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Relationships Among Caregiving, Income, Gender, and Health: A Cross-Sectional Examination of a Representative Sample of Older Americans

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Abstract

Although there is substantial evidence to support the impact of burden on caregivers, few studies have compared caregivers to their non-caregiving counterparts on the basis of health and wellbeing outcomes. This study examines the relationship between caregiving and health, and whether other factors may have stronger influence on well-being measures. Using a nationally representative sample of older adults in the United States ($N=3,005$), this study examines relationships between caregiving status, gender, and income, and nine outcomes (self-rated physical and mental health, time since seeing a doctor, time since most recent pap smear or prostate-specific antigen [PSA] test, depression, loneliness, stress, anxiety), using logistic and linear regression models.

Results support that paradoxically, caregiving was associated with increased likelihood of PSA test in male caregivers, although data also indicated higher levels of anxiety and stress, as might be expected. Income was associated with eight of nine outcomes, and gender predicted depression, anxiety, stress, and self-rated mental health.

The study highlighted the importance of psychosocial stressors, such as income and gender on the health outcomes of older adults who may be caregiving. Considering complexity of unique experience is necessary to accurately assess vulnerability to poor mental health or health related outcomes.

Keywords

caregiving; stress; preventive health; National Social Life, Health, & Aging Project

Adults in the United States provide more informal assistance with caregiving needs than formal care providers, and provide care across a spectrum of health-related issues such as physical disabilities, dementia, or acute medical needs. One area of substantial concern for public health is the long-term health outcomes of these caregivers. With increasing amounts

of long-term care in the United States being provided in community-based settings by unpaid family members and friends, it is critical to consider the impact of caregiving on the health and well-being of these individuals, specifically considering their likelihood and ability to engage in preventative health and self-care behaviors. Evidence on this issue, however, is equivocal in the literature. This study uses a nationally representative sample of adults aged 50 and older to explore relationships between caregiver status and preventive health behaviors, such as medical appointment attendance and screening, as well as mental health measures for depression, anxiety, loneliness, and stress.

Caregiving and routine preventive health care services

There is strong evidence to suggest that non-professional individuals who assist with the activities of daily living (ADLs) of another adult may be less likely to attend to their own health needs, may face higher allostatic load levels, and have higher risks for mortality and morbidity as they age (Kinnear et al., 2010; Roepke et al., 2011; Sheets, Black, & Kaye, 2014; Vitaliano, Zhang, & Scanlan, 2003). Other research suggests that there may be beneficial effects associated with some levels of caregiving, including decreased overall risk of all-cause mortality (Roth et al., 2013). While an established body of evidence highlights chronic stress and burden that caregiving imposes on adults, studies have involved mostly targeted sample populations, with few studies attempting to assess the relative risk when compared to the larger population of older adults in the United States.

Multiple studies have examined the relationship between caregiving and physical health, finding that caregivers have poorer physical health in both subjective and objective measures than their non-caregiving counterparts, and systematic review of the literature has established a link between physical health and income, social network support, and depression, areas directly impacted by the context of caregiving (Pinquart & Sorensen, 2007; Schulz & Sherwood, 2008). However, despite such findings, Schulz & Sherwood (2008) point out that while progression from caregiver stress to physiological impact is conceptually logical, demonstrating sequential causal relationships has proved to be challenging. There is, however, a logical reason to consider this connection, since evidence suggests that some caregivers are less likely to adhere to medication and appointment planning, and that there may be a link to intensity of the caregiving experience, gender, and educational attainment (Wang, Robinson, & Hardin, 2015). Such behaviors imply less focus on self-care and health maintenance, and could have far-reaching effects on the lives of the individuals involved.

Other related factors of stress in caregivers

Recent epidemiological studies have attempted to clarify whether poor health outcomes are the result of caregiving or are simply the result of factors related to aging in the United States relative to a broader population of adults, leading to findings that challenge the established assumptions of vulnerability. Additionally, studies of causal relationships between caregiver burden and socioeconomic strain (SES) are beginning to emerge in the literature, although there is reliable evidence that families with higher SES face fewer barriers to healthcare and resource access overall (Brodsky, Thomson, Thompson, & Fine,

2005; Pinquart & Sorensen, 2007). Systematic review of the literature establishes the strong correlation between income, social support, and physical health status in both objective and subjective measures, for both caregivers and noncaregivers; however, despite such linkages, there is no meaningful difference between the two groups for this relationship (Pinquart & Sorensen, 2007), implying that it may be external factors and not caregiving that leads to poorer health outcomes.

In addition to SES and social support, gender is a consideration, given well documented income disparities, particularly for older adults. Statistically, in the United States, adult caregivers tend to be female, regardless of reason for caregiving. Evidence suggests that female caregivers rate their physical health status as lower than male caregivers (Pinquart & Sorensen, 2007). Additionally, they are less likely to keep medical appointments than male caregivers, and there is a greater impact of depression on women who are caregivers, which may be related to the lower subjective health ratings (Schulz & Sherwood, 2008; Wang et al., 2015). While psychological burden related to caregiving is well-documented in the literature, the relationship between mental health issues, such as depression or anxiety and physical health outcomes and caregiving is less clear. Literature about these conditions independently suggests that there is a relationship between depression and physical well-being, but studies attempting to link these to caregiver status have not been significant (Pinquart & Sorensen, 2007). Similarly, loneliness is a construct related to social network support; while loneliness is not often identified in the literature as correlational to caregiving burden, social network support has been well-established as a negative correlation to burden: the higher the social network support, the lower the overall burden related to caregiving (Chappell & Reid, 2002; Pinquart & Sorensen, 2007). Overall, evidence seems to suggest that it is stress that affects caregiver health decline, rather than caregiving status, and that the emotional, physical, and financial stressors of caregiving are complex and diverse, with high levels of these types of stresses directly related to poor health outcomes among caregivers, implying an additive stress model (Fredman, Cauley, Hochberg, Ensrud, & Doros, 2010). While causal relationships are difficult to establish, it is logical to consider orientations that include not only the total burden of caregiving for another adult, but also the contextual stressors that may be present related to gender bias and role expectations, income-related stress, and health care access, as well as the premorbid well-being of the caregiver.

The research question guiding this study queried whether caregiving, health behaviors, and overall psychosocial well-being in the caregiver were related. The guiding hypothesis was that caregiving would be associated with poorer follow up with specific health-related outcomes (self-rated physical and mental health, time since seeing a doctor, and time since most recent pap smear or prostate-specific antigen [PSA] test) and with higher scores on four wellbeing outcomes (depression, loneliness, stress, anxiety). Additionally, it was hypothesized that income and gender would be significant covariates, based on the strength of recent literature, although it was anticipated that caregiving would remain the strongest predictor in all models. Although racial health disparities in the United States are well documented, this analysis does not include race due to the small cell sizes or missing data from this preexisting data set that was examined across groups that precluded using this variable in the analysis.

Method

Measurement

Unlike most studies of caregivers that are conducted with samples recruited specifically for status as a caregiver, the present study takes advantage of a retrospective, cross-sectional data analysis of a nationally representative sample of older adults recruited for the National Social Life, Health, & Aging Project (NSHAP; Waite et al., n.d.). The NSHAP study engaged participants across the nation for the primary purpose of studying sexual health and overall well-being among adults 50 years and older. The inclusion of caregiving questions in the NSHAP provides a unique opportunity to compare self-rated health and health-behaviors among both caregivers and non-caregivers. One strength of using this dataset is that participants were not recruited for nor particularly focused on issues related to caregiving, which helps to eliminate any bias in their responses. Previous studies using these data have included caregiving as a correlate for sexual health and activity, but there has not been an examination, to date, of caregiving variables and their correlation to health behaviors.

Sample

The first wave of the NSHAP study, completed during 2005–2006, recruited adults between the ages of 57 and 85, with the goal of exploring overall well-being in late life. The primary focus of the study was on physical and sexual health of older adults in the general American population. A total of 3,005 individuals recruited using an area probability sample were randomized to groups that engaged with modules of assessments related to aspects of physical and sexual health; 413 of these self-identified as caregiving for another adult. Additional information about the NSHAP study appears in previously published research (see for example: Suzman, 2009). Fifty-one percent of the respondents (N=3,005) were female. There were 413 caregivers (57.7% female) and 2,592 non-caregivers (50.4% female) in NSHAP; 74.1% of all respondents had incomes of <\$50,000 per year (81.8% of total women, 65.9% of total men, 75.5% of caregivers). See Table 1.

Instruments

Data collection for the NSHAP study included four validated scales. Scores from these scales were used in this study. These scales are the Center for Epidemiologic Studies Depression Scale, the Hospital Anxiety and Depression Scale, the Perceived Stress Scale, and the UCLA Loneliness Scale.

The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977)—The CES-D is a 20-item scale where the respondent rates frequency of depressive symptoms over the previous week from rarely to most or all of the time. This measure of depression is frequently used in caregiver studies. Reliability for this scale is .90 (Cronbach's alpha), and the measure has demonstrated excellent construct validity. Scores are summed for a total score ranging from 0 to 80, with higher scores indicating greater distress.

The Hospital Anxiety and Depression Scale (HADS; Snaith & Zigmond, 2000)—The HADS is a 14-item scale to rate the frequency of symptoms of depression and

anxiety. Higher scores indicate greater distress. This instrument has been translated into dozens of languages and used extensively as a well-validated and reliable measure of both anxiety and depression, with strong diagnostic specificity and higher diagnostic odds ratios than other commonly used instruments (Ali, Ryan, & De Silva, 2016).

The Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983)—The PSS has 14-items that rate perceived stress. Respondents rate situations over the last month as stressful, from never to very often on a 5-point scale, and scores are summed, with higher scores indicating greater distress. Cronbach's alpha is .86; predictive and concurrent validity has been well established for this measure, which is often used in caregiving studies, although not created specifically for that population.

The UCLA Loneliness Scale (UCLA; Russell, 1996)—The UCLA has 20-items, and assesses subjective loneliness and social isolation. Items are summed and higher scores indicate greater distress. This scale has been tested for reliability and validity with a range of populations, including the elderly, and has been demonstrated to have excellent internal consistency (coefficient alpha from .89–.94) and reliability over a 1-year period ($r=.73$).

Procedure

This study used secondary data analysis to examine relationships between three predictors (caregiving status, gender, income), and five specific health-related outcomes (self-rated physical and mental health, time since seeing a doctor, and time since most recent pap smear or prostate-specific antigen [PSA] test). In addition, four scales were examined assessing mental health status: the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), the Hospital Anxiety and Depression Scale (HADS; Snaith & Zigmond, 2000), the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983), and the UCLA Loneliness Scale (UCLA; Russell, 1996).

Independent variables included caregiving status (caregiver, non-caregiver), gender (male, female), and income (<\$50,000, \$50,000). Caregiver status was identified through self-report to the question “Are you currently assisting an adult who needs help with day-to-day activities because of age or disability?” These analyses included caregivers, with non-caregivers as a comparison group (see Table 1). Income was identified by self-report to the question “Would you say that your household income (last year) was more than \$50,000, or less than \$50,000?”

Since we were seeking possible predictive relationships between the variables, regressions were the analyses of choice. Logistic regressions were conducted for analyses for binary outcomes and linear regression analysis for continuous outcomes. Dependent variables for the logistic regressions were as follows: self-rated physical health and mental health (very good or excellent vs. good, fair, or poor); and time since seeing a doctor, most recent pap smear, and most recent PSA test (one year vs. >one year, which is consistent with the screening guidelines recommended at the time of data collection). Scores from each of the scales described above were treated as continuous variables for linear regressions. The 20-item CES-D rates the frequency of depressive symptoms from rarely to most of the time, with higher scores indicating greater symptomatology. The 14-item HADS rates the

frequency of depression and anxiety symptoms, with higher scores indicating greater distress. The 14-item PSS rates perceived stress, with higher scores indicating higher levels of distress. The 20-item UCLA assesses subjective loneliness and social isolation, with higher scores indicating greater distress.

Missing data were addressed by dropping cases listwise by analysis. The de-identified dataset is publicly available from the Inter-University Consortium for Political and Social Research (www.icpsr.umich.edu) and thus not subject to Institutional Review Board oversight. The STROBE statement was used as a guideline for reporting (von Elm et al., 2007).

Results

This study was guided by the hypothesis that caregiving would be associated with poorer follow-up with specific health-related outcomes (self-rated physical and mental health, time since seeing a doctor, and time since most recent pap smear or prostate-specific antigen [PSA] test) and with higher scores on four wellbeing outcomes (depression, loneliness, stress, anxiety). Additionally, it was hypothesized that income and gender would be significant covariates, based on the strength of recent literature, although it was anticipated that caregiving would remain the strongest predictor in all models.

Caregiving status was not a significant predictor for the majority of outcomes assessed. However, male caregivers were more than twice as likely as their non-caregiving counterparts to have had a PSA test for prostate cancer within the last year- the recommended guideline at the time of data collection- (OR: 2.19; CI: 1.35, 3.56) in both unadjusted and adjusted analyses; despite this overall finding, lower income men who were caregiving appeared to be less likely to complete the test than male caregivers with higher household income (OR: 0.59; CI: 0.44, 0.79). Income was significantly associated with more health outcomes than caregiving status, with lower income individuals about half as likely to rate their physical health (OR: 0.50; CI: 0.42, 0.59) or mental health (OR: 0.41; CI: 0.33, 0.48) as very good or excellent. Similar to the effect found in male caregivers, lower income women were less than half as likely (OR: 0.41; CI: 0.27, 0.62) to have had a pap smear to test for cervical cancer within the last year than higher income women- the recommended guideline at the time of data collection. Surprisingly, there was no relationship between any of the three predictors (caregiving, income, or gender) and time since most recent doctor's visit. Women were less likely than men to rate their mental health as very good or excellent (OR: 0.85; CI: 0.79, 0.99), regardless of caregiving status.

Income and gender were significantly associated with measures of distress more frequently than caregiving status (See Table 2). Caregiving predicted higher levels of anxiety (HADS) and stress (PSS) ($p < 0.01$), in both unadjusted and adjusted analyses. Caregiving was not significantly associated with depression (CES-D) or loneliness (UCLA). Lower income was related to higher levels of depression, stress, and loneliness in unadjusted and adjusted analyses ($p < 0.01$), and with increased anxiety in caregivers ($p < 0.01$). Gender was predictive of higher depression ($p < 0.01$) and higher rates of loneliness ($p = 0.02$) in both

unadjusted and adjusted models, although there was no significant relationship seen on the stress measure, and anxiety levels were only significant in the unadjusted model ($p=0.03$).

Discussion

Although the study hypothesis was that there exists a negative relationship between caregiving and routine preventive health care services, such as attending doctor's appointments and getting annual cancer screenings, this study did not find significant relationships between these variables in this representative sample of American older adults. Findings indicate that gender and income had more frequent significant associations with distress and specific health outcomes than caregiver status among this sample. In fact, findings indicate that male caregivers were *more* likely than their non-caregiving counterparts to complete an annual PSA test, the opposite of what had been expected.

These data do not offer answers as to the reasons for this PSA finding; however, it is possible that these men may have had more frequent contact with healthcare providers than male non-caregivers, and that more engagement prompts greater attention to screening activities. This difference between caregivers and non-caregivers is not replicated in the women's behavior relative to getting pap smears, nor does it appear in the likelihood for either gender to see a doctor, however, so it is purely speculation as to what may be causing this effect. It is theoretically possible that societal constructs of masculinity compel caregiving men to consider the impact of their own possible future impairment on their ability to provide care, while their female counterparts are more likely to focus on the care recipient to the exclusion of self-preservation. Although such considerations would be worthy of future investigation, any suggestions applied to this study are mere speculation, as they lie outside of the limits of the data.

In this representative sample of older adults, caregiving was not associated with either depression or loneliness. Caregiving was, however, associated with higher levels of anxiety and stress, and caregivers making less than \$50,000 annually appeared particularly vulnerable to stress. While caregiving is undoubtedly a role that involves a substantial burden and potential for long-term impact on well-being, this role alone may not be a sufficient predictor for distress. Caregiver outcomes may depend on perceived burden by caregivers, and caregiving styles (Corcoran, 2011; Roth et al., 2013), variables that were not available for these analyses. Perceived burden and style may be closely tied to socioeconomic status and overall access-related issues, thus providing a more complex frame of consideration than a simple measure can provide.

Recent research points towards gender, social network support, and income inequality as important reasons for findings of health outcome differences, with caregiving a related but not clearly causal factor (Pinquart & Sorensen, 2007; Sorensen & Conwell, 2011; Wang et al., 2015), and this study adds evidence to support such findings. This is consistent with existing theoretical models of caregiving that consider multidimensional constructs of strain and posit that there may be differences between correlates of physical health and caregiving versus mental or emotional health and caregiving (Murphy, Christian, Caplin, & Young, 2007; Pinquart & Sorensen, 2007). It appears that a more complex consideration of those

who fill the caregiving role is called for, with attention to gender and income and how cumulative multiple factors may influence barriers to care or risk factors for distress, a finding that is consistent with recent literature advocating for a broad assessment of strengths and needs among caregiving families (Gelman, Sokoloff, Graziani, Arias, & Peralta, 2014; Stenberg, Ekstedt, Olsson, & Ruland, 2014).

This study is strengthened by the use of a representative sample of older adults, although limitations regarding self-selection into participation may still exist, including an obvious racial disparity in the sample. This study used cross-sectional data, making it impossible to draw conclusions regarding caregiving as a key causal factor. Further, as this study focused on the broad impact of caregiving on caregivers, the analyses did not examine differences among sub-groups of caregiving type (e.g. dementia caregiving versus disability caregiving), and no data were available regarding caregiving styles. It is possible that different trajectories of disease, role expectations, and burden on caregivers may differ across these groups, and those levels of burden, caregiving style, or cultural influence may be mediating factors for some of the outcomes represented here.

This study did not confirm the original hypotheses, although it does provide some insight into vulnerable groups of older adults providing caregiving to another adult, such as those with lower incomes and women. These findings present an example that is as relevant in 2016 as when the data were collected of the importance of addressing the psychosocial stressors of caregivers, treating them as unique individuals who may have diverse risk factors for distress and barriers to care that lie outside of their caregiving role. Interventions aimed at alleviation of caregiving burden and protection of vulnerable adults requiring ADL assistance should include consideration of gender and income disparities as confounders to targeted goals. As budgets become more restricted post-sequestration, and the mechanisms for medical home services roll out across the nation, it is important to learn from existing data regarding ways in which we may more effectively identify families who are in need of and will benefit from services. Policy and practice can more efficiently target support services by considering a more nuanced assessment of caregivers, considering both strengths and vulnerabilities of families, in order to make decisions about allocation of resources. Future research should include examination of how such expanded assessments of patients and families have impacted on allocation of resources, and whether this method has been effective in producing desired clinical outcomes.

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Table 1

Demographics (All respondents aged >55 years old)

	Caregivers		Non-caregivers	
	Female (N=238)	Male (N=175)	Female (N=1306)	Male (N=1286)
Household income last yr (Mean)	\$46,767.71	\$69,027.95	\$50,017.21	\$63,265.96
Income <50K/yr	82%	67%	82%	66%
Caucasian/white	81%	81%	80%	81%
Married/living w partner	66%	85%	57%	79%
Education: Completed college	55%	63%	50%	59%

Table 2

Outcomes

Binary variables: Logistic regressions											
	SRH		SRMH		Doctor		Pap		PSA		adjusted (OR, 95% CI)
	unadj (OR, 95% CI)	adjusted (OR, 95% CI)	unadj (OR, 95% CI)	adjusted (OR, 95% CI)	unadj (OR, 95% CI)	adjusted (OR, 95% CI)	unadj (OR, 95% CI)	adjusted (OR, 95% CI)	unadj (OR, 95% CI)	adjusted (OR, 95% CI)	
Caregiving (ref= N)	1.11 (0.90,1.37)	1.13 (0.92,1.40)	1.08 (0.87,1.35)	1.12 (0.89,1.40)	0.92 (0.60,1.41)	0.89 (0.58,1.37)	0.94 (0.67,1.32)	0.94 (0.67,1.33)	2.19* (1.35,3.56)	2.17* (1.34,3.51)	
Income (ref= >\$50K)	0.50* (0.42,0.59)	0.50* (0.42,0.59)	0.39* (0.33,0.48)	0.41* (0.34,0.49)	0.93 (0.64,1.33)	0.88 (0.61,1.27)	0.41* (0.27,0.62)	0.41* (0.27,0.62)	0.59* (0.47,0.78)	0.59* (0.44,0.79)	
Gender (ref= M)	0.89 (0.77,1.03)	0.99 (0.86,1.15)	0.75* (0.65,0.87)	0.85* (0.79,0.99)	1.31 (0.95,1.80)	1.34 (0.97,1.86)	NA	NA	NA	NA	
Continuous variables: t-tests & linear regressions											
	CES-D		HADS		PSS		UCLA				
	unadj (t.sig.)	adj	unadj (t.sig.)	adj	unadj (t.sig.)	adj	unadj (t.sig.)	adj	unadj (t.sig.)	adj	
Caregiving	-0.26,0.80	0.09,0.93	-3.16,<0.01*	3.07,<0.01*	-2.66,<0.01*	2.76,<0.01*	0.35,0.73	-0.65,0.51			
Income	-8.39,<0.01*	7.52,<0.01*	-1.96,0.05*	1.54,0.13	6.95,<0.01*	-7.02,<0.01*	7.05,<0.01*	6.50,<0.01*			
Gender	-6.07,<0.01*	4.25,<0.01*	-2.14,0.03*	1.69,0.09	0.43,0.67	0.74,0.46	3.54,<0.01*	2.30,0.02*			

* Significant relationship

SRH: self-rated health; SRMH: self-rated mental health; CES-D: depression scale; HADS: anxiety scale; PSS: perceived stress scale; UCLA: loneliness scale. Reference group: Poor/good SRH or SRMH; 1+yr PSA or Pap. (Odds ratio/Confidence interval); Adjusted linear regressions: scale as dependent var, w covariates together; Unadj: t-test for individual variable