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Prevalence and Correlates of Poor Self-Rated Health in the United States: The National Elder Mistreatment Study

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Abstract

Objectives—Despite its subjective nature, self report of health status is strongly correlated with long term physical morbidity and mortality. Among the most reliable predictors of self-reported poor health is older age. In younger adult populations, a second reliable predictor of reported poor health is the experience of domestic and other interpersonal violence. However, very little research exits on the connection between elder mistreatment and self reports of poor health. The aim of the present study was to examine the level of, and correlates for, poor self-rated health in a community sample of older adults with particular emphasis on elder mistreatment history, demographics, and social dependency variables.

Design—Random Digit Dialing telephone survey methodology.

Setting—A national representative phone survey of non-institutionalized U.S. household population.

Participants—5,777 U.S. adults, aged 60 and older.

Measurements—Individuals participated in a structured interview assessing elder mistreatment history, demographics, and social dependency variables.

Results—Poor self-rated health was endorsed by 22.3% of the sample. Final multivariable logistic regression models showed that poor self-rated health was associated with unemployment, marital status, low income, low social support, use of social services, needing help in activities of daily living, and being bothered by emotional problems. Exploratory analyses revealed a mediational role of emotional symptoms in the association between physical maltreatment and poor health.

Conclusions—Results suggest that poor health is common among older adults. This study also identified correlates of poor health that may be useful in identification of those in need of intervention.

Keywords

self-rated health; health; older adults; elder mistreatment; social support

Subjective ratings of one's overall general health are actually quite good in predicting objectively measured health along a variety of parameters, including economic burden, impairment in occupational and social functioning, long-term sickness, and death[1–5]. Although poor health may affect individuals across the age span, older adults are a group at increased risk1 due largely to their increased physical vulnerability and other age-related stressors.

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However, one potentially health related stressor that has received significant attention in younger adults[6–9] (see also[10] for review), but remains understudied in older populations is interpersonal violence, here referred to as elder mistreatment. This is unfortunate considering that two recent national studies of elder mistreatment[6, 11] demonstrate that interpersonal violence is also a significant problem for older adults, with up to 10% of geriatric populations reporting abuse (see also[12–16]).

Many predictors of poor-health in older adults exist (e.g., mental disorders, low social support). For example, depressed older adults are more likely to present with multiple health concerns, including vascular disease[17–19], functional disabilities[20], pain[21, 22], poor cognitive functioning[23] and general medical illness[24, 25]. Consistent with broad literature on younger adults supporting the mediation of coping mechanisms, including social support, between stressful events and health status[26, 27], researchers have found significant associations between social support, mistreatment, and health status in older adults[28, 29]. For example, Comijs and colleagues[28] found a direct link between elder mistreatment and poor psychological health; while social support demonstrated a moderating effect on the level of poor psychological health, with less social support contributing to poorer psychological health.

With respect to the present study, some data suggest that exposure to violence may be associated with poor health for older adults[6]. Although extant research has identified a number of variables that are associated with self-rated health in older adults, the majority of studies are limited in terms of small and/or nonrepresentative samples, failure to independently assess different elder mistreatment types, or reliance on agency or caregiver reports rather than direct interview of victims to establish mistreatment events[30, 31]. Further, literature investigating the role of social support has primarily focused on psychological well-being alone, or the combination of physical and psychological health (e.g.,[6, 28, 32]). The current study utilized a nationally representative sample of older adults to extend the current knowledge of risk factors for poor overall self-rated health by defining relevant social and demographic factors along with independently analyzing each form of elder mistreatment in terms of its ability to predict poor self rated health. We hypothesized that mistreatment, low social support, high caretaker dependency, and the presence of emotional symptoms would be associated with significantly increased likelihood of poor self-rated health. As a secondary aim, the possible mediational role of emotional symptoms in the relationship between mistreatment and health was examined.

Method

Sampling

The survey sample was derived using stratified random digit dialing (RDD) with an area probability sample based on Census-defined ‘size of place’ parameters (e.g., rural, urban, etc.) in the continental US. Interviews were conducted in either English or Spanish, depending on participant preference. To increase participant privacy and protection, respondents were asked if they were in a place where they could talk privately, and sensitive questions were worded to elicit a “yes/no” response, rather than a description of the mistreatment event.

This method yielded a representative sample (based on age and gender) of 5,777 older adults age 60 or above. Interviewers used standardized computer assisted telephone interviewing (CATI) procedures to ask participants about health and potential correlated (e.g., mistreatment experiences, dependency variables, demographics). The field interviewing commenced on February 6, 2008. The cooperation rate was 69%. See Acierno and colleagues[11] for full methodological details.

Variable Definitions

Health Status (Good vs. Poor)—Health status over the prior month was assessed using the general health question number 1 from the World Health Organization Short-Form 36 Health Questionnaire[33]. Participants were asked to rate the following question: "In general, would you say your health is "Excellent, Very good, Good, Fair, or Poor." These responses were dichotomized into Poor Health (self rating of fair or poor) and Good Health (self rating of excellent, very good, or good). This assessment has shown consistency with previously validated single item measures of general subjective health, which have demonstrated both good reliability and validity[34], and has been related to morbidity and mortality1, 3.

Demographic Variables—Standard demographic variables were assessed, including age (dichotomized into 60–70 and 71+), ethnicity (categorized into Caucasian and non-Caucasian), employment status (dichotomized into employed and unemployed), marital status (in three categories: married/cohabitating, single/divorced/separated, and widowed), income (categorized as an annual household income of $35,000 and below, and $35,001 and above), and gender (as male and female).

Mistreatment Variables—Emotional, physical, and sexual mistreatment were assessed. Descriptive parameters of the event were collected after respondents indicated that such an event had occurred.

Emotional mistreatment was defined as an affirmative answer to any one of the following: 1. "Has anyone ever verbally attacked, scolded, or yelled at you so that you felt afraid for your safety, threatened or intimidated?" 2. "Has anyone ever made you feel humiliated or embarrassed by calling you names such as stupid, or telling you that you or your opinion was worthless?" 3. "Has anyone ever forcefully or repeatedly asked you to do something so much that you felt harassed or coerced into doing something against your will?" 4. "Has anyone close to you ever completely refused to talk to you or ignored you for days at a time, even when you wanted to talk to them?"

Physical mistreatment was defined as an affirmative answer to any one of the following: 1. "Has anyone ever hit you with their hand or object, slapped you, or threatened you with a weapon?" 2. "Has anyone ever tried to restrain you by holding you down, tying you up, or locking you in your room or house?" 3. "Has anyone ever physically hurt you so that you suffered some degree of injury, including cuts, bruises, or other marks?"

Sexual mistreatment was defined as an affirmative answer to any one of the following three questions: 1. "Regardless of how long ago it happened or who made the advances, has anyone ever made you have sex or oral sex by using force or threatening to harm you or someone close to you?" 2a. (for females) "Has anyone ever touched your breasts or pubic area or made you touch his penis by using force or threat of force?" 2b. (for males) "Has anyone ever touched your pubic area or made you touch their pubic area by using force or threat of force?" 3a. (for females) "Has anyone ever forced you to undress or expose your breasts or pubic area when you didn't want to?" 3b. (for males) "Has anyone ever forced you to undress or expose your pubic area when you didn't want to?"

Experience of Prior Traumatic Events (Yes vs No). Participants were asked to report if they had been exposed to the following events *and* indicated fear that they would be killed or seriously injured during this exposure: natural disasters such as earthquake, hurricane, flood, or tornado; serious accident at work, in a car, or somewhere else; or being in any other situation where you thought you would be killed.

Social/Dependency Variables—Social support, social service use, activities of daily living (ADL) need, and being bothered by emotional symptoms were assessed.

Perceived social support during the past month was assessed via a modified five-item version of the Medical Outcomes Study module for social support[35]. Participants were asked about emotional (e.g., "someone available to love you and make you feel wanted"); instrumental (e.g., "someone available to help you if you were confined to bed"); and appraisal (e.g., "someone available to give you good advice in a crisis") social support and responded to items using a four-point scale from "none of the time" to "all of the time" (sample range=0–20; *M*=15.9 [*SD*=4.8]). Low social support was operationalized as a score in the lower quartile of the sample ratings, and the comparison high social support was operationalized as a score in the upper quartile of sample ratings.

Participants were asked if they had used any of the following programs or services: senior centers or day programs; physical rehabilitation; meals on wheels or any other meal service, social services or health services provided to the home; hospice; formal senior friends services, church group home visits, or any other program or service. This item was used dichotomously (yes vs no).

Participants were asked if they needed help from time to time with the following activities of daily living (ADLs): shopping for groceries or medicines; going to the doctor; transportation to friends, church or temple; paying bills or doing related paperwork; taking medicines, getting dressed, bathing, and eating. This item was used dichotomously (yes vs no).

To assess if participants had been bothered by emotional symptoms, they were asked, "during the past four weeks have you been bothered by emotional problems such as feeling anxious, depressed, or irritable?" This item was dichotomized (not at all/slightly vs moderately/quite a lot/completely).

Statistical Analyses

Logistic regression analyses were conducted to identify variables within each theoretically-defined predictor set: demographics (age, ethnicity, employment status, marital status, income, gender), mistreatment (sexual abuse, physical abuse, emotional abuse, PTE exposure), and dependency (social support, use of social services, ADL needs, presence of emotional symptoms) that were associated with self-reported health. Significant predictors emerging from these analyses were entered into a final multivariable logistic regression analysis predicting health, as has been done in previous published studies (e.g., 9). SUDAAN (version 10.0) was used for all regression analyses to account for complex survey design and sample weighting. Exploratory analyses were conducted to examine the possible mediational role between mistreatment types, emotional symptoms, and self-rated health.

Results

Table 1 presents sample characteristics for the full sample[a]. Among the full sample, 22.3% (n=1279) of participants endorsed poor health. Table 2 presents the results of the individual regression models, and Table 3 reports the final model results.

Demographics

Most of the variables in the demographic variable predictor set were significant, with the exception of age category and gender (See Table 2). Adults ages 60–70 were at no less risk for

[a]Correlations are available upon request.

poor health than adults over 70. When compared to Caucasian participants, non-Caucasian participants were at greater risk of reporting poor health. Those who were unemployed were at higher risk of poor self-rated health compared to employed individuals. Divorced/separated or single participants were more likely to report poor health than where married/cohabitating participants. Widowed participants were not any more likely to report poor health compared to married/cohabitating participants. Those with a household income of $35,000 or more were less likely to report poor health compared to individual's with a household income of less than $35,000 annually.

Mistreatment/Trauma

Sexual abuse since age 60 was not a significant predictor (See Table 2); however, it should be noted that this abuse type had a low frequency (n=16). Physical abuse since age 60 was a strong predictor of poor health in this model. Emotional abuse since age 60 also was associated with increased risk of poor health in this sample compared to those without an emotional abuse history since age 60. Lastly, a lifetime history of PTE exposure (compared to no exposure) was associated with increased risk for poor health.

Social/Dependency Model

As shown in Table 2, low levels of social support were associated with increased risk of poor health. Individuals who used social services were also at a higher likelihood of poor health than those who did not partake in such services. Similarly, those who reported needing help with ADLs were at greater risk of poor health compared to people who do not require ADL assistance. Lastly, individuals who reported being bothered by emotional symptoms were also at greater risk for poor health compared to those who did not report being bothered by emotional symptoms.

Final Model

All significant predictors from the individual models were entered into a final multivariable model (Table 3). Of the demographic variables, only ethnicity became non-significant. Employment status remained a significant predictor, and similar to the individual model described above, individuals who were not employed had higher risk of poor self-rated health than individuals who were employed. Marital status remained a significant predictor; however, the pattern of findings for this variable differed from those reported above. Surprisingly, single/divorced/separated participants were at no greater risk for poor health than married/cohabitating participants, and widowed participants were actually at less risk of poor health compared to single/divorced/separated participants. Higher income remained protective in this model. Notably, mistreatment variables, when entered into the final model, no longer accounted for unique variance in health. Low social support remained a predictor of poor health, compared to high social support. Similar to the individual model findings, those who use social services were at greater risk for poor health, as were those who need ADL assistance. The strongest predictor of self-rated health was if individuals were bothered by emotional symptoms.

Exploratory Analyses

Next, given that previous studies have found mediators between the relationship between trauma exposure and health (e.g., 28), exploratory analyses were conducted to examine if emotional symptoms mediate the relationship between elder abuse (physical and emotional) and reported health. To answer this question, a series of logistic regression analyses and a series of Sobel tests of the significance of the indirect effects were conducted. To establish mediation, the following four regression conditions must hold36: (1) mistreatment must have an effect on health; (2) mistreatment must have an effect on emotional symptoms; (3) emotional symptoms must affect health, and (4) the effect of elder abuse on health must be less when emotional

symptoms are included. Both mistreatment (Wald *F*s(1, Ns=5325, 5421) = 30.53, 48.46, for physical mistreatment and emotional mistreatment, respectively, *p*s < .001) and emotional symptoms (Wald $F(1, N=5735) = 415.22$, $p < .001$) served as significant predictors of health when entered independently. Mistreatment (both physical and emotional) also served as a significant predictor of emotional symptoms (Wald *F*s(1, Ns=5328, 5420) = 58.50, 175.92, for physical mistreatment and emotional mistreatment, respectively, *p*s < .001). Supporting the mediational relationship, the β for mistreatment predicting health was substantially reduced after emotional symptoms was included (1.17 (S.E.=.21) to .73 (S.E.=.23), for physical mistreatment; .62 (S.E.=.09) to .29 (S.E.=.10) for emotional mistreatment). Results of the Sobel test of the significance of the indirect path also supported the mediational model for emotional symptoms as a mediator of the relationship between physical abuse and health ($z = 7.25$, $p < .001$); however, for emotional abuse, the Sobel test was not significant ($z = 1.13$, p=.09).

Discussion

Poor self-rated health and old age are both associated with mortality, morbidity, and social and occupational functioning[1–5]. A number of factors may affect health status, such as interpersonal violence, social support, and relevant demographics. In the present study, approximately 20% of the sample reported poor health. Demographic (ethnicity, employment, marital status, and income), mistreatment (physical abuse, emotional abuse, PTE exposure), and dependency variables (social support, social services, help with ADLs, and emotional symptoms) were independently associated with health status in the individual models. Our final model found a number of variables independently associated with poor health that could be used by public health officials to identify those most likely in need, and therefore may be important for allocation of resources (e.g., employment status, marital status, income, use of social services). Further, the magnitude of the ORs ranged from small (employment, marital status, income, level of social support, and use of social services) to moderate (need help with ADLs, bothered by emotional symptoms).The range in effect sizes demonstrates that some variables may be more important for understanding risk of poor health.

Although physical and emotional mistreatment were significant predictors in the preliminary mistreatment regression model, they did not remain significant in the final model. Given that mental health distress has been found to be related to mistreatment, exploratory analyses were conducted to determine if emotional symptoms mediated the effect of mistreatment on health status. Results suggested that emotional symptoms did significantly mediate the effect of physical abuse on health status. We caution, however, that this relation may be bi-directional and this study cannot determine temporal sequence of these findings (e.g., emotional symptoms may precede poor health, poor health may precede the development of emotional symptoms, a common factor may play a role in both emotional symptoms and overall health status). However, we suggest that the observed relation has implications for policy and practice, irrespective of directionality of association.

This mediation effect may suggest that emotional symptoms are a particularly viable target for efforts aimed at improving health among the physically mistreated older adults. These results also suggest that future research with careful measurement of psychopathology should be conducted in this population. With approximately 10% of older adults in the U.S. exposed to at least one form of elder mistreatment[6, 11], the present data suggest that providing interventions for the emotional consequences of abuse, such as depression and anxiety, may prevent the negative impact of elder mistreatment on health status. Indeed, being bothered by emotional symptoms was the most robust predictor of poor physical health, highlighting the potential importance of emotion symptoms in understanding physical health status.

Older adults have annual medical costs of approximately $4300, with costs as high as $7600 among older adults who are physically inactive[37]. Moreover, individuals with at least one mental health diagnosis have annual medical costs nearly twice as high as individuals without a mental health diagnosis[38], which further corroborates the relation between emotional symptoms and physical health identified in the present study. Targeting emotional symptoms can potentially impact two outcomes: emotional health and physical health, regardless of causal directionality. Cognitive-behavioral interventions for anxiety and depression have been found to be effective for older adults [39, 40]. One cognitive-behavioral intervention in particular for depressed and withdrawn older adults is behavioral activation, as it has been found to reduce depression[41, 42] and improve overall self-rated health[43]. Similarly, low social support was associated with poorer overall health. Social support could be modified in treatment by structuring social activities into behavioral activation plans, and in individuals not seeking treatment by increasing involvement in activity groups, neighborhood activities, etc.

Another interpretation of the observed correlations is that the relation between the predictors and health outcomes is spurious to other variables. For example, unemployment and low-income may be related to poor health only because they are associated with limited access to services[44]. Even if the observed relations were non-causal, the modifiable variables identified in the present study can still inform useful targets for interventions, and interventions aimed at these factors may improve health status among older adults. For example, increasing social support may not independently cause an increase in health status, but increased social support may increase health status indirectly via increases in mood and motivation, and learning about different types of services due to increased contact with others. Further, even if the observed relations are non-causal, the present study still identified several correlates of poor health among older adults that may be used on a public health level to identify older individuals who are most vulnerable and perhaps at the highest need for services. For example, older individuals who are single and/or unemployed may be particularly vulnerable to developing or currently experiencing poor overall health.

Limitations

First, we failed to include a measure of cognitive functioning as a covariate. Instead, control was achieved over this variable by requiring interviewers to have no doubt of the ability of respondents to understand and respond to questions. Accordingly, our data reflect responses of a cognitively healthy, community residing sub-population of older adults. Generalization of these results to the group most at risk of mistreatment, the cognitively impaired older adults, is not appropriate. Second, we did not include individuals with no home phone (i.e., those with only cell phones), introducing the possibility of sampling bias; however, our data is nationally representative and is weighted on Census estimates.

Lastly, as mentioned the present study is also limited by a cross-sectional design that precludes causal inferences. For many of the variables it cannot be determined whether they are causes or consequences of health outcomes, if the relationship is bi-directional, or whether they are epiphenomenal to unknown variables. However, the variables identified to independently account for variance in health status may be viable markers to identify individuals who may need assistance. Difficulty interpreting the present results underscores the importance for future prospective research in the area to further elucidate the mechanisms of health status in older adults.

Future Directions

Future research should be directed towards prospective, longitudinal, and experimental designs of elder mistreatment that include careful measurement of both physical and mental health. Such research will allow for more firm inferences about causality and the utility of modifying

the markers identified in the present study. Elder mistreatment definitions are an evolving field. The core elements of emotional mistreatment, as outlined by the National Research Council NIA commissioned work and elements of other major studies, were used in the present study with the express intent of being inclusive while maintaining the ability to redefine the mistreatment event (by asking core aspects separately) at a later date when the field achieves consensus, and therefore future studies should also take careful note of these definitions and the current zeitgeist of the field. Initial interventions may be dependent on the ability to identify individuals at need and key variables that need to be modified. Further, it is necessary to examine interactions between risk factors (e.g., what forms of abuse, in the context of which risk factors, lead to what types of negative outcomes) in order to more accurately identify and treat those in need.

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Table 1

Frequencies for Independent Variables (N=6,589)

Variable	N	%
Demographics		
Age		
60–70	2842	50.1
71+	2833	49.9
Ethnic Categories		
White	4876	89.4
All other groups	581	10.6
Employment		
Employed	1067	19.0
Not employed	4537	81.0
Marital Status		
Married/Cohabitating	3282	57.5
Single/Divorced/Separated	980	17.2
Widowed	1450	25.4
Income		
≤$35,000	2002	46.1
>$35,000	2337	53.9
Gender		
Male	2300	39.8
Female	3477	60.2
Sexual Abuse since Age 60		
No	5303	99.7
Yes	16	0.3
Physical Abuse since Age 60		
No	5051	98.2
Yes	93	1.8
Emotional Abuse since Age 60		
No	4518	86.5
Yes	708	13.5
Lifetime PTE Exposure		
No	2182	38.0
Yes	3566	62.0
Level of Social Support		
High	1783	56.4
Low	1379	43.6
Use of Social Services		
No	3373	59.2
Yes	2329	40.8
Needs ADL Help		
No	3581	62.2

Variable	N	%
Yes	2176	37.8
Bothered by Emotional Symptoms		
Not/Slightly	4664	81.3
Moderately/Quite A Lot/Completely	1072	18.7

Note: N's differ due to missing data.

Table 2

Individual Model Logistic Regression Results Predicting Self-Rated Health

Predictor	OR	95% CI	p-value
Model 1: Demographics			
Age			
60–70	1.00	-	.963
71+	1.00	0.83–1.21	
Ethnic Categories			
White	1.00	-	.001
All other groups	1.64	1.30–2.06	
Employment			
Employed	1.00	-	.001
Not Employed	1.98	1.56–2.52	
Marital Status			
Married/Cohabitating	1.00	-	.017
Single/Divorced/Separated	1.35	1.09–1.66	
Widowed	1.08	0.87–1.34	
Income			
≤$35,000	1.00	-	.001
>$35,000	0.48	0.40–0.58	
Gender			
Male	1.00	-	.111
Female	0.87	0.72–1.03	
Model 2: Mistreatment **Sexual Abuse since Age 60**			
No	1.00	-	.502
Yes	1.50	0.46–4.85	
Physical Abuse since Age 60			
No	1.00	-	.001
Yes	2.75	1.52–4.99	
Emotional Abuse since Age 60			
No	1.00	-	.001
Yes	1.61	1.27–2.04	
Prior PTE			
No	1.00	-	.001
Yes	1.48	1.27–1.73	
Model 3: Dependency Variables **Level of Social Support**			
High	1.00	-	.001
Low	1.94	1.58–2.38	
Use of Social Services			
No	1.00	-	.004
Yes	1.34	1.10–1.62	
Needs ADL Help			

Predictor	OR	95% CI	p-value
No	1.00	-	.001
Yes	3.11	2.55–3.79	
Bothered by Emotional Symptoms			
Not/Slightly	1.00	-	.001
Moderately/Quite A Lot/Completely	3.11	2.50–3.86	

Notes for logistic regression results: The level of the variable given represents the value of the variable, which is also the level the variable hypothesized to be associated with increased risk. Confidence Intervals that do not cross the value 1.00 indicate increased (if CI ranges above 1.00) or reduced (if CI ranges below 1.00) risk for the reference value of the variable. Degrees of freedom for the overall models are as follows: Model 1 (8, N=4069), Model 2: (5, N=4481), Model 3: (5, N=3089).

Table 3

Final Model Logistic Regression Results Predicting Self-Rated Health

Predictor	OR	95% CI	p-value
Ethnic Categories			
White	1.00	-	.111
All other groups	1.37	0.93–2.02	
Employment			
Employed	1.00	-	.007
Not Employed	1.81	1.17–2.79	
Marital Status			
Married/Cohabitating	1.00	-	.007
Single/Divorced/Separated	1.09	0.76–1.57	
Widowed	0.64	0.45–0.89	
Income			
≤$35,000	1.00	-	.001
>$35,000	0.54	0.40–0.73	
Physical Abuse since Age 60			
No	1.00	-	.152
Yes	2.08	0.76–5.65	
Emotional Abuse since Age 60			
No	1.00	-	.968
Yes	0.99	0.69–1.43	
Prior PTE			
No	1.00	-	.092
Yes	1.28	0.96–1.70	
Level of Social Support			
High	1.00	-	.001
Low	1.82	1.37–2.43	
Use of Social Services			
No	1.00	-	.022
Yes	1.39	1.05–1.85	
Needs ADL Help			
No	1.00	-	.001
Yes	2.81	2.10–3.77	
Bothered by Emotional Symptoms			
Not/Slightly	1.00	-	.001
Moderately/Quite A Lot/Completely	3.19	2.33–4.35	

Notes for logistic regression results: The level of the variable given represents the value of the variable, which is also the level the variable hypothesized to be associated with increased risk. Confidence Intervals that do not cross the value 1.00 indicate increased (if CI ranges above 1.00) or reduced (if CI ranges below 1.00) risk for the reference value of the variable. Degrees of freedom for the overall model is (13, N=1804).