

## •Commentary•

## Prevalence of autism spectrum disorders in China

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Autism spectrum disorders (ASD) are a heterogeneous group of neuro-developmental disorders that are among the most genetically heritable behavioral disorders.<sup>[1]</sup> ASD have attracted increasing attention from researchers and public-health agencies worldwide, particularly in Western high-income nations, where substantial increases in the prevalence of ASD have been reported since the 1990s, and where strong advocacy by families of persons with autism has resulted in increased funding for research into the causes of these devastating conditions. Far fewer data on ASD prevalence are available from Asia than from Europe and North America. Thus, the report in the previous issue by Wan and colleagues,<sup>[2]</sup> of a comprehensive review and meta-analysis of prevalence estimates for ASD in mainland China, Taiwan, Hong Kong and Macau, is a welcome contribution to the international literature. The results of the study, which focused on analyses of populations  $\leq 18$  years of age, highlight the urgent need for large methodologically rigorous studies of the prevalence of ASD in Han Chinese populations—an ethnic group that includes approximately 20% of the world's population.

The authors conducted an exhaustive electronic search of the published literature on ASD prevalence in Chinese-speaking populations, supplemented by a manual search of references in relevant reports. Very importantly, they included Chinese-language publications, thus incorporating several studies that have until now been inaccessible to the non-Chinese-speaking scholarly community. Following a rigorous *a priori* protocol, they selected appropriate studies, and then evaluated their quality according to the criteria outlined in the STROBE statement.<sup>[3]</sup> Their procedure excluded numerous studies, notably several registry-based analyses from Taiwan and Hong Kong, which had not included screening procedures in their ascertainment strategies. The degree of heterogeneity in results across the studies was substantial and statistically significant. Even after exclusion of the largest and only nation-wide study from China, which was found to be a major contributor to overall heterogeneity, the  $I^2$  statistic remained large (0.76), necessitating applications of mixed-effects models in all meta-analyses performed.

The result of the main analysis, representing data from 154,473 individuals, was a pooled mean prevalence of 12.8 per 10,000, substantially lower than current estimates from the West,<sup>[4]</sup> or from South Korea.<sup>[5]</sup> Separate analysis of the five studies from mainland China (which included the previously excluded study because its removal did not improve the heterogeneity score) yielded an estimated pooled mean prevalence of 24.4 per 10,000 based on 45,694 persons. The variability of the estimate for mainland China was very high, with the upper limit of the 95% confidence interval for that estimate (57.4 per 10,000) approaching the prevalence reported in Western and South Korean studies. However, the authors found clear evidence for publication bias in the mainland Chinese reports, with smaller studies tending to report higher prevalence rates.

The most remarkable result from the analysis is the huge variability of estimates of prevalence, ranging from 1.8 to 426.4 per 10,000. That extraordinary range, together with the observation that many of the studies reviewed (including those finally used for the meta-analyses) had significant methodological flaws, argues strongly for the need for more research. This need is particularly evident for mainland China, where the vast majority of Chinese-speaking people live, and where the new Mental Health Law<sup>[6]</sup> sets the stage for an evidence-based re-working of policy affecting persons with neuro-developmental disorders, their families, and their communities. The observation that data are available from studies representing 14,570,369 persons from Hong Kong and Taiwan, but only from 771,413 from mainland China dramatizes the urgency of the need for large, rigorous studies in mainland China. Fortunately, high-quality, large-scale epidemiological studies of other health issues, such as the impact of using folic acid at the time of conception on the subsequent incidence of open neural tube defects,<sup>[7]</sup> have been conducted for many years in China, so the framework for conducting such studies is in place. This inspires hope that the present meta-analysis will spur further rigorous research on the prevalence of ASD in the nation that may soon become the largest economy in the world.

### Conflict of interest

The author reports no conflict of interest related to this manuscript.

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