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Dementia incidence in middle-income countries.

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Women who have undergone genital mutilation cannot be compared to individuals with intersex conditions (Creighton and colleagues' references 2 and 3), in terms of either psychological experience or the type of lesion to be repaired. We clearly set out the limitations of the study in our paper.

We are aware of Creighton and colleagues' strong opposition to female genital cosmetic surgery. However, what we are doing can in no way be described as "cosmetic". Instead, what we are trying to do is to restore the dignity and wellbeing of women who have experienced violence—and who very much welcome our initiative.

We declare that we have no conflicts of interest.

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## Dementia incidence in middle-income countries

One of the main hypotheses in Martin Prince and colleagues' study on dementia incidence in middle-income countries (July 7, p 50)<sup>1</sup> is that if cognitive reserve is less stimulated in these countries, dementia incidence should be higher than in high-income countries. Considering that education is one of the main constituents of cognitive reserve,<sup>2</sup> and that in the total baseline sample of the study 41% did not complete primary education, one indeed should expect a higher dementia incidence in this sample. However, the results of the study suggest that dementia incidence

"might be much the same as that typically recorded in countries with high incomes".<sup>1</sup>

A possible explanation for this apparently negative result might be found in the analysis of dementia incidence by age. In a retrospective study on dementia prevalence in Latin America,<sup>3</sup> we found a similar total dementia prevalence to that of studies from developed countries, but the prevalence was higher in relatively younger individuals and lower in older individuals in Latin America than in developed countries. According to the cognitive reserve hypothesis, higher cognitive reserve delays the clinical manifestations of the diseases that cause dementia.<sup>4,5</sup> Our interpretation was that low cognitive reserve caused earlier emergence of clinical signs of dementia in Latin America, whereas high mortality decreased the prevalence in older individuals.<sup>3</sup>

It is not clear whether Prince and colleagues assessed the possibility of different incidence by age in their sample when compared with studies from high-income countries. Information on this point might be important for public health initiatives in low-income and middle-income countries.

I declare that I have no conflicts of interest.

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Martin Prince and colleagues<sup>1</sup> classified patients with dementia according to rural and urban residence without mentioning differences in exposure to air pollution. Studies have indicated associations between air pollution and neurodegenerative diseases. Residents of cities with severe air pollution had significantly greater accumulation of  $\beta$  amyloid protein in the brain than did residents of less polluted cities.<sup>2</sup> Research implies that elevated levels of air pollutants could have a role in neuroinflammation and the pathogenesis of neurodegenerative disorders. Consequently, air pollution should be considered as a confounding factor in the study by Prince and colleagues.

Research has also revealed links between environmental inhalation exposures and olfactory function in human beings. Significant olfactory impairment associated with exposure to air pollution has been reported.<sup>3</sup> Olfactory loss is an early finding in neurodegenerative diseases, preceding cognitive and motor symptoms by several years.<sup>4</sup> Also, olfactory dysfunction was found to be correlated with  $\beta$  amyloid burden in a mouse model of Alzheimer's disease.<sup>5</sup> Linking these study results together suggests the question: could a causal relation exist between poor air quality and neurodegenerative diseases, with impaired olfaction being an early marker?

Thus, the use of periodic olfactory testing as an early screening tool for possible neurotoxicity after substantial air pollution exposures could be clinically useful. Confounding factors, such as ageing or vascular disorders that affect olfaction, are prevalent in older people. Therefore, young people are recommended for future research.

We declare that we have no conflicts of interest.

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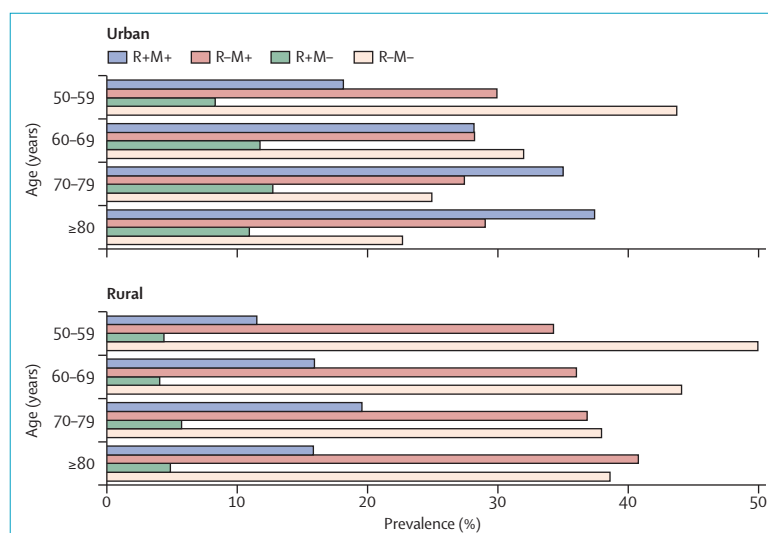
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## Hypertension in developing countries

The Series paper by Mohsen Ibrahim and Albertino Damasceno (Aug 11, p 611)<sup>1</sup> points to a need for action and research on hypertension in low-income and middle-income countries. Relatively little is known about prevalence in older adults. One source of health data for six countries, WHO's Study on global AGEing and adult health (SAGE), found hypertension to be common in older adults, with a higher prevalence in women and urban residents.<sup>2,3</sup> For those with multiple chronic disorders, a high proportion include hypertension,<sup>3</sup> adding to disease burden and treatment complexities.

The prevalence and awareness of hypertension in urban and rural dwellers in SAGE wave 1 (China, Ghana, India, Mexico, Russia, and South Africa)<sup>4</sup> show marked differences in those with diagnosed hypertension under adequate control by age and urban or rural residence (figure). Individuals not diagnosed but with high blood pressure on measurement (higher in rural settings) are as much of a concern as those who know they have hypertension and are still hypertensive on measurement (much higher in urban settings). Awareness was low in four of the six



**Figure:** Dynamics of self-reported and measured hypertension, by age group and place of residence, six-country pooled results for SAGE wave 1<sup>4</sup>

R= self-reported. M= measured. R+M+ = previously diagnosed, poor control (measured blood pressure >140/80 mm Hg); R+M- = previously diagnosed, adequate control; R-M+ = undiagnosed hypertension; R-M- = not hypertensive by self-report or measurement.

countries, with the highest level of treatment at 14%. These results point not only to treatment gaps, but also care insufficiencies.

Not addressing this risk factor is likely to result in high disease prevalence and costs from chronic treatment of cerebrovascular and cardiovascular disease. Yet treatment of hypertension is highly cost effective.<sup>5</sup> SAGE provides an evidence base to track hypertension over time, as well as related health expenditures and covariates that affect prevalence, incidence, and treatment.

We declare that we have no conflicts of interest.

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Mohsen Ibrahim and Albertino Damasceno<sup>1</sup> describe the increasing prevalence of hypertension in developing countries and propose measures for blood pressure control. Meanwhile, rates of cardiovascular morbidity and mortality are also growing in these regions.<sup>2,3</sup> It is important to understand the relation between hypertension and cardiovascular disease in developing countries.

In a traditional rural population in northern Ghana, we have studied hypertension, peripheral arterial disease, and coronary arterial disease, by use of ankle-arm index and electrocardiography, in almost