Human culture and the future dementia epidemic: Crisis or crossroads?
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Human culture and the future dementia epidemic
Crisis or crossroads?

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Epidemics appear, and often disappear without trace, when a new culture has started... The history of epidemics is therefore the history of disturbances of human culture.

—Rudolf Virchow

Late-onset dementias are life-shortening diseases of largely unknown cause. Predictions of the number of persons living with dementia by 2050 have spawned alarming headlines forecasting a "tsunami" of dementia cases that will overwhelm families and health care systems and impose unbearable economic burdens. Recommendations to avert the "dementia crisis" include increased early diagnosis and treatment, and applying the tools of clinical neuroscience to determine how to delay and eventually cure the disease. Although the ultimate goals remain elusive, there have been advances on both fronts, which should not be considered in isolation.

Marked declines in major illnesses in the final decades of the last century are traceable to social improvements from around 1850. Historical observations suggest that cultural forces other than the fruits of laboratory science contribute to lower disease incidence. These forces place us at a crossroads in understanding and dealing with incidence and prevalence of dementia. Examples include better social conditions and diets (stomach cancer), better care (breast cancer), public health measures to improve lifestyle (heart disease), and wider use of drugs to reduce risk (statins and antihypertensives in heart disease and stroke). One review, albeit based primarily on observational studies, estimated sizable reductions in dementia if measures currently available were implemented, suggesting that "up to half of AD cases are potentially attributable to modifiable risk factors... similar to all cause dementia."1

Estimations of present and future numbers of people living with late-onset dementia are bedeviled by the need to make multiple assumptions2 that a uniformly susceptible population will be exposed to causal factors that lead to symptomatic dementia; causal factors remain constant over time, such that successive aging cohorts will be equally exposed to the same agents for similar periods and at about the same intensity; the rate of progression from dementia initiation through to symptom formation and onto to disability and death will remain relatively constant over the projected period of interest; and present trends of improvements in mortality will continue.

No data on temporal trends in dementia incidence are currently available that take full account of these assumptions. Nevertheless, in this issue of Neurology®, Qiu et al.3 report substantial progress. They compared dementia prevalence estimates drawn from 2 population-based cross-sectional surveys (spanning 1987–1994 and 2001–2008) in the island of Kungsholmen, part of Stockholm. They report that overall prevalence of dementia remained constant between these 2 time periods and that survival (with and without dementia) was longer in the latter cohort. The authors reasoned that falling dementia incidence could account for stable prevalence as survival improved. While their data do not allow causal evaluation, they considered how multiple risk factors for cerebrovascular disease may have ameliorated between 1987 and 2008 and contributed to reducing dementia incidence. Incidence could also have been reduced, in their view, due to better and longer education and more complex occupations and recreational interests, including increased physical activity. Studies elsewhere support these notions (e.g., reference 4), and can be linked to improvements in "social capital"5 that give many older US adults many material advantages to be enjoyed in a socially and intellectually engaged lifestyle.6,7

In a previous issue of Neurology®, Hebert et al.8 provided updated projections of numbers of people living with dementia in the United States by 2050 that included the effects of improved survival. The projections essentially confirmed earlier ones based on older population data and smaller samples. Importantly, these authors consider the effects of timing on the effect of measures to prevent or delay dementia onset. If, for example, interventions introduced after age 40 years were ineffective because dementia processes were irreversibly established, individuals now over age 40 could...
not benefit. With improved survival, these individuals would comprise the majority of dementia cases by 2050. Their argument appears prudent. So far, the timing of critical exposures that increase or protect against dementia risk is largely unknown. Midlife exposures to vascular risk factors are important,9 as are the protective roles of childhood education and higher intelligence.10 Drawing together and making coherent sense of these diverse factors is no easy task. Social scientists more so than clinical neuroscientists would recognize these as “cultural influences” and understand the challenges involved in attempting to quantify their causal attributions. Fortunately, the emerging field of population health sciences has gained a growing presence in research universities. Students in such programs are systematically introduced to the concepts and methods involved in estimating the multiple determinants of health outcomes, including medical care, public health interventions, aspects of the social environment (e.g., education, social support, culture) and aspects of the physical environment (e.g., urban design, air and water quality), genetics, and individual behavior.11

Neither the Qiu et al.3 nor the Hebert et al.8 study can evaluate the provocative conclusions offered by Barnes and Yaffe.1 Notwithstanding, they provide a useful substrate for such studies, and bring into focus tentative findings from the United States and Holland that show potential to improve dementia reduction. Further, Qiu et al.3 emphasize that one epidemic should not be addressed in isolation from others; e.g., failure to address the growing obesity epidemic in the United States and Europe has serious implications for our ability to reduce dementia incidence.

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