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Prevalence of chronic illnesses and characteristics of chronically ill informal caregivers of persons with dementia

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Abstract

Objectives: to examine the prevalence of and the link of chronic illnesses (CIs) to informal caregivers of persons with dementia (PWDs), as well as to identify characteristics of caregivers with CIs.

Methods: the sample included 124 caregivers of PWDs from a caregiver programme of research. Sociodemographic information and caregivers CIs were collected by an in-person interview. Descriptive statistics, *t*-tests, chi-square analysis and binary logistic regressions were performed for data analysis.

Results: approximately 81.5% ($n = 101$) of caregivers reported having at least one CI, 60.5% ($n = 75$) reported two or more CIs. Caregivers with CIs were more likely to be older and unemployed; advanced age and female gender were risk factors for CIs. The link of CIs to caregivers was stronger in younger caregivers but weaker in older caregivers when compared with the general population.

Conclusion: targeted interventions based on this study need to be developed to improve the health of caregivers of PWDs.

Keywords: informal caregivers, Alzheimer's disease, dementia, chronic illness, community, older people

Introduction

The association between informal caregiving for persons with dementia (PWDs) and impaired physical and psychological health has been well documented [1–3]. Given the negative impact of caregiving, most caregivers are at risk for chronic illnesses (CIs) if not already present [4]. A meta-analysis of 84 studies that compared health of caregivers with non-caregivers indicated that most health indicators were consistently better in non-caregivers than PWD caregivers [1, 3]. Despite the overwhelming research on its risk, the scope of CIs in PWD caregivers and characteristics of caregivers with CIs are unclear.

In assessing caregivers health most studies used demographics matched non-caregivers (usually age and sex) as a basis for comparison. Yet, experts have suggested that informal caregivers who usually are family members of the PWD, often share the same lifestyle habits and other health-related factors as the PWD and are likely to develop health problems [3, 5]. Substantial bias exists in the studies that have contrasted the health of caregivers to non-caregivers because of the impact of these factors (more discussion, please see supplementary data available in *Age and Ageing online*, Appendix S1). More comparisons with the general population are needed to improve our understanding of the health status of caregivers.

The purpose of this study was (i) to examine the prevalence of CIs in informal caregivers of PWDs, the prevalence of CIs in comparison with the general population, and (ii) to explore the characteristics of caregivers with CIs.

Methods

Design and sample

Cross-sectional, descriptive, correlational analysis was performed. Baseline data from a dementia caregiver programme of research in the southern part of the Midwest in the USA was used. The sample consisted of 124 primary informal caregivers who were: (i) over 21 years of age, (ii) provided care for >1 year, (iii) for a person who has a diagnosis of Alzheimer's dementia or other type of dementia and still lives at home.

Data collection and analysis

In addition to demographic information, caregivers were asked to list major CIs as well as other chronic conditions to evaluate

the caregiver's chronicity (definitions of stages of dementia and CIs, please see supplementary data available in *Age and Ageing online*, Appendix S2). Descriptive statistics summarised characteristics of the sample, characteristics of caregivers with CIs and without CIs, as well as described the prevalence of CIs in the sample, by age and by kinship status. Independent-sample t -tests, Chi-square tests and binary logistic regression were conducted to further examine characteristics of caregivers having CIs. Finally, comparisons were performed between caregivers and the general population for the prevalence of CIs.

Results

The sample consisted of 46 female spouse caregivers, 29 male spouse caregivers and 34 daughter caregivers. Sons ($n = 6$), siblings ($n = 3$) and other relationships ($n = 6$) were excluded from further analysis due to their small numbers. Sociodemographic characteristics of the sample are presented in Table 1. Compared with caregivers without CIs, caregivers with CIs were significantly older in age and were more likely to be unemployed ($t = -2.15$, $P = 0.03$; $\chi^2 = 7.55$, $P = 0.01$). Binary logistic regression analysis indicated that CIs were significantly associated with caregiver age and gender. The risk of CIs was nearly three times higher for caregivers over age 65 than caregivers under age 65 (OR: 2.98, 95% CI: 1.16–7.68). Among caregivers age 65 and older, the prevalence of CIs was almost four-times higher for female spouse caregivers than for male spouse caregivers (OR: 3.80, 95% CI: 1.02–14.2).

The prevalence of CIs in the sample is shown in Table 2. Overall, a mean number of 2.0 ± 1.5 CIs was reported, 81.5% of caregivers reported having at least one CI, and 60.5% reported multiple (≥ 2) CIs. The top three prevalent CIs in the sample were hypertension, arthritis and heart disease. By age, a mean number of 1.8 ± 1.6 CIs was reported by caregivers under age 65 with hypertension, depression and arthritis most prevalent. In regard to caregivers over age 65, a mean number of 2.1 ± 1.3 CIs was reported with hypertension, arthritis and heart disease most common.

With respect to kinship status, female spouse caregivers reported 2.3 ± 1.4 CIs with hypertension, arthritis and heart disease most prevalent. Male spouse caregivers reported 1.9 ± 1.2 CIs and the most prevalent CIs in this group included heart disease, hypertension and arthritis. For daughter caregivers, a mean number of 1.7 ± 1.5 CIs were

Table 1. Sociodemographic and caregiving characteristics of the sample: caregivers with CIs and caregivers without CIs

| | Entire sample, <i>n</i> = 124 | Without CIs, <i>n</i> = 23 (18.5%) | With CIs, <i>n</i> = 101 (81.5%) | <i>P</i> -value |
|---------------------------------|-------------------------------|------------------------------------|----------------------------------|-----------------|
| Caregiver, characteristics | | | | |
| Age | 65.4 ± 12.6 | 60.3 ± 12.4 | 66.7 ± 12.3 | 0.03* |
| Education (years) | 14.4 ± 2.6 | 15.1 ± 2.0 | 14.2 ± 2.7 | 0.13 |
| Care duration (years) | 3.2 ± 2.7 | 3.5 ± 2.7 | 3.1 ± 2.8 | 0.52 |
| Female | 86 (69.4) | 15 (65.2) | 71 (70.3) | 0.63 |
| White | 116 (94.3) | 21 (91.3) | 95 (94.1) | 0.56 |
| Unemployed | 93 (75.0) | 11 (47.8) | 82 (81.2) | 0.01* |
| No financial strain | 100 (81.3) | 20 (87.0) | 80 (79.2) | 0.52 |
| Marital status | | | | |
| Married | 105 (84.7) | 20 (87.0) | 85 (84.2) | 0.82 |
| Divorced | 7 (5.6) | 1 (4.3) | 6 (5.9) | |
| Widowed | 2 (1.6) | 0 (0) | 2 (2.0) | |
| Single | 10 (8.1) | 2 (8.7) | 8 (7.9) | |
| Relationship | | | | |
| Spouse | 75 (60.5) | 10 (43.5) | 65 (64.4) | 0.17 |
| Offspring | 40 (32.3) | 11 (47.8) | 29 (28.7) | |
| Sibling | 3 (2.4) | 0 (0) | 3 (3.0) | |
| Others | 6 (4.8) | 2 (8.7) | 4 (4.0) | |
| Care-recipient, characteristics | | | | |
| Age | 78.2 ± 8.6 | 77.8 ± 9.5 | 78.1 ± 8.0 | 0.91 |
| Gender | 71 (57.2) | 12 (52.2) | 59 (58.4) | 0.64 |
| General health | | | | |
| Poor | 15 (12.5) | 2 (8.7) | 13 (12.9) | 0.12 |
| Fair | 38 (31.7) | 5 (21.7) | 33 (32.7) | |
| Good | 43 (35.8) | 9 (39.1) | 34 (33.7) | |
| Excellent | 24 (20.0) | 6 (26.1) | 18 (17.8) | |
| Stage of dementia | | | | |
| Early | 45 (36.6) | 12 (52.2) | 33 (32.7) | 0.73 |
| Middle | 60 (48.8) | 8 (34.8) | 52 (51.5) | |
| Late | 18 (14.6) | 2 (8.7) | 16 (15.8) | |

Data presented as means ± SD or *n* (%).

**P* < 0.05, there were statistically significant differences between caregivers with CIs and without CIs.

reported. The most common CIs for this group were depression, arthritis and hypertension.

When compared with their national counterparts [6, 7], younger caregivers were significantly higher in proportions of multiple CIs ($t = 3.37$, $P = 0.008$) and depression ($t = 5.73$, $P < 0.001$). When compared with the general older population [7, 8], older caregivers were not significantly different in the proportions reporting CIs, reporting multiple CIs or the prevalence of five specific CIs, whereas they were lower in the incidence of other four CIs (for details, please see Supplementary data available in *Age and Ageing* online, Appendix S3).

Discussion

Our study provides a comprehensive picture of the prevalence of CIs among informal caregivers of PWDs. More than four-fifths of caregivers reported having at least one CI, and nearly two-thirds reported multiple CIs. The proportion of CIs was particularly high for caregivers aged 65 years and older as well as for spouse caregivers; advanced age was a

significant risk factor for CIs. One of the most salient findings of this study is the greater risk of CIs for older female spouse caregivers compared with older male spouse caregivers. This result supports and advances our understanding of the findings in previous studies that older female spouse caregivers experience greater burden and strain from caregiving [9, 10]. Another important finding of this study is related to the high comorbidity level in caregivers regardless of age. More than half of all caregivers under the age of 65 and more than two-thirds of all caregivers over the age of 65 reported the existence of multiple CIs.

When compared with the general population, the link of CIs to younger caregivers became more evident, whereas the association of CIs with older caregivers was significantly reduced. One possible reason may be that younger adults often have other life roles besides caregiving, such as employment and parenting. Trying to fulfill multiple responsibilities caused greater risk for psychological stress and depression among this younger group, when compared with the older group who was more likely to be retired and no longer in the parenting role. In contrast, the weak relationship of CIs with older caregivers compared with the general population may be due to better physical health as a prerequisite for seniors taking on the role of caregiving in the first place, as supported by a recent longitudinal study among 4,245 seniors [11]. One factor that would allow an unhealthy caregiver to continue the role is the availability of financial resources and formal support [5, 12]. The majority of our sample had no financial strain or problems in accessing formal support so they were likely to take on caregiving initially because of good general health. Further, studies have found that older spousal caregivers compared with others were more likely to identify a deeper meaning of caregiving that was found to contribute to decreased depression, lower burden and better self-rated health of the group [13, 14]. Given the above reason, the association of CIs with older caregivers was not as significant as in the younger caregiver group.

Our findings also indicate that common types of CIs among caregivers are similar to that in the general population. Older caregivers reported the highest hypertension and arthritis, consistent with population findings that hypertension and arthritis were the most frequently reported CIs among senior Americans [15, 16]. Younger caregivers reported the most depression of all caregivers, consistent with population reports that younger Americans under age 65 were more likely to report depression than older Americans over age 65 [17]. Female spouse caregivers reported higher levels of hypertension, whereas male spouse caregivers reported more incidents of heart disease and cancer, similar to that of the general population by gender [18].

By comparing caregivers to the general population, this study increases our understanding of the health status of caregivers more completely. However, the unavailability of data at state and local levels related to CIs limited the significance of our study in comparison. In addition, self-reported data were used in this study, which may have yielded lower reported rates of CIs than the actual rates due to subject

Table 2. The prevalence of chronic illnesses in caregivers and among the general population

| Prevalence of CIs | Caregivers | | | | | | Adult Americans | |
|-------------------|-----------------------|------------------------|----------------------|-------------------------|----------------------|--------------------------|------------------------------------|----------------------------------|
| | Total, <i>n</i> = 124 | Younger, <i>n</i> = 54 | Older, <i>n</i> = 70 | Husbands, <i>n</i> = 29 | Wives, <i>n</i> = 46 | Daughters, <i>n</i> = 34 | Younger ^a , 45–64 years | Older ^b , 65–74 years |
| 0 | 18.5 | 27.8 | 11.4 | 17.2 | 10.9 | 26.5 | 40.7 | 20 |
| ≥1 | 81.5 | 72.2 | 88.6 | 82.8 | 89.1 | 73.5 | 59.3 | 80 |
| ≥2 | 60.5 | 51.9* | 67.1 | 58.6 | 71.7 | 47.1 | 30.7 | 50 |
| M ± SD | 2.0 ± 1.5 | 1.8 ± 1.6 | 2.1 ± 1.3 | 1.9 ± 1.2 | 2.3 ± 1.4 | 1.7 ± 1.5 | – | – |
| HTN | 33.9 | 24.1 | 41.4 | 24.1 | 58.7 | 11.8 | 32.9 | 55.6 |
| Arthritis | 21.8 | 13.0* | 28.6 | 20.7 | 28.3 | 14.7 | 31.2 | 47.6 |
| Back problems | 9.7 | 9.3* | 16.0 [†] | 13.8 | 13.0 | 2.9 | 33.3 | 33.2 |
| Heart disease | 20.2 | 9.3 | 28.6 | 34.5 | 19.6 | 8.8 | 12.8 | 26.7 |
| Cancer | 6.5 | 5.6 | 7.1 [†] | 10.3 | 8.7 | 0 | 8.8 | 22.7 |
| Stroke | 1.6 | 0 | 2.9 | 3.4 | 2.2 | 0 | 2.8 | 6.5 |
| Lung Disease | 3.2 | 1.9* | 4.3 [†] | 6.9 | 2.2 | 2.9 | 15.9 | 16.4 |
| Diabetes | 8.1 | 9.3 | 7.1 [†] | 10.3 | 6.5 | 2.9 | 12.2 | 22.9 |
| Depression | 10.5 | 20.4* | 2.9 | 0 | 6.5 | 20.6 | 4.4 | 2.8 |

Data presented as %, 0, reporting having no CIs; ≥1, reporting at least one CI; ≥2, reporting two or more CIs; HTN, hypertension.

**P* < 0.05, there were statistically significant differences between younger caregivers and younger adult Americans.

[†]*P* < 0.05, there were statistically significant differences between older caregivers and older Americans.

^aBaseline Health, Socioeconomic Status, and 10-Year Mortality among Older Middle-Aged Americans: Findings From the Health and Retirement Study, 1992–2002 (*n* = 9,759) [6]; the Summary health statistics for US adults: National health interview survey, 2011 (*n* = 87,500) [7].

^bChronic Diseases at a Glance 2009 [8], and Summary health statistics for U.S. adults: National health interview survey, 2011 (*n* = 87,500) [7].

forgetfulness. Further, failing to obtain a formal diagnosis might have influenced the lower rates of CIs among caregivers. In the clinical practice, caregivers often indicated that they delayed or cancelled their own medical appointments because of needed care for the PWDs. Good health is an important predictor of initiating and continuing the role of a caregiver [11]. More emphasis on health promotion and screening is needed to promote and better investigate the health status of informal caregivers of PWDs.

Key points

- CIs and comorbidity were high among PWD caregivers.
- The link of CIs to caregivers was stronger in younger caregivers but weaker in older caregivers.
- Advanced age, female gender were significant risk factors for caregivers CIs.

Conflicts of interest

None declared.

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Supplementary data

Supplementary data mentioned in the text is available to subscribers in *Age and Ageing* online.

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Specialty experience in geriatric medicine is associated with a small increase in knowledge of delirium

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Abstract

Background: delirium is underdiagnosed and undertreated. Understanding of delirium among doctors in medical and ICU settings has previously been shown to be low. We hypothesised that junior doctors who had gained experience in geriatrics, neurology or psychiatry may have an increased knowledge of delirium.

Methods: we used data from a large multi-centre study of junior doctors conducted between December 2006 and January 2007 which is, to date, the largest survey of understanding of delirium among junior doctors. The original survey used a questionnaire within which certain key items led to a correct or incorrect answer. Total correct answers were recorded giving a maximum total knowledge score of 17 for each participant. The relationship between total knowledge score achieved on the questionnaire and time since qualification; specialty experience in geriatric medicine, psychiatry and/or neurology and self-reported experience with the Confusion Assessment Method (independent variables) were modelled using linear regression.