

Stressful Life Events Among Community-living Older Persons

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OBJECTIVES: To identify the life events that older persons experience as most stressful, to evaluate older persons' perceptions of the consequences of these stressful events for their lives, and to evaluate the relationship of demographic factors and measures of health and functional status to these perceptions.

DESIGN: Cross-sectional study.

PARTICIPANTS: Seven hundred fifty-four community-living persons aged 70 years or older.

MEASURES: During a comprehensive assessment, participants identified the most stressful event that they had experienced in the past 5 years and, subsequently, rated its stressfulness and perceived consequences.

RESULTS: Six hundred three participants (80%) identified a stressful life event. Of these, 18% identified a personal illness, 42% the death of a family member or friend, 23% the illness of a family member or friend, and 17% a nonmedical event. Although participants consistently rated their events as highly stressful, they reported widely varied consequences of these events for their lives. While 27% to 59% of participants across the 4 event types reported considerable negative consequences, 17% to 36% reported positive consequences such as starting new activities that have become important to them and changing for the better how they feel about their lives. Dependence in instrumental activities of daily living and depressive symptoms were independently associated with several negative perceived consequences.

CONCLUSIONS: Older persons experience a wide array of stressful life events, with only a small minority reporting personal illnesses as the most stressful. Similar stressful events can have either negative or positive consequences for older persons' lives. This variation in response to stressful events among older persons may indicate different degrees of resilience, a potentially important factor underlying successful aging that deserves further investigation.

KEY WORDS: stress; life events; older persons; functional status.

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Both patients and clinicians intuitively believe that stress has a substantial effect on health. Most patients feel that discussing stressful life events with their primary

care providers is appropriate, but only a minority of patients who experience these problems actually mention them to their providers.^{1,2} Since stressful life events have been linked to poor mental and physical health,^{3,4} a better understanding of the types of events that patients experience and of patients' perceptions of the consequences of these events for their lives may encourage clinicians to seek information about stressful life events and thus provide better care.

The relationship between stress and health has long been investigated in the social and behavioral sciences. Researchers have focused on the objective measurement of stress, either in the form of major life events or daily hassles.^{5,6} Using checklists⁷ or interviews⁸ to identify and rate the severity of stressful life events, researchers have established a link between stressful life events and psychiatric disorders (particularly depression) across diverse populations, including older persons.⁸⁻¹² In addition, studies in the medical literature have identified stressful life events as a potential contributor to an array of diverse medical conditions, such as cancer.¹³⁻¹⁶ While this work has added greatly to our understanding of the relationships between stress and disease, the objective measurement of stress, which is essential for research, may be less important in the clinical setting than the patient's subjective assessment of stress. Given the clinician's focus on understanding patients' complaints in the context of their lives, patients' perceptions of stressful life events and their perceived consequences are particularly important.

Previous studies have suggested that older persons experience fewer stressful life events than younger persons, and that they rate these events as less severe,^{17,18} although there has generally been less agreement on these relationships than on the association between stressful life events and mental illness.¹⁹ When checklists are used, the prevalence of medical events—such as personal illness, or death or illness of a family member or friend—has consistently been high in older persons.^{9,20,21} More open-ended methods have identified a wider array of stressful events in older persons,^{22,23} but have not asked older persons to identify the events that they find most stressful. For clinicians, patients' interpretations of stressful events are of primary importance.

The goals of the current study were to identify the life events that older persons experience as most stressful, to determine how often each type of event is identified as most stressful (particularly among those with a recent serious illness), to evaluate the perceived consequences of these events for the lives of older persons, and to evaluate the relationship between demographic factors and measures of health and functional status and these perceived consequences.

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METHODS

Study Population

Data for the current study were obtained from the Precipitating Events Project (PEP),²⁴ a prospective cohort study of 754 functionally independent, community-living persons aged 70 years or older, who were members of a large health care plan in New Haven, Conn. Potential participants for PEP were English-speaking and independent in 4 key activities of daily living (ADLs)—bathing, walking, dressing, and transferring from a chair. Potential participants were excluded based on diagnosis of a terminal illness, plan to move out of the New Haven area, or significant cognitive impairment with no available proxy. Participants were enrolled in a 4:2:1 ratio for low, intermediate, and high risk for ADL dependence, using a model developed and validated in an earlier study.²⁵ Only 4.6% of potential participants who could be contacted refused to complete the screening telephone interview, and 75.2% of those eligible agreed to participate in the study. Persons who refused to participate did not differ significantly from those who were enrolled in terms of age or gender. All participants provided informed consent, and the study was approved by the Yale School of Medicine institutional review board.

Data Collection

During a comprehensive home-based assessment, a trained research nurse using standard instruments collected data on demographic factors, 13 self-reported, physician-diagnosed chronic conditions,²⁴ hospitalization in the past year (as a marker of recent serious illness), self-rated health, cognitive status,²⁶ instrumental activities of daily living (IADLs)—shopping, housework, meal preparation, taking medications, and managing finances²⁷—and depressive symptoms.²⁸ Participants were considered to have significant cognitive impairment if they scored <24 on the Folstein Mini-Mental State Examination²⁶ and to have depressive symptoms if they scored ≥ 16 on the Center for Epidemiologic Studies Depression scale.^{28,29}

Measurement of Stressful Life Events

Participants were asked, “Thinking back over the last five years, what has been the most stressful event in your life?” The interviewer recorded each participant’s single response. This question was reliable, with 80% agreement in the specific event reported when 20 participants were re-questioned after a 1-month interval. The stressful events identified by the participants were reviewed (by SH) and a taxonomy of events was developed. A second investigator (JC) categorized a random 10% sample of the events using the developed taxonomy, with 100% agreement. Four main types of events were identified: personal illness or injury, death of a family member or friend, illness or injury of a family member or friend, and nonmedical events.

Participants who identified an event were asked to rate the stressfulness and perceived consequences of the event for their lives. The questions assessing the consequences of stressful life events were adapted from the Resilience Module of the Asset and Health Dynamics Among the Oldest Old (AHEAD) study.³⁰ Stressfulness was assessed on a 10-point scale anchored at 0 (not particularly), 5 (fairly), and 10 (extremely).³¹ The perceived consequences were assessed with 2 questions with 4-point Likert responses: “After this event, how much more discouraged were you,” and “After this event, how much harder was it to get everyday things done”; and with 4 yes/no questions: “As a result of this event, have you stopped doing some activities that were important to you,” “As a result of this event, have you started doing some activities that have become important to you,” “Has this event made a permanent change in how you feel about your life,” and, if so, “Is that change for the better, or for the worse.”

Analyses

Univariate analyses are presented as medians (interquartile range) for continuous variables and as proportions for dichotomous variables. Stressfulness of the events across categories was compared with the Kruskal-Wallis test.³² Responses to the questions about the consequences of the events across categories were compared with χ^2 tests.

Bivariate associations between the demographic factors and measures of health and functional status (IADL dependence, cognitive impairment, chronic conditions, depressive symptoms, self-rated health, and hospitalization in the past year) and the perceived consequences of events were compared with χ^2 tests. Because these analyses were exploratory, adjustments in *P* values were not made for multiple comparisons. Multiple logistic regression was used to identify those demographic factors and measures of health and functional status that remained significantly associated with the perceived consequences of events after adjusting for all other factors. Relative risks were subsequently approximated from the odds ratios using the method of Zhang and Yu.³³ For the bivariate and multivariable analyses, continuous variables were dichotomized at accepted cut points or at the median value. All analyses were performed using SAS version 6.12,³⁴ and all statistical tests were 2-sided.

RESULTS

The characteristics of the study population are presented in Table 1. Of the 754 participants, 603 (80%) identified a stressful event in the previous 5 years. Among participants identifying an event, 18% identified a personal illness or injury, 42% the death of a family member or friend, 23% the illness or injury of a family member or friend, and 17% a nonmedical event. The nonmedical events identified most frequently were victimization (such as having one’s home broken into or being cheated) and changing residence, which together accounted for 46% of

Table 1. Characteristics of Study Population (N = 754)*

Female	487 (65)
White	682 (90)
Age, y	78 (74 to 82)
Currently married	361 (48)
Education, y	12 (10 to 14)
Annual income category, \$	20,000 to 24,999
Dependence in at least one IADL	328 (44)
Cognitive impairment	86 (11)
Chronic conditions, N	2 (1 to 3)
Depressive symptoms	156 (21)
Self-rated health fair or poor	211 (28)
Hospitalization in past year	193 (26)

* Results are presented as n (%) for dichotomous variables and as median (interquartile range) for continuous variables, except for income, for which only the median category is reported. IADL, instrumental activity of daily living.

these events. Although most nonmedical events had their primary impact on the participant, about a quarter of the events, such as the divorce of a family member or the unemployment of a child, had their primary impact on others. All events reported were undesirable, or negative, in nature.

Participants rated their events as highly stressful, with a median stressfulness of 9 (out of a possible 10) and an interquartile range of 6 to 10. Across the 4 categories of events, the stressfulness ratings were 8 (5 to 10) for personal illness or injury, 10 (6 to 10) for death of a family member or friend, 9 (7 to 10) for illness or injury of a family member or friend, and 8 (5 to 10) for nonmedical events. There was no statistically significant difference in ratings among categories (Kruskal-Wallis $H = 5.20$; $df = 3$; $P = .158$).

Only a minority of participants who had been hospitalized in the past year identified a personal illness or injury as their most stressful event, although they were more likely than those without a recent hospitalization to do so (32% vs 13%; $\chi^2 = 31.2$; $P = .001$). Of the 193 participants who had been recently hospitalized, 24 (12%) identified no stressful event in the past 5 years. One participant who identified no stressful event noted that

“even surgery wasn’t stressful,” while another commented that his heart attack wasn’t stressful, although his retirement (more than 5 years ago) was.

The perceived consequences of the stressful events for participants’ lives are presented in Table 2. About half of the participants felt quite a bit or a great deal more discouraged after their events, with no significant difference across the 4 event types. After their events, 44% of participants found it quite a bit or a great deal harder to get everyday things done. Personal illnesses had the greatest effect, while nonmedical events had the least. Thirty-five percent of participants stopped important activities after their events, with personal illnesses having this effect most frequently. In addition to these negative consequences, participants reported positive consequences of their stressful events for their lives. Thirty percent of participants started new activities that became important to them, with no significant differences among event types. Of the 229 participants (39%) who felt that the event had made a permanent change in how they felt about their lives, 113 (49%) reported a change for the better, with no significant difference among event types.

The bivariate (i.e., unadjusted) associations between the demographic factors and the perceived consequences of stressful events are presented in Table 3. Participants with annual income of $\geq \$20,000$ were significantly less likely to report finding it harder to do everyday things. Female participants were significantly more likely to report stopping important activities. Among participants who reported a permanent change in how they felt about their lives, those who were female, white, or aged ≥ 80 years were less likely to report a change for the better, while those who were married were more likely to do so.

The bivariate associations between the measures of health and functional status and the perceived consequences of stressful events revealed a more consistent pattern (Table 4). Dependence in 1 or more IADLs, depressive symptoms, and fair or poor self-rated health were each associated with perceiving several negative consequences of the stressful event—being more discouraged, finding it harder to do things, stopping important

Table 2. Perceived Consequences of Stressful Life Events by Event Type*

Perceived Consequences	Total (N = 601)	Personal Illness (n = 108)	Death (n = 254)	Other’s Illness (n = 138)	Nonmedical (n = 101)	P Value
A great deal or quite a bit more discouraged	311 (52)	57 (53)	123 (49)	80 (58)	51 (51)	.374
A great deal or quite a bit harder to get things done	261 (44)	64 (59)	112 (44)	53 (39)	32 (32)	<.001
Stopped activities important to you	212 (35)	60 (56)	82 (32)	43 (31)	27 (27)	<.001
Started activities that have become important to you	177 (30)	39 (36)	75 (30)	41 (30)	22 (22)	.157
Event made a permanent change in how you feel about life	229 (39)	50 (48)	92 (37)	56 (42)	31 (31)	.066
If so, change for better	113 (49)	23 (46)	45 (49)	28 (50)	17 (55)	.893

* Results are given as n (%), based on yes responses. P values are for the comparison of results across the four event types.

Table 3. Unadjusted and Adjusted Associations between the Demographic Factors and Perceived Consequences, Relative Risks*

	More Discouraged	Harder to Get Things Done	Stopped Activities	Started Activities	Permanent Change in Feeling about Life	Change for the Better
Female						
Unadjusted	1.08	1.15	1.42 [†]	1.09	1.09	0.74 [‡]
Adjusted	1.03	1.00	1.25	0.96	0.96	0.88
White						
Unadjusted	1.02	0.81	1.03	0.90	1.12	0.63 [‡]
Adjusted	1.10	0.86	0.97	0.88	1.16	0.60 [‡]
Age ≥80 y						
Unadjusted	1.09	1.06	1.16	0.90	0.91	0.71 [‡]
Adjusted	1.00	1.03	1.15	0.93	0.87	0.74
Married						
Unadjusted	0.94	0.84	0.83	1.05	0.92	1.41 [†]
Adjusted	0.99	0.92	0.96	1.04	1.00	1.37
High school graduate						
Unadjusted	0.88	0.83	1.06	1.03	1.07	0.82
Adjusted	0.97	0.95	1.15	1.03	1.19	0.82
Annual income ≥\$20,000						
Unadjusted	0.91	0.80 [‡]	1.00	1.00	0.99	0.97
Adjusted	0.98	0.93	0.91	0.91	0.97	0.73

* Adjusted associations are adjusted for the other demographic factors (as listed in the table) and dependence in instrumental activities of daily living (IADLs), cognitive impairment, chronic conditions, depressive symptoms, self-rated health, and hospitalization in the past year. Relative risks are approximated from odds ratios.

[†] P < .01.

[‡] P < .05.

activities, and (except for self-rated health) reporting a change for the worse (when reporting a permanent change in how one feels about life). No measure of health or functional status was associated with the positive consequence of starting new activities that were important.

In multivariable analysis, adjusting for the demographic factors and other measures of health and functional status, dependence in 1 or more IADLs and depressive symptoms most consistently remained significantly associated with the perceived consequences of stressful events (Tables 3 and 4). Hospitalization in the past year was associated with finding it harder to get everyday things done. Among participants who reported a permanent change in how they felt about their lives, white race was negatively associated with reporting a change for the better.

DISCUSSION

In this study, we found that when asked about their most stressful life event, older persons identified a wide array of events. While confirming prior findings of the importance of medical events (such as personal illnesses, or illnesses or deaths of family members or friends),^{9,20-22} we found that nonmedical events were also highly stressful and perceived to have important consequences for older persons' lives. Finally, we found that participants reported both negative and positive consequences of their events, revealing substantial variations in their responses to stressful events.

Deaths and illnesses of family members or friends were the most common event types, accounting for 65% of all events. Surprisingly, participants were as likely to identify a nonmedical problem as their most stressful event as they were a personal illness or injury (17% vs 18%). Even participants who had been hospitalized within the past year identified a personal illness or injury as their most stressful event only a third of the time. The distribution of events identified in this study is consistent with findings using the Life Events and Difficulties Schedule, a semi-structured interview, in a rural population of persons aged 65 years or older.²² However, the majority of the non-medical events in that study were rated as posing little or no threat (and therefore as only minimally stressful), while our participants rated nonmedical events as highly stressful. Of course, this finding is consistent with our study's focus on the most stressful event, rather than on all stressful events.

As a result of their stressful events, 44% of participants found it a great deal or quite a bit harder to get everyday things done and 35% stopped activities that were important to them. The cessation of productive activities and difficulty completing everyday tasks may contribute to functional decline in older persons.^{35,36} Hence, when patients present with functional decline or disability, health care providers should consider asking if the patient perceives any life events as contributing to the decline. Most patients want to discuss life events and psychosocial problems with their providers, although they often do not do so.^{1,2} By encouraging discussion of nonmedical problems rather

Table 4. Unadjusted and Adjusted Associations between Measures of Health and Functional Status and Perceived Consequences, Relative Risks*

	More Discouraged	Harder to Get Things Done	Stopped Activities	Started Activities	Permanent Change in Feeling about Life	Change for the Better
Dependence in ≥ 1 IADL						
Unadjusted	1.36 [†]	1.57 [†]	1.86 [†]	1.07	1.36 [‡]	0.72 [§]
Adjusted	1.26 [§]	1.39 [‡]	1.70 [†]	1.16	1.28 [§]	0.93
Cognitive impairment						
Unadjusted	1.29 [§]	1.21	0.89	1.01	0.97	1.12
Adjusted	1.23	0.93	0.71	0.87	0.86	0.85
≥ 2 Chronic conditions						
Unadjusted	1.09	1.15	1.15	0.95	1.02	0.97
Adjusted	0.99	0.99	1.05	0.97	0.94	1.01
Depressive symptoms						
Unadjusted	1.23 [§]	1.54 [†]	1.43 [‡]	0.87	1.61 [†]	0.51 [†]
Adjusted	1.08	1.38 [‡]	1.23	0.90	1.46 [‡]	0.44 [†]
Self-rated health fair or poor						
Unadjusted	1.25 [‡]	1.49 [†]	1.26 [§]	0.84	1.32 [‡]	0.80
Adjusted	1.13	1.21	1.04	0.88	1.15	0.98
Hospitalization in past year						
Unadjusted	1.09	1.26 [§]	1.26	0.95	1.18	1.02
Adjusted	1.05	1.24 [§]	1.20	0.91	1.15	1.03

* Adjusted associations are adjusted for the other measures of health and functional status (as listed in the table) and gender, race, age, marital status, education, and income. Relative risks are approximated from odds ratios.

[†] $P < .001$.

[‡] $P < .01$.

[§] $P < .05$.

IADL, instrumental activities of daily living.

than focusing exclusively on the biomedical aspects of care, providers may identify a potential cause of, and perhaps even help ameliorate, reductions in the activities of their older patients. Further research is needed to investigate the potential role of stressful events in the development of functional decline and disability and to determine if interventions directed at alleviating the perceived effects of these events can improve functional status.

While many event checklists include both desirable events, such as the birth of a grandchild, and undesirable events, such as death of a loved one,²¹ prior research has suggested that only undesirable events are associated with measures of stress and health outcomes.^{37,38} Consistent with these findings, our participants reported exclusively undesirable events when asked to identify a stressful event. Nonetheless, despite the negative nature of these events, both positive and negative consequences were reported. For example, participants reported beginning new activities that became important to them as a result of their stressful events. These positive responses suggest that for some older individuals, stressful events may provide an opportunity for personal growth, rather than simply increasing the risk of mental or physical illness. Participants who experienced positive consequences might be considered to have responded "resiliently" to their stressful events.

Resilience has been defined as the capacity to remain well, recover, or even thrive in the face of adversity.^{39,40} Researchers in childhood and adolescent development first described resilience as a factor enabling children in adverse

circumstances to develop into well-adjusted, successful adults.⁴¹ Research on resilience has more recently been extended to other parts of the lifespan, particularly old age.^{39,40} Resilience was originally defined on the basis of outcomes, such as maintaining psychosocial function after the death of a spouse,⁴² or on the basis of personality traits, such as hardiness,⁴³ that enhance coping. More recently, resilience has been viewed as the process by which individuals survive or even thrive under adversity, incorporating both the internal traits, such as hardiness or high self-efficacy, and the external factors, such as social support, that promote coping.^{40,44} The responses reported in this paper likely reflect this combination of innate and external factors. Resilience may be an important attribute in recovery from illness or other potential insults and, hence, in maintaining high functional status and quality of life in old age. Response to a stressful event deserves further investigation as a potential indicator of resilience in older persons.

Dependence in 1 or more IADLs, depressive symptoms, and fair or poor self-rated health were each associated with reporting several negative perceived consequences of stressful events in bivariate analyses. After adjusting for the demographic factors and other measures of health and functional status, dependence in IADLs and depressive symptoms each remained significantly associated with multiple negative consequences. Fair or poor self-rated health was no longer associated with any perceived consequences after adjusting for other factors, due to the

strong association of self-rated health with both dependence in IADLs and depressive symptoms (data not shown). Among the demographic factors, nonwhite race was significantly associated with reporting a permanent change for the better in how participants felt about their lives; race or ethnicity may play an important role in resilience in response to stressful events.

The generalizability of our results may be limited by the characteristics of the study population. Our participants were mostly white, reflecting the racial distribution among older persons in New Haven County,⁴⁵ had a slightly higher income and education than those aged 70 years or older in Connecticut,⁴⁶ and were independent in key ADLs. The types of events identified differed only slightly by race and education (data not shown). Furthermore, whites and nonwhites and those who did and did not complete high school all identified personal illnesses and injuries as their most stressful event less than 20% of the time, and nonmedical events as their most stressful more than 10% of the time.

Participants were not asked to describe the consequences of their stressful events in an open-ended manner; thus, we were unable to identify the specific activities affected by their stressful events or to determine the nature of their difficulties with everyday tasks. Since we do not know the specific activities affected by their events, our ability to judge the magnitude of the events' consequences for participants is limited. Nonetheless, we do know that all the affected activities were deemed important by the participants. Participants were asked about the perceived consequences only of their most stressful event. Stress may be the product of multiple stressful events and daily hassles. It is possible, therefore, that participants' perceived consequences of their most stressful event may have been colored by other concurrent stressors.

Participants' perceived consequences varied little across the 4 event types. One explanation for the absence of more pronounced differences could be our choice of categories. The classification of stressful life events into medical (personal illness, deaths, and others' illnesses) and nonmedical types reflects our perspective as clinicians, which might not be shared by patients. Regardless of whether patients distinguish medical from nonmedical events, our results suggest that clinicians should consider all types of events, and not just the medical events that are often the primary (or sole) focus of clinicians, as potentially important for patient care.

In summary, older persons experience a wide array of stressful life events, with only a small minority identifying personal illnesses or injuries as the most stressful, even among those with a recent serious illness. These events may contribute to decreases in activities and ability to perform everyday tasks (and thus potentially to functional decline) in some older persons, but may provide opportunities for personal growth in others. This variation in response to stressful events among participants may indicate different degrees of resilience, a potentially

important factor underlying successful aging that deserves further investigation.

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