

## LETTER TO THE EDITOR

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**Response to “Factors associated with long-term impact on informal caregivers during Alzheimer’s disease dementia progression: 36-month results from GERAS”**

We read with interest the recent paper entitled “Factors associated with long-term impact on informal caregivers during Alzheimer’s disease dementia progression: 36-month results from GERAS” by Reed *et al.* (2019). The authors concluded that long-term informal caregiver burden is driven by declining functional abilities and increased behavioral symptoms in patients with Alzheimer’s disease in the community.

Longitudinal studies using large sample sizes which focused on the burden of caregivers of persons with dementia are few. Previous analysis of longitudinal data assessing the burden of caregivers of persons with dementia over 12 months (Kajiwar *et al.*, 2018) found no significant differences in caregiver burden, positive caregiving appraisal, and behavioral and psychological symptoms of dementia (BPSD). Moreover, other studies reported that BPSD was associated with caregiver burden (Kajiwar *et al.*, 2015; van der Linde *et al.*, 2012). This study demonstrated worsening behavioral symptoms in patients with Alzheimer’s disease. Therefore, caregiver burden may be positively associated with BPSD in this study and this information is important to consider.

It is noteworthy that Reed *et al.*, (2019) reported lower increases in caregiver burden over 36 months when the participants lived in Germany. A previous study reported differences in caregiver burden by country (Matsushita *et al.*, 2016). Other research in Sweden and the United States have reported that caregiver burden tends to decline in longitudinal studies (Gaugler *et al.*, 2009; Grafström & Winblad, 1995). Therefore, it may be useful to consider the relationship between cultural background and caregiver burden in each country, as there may be differences in caregiving roles.

Undoubtedly, it is important to focus on long-term impacts of caregiver burden, and to use large sample sizes in longitudinal designs. The study conducted by Reed *et al.* (2019) provided useful data in this regard. We believe that longitudinal studies emphasizing caregiver burden, functional abilities and behavioral symptoms will be beneficial

in understanding the burdens of caregivers of persons with dementia.

**Conflict of interest**

None.

**Description of authors’ roles**

KK, JK, HN, YO and MK made substantial contributions to study conception and design. KK and JK were involved in drafting the manuscript or revising it. All authors contributed to and approved all drafts.

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