



Invited Commentary

Invited Commentary: Adult Child Migration and Parental Cognitive Decline— A New Perspective on Loneliness and Social Isolation

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There is a growing body of research on the link between social isolation, loneliness, and health outcomes in later life, including cognitive decline and dementia. In the current issue of the *Journal*, Torres et al. (*Am J Epidemiol.* 2020;189(8):761–769) present findings from a study of the association between adult child migration status and cognitive performance among parents who stayed behind in Mexico, using longitudinal data (2001–2015) from the Mexican Health and Aging Study. This is an excellent example of the role that emotional and social factors may play in the development of cognitive impairment among older adults. In their study, having an adult child in the United States was associated with a steeper decline in verbal memory scores over time, but only among women. In the light of the increasing levels of immigration worldwide, this work is highly relevant, as it touches upon a less recognized socioemotional risk factor for cognitive decline: family-member migration status. Further research on this topic should be conducted in other countries and should include assessment of the social and emotional needs of those staying behind when a family member migrates. This will increase our understanding of how social isolation and loneliness relate to cognitive decline and may contribute to new directions for interventions.

Alzheimer disease; cognitive decline; dementia; loneliness; migration status; mild cognitive impairment; social isolation; vascular dementia

Dementia is one of the largest medical challenges worldwide, with a rapidly increasing prevalence due to increased longevity (1). Alzheimer disease and vascular dementia account for 90% of cases. Established risk factors for dementia include aging; single-gene defects; female sex; illiteracy; vascular factors such as hypertension, stroke, and diabetes; early-life negative events (such as deviations in early-life brain development); head injury; and preexistent cognitive reserve. There is a broad consensus that dementing disorders lie on the final pathway of the interaction between these factors (1, 2).

In the past decade, there have been more and more clues that environmental factors such as social isolation and emotional factors such as loneliness are associated with cognitive decline and dementia (2, 3). While the term *social isolation* merely refers to the quantity of social interactions—for example, in terms of social network size and paucity of social contact—*loneliness* refers to the quality of social attachments and the evaluation of being alone as negative (4).

Understanding of the associations of loneliness and social isolation with cognitive decline and dementia remains limited. Several pathways through which loneliness may affect cognition and cause dementia have been proposed, such as triggering of neural responses directly influencing the development of neurodegenerative conditions, activation of the hypothalamic-pituitary-adrenal axis and the sympathoadrenal system, disruption of sleep, dysregulation of the immune system, oxidative stress, and a higher amyloid burden in lonely individuals. Other possible explanations are that lonely people are more prone to unhealthy behaviors such as physical inactivity, substance abuse, and a poor diet. Furthermore, we know that loneliness is associated with depression, which in itself contributes to cognitive decline and dementia (3). Finally, isolation may also lead to a lack of sensory and cognitive stimulation, thereby influencing those cognitive neural systems that produce a decrease in neural reserve. Recently, it was found that the negative impact of hearing impairment on cognition is mediated through the

adverse effects of hearing impairment on loneliness and social isolation (5, 6).

In a recent article on dementia prevention, intervention, and care, Maharani et al. (6) stated that 85% of dementia-associated costs are related to family and social care rather than medical care. The article mentions social isolation as a relevant risk factor for incident dementia (relative risk = 1.57, 95% confidence interval: 1.32, 1.85), with a population attributable fraction similar to that for hypertension and physical inactivity. With social isolation identified as a risk factor for dementia, hypertension, coronary heart disease, and depression, the importance of considering social engagement is underlined (7).

In their landmark paper “From Social Integration to Health,” Berkman et al. (8) review different sets of historical theoretical orientations of the association between social relationships and health (9). The authors present a conceptual model on how social networks impact health. They describe a cascading process involving macrosocial conditions (e.g., poverty and labor market structure), mezzosocial conditions (e.g., social network size and frequency of contacts), and microsocial conditions (e.g., emotional support and close personal contact) which affect health behavior, psychological well-being (e.g., depression), and physiology (e.g., hypothalamic-pituitary-adrenal axis response and cardiovascular reactivity) (8).

In the present issue of the *Journal*, Torres et al. (10) address an important social condition. They studied the association between adult child US migration status and cognitive performance scores, using data from the Mexican Health and Aging Study (2001–2015). Participants were aged 50 years or older, with at least 1 living child who completed direct interviews at 2 years (2003), 9 years (2010), or 11 years (2013) of follow-up. Adult child migration status and cognitive performance were analyzed among 11,806 participants (6,374 women, 5,432 men). Women who had an adult child in the United States at baseline and at the 2-year follow-up had steeper 9- and 11-year declines in immediate and delayed verbal recall scores than those with no children in the United States. In men, no associations were found.

To our knowledge, this study is the first to have assessed the relationship between adult child immigration status and cognitive decline. The authors argue that the steeper decline in cognitive functioning observed among women with a migrant child might be explained by reduced social engagement, loneliness, and depression. They hypothesize that men may have been more socially and cognitively engaged through their working lives, since men were more likely to be employed than women. The authors state that in the future, researchers should evaluate potential mediators and modifiers of the observed associations and analyze family migration status in other low- and middle-income countries.

Compared with an increasing amount of literature describing the impact of migration and minority status on mental disorders, with an emphasis on psychotic disorders (11), studies on immigration status and cognitive decline are relatively scarce, while the cognitive consequences for those left behind have not been studied at all. In this light, the work of Torres et al. (10) is a highly relevant rare study addressing the cognitive health status of those staying behind in case of

immigration of a child. The importance of this work is that it highlights both a less known side effect of immigration and a potentially modifiable risk factor for cognitive decline and possibly dementia. Considering the model of Berkman et al., possible factors that could explain the results of the present study on the consequences of immigration, a macrosocial condition, are the structure and characteristics of the remaining social network (e.g., network size, proximity of network members, frequency and intimacy of face-to-face contacts), social support, and social engagement, as well as levels of loneliness and depression, among those staying behind (8). Future research could address these factors.

Current research and recommendations on dementia merely emphasize early detection of dementia and interventions for reducing or delaying conversion through methods such as cognitive training and rehabilitation, lifestyle and exercise interventions, medication (cholinesterase inhibitors and treatment of neuropsychiatric symptoms) treatment of depression, and end-of-life care (1, 7). With the number of people with dementia on the rise, preventing and delaying cognitive decline and the onset of dementia is essential. Understanding the effects of loneliness and social isolation on cognitive decline, mild cognitive impairment, and the onset of dementia might be one of the keys in preventing and delaying this neuropsychiatric disorder. Research on the consequences of these conditions, as well as interventions, need to address macrosocial conditions, such as immigration, network structure and ties, interpersonal contact, personality, and emotional functioning (8, 12). Further biological research is needed to find out whether feelings of loneliness are a signal of prodromal dementia or are a direct result of neurodegenerative pathology such as cortical amyloid burden (12, 13).

In conclusion, dementia is a multicausal medical condition with an increasing prevalence worldwide and a large societal burden. Currently, the focus is mainly on early detection and cognitive interventions, exercise, medication, and end-of-life care. The increasing evidence on the cognitive consequences of loneliness and social isolation is not yet reflected in preventive approaches to cognitive decline and dementia. The first step would be to increase awareness of the deleterious effects of loneliness and social isolation among health-care professionals and researchers. Further, research and interventions are needed not only on a biological and psychosocial level but on a macrosocial level as well—for example, through studying the cognitive consequences of migration. Interdisciplinary cooperation between medical specialists, sociologists, psychologists, neuroscientists, and epidemiologists is indispensable in effective dementia prevention, intervention, and care.

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