Primary Prevention of Alzheimer's Disease in Developing Countries

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TO THE EDITOR

The “use it or lose it” theory of brain proposes that an enriched environment, a cognitively active life-style, and an exploratory rather than “indoor” exercise schedule can prevent or postpone dementia,¹⁾ much like with a muscle. Enhancement of hippocampal volume; continued cellular proliferation, differentiation, survival and integration into circuits involving the hippocampus²⁾ have all been reported with adoption of these methods.

Recently, it has been reported that low educational achievement has the highest estimated population-attributable risk (PAR; 19.1%, 95% confidence interval 12.3-25.6) worldwide in terms of developing Alzheimer's dementia (AD); while physical inactivity contributed highest in this regard in developed world.³⁾ PAR, in this report, has been calculated through meta-analysis of existing data for seven modifiable factors. As PAR measures the proportion of cases that would not occur in a population if concerned factor was eliminated, this revelation is of seminal importance. It is, therefore, implied that improving access to education and physical exercise could help the world avoid an epidemic of AD.³⁾

“Developing nations” like India face certain unique problems in this regard. They have to deal with widely prevalent poverty, which ensures that the population maintains dismal rates of adult literacy and conditions of general deprivation at-large. In India, for example, adult literacy rate was 62.8% during 2008-2012.⁴⁾ Since education is one of the cheapest and most generalizable methods for cognitive stimulation, approximately 37% of the adult population in this country might therefore be denied of their chances at stimulating their brains through cognitive

exercises. At the same time, a fast incursion of sedentary lifestyle into traditional Indian society and associated physical inactivity might propagate obesity, increase metabolic risk factors⁵⁾ and expose the population to chances of developing AD.

Thus, with these two socio-economically opposing but physiologically complementary ultra-high PAR clusters at work; what are the chances that an AD epidemic could be avoided in the developing world in near future? India, in 2030, is expected to have its older population share more than 45% of the healthcare-related burden; and by 2045, proportion of adults above 60 years might exceed those between 0-14.⁶⁾ In this age-group, associated urbanization is also expected to increase physical inactivity, while unequal distribution of wealth might still maintain poverty and keep cognitive stimulations at bay. Therefore, while a reduction in prevalence of these risk factors could predictably reduce the prevalence of AD;³⁾ it would require massive undertakings by all stakeholders (governments and private players) in order to realize this dream. We believe that a concerted effort at alleviating poverty, improving access to quality education and lifestyle modification might enable us in achieving a better old age for the rapidly aging population of the developing world.

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Received: April 16, 2015 / Accepted: April 30, 2015

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