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Urban and Rural Variations in the Characteristics Associated with Elder Mistreatment in a Community-Dwelling Chinese Population

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Abstract

This study compared the urban and rural differences in the sociodemographic, socioeconomic, health-related, and psychosocial factors associated with elder mistreatment (EM) in a Chinese population. Cross-sectional study of 269 urban and 135 rural participants aged 60 years or greater was performed. For urban participants, those with EM were more likely to be younger, have lower levels of education and income, and have lower levels of psychosocial well-being. For rural participants, those with EM were more likely to be older, have lower levels of education, have higher numbers of medical conditions and lower levels of health status, and have lower levels of psychosocial well-being. Among those with EM, rural participants were more likely to be women, have lower levels of education and income, have lower levels of health status and quality of life, have worse change in recent health, and have lower levels of psychosocial well-being. Both higher levels of depressive symptoms and lower levels of social support were associated with increased risk of EM. Future intervention studies are needed to examine the effect of improving psychosocial well-being on the risk of EM among Chinese populations.

Keywords

elder mistreatment; health and aging; Chinese population; rural health; quality of life

INTRODUCTION

Elder mistreatment (EM) is an important global public health issue. The World Health Organization has declared that EM is a violation of a person's fundamental right to be safe and free of violence (World Health Organization, 2002). In addition, prior studies indicate EM is associated with significant morbidity and mortality (Dong, 2005; Dong, Simon, Mendes de Leon, Fulmer, Beck, Hebert, Dyer, Paveza, & Evans, 2009a). However, we still only have rudimentary knowledge about this pervasive global issue. The US National Research Council recommended that rigorous research is needed in all aspects of EM (National Research Council, 2003). Unfortunately, our current understanding of EM is limited in specific racial/ethnic groups, especially among the Chinese population.

By the year 2050, estimates suggest that 25% of the world's older adult population will be Chinese (Banister, 1990). Most of our knowledge about health and aging among Chinese populations is derived from urban populations, as the studies among rural populations are

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less common. In addition, agriculture still dominates most of rural China, and most of the Chinese population resides in rural settings. Recent estimates suggest that there are 900 million people living in rural China, most of whom face drastically different socioeconomic, health and psychosocial constraints (Woo, Kwok, Sze, & Yuan, 2002). These demographic imperatives necessitate an improved understanding of health and aging among rural Chinese populations.

For thousands of years, Chinese culture has been heavily influenced by Confucian traditions, which greatly emphasized filial piety and provided guidelines for the obligatory roles and responsibilities of each person in the family (Gabrenya & Kwang, 1996). The concept of filial piety is based on the idea that individual lives and other family members are one unit. It demands that one should provide for material and mental well-being of one's older parents, perform ceremonial duties to worship the ancestors and take care to avoid harm to one's body, ensure the continuity of the family line, and in general, discipline oneself so as to maintain honor to the family name. For thousands of years, this system of interdependence among family members has been the centerpiece of Chinese cultural and society.

However, similar to other countries, Chinese society is facing enormous challenges as the aging population rapidly increases. In addition, urbanization has triggered massive migration of rural populations to urban settings, which has posed great challenges to the traditional values and Chinese families. Multigenerational Chinese households are facing immense psychological and social burdens (Tam & Neysmith, 2006). Furthermore, the rapidly widening socioeconomic gaps between rural and urban China have further exacerbated the psychological stress of Chinese families, especially the aging population.

These challenges fundamentally threaten the fragile social support system for rural older Chinese populations. Psychological and social support factors have special relevance to the aging population, as prior research suggests that lower levels of such factors are associated with significant morbidity and mortality (Jakobsson & Hallberg, 2005; Ryan, 1998; Temkin-Greener et al., 2004). In addition, greater psychological burden and lack of social support may indicate vulnerability and dependency, which may reflect conditions that strongly contribute to the increased risk for EM among rural Chinese populations.

A prior Chinese study (Dong & Simon, 2010) suggests that rural older adults have significant differences in characteristics of health and well-being compared to urban older adults. More specifically, rural older adults have significant lower levels of quality of life and social support and higher levels of depression and loneliness. In addition, other studies suggest that higher levels of depression and loneliness and lower levels of social support are associated with increased risk of EM (Dong, Simon, Odwazny, & Gorbien, 2008a; Dong & Simon, 2008b; Dong, Simon, Gorbien, Percak, & Golden, 2007a). However, most prior research has not given enough attention between rural and urban differences in EM, and there is incomplete knowledge regarding the urban and rural differences in the sociodemographic, socioeconomic, health-related, psychological, and social factors associated with EM. This gap in our knowledge has inhibited comprehensive understanding of EM and hampered development of more targeted prevention and intervention strategies to combat EM.

The objectives of this study are 1) to describe and contrast sociodemographic, socioeconomic, health-related, psychological and social characteristics associated with EM for urban and rural Chinese older adults and 2) to describe and contrast these characteristics between mistreated urban and rural participants in a community-dwelling Chinese population.

METHODS

Setting

This study was carried out in 2005 of rural and urban participants presented to a medical center in NanJing, China. The details of this study have been previous described (Dong, Simon, & Gorbien, 2007b). In brief, the study population consists of rural and urban patients 60 years or older. Participants were identified in four different medical clinics. When they registered with the clinic nurses, all participants 60 or over were asked if they would like to participate in the study. Research assistants spoke both mandarin and NanJing local dialect. They approached these patients to explain the purpose of the study, and subjects were asked for their consent to participate. A total of 500 participants were approached in the four medical clinics during the four week period. Of the total eligible participants, 412 subjects agreed to participate. Eight participants had missing data on their living location, which resulted in total of 404 participants for the study. The most common reasons for visiting the clinics were routine follow up, stomach ache, headache, and chronic disease management for hypertension, diabetes, and osteoarthritis.

A total of 135 rural and 269 urban participants consented to participate. Categorization of urban and rural subjects was based on self-report if they lived in the city (urban) or lived outside of the city (rural). In NanJing, like many other major cities, the boundaries are set by the wall (fortress) that surrounds the city which in-turn geographically defines the urban limits. This study did not invite to participate those patients who lacked the ability to give informed consent, or those with cognitive impairment (according to family members and/or clinic nurses). The survey was self-administered; it did not involve anyone accompanying the older patients, and research assistants were available to answer questions.

EM Assessment

The EM measures used in this study were derived from the Vulnerability to Abuse Screening Scale (VASS) (Schofield & Mishra, 2003; Hwalek & Sengstock, 1986), which is a brief screening suitable in an outpatient setting. Questions were asked about ever being: afraid of anyone, hurt or harmed by anyone, called names, forced to do things; neglected or confined, and/or exploited of personal or financial belongings without permission. These questions demonstrated high face validity for mistreatment and moderate to good construct validity (Schofield & Mishra, 2003). The original VASS instrument measured domains of dependence, dejection, vulnerability, and coercion and yielded a Cronbach's alpha of 0.31-0.74, indicating moderate to good internal reliability and appropriateness for a brief screening instrument.

In addition, further consideration was given to the issues of EM in Chinese culture. The study investigators felt that it was important to be more specific and to explore the physical, sexual, psychological, and financial abuse screening questions in more detail. Direct questions were asked regarding: being hit, kicked, slapped, pushed, etc.; being insulted; being abandoned; having someone take money or belongings without permission; or having non-consenting sexual contact of any kind. The study investigators felt that answering positively to any of these extremely direct questions usefully supplemented the original screening questions for EM in China. For the purposes of this research, screening positive for any of the above questions on the survey was considered positive for self-reported EM. Our revised EM measure yielded a Cronbach's alpha of 0.79, indicating good internal reliability of the measure.

Sociodemographic and Socioeconomic Characteristics

Sociodemographic and socioeconomic characteristics that were examined included: age (years), gender, education (years), and monthly income (RMB). Family structure was assessed by asking marital status, number of children, and number of person living in the same household.

Medical Co-Morbidities and Health-Related Quality of Life

Self-reported medical conditions were asked of all participants. These health conditions included: coronary artery disease, hypertension, chronic lung disease, Diabetes Mellitus, kidney disease, liver disease, stomach disease, arthritis, stroke, cancer, and tuberculosis. Health-related quality of life measures were assessed with respect to overall health status, quality of life, and changes in health in the last 12 months.

Psychological and Social Factors

Depression was assessed based on the five-question Geriatric Depression Scale (GDS) (Tang, Wong, Chiu, Lum, & Ungvari, 2005). Questions were asked regarding feelings of: satisfaction with life, boredom, helplessness, wanting to stay home, and worthlessness. Depression was defined as three or more positive answers to the five screening questions. Prior study demonstrated this instrument has good sensitivity (94%), specificity (81%), and positive (81%) and negative (94%) predictive values (Rinaldi et al., 2003). This scale had a positive likelihood ratio of 4.92 and a negative likelihood ratio of 0.07; it also had good inter-rater reliability (k=0.88) and test-retest reliability (k=0.84). Cronbach's alpha of this measure in our study was 0.77.

Loneliness was assessed using a validated three-question survey (Hughes, Waite, Hawkley, & Cacioppo, 2004), derived from the R-UCLA Loneliness Scale. Questions were asked regarding feelings of: lacking companionship, left out of life, and isolated from others. The alpha coefficient of reliability for this three question survey has been shown to be 0.72, with internal consistency of 0.82, indicating good reliability and internal validity (Hughes et al., 2004). Cronbach's alpha of this measure in our study was 0.78.

Social support was assessed using a validated Social Support Instrument (SSI) (Berkman, Leo-Summers, & Horwitz, 1992; Gorkin et al., 1993). Questions were asked regarding availability of someone to: listen and talk to; give good advice; show love and affection; help with daily chores; provide emotional support; and trust and confide. The SSI has demonstrated acceptable internal consistency and was shown to be correlated positively with other social support instruments (Blumenthal et al., 1987; Vaglio et al., 2004). These studies indicate that Cronbach's alpha was 0.88, and inter-item correlation was significant between all items and item-total scores. Cronbach's alpha of this measure in our study was 0.91.

Statistical Analyses

Sociodemographic, socioeconomic, medical conditions, health-related quality of life, psychological, and social variables were separated by urban and rural participants. Mean, standard deviation, frequencies, and percentages were calculated for all of the above variables. Comparisons were made using Chi-squared or t-test as appropriate for these variables across rural and urban groups. In addition, Cochran-Armitage trend test (Z-Stat 2 sided) was used to test the significance level of the multichotomous variables with respect to urban and rural participants. Degrees of freedoms (DF) were reported.

In addition, we examined the association between psychosocial factors of depression, loneliness, and social support with the risk of elder mistreatment. We used 4 different models to test these associations. First, we added the sociodemographic variables of age and

sex to examine each of the psychosocial factors to the risk of EM (Model A). Second, we added the socioeconomic variables of education and income (Model B). Third, we added marital status and household composition to the prior model (Model C). Lastly, we added medical conditions to the prior model to test the association between the psychosocial factors and risk of EM. Odds ratio (OR) and 95% confidence interval (CI) are reported for these analyses. Data analyses were performed using SAS (SAS Institute Inc, 2004).

RESULTS

Urban Older Adults

Of the 269 urban participants, there were 84 (31.2%) older adults with self-reported EM. Of the 135 rural participants, there were 60 (44.4%) older adults with self-reported EM. Among urban participants (see Table 1), mean age for those mistreated was 68.5 ± 6.8 and for those without mistreatment it was 71.3 ± 6.7 (T=3.15, df=267, p=0.002). Cochran-Armitage trend test results suggest that those with EM were significantly more likely to be in younger age groups (Z=3.45, p<0.001). Urban older adults with EM compared to those without EM were more likely to have lower levels of education (T=3.79, df=266, p<0.001) and lower levels of income (T=3.90, df=265, p<0.001). There were no significant differences across marital status, number of children and number of persons living in the same household (see Table 1). However, there was nothing statistically significant by EM status across medical conditions, overall health status, quality of life, or recent changes in health.

With respect to psychological factors, urban older adults who were mistreated were more likely to be dissatisfied with life (χ^2=15.51; df=1, p<0.001); feeling bored (χ^2=21.39; df=1, p<0.001), worthless (χ^2=11.24; df=1, p<0.001), or helpless (χ^2=15.28; df=1, p<0.001); and lacking companionship (Z=2.69, p=0.007). With respect to social factors, urban older adults who were mistreated were more likely to have lower levels of social support measures, including lacking someone to listen to (Z=4.77, p<0.001), to get advice (Z=5.55, p<0.001), to show love and affection (Z=4.94, p<0.001), to get help with chores (Z=3.69, p<0.001), to trust and confide (Z=5.95, p<0.001)and to count on for emotional support (Z=5.69, p<0.001) (see Table 1).

Rural Older Adults

Among rural older adults, the mean age for those mistreated was 69.6 ± 6.9 and for those without mistreatment it was 67.5 ± 5.8 (T=−2.00, df=133, p=0.048) (see Table 2). Cochran-Armitage trend test results suggest that those with EM were significantly more likely to be in the older groups (Z=2.23, p=0.026). Those mistreated were significant more likely to have lower levels of education (3.1 ± 3.7 vs. 5.1 ± 4.4, T=2.84, df=130, p=0.005). There were no significant differences between those with EM and those without EM across levels of income, marital status, or number of persons living in the same household. The study then examined the medical conditions, health status, and quality of life measures among rural older adults by EM status. Rural older adults with EM were less likely to have coronary artery disease (χ^2=8.01; df=1, p=0.005), diabetes (χ^2=8.23; df=1, p=0.004), or stomach disease (χ^2=6.48; df=1, p=0.011), and they also had lower levels of overall health status (Z=2.51, p=0.012) (see Table 2).

With respect to psychological factors, those with EM compared with those without EM were more likely to be dissatisfied with life (χ^2=11.28; df=1, p<0.001); feeling bored (χ^2=10.03; df=1, p=0.002), worthless (χ^2=5.36; df=1, p=0.021), or helpless (χ^2=9.19; df=1, p=0.002); lacking companionship (Z=2.82, p=0.005); feeling left out of life (Z=2.43, p=0.001); and feeling isolated (Z=1.98, p=0.048) (see Table 2). With respect to social factors, rural older adults who were mistreated were more likely to have lower levels of social support

measures: lacking someone to listen to (Z=4.71, p<0.001), getting advice (Z=4.11, p<0.001), showing love and affection (Z=3.49, p<0.001), getting help with chores (Z=2.57, p=0.01), trusting and confiding in others (Z=5.15, p<0.001), and counting on for emotional support from others (Z=5.49, p<0.001) (see Table 1).

EM Comparison between Urban and Rural Older Adults

Among those who have suffered mistreatment, the study examined the urban and rural differences across sociodemographic, socioeconomic, health-related, psychological, and social measures. The study found that rural participants with EM were more likely to: be women (χ^2=4.86, df=1, p=0.027), have lower levels of education (T=7.81, df=139, p<0.001), have lower levels of income (T=4.44, df=142, p<0.001), have higher numbers of children (T=1.86, df=140, p=0.004), and less likely to be married (Z=5.97, p=0.016). Rural participants compared with urban participants with EM were more likely to have lower levels of overall health status (Z=4.01, p<0.001), lower levels of quality of life (Z=3.97, p<0.001), and worsening changes in recent health (Z=2.19, p=0.028) (see Table 2).

With respect to psychological factors, mistreated rural adults were more likely to be dissatisfied with life (χ^2=5.71; df=1, p=0.017); more likely to have depression (χ^2=5.49; df=1, p=0.019); and more likely to have feelings of lacking companionship (Z=2.82, p=0.005), being left out of life (Z=3.39, p=0.001), and being isolated (Z=3.42, p=0.001) (see Table 2). Among social support measures, mistreated rural adults were more likely than mistreated urban adults to report lacking someone to listen to (Z=3.21, p=0.001), to get advice from (Z=2.54, p=0.011), to show love and affection (Z=2.71, p=0.007), to trust and confide (Z=2.12, p=0.034), and to get emotional support (Z=2.65, p=0.008), and less likely to be living with a partner (χ^2=7.85; df=1, p=0.005).

Regression Analyses of Psychosocial Factors and Elder Mistreatment

In the regression analyses, we examined the independent association between psychosocial factors (depression, loneliness, and social support) and EM. In the core model (see Table 4, Model A), we found that depression is associated with increased risk of EM in urban (OR, 1.79, 95%CI, 1.39-2.31) and rural populations (OR, 1.49, 95%CI, 1.15-1.92). In the fully adjusted model (see Table 4, Model D), higher depressive symptoms remain a significant risk factor for EM among both urban and rural older adults.

With respect to loneliness (see Table 5, Model D), after consideration of sociodemographic and socioeconomic, household composition, and medical co-morbidities, higher loneliness score was no longer a statistically significant risk factor for EM in urban and rural populations. With respect to social support (see Table 6, Model D), lower levels of social support remained a significant risk factor for EM in rural (OR, 1.19, 95% CI, 1.08-1.31) and urban populations (OR, 1.11, 95% CI, 1.04-1.19).

DISCUSSION

In this Chinese population, the study found that urban and rural older adults had different sociodemographic, socioeconomic, and health-related factors associated with EM. Both mistreated urban and rural older adults, compared to those without mistreatment, were more likely to have higher levels of psychological burden and lower levels of social support. Furthermore, among the EM victims, there were significant differences across sociodemographic, socioeconomic, health-related, and psychosocial factors between urban and rural older adults. Lastly, higher levels of depressive symptoms and lower levels of social support are independently associated with increased risk of EM in both urban and rural older adults.

Our findings expand prior studies in a number of ways. This is the first study of a Chinese aging population to examine the urban and rural differences across a wide range of sociodemographic, socioeconomic, health-related, psychological, and social factors with respect to EM. It is estimated that 900 million people live in rural China, most of whom have unique socioeconomic needs, health-related conditions and psychosocial well-being. Therefore, it is critical to understand the rural and urban differences in health and aging. The findings from our study contribute to the global understanding of geographical variations associated with EM. In addition, the study found that there are significant differences across sociodemographic, socioeconomic, and health-related characteristics with EM for urban and rural older adults. This has important practical implications for social services agencies and health care professionals for targeted screening, intervention, and prevention strategies in rural and urban populations.

Moreover, higher levels of psychological distress and lower levels of social support were frequently found in both urban and rural older adults with EM. These findings suggest that future investigations are needed to elucidate the geographic variations in the complex interactions of depression, loneliness, and social support with respect to the risk of EM. Lastly, among those mistreated, there are significant urban and rural differences across sociodemographic, socioeconomic, health-related, psychological and social well-being factors. This suggests that social services agencies and health care professionals must be sensitive toward the geographical variation in caring for victims of EM, especially with respect to the differential characteristics in management, support, and follow-up with this vulnerable population.

Prior Literature on EM

There is a great paucity in our current understanding of urban and rural differences in characteristics associated with EM. We are not aware of any study that specifically has examined the rural and urban differences in sociodemographic, socioeconomic, health-related, psychological, and social well-being with respect to the risk of EM. Once recent study (Dong & Simon, 2009b) suggests that rural older adults have marked differences in health and well-being compared to urban older adults, with lower levels of quality of life and social support and higher levels of depression and loneliness. Current knowledge of the relationship between psychological and social factors and EM in Asian cultures is limited. Recent studies suggest that depression and loneliness may be risk factors for EM in a Chinese population (Dong, Simon, Odwazny, & Gorbien, 2007a; Dong & Simon, 2008a). Lee and Kolomer (2005) examined a Korean population, and their findings suggest that only formal social support but not informal social support was associated with a lower risk of EM. In an Indian population, Chokkanathan and Lee (2005) found that low levels of social support may be associated with increased risk of EM.

Sociodemographic and Socioeconomic Characteristics

The study found that there were significant urban and rural differences in EM with respect to these characteristics. While urban participants with EM tended to be younger, rural participants with EM tended to be older. Improved understanding of the geographic variations across age groups and risk of EM could provide more targeted understanding of risk factors associated with EM. In addition, among those with EM, rural participants were more likely to be women and have lower levels of education and income. An earlier study suggested that lower levels of socioeconomic status were associated with psychological burden, suggesting the importance of socioeconomic status in the etiology of psychological and social burden among rural older Chinese adults (Mao & Wu, 2007). Further investigation is needed to explore the relationship between comprehensive measures of socioeconomic status and EM in urban and rural Chinese populations.

Health Status and Health-Related Quality of Life

The present study found that among those with EM, rural older adults had significant lower levels of overall health status, lower levels of quality of life, and worsening changes in health. Prior studies suggest that a poor health status is more common in rural than urban Chinese populations, and there is a significant gradient relationship between poorer health status and higher psychological burden in rural Chinese populations (Chen, Yu, Zhang, Liu, Hi, & Katzman, 1995). Future study is needed to rigorously examine the temporal associations between medical comorbidities and health-related quality of life measures and EM in rural Chinese populations.

Psychological and Social Factors

Our study also found significantly higher levels of depression and loneliness and lower levels of social support in rural older adults than urban older adults with EM. Prior studies suggest that depression is common among older persons in rural China and that greater levels of social support maybe protective against depression (Chen, Wei, Hu, Qin, Copeland, & Hemingway 2005; Iizaka, Tadaka, & Sanada, 2008). In Chinese culture, it is traditionally thought that social support is strong, especially in rural families where multi-generations co-exist. The countryside is facing enormous challenges as the aging population rapidly increases. Traditionally, old age was revered and older adults enjoyed support and comfort in a multi-generational system. However, social changes brought about by the country's urbanization and industrialization may have weakened traditional family social support structures and precipitated changes in personal values, which in turn have placed older adults in economic and psychological distress. Furthermore, evidence suggests that older rural adults face higher levels of socioeconomic and psychosocial burden compared to older urban adults (Yi, Yuzhi, & George, 2003; Zhan & Montgomery, 2003). Collectively, these factors may exacerbate the vulnerability of older rural adults and create an environment that may predispose them to be at increased risk for EM.

Furthermore, urbanization, industrialization and migration of the rural workforce into urban cities have fundamentally altered the family dynamic and household composition in rural China. In addition, the one child policy often presents Chinese families with the 4-2-1 paradigm in that an adult is responsible to care for 2 parents and 4 grandparents, which further exacerbates the psychosocial distress. In our present study, we found significantly lower levels of social support and higher levels of psychological burdens in rural older adults compared to urban older adults with EM. The intersection of geographic variation of depression, loneliness, social support, and EM deserves further exploration. In-depth investigations are needed to elucidate the causal mechanism between social context and risk of EM in representative populations.

Study Limitations

Our study has limitations. First, this is a population of rural participants presented to a medical center and is not representative of the general population of urban older adults. This clinical population is likely to be frailer than that of general population, which could bias the psychological and social factors in relation to the general population. Thus, our study results may not be generalizable to other Chinese rural populations including Chinese minority groups and rural immigrant Chinese residents in other countries, as they may be subjected to varying degrees of social, economic, and Western influence.

Second, this is a self-administered survey, which excluded older persons with cognitive impairment, which also limits the generalizability of the study findings. The study team was concerned that persons with cognitive impairment may not be able to appropriately complete the survey. Third, our study was based on the self-report of older participants, which may

have been subjected to recall bias. In addition, the self-reported EM was not investigated or substantiated by social services agencies. Currently, there are no formal Adult Protective Services available in NanJing, and future studies are needed to better refine the case definitions of EM among Chinese populations. Fourth, this study does not have any data regarding the cultural factors, social context, and social embeddedness of EM. However, it sets the foundation for the next in-depth study to expand our findings, especially with respect to psychological and social well-being.

Fifth, the study collected self-reported medical conditions and could not objectively assess the severity of medical conditions (coronary artery disease, stroke, diabetes, etc). However, it sets the stage for future studies to perform more detailed clinical evaluation to objectively ascertain the severities of medical co-morbidities. Finally, this is a cross-sectional study to compare the rural and urban differences in EM with respect to the sociodemographic, socioeconomic, health, psychological, and social well-being factors, limiting our ability to make inferences regarding temporal relationships. Prospective study is needed to quantify these relationships. Nevertheless, this study does provide a unique window into the seldom studied issue of the rural and urban differences in EM in a Chinese population and lays the groundwork for future studies on these issues.

CONCLUSION

Overall, our study found that there are significant urban and rural differences in the sociodemographic, socioeconomic, health-related, and psychosocial factors associated with EM. Due to the vast geographical area of China and its diverse culture, there is a need for a multi-site study of EM in China. Further in-depth studies across different geographic areas are needed to explore the cultural, familial, psychological, and social factors of both EM victims and perpetrators. Future study of EM is needed in other health care settings, such as emergency rooms, nursing home facilities, and local neighborhood centers. Further prospective study also is needed to quantify the temporal relationships of health-related, psychological, and social factors and EM in urban and rural populations. Future work is required to better understand the adverse health outcomes of EM across different Chinese populations. Social services agencies, family members, communities, local governments, and health care professionals could play critical roles in reducing urban and rural differences in psychological burden, and increasing social support for the older Chinese population. Together, this could set the cornerstone for more targeted screening, intervention, and prevention strategies in order to reduce EM and improve human rights

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TABLE 1

Characteristics of Elder Mistreatment among Urban Older Adults

	EM N=84	No-EM N=185	Z-Stat	Chi Squared	T-Test	DF	P value
Sociodemographic Characteristics							
Age							
Age, years, mean, (SD)	68.5 (6.8)	71.3 (6.7)			3.15	267	0.002
Age Groups, number, (%)							
60-64	30 (35.7)	31 (16.8)					
65-69	24 (28.6)	45 (24.3)					
70-74	17 (20.2)	54 (29.2)					
75-79	3 (3.6)	26 (14.1)					
80 >	10 (11.9)	29 (15.7)	3.45				<0.001
Sex							
Men, number, (%)	56 (66.7)	139 (75.1)					
Women, number, (%)	28 (33.3)	46 (24.9)		2.08		1	0.149
Education							
Education, years, mean, (SD)	8.9 (4.9)	11.3 (4.5)			3.79	266	<0.001
Education Groups, years, mean, (SD)							
0	6 (7.2)	6 (3.2)					
1-6	23 (27.7)	21 (11.4)					
7-12	35 (42.2)	106 (57.3)					
>12	19 (22.9)	52 (28.1)	2.84				0.0045
Income							
Monthly Income, RMB, mean, (SD)	1372 (1276)	1971 (1113)			3.90	265	<0.001
Income Category, number, (%)							
0-250	9 (10.7)	7 (3.8)					
251-500	16 (19.1)	9 (4.9)					
501-1000	23 (27.4)	36 (19.7)					
>1000	36 (42.9)	131 (71.6)	4.88				<0.001

	EM N=84	No-EM N=185	Z-Stat	Chi Squared	T-Test	DF	P value
Marital Status: Married	66 (82.5)	137 (81.6)		0.03		1	0.856
Family Structure							
Number of children: mean, (SD)	2.7 (1.5)	2.5 (1.3)			-1.40	267	0.162
Number of persons living together	2.5 (1.6)	2.8 (1.7)			1.48	267	0.139
Medical Conditions							
Medical Conditions, number, (%)							
Coronary Artery Disease	24 (28.6)	48 (25.9)		0.20		1	0.652
Hypertension	46 (54.8)	80 (43.2)		3.08		1	0.079
Lung Disease	18 (21.4)	33 (17.8)		0.48		1	0.486
Diabetes	30 (35.7)	58 (31.4)		0.49		1	0.479
Kidney Disease	7 (8.3)	14 (7.6)		0.05		1	0.828
Stroke	1 (12)	3 (1.6)		0.07		1	0.787
Stomach Disease	26 (30.9)	52 (28.1)		0.23		1	0.634
Osteoarthritis	16 (19.1)	18 (9.7)		4.54		1	0.033
Cancer	1 (1.2)	2 (1.1)		0.01		1	0.937
Liver Disease	10 (11.9)	17 (9.2)		0.47		1	0.492
Tuberculosis	7 (8.3)	16 (8.7)		0.01		1	0.932
Health Status and Quality of Life Measures, number, (%)							
Overall Health Status							
Excellent	5 (5.9)	4 (2.2)					
Very good	28 (33.3)	43 (23.5)					
Good	25 (29.8)	78 (42.6)					
Fair	22 (26.2)	49 (26.8)					
Poor	4 (4.8)	9 (4.9)	1.49				0.135
Quality of Life							
Very good	17 (20.7)	30 (17.1)					
Good	36 (43.9)	91 (51.7)					
Fair	24 (29.3)	49 (27.8)					
Poor	5 (6.1)	6 (3.4)					

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	EM N=84	No-EM N=185	Z-Stat	Chi Squared	T-Test	DF	P value
Very poor	0	0	-0.30				0.764
Recent Change in Health							
Significantly improved	1 (12)	0					
Improved	14 (17.1)	29 (16.6)					
No change	47 (57.3)	110 (62.9)					
Worse	19 (23.2)	34 (19.4)					
Significantly worse	1 (1.2)	2 (1.1)	−0.11				0.914
Psychosocial Well-being, number, (%)							
Depression							
Satisfied with Life							
Yes	67 (79.8)	175 (95.1)					
No	17 (20.2)	9 (4.9)		15.51		1	<0.001
Feeling Bored							
Yes	20 (23.8)	9 (4.9)					
No	64 (76.2)	175 (95.1)		21.39		1	<0.001
Prefer to Stay Home							
Yes	31 (36.9)	55 (29.9)					
No	53 (63.1)	129 (70.1)		1.30		1	0.254
Feeling Worthless							
Yes	17 (20.2)	12 (6.52)					
No	67 (79.8)	172 (93.5)		11.24		1	<0.001
Feeling Helpless							
Yes	16 (19.1)	8 (4.4)					
No	68 (80.9)	176 (95.6)		15.28		1	<0.001
Depression							
Yes	15 (17.9)	5 (2.7)					
No	69 (82.1)	179 (97.3)		19.14		1	<0.001
Loneliness							
Lacking Companion							

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	EM N=84	No-EM N=185	Z-Stat	Chi Squared	T-Test	DF	P value
Hardly ever	46 (54.8)	132 (72.1)					
Sometimes	34 (40.5)	46 (25.1)					
Often	4 (4.8)	5 (2.7)	-2.69				0.007
Left Out of Life							
Hardly ever	58 (70.7)	151 (82.1)					
Sometimes	22 (26.8)	29 (15.8)					
Often	2 (2.4)	4 (2.2)	-1.84				0.066
Feeling Isolated							
Hardly ever	47 (57.3)	131 (71.2)					
Sometimes	31 (37.8)	44 (23.9)					
Often	4 (4.9)	9 (4.9)	−1.81				0.071
Social Support							
Someone to Listen to							
None, Little	18 (21.7)	8 (4.5)					
Sometimes	19 (22.9)	28 (15.6)					
Most times, All the times	46 (55.4)	143 (79.9)	4.77				<0.001
Someone to Get Advice							
None, Little	20 (23.8)	9 (4.9)					
Sometimes	21 (25.0)	25 (13.6)					
Most times, All the times	43 (51.2)	150 (81.5)	5.55				<0.001
Someone to Show Love Affection							
None, Little	11 (13.1)	5 (2.7)					
Sometimes	21 (25.00	17 (9.3)					
Most times, All the times	52 (61.9)	161 (88.0)	4.94				<0.001
Someone to Help with Chores							
None, Little	19 (22.6)	13 (7.2)					
Sometimes	13 (15.5)	23 (12.7)					
Most times, All the times	52 (61.9)	145 (80.1)	3.69				<0.001
Someone Trust Confide							

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	EM N=84	No-EM N=185	Z-Stat	Chi Squared	T-Test	DF	P value
None, Little	16 (19.3)	2 (1.1)					
Sometimes	20 (24.1)	26 (14.1)					
Most times, All the times	47 (56.6)	156 (84.8)	5.95				<0.001
Someone for Emotional Support							
None, Little	15 (18.3)	5 (2.8)					
Sometimes	24 (29.3)	25 (13.8)					
Most times, All the times	43 (52.4)	151 (83.4)	5.69				<0.001
Currently Living with Partner							
Yes	65 (83.3)	131 (80.9)					
No	13 (16.7)	31 (19.1)		0.21		1	0.643

TABLE 2

Characteristics of Elder Mistreatment among Rural Older Adults

	EM N=60	No EM N=75	Z-Stat 2-sided	Chi-Squared	T-test	DF	P value
Sociodemographic and Socioeconomic Characteristics							
Age							
Age, mean, (SD)	69.6 (6.9)	67.5 (5.8)			−2.00	133	0.048
Age Groups, number, (%)							
60-64	16 (26.7)	28 (37.3)					
65-69	15 (25.0)	21 (28.0)					
70-74	15 (25.0)	17 (22.7)					
75-79	5 (8.3)	7 (9.3)					
80 >	9 (15.0)	2 (2.7)	−2.23				0.026
Sex							
Men, number, (%)	29 (48.3)	40 (53.3)					
Women, number, (%)	31 (51.7)	35 (46.7)		0.33		1	0.564
Education							
Education, years, mean, (SD)	3.1 (3.7)	5.1 (4.4)			2.84	130	0.005
Education Groups, years, mean, (SD)							
0	28 (48.3)	22 (29.7)					
1-6	23 (39.7)	28 (37.8)					
7-12	6 (10.3)	23 (31.1)					
>12	1 (1.7)	1 (1.4)	2.67				0.008
Income							
Income, RMB, mean, (SD)	509 (945)	536(544)			0.19	90	0.852
Income Category, number, (%)							
0-250	23 (38.3)	27 (37.5)					
251-500	23 (38.3)	22 (30.6)					
501-1000	11 (18.3)	14 (19.4)					
>1000	3 (5.0)	9 (12.5)	1.23				0.218

	EM N=60	No EM N=75	Z-Stat 2-sided	Chi-Squared	T-test	DF	P value
Marital Status: Married, number, (%)	36 (64.3)	56 (78.9)		3.34		1	0.068
Family Structure							
Number of children, mean, (SD)	3.5 (1.7)	2.9 (1.7)			-2.08	133	0.039
Number persons living together, mean, (SD)	3.0 (1.9)	3.2 (1.9)			0.38	131	0.703
Medical Conditions							
Medical Conditions, number, (%)							
Coronary Artery Disease	18 (30.0)	8 (10.7)		8.01		1	0.005
Hypertension	19 (31.7)	19 (25.3)		0.66		1	0.416
Lung Disease	18 (30.0)	17 (22.7)		0.93		1	0.334
Diabetes	17 (28.3)	7 (9.3)		8.23		1	0.004
Kidney Disease	4 (6.7)	11 (14.7)		2.16		1	0.142
Stroke	1 (17)	1 (13)		0.03		1	0.873
Stomach Disease	23 (38.3)	14 (18.7)		6.48		1	0.011
Osteoarthritis	13 (22.0)	13 (17.3)		0.47		1	0.495
Cancer	6 (10.0)	5 (6.7)		0.49		1	0.482
Liver Disease	12 (20.0)	12 (16.0)		0.36		1	0.546
Tuberculosis	8 (13.3)	15 (20.0)		1.05		1	0.306
Health Status and Quality of Life Measures, number, (%)							
Overall Health Status							
Excellent	1 (17)	2 (2.7)					
Very good	9 (15.0)	12 (16.0)					
Good	11 (18.3)	37 (49.3)					
Fair	30 (50.0)	17 (22.7)					
Poor	9 (15.0)	7 (9.3)	−2.51				0.012
Quality of Life							
Very good	4 (6.7)	4 (5.4)					
Good	15 (25.0)	30 (40.5)					
Fair	30 (50.0)	32 (43.2)					
Poor	11 (18.3)	6 (8.1)					

	EM N=60	No EM N=75	Z-Stat 2-sided	Chi-Squared	T-test	DF	P value
Very poor	0	2 (2.7)	−1.25				0.210
Recent Change in Health							
Significantly improved	0	0					
Improved	11 (18.3)	4 (5.4)					
No change	20 (33.3)	46 (62.2)					
Worse	26 (43.3)	20 (27.0)					
Significantly worse	3 (5.0)	4 (5.4)	−0.19				0.842
Psychosocial Well-being, number, (%)							
Depression							
Satisfied with Life							
Yes	37 (61.7)	65 (86.7)					
No	23 (38.3)	10 (13.3)		11.28		1	<0.001
Feeling Bored							
Yes	22 (36.7)	10 (13.3)					
No	38 (63.3)	65 (86.7)		10.03		1	0.002
Prefer to Stay Home							
Yes	25 (41.7)	23 (30.7)					
No	35 (58.3)	52 (69.3)		1.76		1	0.185
Feeling Worthless							
Yes	17 (28.3)	9 (12.3)					
No	43 (71.7)	64 (87.7)		5.36		1	0.021
Feeling Helpless							
Yes	19 (31.7)	8 (10.7)					
No	41 (68.3)	67 (89.3)		9.19		1	0.002
Depression							
Yes	21 (35.0)	8 (10.9)					
No	39 (65.0)	65 (89.1)		11.16		1	<0.001
Loneliness							
Lacking Companion							

	EM N=60	No EM N=75	Z-Stat 2-sided	Chi-Squared	T-test	DF	P value
Hardly ever	22 (36.7)	41 (54.7)					
Sometimes	27 (45.0)	31 (41.3)					
Often	11 (18.3)	3 (4.0)	-2.82				0.005
Left Out of Life							
Hardly ever	25 (41.7)	48 (64.0)					
Sometimes	31 (51.7)	24 (32.0)					
Often	4 (6.7)	3 (4.0)	-2.43				0.001
Feeling Isolated							
Hardly ever	18 (30.0)	32 (43.8)					
Sometimes	33 (55.0)	36 (49.3)					
Often	9 (15.0)	5 (6.9)	-1.98				0.048
Social Support							
Someone to Listen to							
None, Little	18 (31.0)	8 (10.8)					
Sometimes	28 (48.3)	19 (25.7)					
Most times, All the times	12 (20.7)	47 (63.5)	4.71				<0.001
Someone to Get Advice							
None, Little	17 (28.3)	9 (12.0)					
Sometimes	30 (50.0)	22 (29.3)					
Most times, All the times	13 (21.7)	44 (58.7)	4.11				<0.001
Someone to Show Love Affection							
None, Little	12 (20.0)	7 (9.3)					
Sometimes	27 (45.0)	17 (22.7)					
Most times, All the times	21 (35.0)	51 (68.0)	3.49				<0.001
Someone to Help with Chores							
None, Little	16 (26.7)	11 (14.6)					
Sometimes	18 (30.0)	14 (18.7)					
Most times, All the times	26 (43.3)	50 (66.7)	2.57				0.010
Someone to Trust Confide							

	EM N=60	No EM N=75	Z-Stat 2-sided	Chi-Squared	T-test	DF	P value
None, Little	16 (27.1)	4 (5.3)					
Sometimes	22 (37.3)	11 (14.7)					
Most times, All the times	21 (35.6)	60 (80.0)	5.15				<0.001
Someone for Emotional Support							
None, Little	14 (23.7)	5 (7.0)					
Sometimes	31 (52.5)	11 (15.5)					
Most times, All the times	14 (23.7)	55 (77.5)	5.49				<0.001
Currently Living with Partner							
Yes	34 (61.8)	43 (71.7)					
No	21 (38.2)	17 (28.3)		1.26		1	0.262

TABLE 3

Urban and Rural Differences Among Those with Elder Mistreatment

	EM Urban N=84	EM Rural N=60	Z-Stat	Chi Sq	T-Test	DF	P value
Sociodemographic and Socioeconomic Characteristics							
Age							
Age, years, mean, (SD)	68.5 (6.8)	69.6 (6.8)			−1.02	142	0.308
Age Groups, number, (%)							
60-64	30 (35.7)	16 (26.7)					
65-69	24 (28.6)	15 (25.0)					
70-74	17 (20.2)	15 (25.0)					
75-79	3 (3.6)	5 (8.3)					
80 >	10 (11.9)	9 (15.0)	−1.45				0.149
Sex							
Men, number, (%)	56 (66.7)	29 (48.3)					
Women, number, (%)	28 (33.3)	31 (51.7)		4.86		1	0.027
Education							
Education, years, mean, (SD)	8.9 (4.9)	3.1 (3.7)			7.81	139	<0.001
Education Groups, years, mean, (SD)							
0	6 (7.2)	28 (48.3)					
1-6	23 (27.7)	23 (39.7)					
7-12	35 (42.2)	6 (10.3)					
>12	19 (22.9)	1 (1.7)	6.22				<0.001
Income							
Income, RMB, mean, (SD)	1372 (1275)	509 (945)			4.44	142	<0.001
Income Category, number, (%)							
0-250	9 (10.7)	23 (38.3)					
251-500	16 (19.1)	23 (38.3)					
501-1000	23 (27.4)	11 (18.3)					
>1000	36 (42.9)	3 (5.0)	5.97				<0.001

	EM Urban N=84	EM Rural N=60	Z-Stat	Chi Sq	T-Test	DF	P value
Marital Status: Married	66 (82.5)	36 (64.3)		5.83	1		0.016
Family Structure							
Number of children, mean, (SD)	2.7 (1.5)	3.5 (1.7)			−2.95	142	0.004
Number persons living together, mean, (SD)	2.5 (1.6)	3.0 (1.9)			−1.86	140	0.065
Medical Conditions and Health Services Use							
Medical Conditions, number, (%)							
Coronary Artery Disease	24 (28.6)	18 (30.0)		0.03		1	0.853
Hypertension	46 (54.8)	19 (31.7)		7.54		1	0.006
Lung Disease	18 (21.4)	18 (30.0)		1.37		1	0.242
Diabetes	30 (35.7)	17 (28.3)		0.87		1	0.352
Kidney Disease	7 (8.3)	4 (6.7)		0.14		1	0.711
Stroke	1 (12)	1 (17)		0.06		1	0.809
Stomach Disease	26 (30.9)	23 (38.3)		0.85		1	0.357
Osteoarthritis	16 (19.1)	13 (22.0)		0.19		1	0.662
Cancer	1 (1.2)	6 (10.0)		5.87		1	0.015
Liver Disease	10 (11.9)	12 (20.0)		1.77		1	0.183
Tuberculosis	7 (8.3)	8 (13.3)		0.94		1	0.333
Health Status and Quality of Life, number, (%)							
Overall Health Status							
Excellent	5 (5.9)	1 (17)					
Very good	28 (33.3)	9 (15.0)					
Good	25 (29.8)	11 (18.3)					
Fair	22 (26.2)	30 (50.0)					
Poor	4 (4.8)	9 (15.0)	−4.01				0.001
Quality of Life							
Very good	17 (20.7)	4 (6.7)					
Good	36 (43.9)	15 (25.0)					
Fair	24 (29.3)	30 (50.0)					
Poor	5 (6.1)	11 (18.3)					

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	EM Urban N=84	EM Rural N=60	Z-Stat	Chi Sq	T-Test	DF	P value
Very poor	0	0	−3.97				0.001
Recent Change in Health							
Significantly improved	1 (12)	0					
Improved	14 (17.1)	11 (18.3)					
No change	47 (57.3)	20 (33.3)					
Worse	19 (23.2)	26 (43.3)					
Significantly worse	1 (1.2)	3 (5.0)	−2.19				0.028
Psychosocial Well-being, numbers, (%)							
Depression							
Satisfied with Life							
Yes	67 (79.8)	37 (61.7)					
No	17 (20.2)	23 (38.3)		5.71		1	0.017
Feeling Bored							
Yes	20 (23.8)	22 (36.7)					
No	64 (76.2)	38 (63.3)		2.80		1	0.094
Prefer to Stay Home							
Yes	31 (36.9)	25 (41.7)					
No	53 (63.1)	35 (58.3)		0.33		1	0.563
Feeling Worthless							
Yes	17 (20.2)	17 (28.3)					
No	67 (79.8)	43 (71.7)		1.27		1	0.259
Feeling Helpless							
Yes	16 (19.1)	19 (31.7)					
No	68 (80.9)	41 (68.3)		3.03		1	0.082
Depression							
Yes	15 (17.9)	21 (35.0)					
No	69 (82.1)	39 (65.0)		5.49		1	0.019
Loneliness							
Lacking Companion							

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	EM Urban N=84	EM Rural N=60	Z-Stat	Chi Sq	T-Test	DF	P value
Hardly ever	46 (54.8)	22 (36.7)					
Sometimes	34 (40.5)	27 (45.0)					
Often	4 (4.8)	11 (18.3)	-2.82				0.005
Left Out of Life							
Hardly ever	58 (70.7)	25 (41.7)					
Sometimes	22 (26.8)	11 (51.7)					
Often	2 (2.4)	4 (6.7)	-3.39				0.001
Feeling Isolated							
Hardly ever	47 (57.3)	18 (30.0)					
Sometimes	31 (37.8)	33 (55.0)					
Often	4 (4.9)	9 (15.0)	-3.42				0.001
Social Support							
Someone to Listen to							
None, Little	18 (21.7)	18 (31.0)					
Sometimes	19 (22.9)	28 (48.3)					
Most times, All the times	46 (55.4)	12 (20.7)	3.21				0.001
Someone to Get Advice							
None, Little	20 (23.8)	17 (28.3)					
Sometimes	21 (25.0)	30 (50.0)					
Most times, All the times	43 (51.2)	13 (21.7)	2.54				0.011
Someone to Show Love Affection							
None, Little	11 (13.1)	12 (20.0)					
Sometimes	21 (25.0)	27 (45.0)					
Most times, All the times	52 (61.9)	21 (35.0)	2.71				0.007
Someone to Help with Chores							
None, Little	19 (22.6)	16 (26.7)					
Sometimes	13 (15.5)	18 (30.0)					
Most times, All the times	52 (61.9)	26 (43.3)	1.60				0.109
Someone to Trust Confide							

	EM Urban N=84	EM Rural N=60	Z-Stat	Chi Sq	T-Test	DF	P value
None, Little	16 (19.3)	16 (27.1)					
Sometimes	20 (24.1)	22 (37.3)					
Most times, All the times	47 (56.6)	21 (35.6)	2.12				0.034
Someone for Emotional Support							
None, Little	15 (18.3)	14 (23.7)					
Sometimes	24 (29.3)	31 (52.5)					
Most times, All the times	43 (52.4)	14 (23.7)	2.65				0.008
Currently Living with Partner							
Yes	65 (83.3)	34 (61.8)					
No	13 (16.7)	21 (38.2)		7.85		1	0.005

TABLE 4

Association of Depression and Elder Mistreatment in Urban and Rural Populations

	Odds Ratio (95% Confidence Interval)			
	Model A	**Model B**	**Model C**	**Model D**
	Urban Population			
Age	0.92 (0.88-0.97)	0.93 (0.88-0.97)	0.92 (0.87-0.96)	0.90 (0.86-0.95)
Sex	0.85 (0.46-1.56)	0.93 (0.49-1.76)	0.99 (0.51-1.93)	0.98 (0.49-1.93)
Education		0.97 (0.89-1.04)	0.95 (0.89-1.03)	0.96 (0.89-1.04)
Income		1.52 (1.09-2.13)	1.47 (1.04-2.08)	1.49 (1.05-2.12)
Marital Status			2.16 (0.92-5.08)	1.99 (0.85-4.71)
Number of Children			1.18 (0.94-1.48)	1.17 (0.93-2.50)
Medical Co-morbidities				1.44 (1.06-1.94)
Depression	1.79 (1.39-2.31)	1.67 (1.27-2.19)	1.92 (1.39-2.63)	1.81 (1.31-2.50)
	Rural Population			
Age	1.03 (0.97-1.09)	1.03 (0.97-1.10)	1.02 (0.95-1.09)	1.03 (0.96-1.11)
Sex	1.04 (0.49-2.16)	1.06 (0.49-2.28)	1.07 (0.49-2.35)	0.97 (0.43-2.19)
Education		0.87 (0.78-0.98)	0.86 (0.77-0.97)	0.87 (0.77-0.97)
Income		0.77 (0.52-1.12)	0.65 (0.42-0.99)	0.68 (0.44-1.06)
Marital Status			0.49 (0.19-1.22)	0.49 (0.19-1.23)
Number of Children			1.29 (0.99-1.67)	1.23 (0.93-1.62)
Medical Co-morbidities				1.89 (1.25-2.85)
Depression	1.49 (1.15-1.92)	1.48 (1.14-1.92)	1.48 (1.13-1.93)	1.35 (1.02-1.80)

TABLE 5

Association of Loneliness and Elder Mistreatment in Urban and Rural Populations

	Odds Ratio (95% Confidence Interval)			
	Model A	**Model B**	**Model C**	**Model D**
	Urban Population			
Age	0.93 (0.89-0.97)	0.93 (0.89-0.98)	0.93 (0.88-0.97)	0.91 (0.86-0.96)
Sex	0.78 (0.44-1.39)	0.87 (0.47-1.62)	0.94 (0.49-1.79)	0.93 (0.48-1.78)
Education		0.98 (0.91-1.05)	0.97 (0.89-1.05)	0.98 (0.90-1.06)
Income		1.69 (1.22-2.34)	1.66 (1.19-2.31)	1.67 (1.19-2.34)
Marital Status			1.44 (0.66-3.13)	1.42 (0.65-3.11)
Number of Children			1.15 (0.93-1.44)	1.15 (0.91-1.44)
Medical Co-morbidities				1.55 (1.16-2.08)
Loneliness	1.30 (1.06-1.59)	1.21 (0.97-1.49)	1.25 (0.99-1.58)	1.23 (0.97-1.56)
	Rural Population			
Age	1.04 (0.98-1.10)	1.04 (0.98-1.11)	1.03 (0.96-1.10)	1.04 (0.97-1.12)
Sex	0.95 (0.46-1.94)	0.98 (0.46-2.07)	0.99 (0.46-2.14)	0.93 (0.42-2.08)
Education		0.88 (0.79-0.98)	0.87 (0.78-0.98)	0.87 (0.78-0.98)
Income		0.79 (0.54-1.15)	0.67 (0.45-1.02)	0.71 (0.46-1.09)
Marital Status			0.55 (0.23-1.34)	0.52 (0.21-1.29)
Number of Children			1.30 (1.01-1.67)	1.22 (0.93-1.59)
Medical Co-morbidities				1.95 (1.31-2.92)
Loneliness	1.04 (0.98-1.10)	1.27 (1.01-1.61)	1.27 (1.00-1.62)	1.19 (0.92-1.54)

TABLE 6

Association of Social Support and Elder Mistreatment in Urban and Rural Populations

	Odds Ratio (95% Confidence Interval)			
	Model A	**Model B**	**Model C**	**Model D**
	Urban Population			
Age	0.94 (0.90-0.98)	0.94 (0.89-0.98)	0.93 (0.89-0.98)	0.92 (0.87-0.97)
Sex	0.85 (0.46-1.56)	0.88 (0.47-1.67)	0.94 (0.49-1.81)	0.93 (0.48-1.79)
Education		0.99 (0.92-1.08)	0.99 (0.92-1.08)	0.99 (0.92-1.08)
Income		1.59 (1.15-2.22)	1.56 (1.12-2.18)	1.58 (1.12-2.22)
Marital Status			1.65 (0076-3.58)	1.62 (0.73-3.56)
Number of Children			1.20 (0.96-1.50)	1.19 (0.94-1.49)
Medical Co-morbidities				1.43 (1.07-1.93)
Social Support	1.14 (1.08-1.20)	1.11 (1.05-1.18)	1.13 (1.06-1.20)	1.11 (1.04-1.19)
	Rural Population			
Age	1.04 (0.98-1.11)	1.05 (0.98-1.12)	1.03 (0.96-1.11)	1.04 (0.97-1.12)
Sex	0.87 (0.40-1.86)	0.84 (0.38-1.87)	0.85 (0.37-1.96)	0.79 (0.34-1.89)
Education		0.89 (0.79-0.99)	0.87 (0.77-0.99)	0.88 (0.77-0.99)
Income		0.74 (0.49-1.09)	0.58 (0.37-0.93)	0.61 (0.38-0.98)
Marital Status			0.58 (0.22-1.53)	0.55 (0.21-1.45)
Number of Children			1.50 (1.13-1.99)	0.79 (0.34-1.89)
Medical Co-morbidities				1.66 (1.10-2.49)
Social Support	1.20 (1.10-1.31)	1.19 (1.09-1.30)	1.22 (1.11-1.34)	1.19 (1.08-1.31)