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Education: A Key Resource Against Alzheimer's and Other Dementias in Ethnic Minorities

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Background

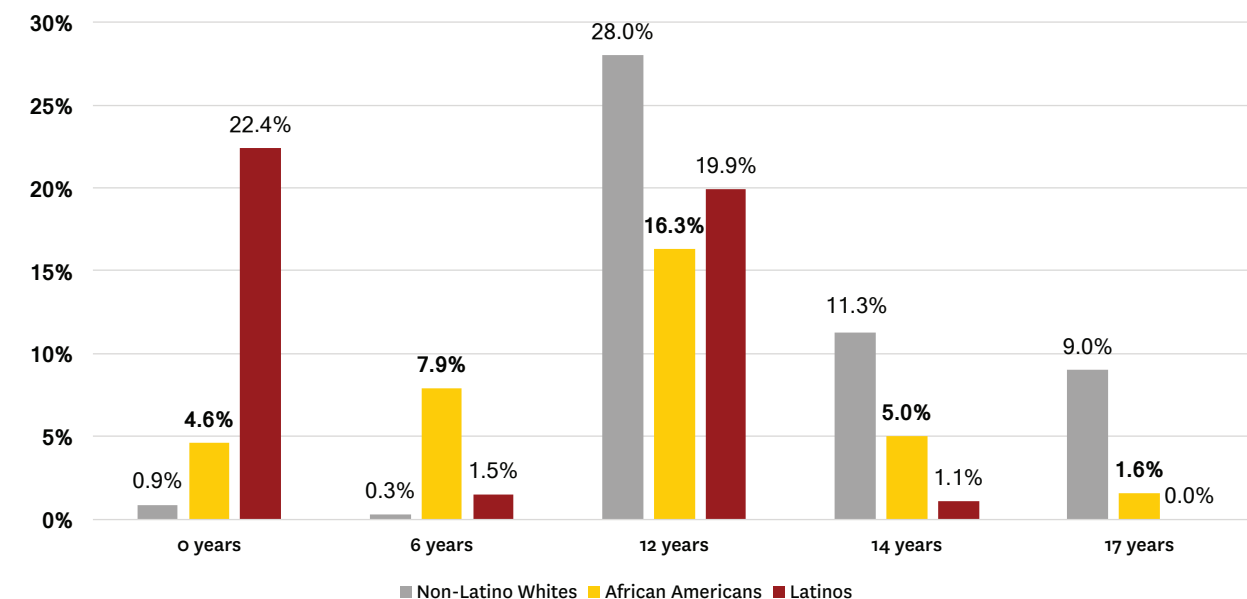
An increase in life expectancy gives people more opportunities to lead fulfilling lives (World Health Organization, 2015). Yet with older age comes an increased risk for developing cognitive impairments and dementias such as Alzheimer's disease (Sosa-Ortiz, Acosta-Castillo, & Prince, 2012). Since dementia is a terminal disease with no cure, it is more important than ever to identify the factors that can help us maintain good cognitive functioning for a longer period of life. Research studies suggest that higher educational attainment may prevent or at least delay dementia onset. This policy brief analyzes data from the nationally representative Aging, Demographics, and Memory (ADAMS) study. Findings demonstrate how education is associated with dementia risk in individuals age 70 and older.

Key findings

Dementia prevalence is higher in ethnic minorities
Lifetime dementia prevalence for people age 70 and older is 27.4%. Of those from non-Hispanic white origin, 26.6 % developed dementia in their life. The lifetime prevalence was higher in ethnic minorities: 33.0% of African Americans and 35.8% Hispanics developed dementia. Despite the difference in dementia prevalence, the average age of dementia onset was very similar. Non-Hispanic Whites were on average 81.8 years old, African Americans were 82.8 years old, and Hispanics were 81.4 years old.

Ethnic minorities have lower educational attainment
A major difference between ethnic groups is educational attainment. In the population age 70 and older, non-Hispanic Whites completed more years of education than African Americans or Hispanics, as shown in Figure 1. Of those from non-Hispanic White origin, 43.6% completed at least some college education. Of those from African-American origin, only 8.1% attended college, and of those from Hispanic origin, only 11.1% did. Figure 2 shows the differences in educational attainment between ethnic groups of people age 70 and older. What is most alarming is how many people did not complete high school.

Figure 1: Years of education by ethnic group. Adjusted for sampling weights. (This only represents a sample of the data. Percentages will not total 100%.)

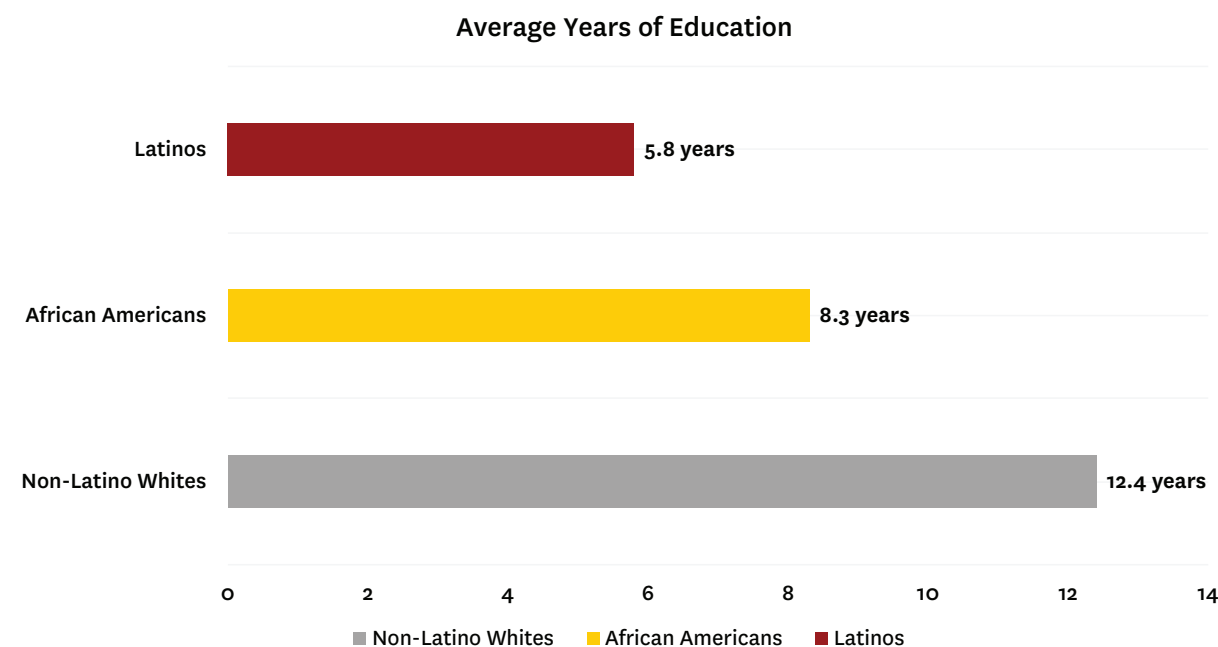


Education and dementia risk

Analyses on the impact of education on dementia risk take into account gender, marital status, stroke, wealth, and genetic risk (APOE e4 allele). Controlling for those factors, results show that every extra year of education is associated with a 5% lower dementia risk (HR 0.95). People with 5 years of education had a 20% risk of dementia at the age of 82, whereas people with 15 years of education had a 20% risk of dementia at the age of 86.

Because educational attainment is lowest for people of Hispanic origin, it is possible that this is one reason for their high prevalence of dementia (HR 1.34). The results highlight that there is a great variance of dementia risk in Hispanics (HR 95% confidence interval 0.64-2.85), and educational attainment seems to be one of the factors explaining that phenomenon. Figure 3 shows how every additional year of education is associated with a lower dementia risk, especially for people of Hispanic origin.

Figure 2. Mean educational attainment in years by ethnic group. Adjusted for sampling weights.



Possible reasons

There are several possible reasons why education decreases dementia risk. Higher education seems to improve brain functioning. Training of mental abilities in various educational settings (e.g., in primary school and in colleges) increases brain connectivity (Astle, Barnes, Baker, Colclough, & Woolrich, 2015; Chapman et al., 2013). Higher education in particular is associated with greater brain volume and higher brain metabolism (Arenaza-Urquijo et al., 2013). In this way, higher education also builds up a cognitive reserve (Stern, 2012). Cognitive reserve helps people maintain good cognitive functioning as they age, even if there is brain damage (Stern, 2012). Moreover, if a person receives better quality of education, cognitive reserve may be higher and dementia risk may be even lower. Better linguistic abilities in early adulthood, for instance, are associated with less brain pathology (Snowdon, Greiner, & Markesbery, 2000) and better cognitive functioning in late life (Iacono et al., 2009). Another mechanism of how education decreases dementia risk could be through strengthening life competencies, such as self-esteem and self-efficacy, productive efficiency, resilience to stressful and risky environments, and health behavior (Feinstein & Sabates, 2006). People with stronger life competencies are more proficient in avoiding risk factors and engage more in cognitively demanding, protective activities (Vemuri et al., 2014).

Implications

Due to the costs and the social burden of dementia, the delay of dementia onset by just a few years would be an enormous relief for the individual and the society. Education can make a significant contribution to this effort. As this and other studies have shown that every additional year of education reduces the risk for developing dementia (Then, Luck, Angermeyer, & Riedel-Heller, 2016; Xu et al., 2015), it is more important than ever to encourage higher educational attainment in minority populations. The educational disparities presented in this policy brief are from individuals aged 70 years and older. Younger generations of ethnic minorities have completed high school and enrolled in college at higher rates (Musu-Gillette et al., 2017). However, high school dropout rates today are still three times as high among Hispanics as among Whites (Cataldi & KewalRamani, 2009). Given the projected epidemic-like prevalence of dementia in the near future, promoting access to higher education for ethnic minorities seems to be an effective mechanism to reduce dementia burden on society.

In that respect, the quality of schooling plays also an important role. Having an enriched primary school experience is essential because it provides the skills needed to succeed in high school. Primary school education forms the skills needed to succeed in high school, and therefore quality of primary schooling is essential. Better quality of schooling also fosters a better level of cognitive functioning throughout the life course. People who experienced a better quality of schooling have superior cognitive functioning later in life (Sisco et al., 2014). Chronic underfunding of schools with large populations of minorities could thus be another critical source ethnic and racial disparities in dementia prevalence (Manly, Jacobs, Touradji, Small, & Stern, 2002).

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Figure 3. Predicted dementia risk (hazard rates) associated with each year of education, by ethnic group. Adjusted for sampling weights gender, marital status, stroke, wealth, and genetic risk (APOE e4 allele)

