaluable contribution to the field, they likely represent a small fraction of

the incidence of these behaviors. Moreover, prior studies suggest that self-neglecting behaviors are associated with an increased burden of morbidity and premature mortality⁷⁻¹⁰. Self-neglect is also associated with increased utilization of health care services¹¹⁻¹³. Dong et al. found in the Chinese Healthy Aging Project (CHAP) cohort that older adults who self-neglect were with three times greater risk for using emergency services than those without self-neglect¹⁴. Yet our knowledge of the relationship between self-neglect behaviors and outcomes has mostly been derived from cases reported to the Adult Protective Services agencies, which inherently carries reporting biases. As such, more comprehensive and systematic studies are needed, so that the problem can be understood more precisely, better solutions can be developed, and appropriate policy can be established.

Prior epidemiological research indicates that the prevalence of elder self-neglect was 9% among the community-dwelling population, and there were significant racial/ethnic differences among non-Hispanic white and non-Hispanic black populations^{15, 16}. However, previous research on this topic remains very limited and there remain significant gaps in current understanding of the scope of self-neglect in diverse populations¹⁷. Preventing and intervening self-neglect requires a comprehensive understanding of its associated factors. Although increased research attention has been devoted to factors of self-neglect, we know very little about the association between elder self-neglect and self-reported quality of life—an important component of successful aging. In addition, interventions to reduce mild elder self-neglect may be different from that to moderate and severe self-neglect, suggesting a need to distinguish factors associated with different severities of self-neglect. Understanding the association between quality of life and different severities of elder self-neglect could help us better distinguish non-self-neglect older adults and self-neglect victims, and thus provide more effective prevention and intervention strategies.

The Chinese community is the largest and the fastest growing Asian American subgroup population in the U.S., numbering approximately 4 million¹⁸. The population of American Chinese adults aged 65 and over has increased by 55% in the past decade, far exceeding the population growth rate of 15% among U.S. older adults¹⁹. Compared with the general population, the Chinese population is older in average age and less acculturated among U.S. immigrant groups²⁰. A lack of language competency, coupled with cultural barriers and social isolation may exacerbate frailty and dependency, and further predispose U.S. Chinese older adults to a greater risk of elder self-neglect²¹. To our knowledge, very little is known about the issues of elder self-neglect in any U.S. Chinese population. Improved knowledge of this pervasive public health issue could assist health care and social services professionals to better assist, screen, treat and prevent elder self-neglect in Chinese aging populations.

This report builds on the existing literature to examine: 1) the prevalence and severity of overall self-neglect as well as the prevalence of specific hazards of hoarding behaviors, poor hygiene, repairs needed on the home, unsanitary conditions, and inadequate utilities in a community-dwelling Chinese population of older adults; 2) prevalence and severity of self-neglect and its phenotypes²²—, all five domains of self-neglect, including hoarding, poor basic personal hygiene, need of home repair, unsanitary conditions, and inadequate utilities, across the levels of self-reported quality-of-life.

DESIGN AND METHODS

Population and Settings

The Population Study of Chinese Elderly in Chicago (PINE) is a community-engaged, population-based epidemiological study of American Chinese older adults aged 60 and over conducted in the greater Chicago area. Briefly, the purpose of the PINE study is to collect community-level data of Chinese older adults in the U.S. to examine the key cultural determinants of health and well-being. The project was initiated by a synergistic community-academic collaboration among the Rush Institute for Healthy Aging, Northwestern University, and many community-based social service agencies and organizations throughout the greater Chicago area. In order to ensure study relevance to the well-being of the Chinese community and increase community participation, the PINE study implemented extensive culturally and linguistically appropriate community recruitment strategies strictly guided by a community-based participatory research (CBPR) approach²³. The formation of this community-academic partnership allowed the development of appropriate research methodology in accordance with the local Chinese cultural context, in which a community advisory board (CAB) played a pivotal role in providing insights and strategies for conducting research. Board members acted as community stakeholders and residents were enlisted through over twenty civic, health, social and advocacy groups, community centers, and clinics in the city and suburbs of Chicago. The board worked extensively with the investigative team to develop and examine the study instrument to ensure cultural sensitivity and appropriateness.

Study Design and Procedure

The research team implemented a targeted community-based recruitment strategy by first engaging community centers as main recruitment sites throughout the greater Chicago area²⁴. Over twenty social services agencies, community centers, health advocacy agencies, faith-based organizations, senior apartments, and social clubs served as the basis of study recruitment sites. Community-dwelling older adults who aged 60 years and over and self-identified as Chinese were eligible to participate in the study. Out of 3,542 eligible older adults approached, 3,159 agreed to participate in the study, yielding a response rate of 91.9 %. More in-depth details of the PINE study design are currently in press²⁵.

In order to ensure cultural and linguistic sensitivity, trained multicultural and multi-lingual interviewers conducted face-to-face home interviews with participants in their preferred language and dialects, such as English, Cantonese, Taishanese, Mandarin, or Teochew dialect. Data were collected using state-of-the-science innovative web-based software, which recorded simultaneously in English, Chinese traditional, and simplified characters. This transformative technological platform not only permitted efficient data acquisition with fluency in the native language and scripts of the study participant, but further sustained the technical base in reducing the risk of miss-interpretation or over-interpretation.

Based on the available census data drawn from the 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 area²⁶. The study was approved by the Institutional Review Boards of the Rush University Medical Center.

Measurements

Elder Self-Neglect is the primary dependent variable and was derived from our prior study of self-neglect in the Chicago Health and Aging Project. Interviewers were trained to uniformly assess personal and environmental observations (27-items) in five domains: hoarding, poor basic personal hygiene, need of home repair, unsanitary conditions, and inadequate utilities. Hoarding was assessed by the presence of accumulation of newspapers or magazines, boxes, bags, or bottles, accumulation of trash, and accumulation of pets. Personal hygiene was assessed by presence of dirty nails, dirty or un-groomed hair, dirty skin, and presence of fecal or urine smells. Repairs needed on the home included difficulty accessing the house, lack of basic furniture, an unworkable bathroom, unworkable lighting, unclean interior walls, dilapidated windows, doors, locks, stairs, floor, and yard. Unsanitary conditions included dwelling in an extremely dirty or cluttered space, spoiled or rotten food, kitchen messiness, insect or rodent infestation, foul odor, and inappropriate disposal of urine or feces. Inadequate utilities were assessed by inadequate heat or air conditioning for the house, inadequate water and electrical services, minimal food available, and no food storage. A four-point scale ranging from 0 = “none”; 1 = “mild”; 2 = “moderate”; and 3 = “severe” was used for each question. Any response other than “none” in one or more of the above questions identified the participant as elder self-neglect victim. **Quality of life** was the independent variable and was assessed by asking “in general, how would you rate your quality of life?” on a four-point scale (1 = poor, 2 = fair, 3 = good, 4 = very good).

All survey interviewers went through uniform training on these factors by the investigative team. At first the project coordinator accompanied the survey interviewers during the initial in-home interview. Then, a single interviewer conducted the assessment of self-neglect and its specific behaviors for any given participant. The 27-item questions were assessed at the end of the PINE population survey. Prior research on the similar observational assessment of self-neglect indicates good reliability, content validity and concurrent validity across different phenotypes¹⁶. In this study, reliability of the instrument was assessed for overall self-neglect and each of the five domains, with Cronbach’s alpha of 0.79 for overall self-neglect, 0.74 for hoarding, 0.74 for poor basic personal hygiene, 0.68 for unsanitary conditions, 0.69 for repairs needed on the home, and 0.35 for inadequate utilities. The correlations between overall self-neglect and its phenotypes ranged from 0.36 to 0.77 and all correlations were significant with p values at the 0.001 level.

Data Analysis

Univariate analyses were performed to examine the prevalence estimates of overall self-neglect and its phenotypes. In addition, prevalence estimates were calculated by the self-reported quality-of-life status (very good, good, fair or poor). Cronbach’s alpha was calculated as the squared correlation between observed score and the true score variance. Approximate 95% confidence intervals for prevalence estimates were obtained by inverting the corresponding Wald test constructed using the standard errors. Logistic regression was used to examine the associations between quality-of-life and overall self-neglect and its

specific self-neglect phenotypes, using “very good” as the reference group and compared the categories of “good” “fair” and then “poor” using it as a continuous measure. Results are presented as odds ratios with 95% confidence intervals (CI). All analyses used 2-sided alternatives with p values less than 0.05. All analyses were done using SAS®²⁷.

RESULTS

Prevalence and Severity of Elder Self-Neglect

In total, there were 3,159 older adult study participants. The participants had a mean age of 72.8 (SD = 8.3, range = 60-105). Table 1 summarizes the prevalence of elder self-neglect and its phenotypes by severity of the neglect. Overall, 18.2% of older adults had mild self-neglect and 10.9% of the older adults had moderate or severe self-neglect. The most common phenotype for any self-neglect 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%).

More specifically, newspaper or magazine accumulation was the most common subtypes of hoarding, with 11.1% of the older adults presenting the symptom. Among older adults who reported poor personal hygiene, dirty nails (9.5%) was the most prevalent subtype. As for older adults whose houses were in need of repair, having difficulties accessing the house (3.5%) was the predominant problem., Having filth covered floors (7.9%) was most commonly reported for those had unsanitary conditions, and inadequate heat/air conditioning (2.7%) was most prevalent among those who reported inadequate utilities.

Prevalence of Elder Self-Neglect Across Quality-of-Life (QOL)

Table 2 presents the prevalence of elder self-neglect by different levels of quality-of-life. The prevalence of mild self-neglect was 33.8% (95% CI 31.3-36.3) for older adults with fair or poor quality-of-life, 22.6% (95% CI 20.3-25.1) for those with good quality-of-life, and 16.7% (95% CI 11.7-22.7) for those with very good quality-of-life. Similar trends for quality-of-life were found for hoarding, personal hygiene, and other environmental hazards.

With regards to moderate or severe self-neglect, the prevalence of elder self-neglect was 13.6% (95% CI 11.9%-15.5) for older adults with poor or fair quality-of-life, 9.3% (95% CI 7.7-11.1) for those with good quality-of-life, and 4.7% (95% CI 2.2-8.7) for those with very good quality-of-life. Similar trends for quality-of-life were observed for hoarding, personal hygiene, and other environmental hazards.

Lower quality-of-life was associated with an increased risk for mild self-neglect (OR 1.43, 95% CI 1.23-1.65, $p<0.001$) (Figure 1). Particularly, lower quality-of-life was associated with an increased risk for mild levels of hoarding (OR 1.43, 95% CI 1.19-1.71, $p<0.001$), poor personal hygiene (OR 1.42, 95% CI 1.19-1.71, $p<0.001$), repairs needed on the home (OR 1.55, 95% CI 1.28-1.87, $p<0.001$), and unsanitary conditions (OR 1.54, 95% CI 1.29-1.84, $p<0.001$). Similarly, lower quality-of-life was significantly associated with increased risk for moderate or severe self-neglect and its five phenotypes.

DISCUSSION

This study suggests that self-neglect and specific personal and environmental hazards were prevalent in a community-dwelling population of Chinese older adults in the U.S. In addition, moderate to severe self-neglect was particularly prevalent in this Chinese aging population. Moreover, lower levels of quality-of-life were associated with a greater risk for self-neglect and specific personal and environmental hazards.

Although there is a paucity in our current understanding of the extent to which older adults are exposed to these personal and environmental hazards, a report from the National Adult Protective Services Agencies suggests that self-neglect is on the rise¹. In addition, the National Center on Elder Abuse submits that self-neglecting behaviors are more common than all other forms of elder abuse, neglect and exploitations combined. Prior studies suggest that hoarding is common among women who are unmarried and live alone. Extreme clutter interferes with basic hygiene and poses dangerous circumstances for health and safety not only for older adults but also those surrounding them^{28, 29}. However, it was noted that only a fraction of the older adults who participated in such research accepted services from social services agencies and other relevant professional disciplines.

A prior environmental observations study of 91 clients requiring special cleaning services in an inner London, U.K. borough, found that physical disorders were common among higher levels of domestic squalor³⁰. Recent studies suggest that older adults with greater vulnerability were more likely to be reported to Adult Protective Services³¹⁻³⁶. Although little is known about the factors associated with elder self-neglect, existing evidence suggests that older adults who have encounters with Adult Protective Services may have significant nutritional deficiencies, untreated medical conditions, unmanaged pain, as well as premature morbidity and mortality³⁷⁻⁴⁰.

Compared with the aforementioned prior studies that relied on reports from social services agencies, this present study uniformly collected self-neglect data within the context of the population-based study. This approach in the PINE study will likely diminish the reporting biases found in most prior studies. In addition, this study systematically collected the self-neglect phenotypes, which provide the field with an improved understanding of the scope of the specific self-neglecting behaviors. Moreover, this study complements previous studies by demonstrating significant associations between levels of quality-of-life with respect to the risk for self-neglect. Improved understanding of these issues contributes to the future prevention and intervention efforts to reduce self-neglect and improve overall health and well-being.

This study demonstrates that self-neglect is a significant public health issue among minority older adults. Prior population-based epidemiological study examined the prevalence of elder self-neglect in a community population on the South side of Chicago within the context of the Chicago Health and Aging Project (CHAP). Dong et al. found a prevalence of nearly 9% for self-neglect among 4,627 older adults, which is lower than that of our study^{15, 16}. Due to a lack of language proficiency and transportation availability, Chinese older adults may experience greater levels of social isolation that may link them to higher risk for elder self-

neglect⁴¹. Cultural and linguistic barriers to U.S. health care access may further deteriorate the health of older adults and make them more susceptible to self-neglect. In particular, low-income Chinese older adults may not be able to afford necessary home care services and have to live in unsafe and unsanitary conditions. We acknowledge that it would be important to compare our findings with studies in other Chinese populations to better understand influences of culture and immigrant factors on elder self-neglect. Unfortunately, to our knowledge, no prior studies have examined the extent of elder self-neglect among Chinese older adults. There is a greater need for improving our knowledge about self-neglect and its risk and protective factors in the Chinese population.

In this study, poorer quality of life was associated with increased risk for elder self-neglect. With respect to categorical levels of quality of life, compared with older adults with very good or good quality of life, those with the poor/fair quality of life had a higher prevalence of older adults who were self-neglected. Older adults with poor self-neglect quality of life may have lower self-esteem and inferior social economic situations that may lead to self-neglect. Although the association was established, the mechanism under the association remained unclear. It is also possible that self-neglected older adults were more likely to be unsatisfied with their present living situations and report their quality of life as fair/poor. Older adults, especially those who are isolated because of language and cultural barriers, may be unaware of the services available to them. Hence, they may maintain in the unsafe and unclean condition despite they are unsatisfied with it.

While this study provides greater insight into prevalence of Chinese elder self-neglect, it also has limitations. This study did not record detailed information on the participant's perception of these personal and environmental hazards. Additional qualitative information could improve understanding of the setting and context of these behaviors. In addition, this study did not have information on the potential harm (fall, nutritional deficiencies, morbidity or mortality) that could have resulted from self-neglecting behaviors⁴². Moreover, this study could not examine whether or not the social services agencies or health care professionals offered services to these participants to ameliorate these hazards and if the participants were willing to accept these interventions. Furthermore, this study did not examine the relations between self-neglecting older adults and their physical and mental health status especially dementia, psychosocial wellbeing or living arrangements that might have exacerbated these behaviors⁴³⁻⁴⁶. Future longitudinal studies are needed to quantify the temporal relations.

The findings from this study have practical implications for health care professionals in prevention, detection, and management of elder self-neglect. As the population ages, health care professionals are increasingly asked to comment on the health status of older patient's and quality-of-life within the context of their daily living. Health care professionals should consider screening for self-neglect among older patients who report lower levels of quality-of-life. In addition, health care professionals should be educated on the importance of these factors that could be integrated into the routine history taking for older patients in clinical settings. Vigilant monitoring of health status and quality-of-life could help clinicians to identify elder self-neglect.

The findings of this study also have direct implication for future research and policy, by providing the first population-based study to systematically examine the prevalence of self-neglect and its specific behaviors in Chinese older adults. Our finding that lower quality of life was associated with increased risk for elder self-neglect indicates that self-neglected older adults may be unsatisfied about their living conditions, providing new insights into elder self-neglect interventions among minority older adults. Community organizations should develop more culturally sensitive services and reduce the barriers to access these services. Like other geriatric syndromes that are the result of the complex interaction between a variety of medical, psychological and social factors, these self-neglecting behaviors are likely to develop and progress slowly over time⁴⁷. These findings inform the health care professionals, social services agencies and other relevant disciplines on the scope and nature of a pervasive public health issue. Future research is needed to explore temporal associations of the risk/protective factors associated with self-neglect in community-dwelling Chinese populations. Additional studies are needed to examine the role of interventions in defined population and settings that might prevent and reduce elder self-neglect in the community-dwelling populations⁴⁸. Improved understanding of these factors should help to shape future prevention and intervention strategies to reduce self-neglect in Chinese aging populations.

CONCLUSION

Elder self-neglect is prevalent in Chinese community older adults, especially among those with lower levels of quality-of-life. Future studies are needed to quantify the risk/protective factors and consequences of self-neglect and specific personal and environmental hazards, in order to better inform practice and policy on the screening, treatment and prevention strategies.

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Figure 1. Association of Mild and Moderate to Severe Self-Neglect with Quality of Life in the Presence of Specific Behaviors

Figure shows the association of mild and moderate to severe self-neglect with quality of life in the presence of specific behaviors of hoarding, personal hygiene, house in need of repair, unsanitary conditions, and inadequate utility, separated by mild self-neglect and moderate/severe self-neglect. We used the reference group of very good which we compared with good, then with two other groups poor and fair levels of quality of life as a continuous measure.

Table 1
Prevalence and Severity of Elder Self-Neglect in a Chinese Aging Population

	No Self-Neglect N (%)	Mild Self-Neglect N (%)	Mod/Severe Self-Neglect N (%)
Overall Self-Neglect	2021 (70.89)	520 (18.24)	310 (10.87)
Hoarding	2425 (85.09)	325 (11.40)	100 (3.51)
Personal Hygiene	2745 (88.69)	306 (9.89)	44 (1.42)
House Need Repair	2388 (83.70)	299 (10.48)	166 (5.82)
Unsanitary Condition	2365 (82.98)	332 (11.65)	153 (5.37)
Inadequate Utility	2697 (95.77)	83 (2.95)	36 (1.28)
Specific Subtypes of Self-Neglect			
Hoarding			
Newspaper/Magazines	2535 (88.95)	264 (9.26)	51 (1.79)
Boxes, Bags, or Bottles	2540 (89.15)	228 (8.00)	81 (2.84)
Trash	2794 (98.0)	45 (1.58)	12 (0.42)
Pets	2842 (99.68)	5 (0.18)	4 (0.14)
Personal Hygiene			
Nails	2800 (90.47)	272 (8.79)	23 (0.74)
Hair Dirty/Un groomed	2980 (96.28)	90 (2.91)	25 (0.81)
Skin dirty, cut or ulcer	3044 (98.32)	41 (1.32)	11 (0.36)
Clothes Dirty or Soiled. Fecal Urine Smell	3040 (98.22)	44 (1.42)	11 (0.36)
House In Need of Repair			
Difficulty Access the House	2755 (96.50)	77 (2.70)	23 (0.81)
Lack of Basic Furniture	2734 (95.86)	81 (2.84)	37 (1.30)
Bathroom Unworkable	2816 (99.36)	11 (0.39)	7 (0.25)
No Working Lighting	2575 (90.29)	186 (6.52)	91 (3.19)
Dilapidated windows, doors, locks, stairs, floor and Needs Repair	2762 (95.94)	79 (2.74)	38 (1.32)
Garden Yard	2819 (98.02)	42 (1.46)	15 (0.52)
Interior Walls	2787 (97.65)	39 (1.37)	28 (0.98)
Unsanitary Conditions			
Filth Covering Floor	2631 (92.5)	167 (5.85)	57 (2.00)
Cluster Accumulation	2679 (93.97)	128 (4.49)	44 (1.54)
Spoiled or Rotten Food	2819 (99.65)	6 (0.21)	4 (0.14)
Kitchen Messiness	2628 (92.47)	157 (5.52)	57 (2.01)
Insect/ Rodent Infestation	2830 (99.40)	7 (0.25)	10 (0.35)
Foul Odor	2706 (94.78)	104 (3.64)	45 (1.58)
Inappropriate Disposal of Urine or Feces	2837 (99.65)	6 (0.21)	4 (0.14)
Inadequate Utility/Food			
Inadequate Heat/AC	2789 (97.25)	55 (1.92)	24 (0.84)

	No Self-Neglect N (%)	Mild Self-Neglect N (%)	Mod/Severe Self-Neglect N (%)
Water	2853 (99.86)	2 (0.07)	2 (0.07)
Electricity	2856 (99.93)	0 (0)	2 (0.07)
Minimal Food Available	2814 (99.54)	8 (0.28)	5 (0.18)
No Food Storage	2788 (98.73)	26 (0.92)	10 (0.35)

Table 2
Prevalence of Elder Self-Neglect Across Levels of Quality-of-life (QOL) in a Chinese Aging Population

	Mild Self-Neglect			Mod/Severe Self-Neglect		
	QOL 1: Poor/Fair % (95% CI)	QOL 2: Good % (95% CI)	QOL 3: Very Good % (95% CI)	QOL 1: Poor/Fair % (95% CI)	QOL 2: Good % (95% CI)	QOL 3: Very Good % (95% CI)
Overall Self-Neglect	33.8 (31.3-36.3)	22.6 (20.3-25.1)	16.7 (11.7-22.7)	13.6 (11.9-15.5)	9.3 (7.7-11.1)	4.7 (2.2-8.7)
Hoarding	18.0 (16.1-20.1)	12.2 (10.5-14.2)	8.3 (4.8-13.1)	4.3 (3.3-5.5)	2.8 (1.9-3.9)	2.1 (0.6-5.2)
Personal Hygiene	16.8 (14.9-18.8)	11.1 (9.5-12.9)	7.8 (4.6-12.4)	1.8 (1.2-2.6)	1.3 (0.8-2.1)	0.0 (0.0-0.0)
House Need Repair	20.9 (18.9-23.2)	12.3 (10.5-14.2)	8.3 (4.8-13.1)	7.7 (6.4-9.2)	4.4 (3.3-5.7)	1.0 (0.1-3.7)
Unsanitary Condition	21.1 (19.0-23.3)	13.8 (11.9-15.9)	8.9 (5.2-12.8)	6.8 (5.5-8.2)	4.3 (3.2-5.6)	2.6 (0.9-5.9)
Inadequate Utility	5.5 (4.4-6.8)	3.1 (2.2-4.3)	3.1 (1.2-6.7)	1.8 (1.2-2.6)	0.9 (0.5-1.6)	1.0 (0.1-3.7)

CI: 95% Confidence interval is based on the inversion of Wald test constructed with the use of standard errors.