elderly patients more carefully and, in particular, pay more attention to a decline in blood pressure? Furthermore, an exciting study in amyloid precursor protein transgenic mice found that noradrenaline depletion results in microglia dysfunction together with an increase in extracellular β-amyloid deposition, which can be rescued pharmacologically.[4] It remains to be seen whether this finding can be translated into noradrenaline-based therapies for patients with dementia (for example noradrenaline reuptake inhibitors). Conceivably, the neuroprotective effects of noradrenaline may even extend beyond a single cellular mechanism or disease entity. Understanding the alterations in central noradrenaline signalling preceding overt dementia may create a powerful new window of opportunity for identifying both preclinical dementia stages and developing novel treatments targeting the locus coeruleus circuitry.[5]

Declaration of interest

None declared.

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Sarcosine in the management of schizophrenia

I read with interest the editorial in December 2019 on 'A possible role for sarcosine in the management of schizophrenia'. Professor David Curtis did suggest that 'it seems to be universally well tolerated with an absence of significant side-effects'.[1] I wonder if addition of sarcosine to medication for schizophrenia is actually safe for every patient. It is well accepted that sarcosine level increases in many cases of carcinoma of the prostate gland. Indeed, it may well be a marker for carcinoma of the prostate.[2–4] It is thought that this elevated level of sarcosine is produced by the prostatic cancer cells. This does not mean that it causes the cancer. However, there are at least two important studies in the literature that comment on this issue. Sreekumar et al[5] in *Nature* in 2009 found metabolomic profiles delineating a potential role for sarcosine in prostatic cancer progression and Khan et al[6] in *Neoplasia* in 2013 found increased alteration of benign prostatic epithelial cells upon the addition of sarcosine to prostatic cells. I wondered therefore if a note of caution should be sounded about the use of sarcosine supplement in older men with schizophrenia, especially those with signs of prostatic hypertrophy. Prostate cancer is the most common cancer in males over 70 and the second most common cause of cancer deaths in men.

Declaration of interest

None.

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Author's reply

Dr Brennan is quite right to draw attention to the theoretical possibility that sarcosine might have unrecognised side-effects along the lines he draws attention to. However, it is worth stating that there is no empirical evidence at all that sarcosine does in fact increase risk of prostatic hypertrophy or carcinoma. This possibility could be investigated using animal studies and in the context of properly resourced, large-scale clinical trials. As sarcosine cannot be patented, these would have to be funded by research councils or charitable bodies since no pharmaceutical company is likely to be interested. At present, the evidence strongly suggests that sarcosine is effective in at least some patients with schizophrenia and is well tolerated and probably safe.

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None declared

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Comment on 'The vulnerability paradox in global mental health and its applicability to suicide'

Michel Dückers et al, present a fascinating paper that aims to confirm an inverse association between country vulnerability and mental health.[1] They cite studies indicating that the higher levels of individualism, more equal distribution of power, low masculinity and greater indulgence within more affluent societies can increase the sensitivity of individuals to social failure and hence increase the risk of suicide. This is a very persuasive argument that harkens back to Émile Durkheim's work on anomie as cause of suicide.[2] It could be argued that modern technology attacks two presumed protective factors of traditional societies – community and the limited mobility that partially restricts contact to a small group of individuals of similar socioeconomic background. Social media would seem to do this by increasing personal isolation and increasing exposure to a wider network of 'more successful

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individuals' than one would be acutely aware of in a lower-income village. Suicide rates are dropping in some high-income countries but they are increasing in others so, although highly credible, this may not be the entire story.[3]

However, the papers premise is not fully convincing, the study was only able to include results from upper- and middle-income countries – there was only data from one lower income and as a result the low-income category could not be included in the statistical analysis. Hence the paper explores only upper- and middle-income countries. So, at best the article could argue for the vulnerability paradox in middle- and upper-income countries. There is no reason to project the results on to low-income nations without the data. The reasons for lack of good data on suicide rates from low-income countries is multifactorial but stigma is likely to play a role in addition to lack of resources. Even if data did exist for low-income nations, the much higher mortality rates of lower-income countries from other methods including accidents, homicide and war would make comparison difficult.[4]

Declaration of interest

None.

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