

Chronic Stress and Mortality Among Older Adults

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A GROWING BODY OF EVIDENCE HAS IMPLICATED caregiving as a risk factor for health. Extending this research, the article by Schulz and Beach' in this issue of THE JOURNAL is the first study to demonstrate that caregiving is a risk factor for mortality, and thus it makes an important contribution to the broader literature on chronic stress. The caregivers in their cohort were part of a large population-based study of the elderly drawn from a random, stratified sample; additional laudable strengths include the fact that the mortality data controlled for baseline health status and the careful determination of mortality status for 100% of the sample.

The findings are particularly notable in view of the very broad definition used for caregiving: these researchers only required that the impaired spouse have difficulty with at least 1 activity of daily living or instrumental activity of daily living "due to physical or health problems or problems with confusion."¹ Accordingly, it is likely that their sample was considerably less burdened and less distressed than the caregivers who have received the most attention, namely caregivers for persons with dementia. Furthermore, their research participants only needed to meet criteria as caregivers at study entry, not in each successive year, so that spouses who functioned as temporary or transient caregivers following acute medical problems in the partner would nonetheless be classified as caregivers in their data. Similarly, it is reasonable to expect that some of their caregivers who reported no strain at baseline, as well as some of their noncaregiver controls, are likely to have joined the ranks of burdened caregivers in ensuing years. As a consequence of these factors, the mortality data are likely to underestimate significantly the actual risks associated with caregiving for a severely physically or cognitively disabled spouse.

Chronic stressors such as caregiving that evoke prolonged distress can influence cardiovascular, immune, and endocrine function, and these alterations are sufficient to enhance a variety of health threats, particularly among older adults.² For example, 2 studies show that spousal caregivers evidenced poorer immune responses to influenza virus vaccination

than well-matched control subjects.^{3,4} Adults who show poorer responses to vaccines and other antigenic challenges also experience higher rates of clinical illness, including influenza virus infection.^{5,6} While pneumonia and influenza together constitute the fourth leading cause of death among persons aged 75 years or older,⁷ influenza viruses are also responsible for considerable "excess mortality" beyond those deaths in which influenza is registered as the cause. For example, a Dutch study⁸ showed that for each influenza-registered death there were 2.6 additional influenza-related deaths (47% in people for whom heart disease was the reported cause of death, 23% with lung disease, and 30% with other diseases). Not surprisingly, 95% of these deaths occurred in people who were aged 60 years or older.

Aging undoubtedly interacts with caregiving to augment vulnerability in other arenas; caregiving is a significant risk factor for the development of depressive symptoms, as well as syndromal depression disorders,^{9,10} and depression can intensify a variety of health threats, particularly among older adults. Depressive symptoms are associated with the development of ischemic heart disease, as well as poorer outcome among patients who have preexisting cardiovascular disease.¹¹ Chronically depressed mood has been linked to cancer risk in older persons.¹² Depressed mood is an independent risk factor for all-cause mortality in medical inpatients.¹³ Data from 11242 outpatients in the Medical Outcomes Study¹⁴ showed that patients with either a current depressive disorder or depressive symptoms in the absence of a syndromal disorder had worse physical, social, and role function, worse perceived current health, and greater bodily pain than patients with no chronic conditions. The poorer functioning that was uniquely associated with depressive symptoms was comparable with or even worse than that uniquely associated with 8 chronic medical conditions. Thus, the burdens and stresses of caregiving that stimulate psychological morbidity may also impair physical health.

While caregiving can be stressful for any family member, spouses have a unique disadvantage. Marriage is the central

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relationship for the majority of adults, and morbidity and mortality are reliably lower for the married than the unmarried across a variety of acute and chronic conditions, including such diverse health threats as cancer, myocardial infarction, and surgery,¹⁵⁻¹⁸ in part because of the support provided by this key relationship.¹⁵ However, when the spouse is ill, the prime source of support can become a major generator of stress, while simultaneously limiting the partner's ability to seek support in other relationships.⁹ In this light, the suggestion of Schulz and Beach¹ that physicians evaluate older married couples as a unit, both in terms of their health status and their caregiving demands, is meritorious.

The evidence that caregiving can accelerate mortality' is important for many reasons. For clinicians, it highlights the importance of assessing both psychosocial and biomedical risk factors. Politically, it is likely to fuel the debate about the financing of long-term care, particularly when considering that caregiving will become an increasingly prominent problem as the baby boom generation ages. Scientifically, it provides consequential data about the interplay between stress and health and the dangers of chronic stress for older adults.

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REFERENCES

- Schulz R, Beach SR. Caregiving as a risk factor for mortality: the Caregiver Health Effects Study. *JAMA*. 1999;282:2215-2219.
- Rabin BS. *Stress, Immune Function, and Health*. The Connection. New York, NY: Wiley-Liss & Sons; 1999.
- Kiecolt-Glaser IK, Glaser R, Gavenstein S, Malarkey WB, Sheridan J. Chronic stress alters the immune response to influenza virus vaccine in older adults. *Proc Natl Acad Sci U S A*. 1996;93:3043-3047.
- Vedhara K, Cox NKM, Wilcock GK, et al. Chronic stress in elderly carers of dementia patients and antibody response to influenza vaccination. *Lancet*. 1999; 353:627-631
- Bums EA, Goodwin JS. Immunology and infectious disease. In: Cassel CK, Risenberg DE, Sorensen LB, Walsh IR, eds. *Geriatric Medicine*. New York, NY: SpringerVerlag;1990: 312-329.
- Gravenstein S, Drinka P, Duthie EH, et al. Efficacy of an influenza hemagglutinin-diphtheria toxoid conjugate vaccine in elderly nursing home subjects during an influenza outbreak. *J Am Geriatr Soc*. 1994; 42: 245-251.
- Yoshikawa TT. Geriatric infectious diseases: an emerging problem. *J Am Geriatr Soc*.1983;31:34-39.
- Sprenger MJW, Mulder PG, Beyer WEP, VanStrik R, Masurel N. Impact of influenza on mortality in relation to age and underlying disease. *Int J Epidemiol*. 1993; 22: 334-340.
- Kiecolt-Glaser IK, Dura JR, Speicher CE, Trask OJ, Glaser R. Spousal caregivers of dementia victims- longitudinal changes in immunity and health. *Psychosom Med*. 1991;53:345-362.
- Light E, Lebowitz BD, eds. *Alzheimer's Disease Treatment and Family Stress: Directions for Research*. Rockville, Md: National Institute of Mental Health; 1989.
- Glassman AH, Shapiro PA. Depression and the course of coronary artery disease. *Am J Psychiatry*. 1998;155:4-11.
- Penninx BWJH, Guralnik JM, Pahor M, et al. Chronically depressed mood and cancer risk in older persons. *J Natl Cancer Inst*. 1998;90:1888-1893.
- Herrmann C, Brand-Driehorst S, Kaminsky B, Leibing E, Staats H, Ruger U. Diagnostic groups and depressed mood as predictors of 22-month mortality in medical inpatients. *Psychosom Med*. 1998;60:570-577.
- Wells KB, Stewart A, Hays RD, et al. The functioning and well-being of depressed patients. *JAMA*. 1989; 262:914-919.
- House JS, Lands KR, Umberson D. Social relationships and health. *Science*. 1988;241:540-545.
- Chandra V, Szklo M, Goldberg R, Tonascia I. The impact of marital status on survival after an acute myocardial infarction: a population-based study. *Am J Epidemiol*. 1983; 117:320-325.
- Goodwin JS, Hunt WC, Key CR, Samet IM. The effect of marital status on stage, treatment, and survival of cancer patients. *JAMA*. 1987;258:31253130.
- Gordon HS, Rosenthal GE. Impact of marital status on outcomes in hospitalized patients. *Arch Intern Med*. 1995;1552465-2471.