

## Correspondence

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### Abortion and mental health: guidelines for proper scientific conduct ignored

We have serious concerns about the methodology of the quantitative synthesis by Coleman<sup>1</sup> and want to highlight these to prevent readers and policy makers drawing erroneous conclusions, in particular the incorrect statement that ‘nearly 10% of the incidence of mental health problems was shown to be attributable to abortion’.

This quantitative synthesis and meta-analysis did not follow the robust methodologies now generally accepted for systematic reviews.<sup>2</sup> There is no detail of the search strategy including search terms; the strategy is not comprehensive (only two databases included); other strategies to search the literature, including citation tracking, hand searching and contacting authors and experts in the field to try to minimise publication bias, were not carried out; and there was no assessment or rating of the quality of included studies, so that only those of at least reasonable quality are included in the meta-analysis. This is particularly important here as many of the primary studies included in this review have significant methodological limitations, including non-prospective design, non-standardised measures of mental disorders, lack of adjustment for pre-existing mental illness, lack of adjustment for other key confounders (e.g. social deprivation), non-comparability of exposed and non-exposed groups, and selection bias. This is especially concerning, given that previous reviews raised serious methodological concerns about some of the included studies, and came to different conclusions when these were excluded from analyses.<sup>3–5</sup> Furthermore, results from several of the included studies linking abortion to mental health problems have since been re-analysed by other researchers. These studies, using the same data, have less biased sample selection techniques and control for pre-pregnancy factors known to influence poor mental health outcomes (i.e. rape history) and have found no significant links between abortion and subsequent poor mental health.<sup>6,7</sup>

A recent population-based cohort study conducted in Denmark published in the *New England Journal of Medicine* this year confirmed this. Munk-Olsen *et al*<sup>8</sup> reported no difference between the incidence of first psychiatric contact before and after abortion. Importantly, the incidence of psychiatric contact is higher among women who underwent abortion; this is the result of a selection phenomenon and not a causal association because this relationship is evident before the abortion occurred.<sup>8</sup> This is evidence that women having induced abortions constitute a population with higher pre-existing psychiatric morbidity.

Study selection and evaluation should be carried out by two independent raters; the Coleman review was carried out by one author only. Of the 22 papers included, 11 were authored by Coleman, the author of the review. This is a conflict of interest,

and undermines the author’s ability to critically review the primary studies.

Finally, the synthesis of the data and the summary statistics are flawed. The criteria for synthesising data meant that several effect measures were included from the same study. Eleven of the included studies contributed more than one effect measure, with two studies contributing four measures each. Despite the clustering of effect measures by study, they are analysed as independent measures. This is an important limitation, since the use of several effect measures from a flawed study can magnify the bias.

Most importantly for readers of this study to know, is the erroneous conclusions drawn by the author regarding the population attributable risk (PAR). The underlying assumptions for estimating PAR include that there is a causal relationship between the risk factor (abortion) and the disease (mental ill health) and that there is independence of the considered risk factor from other factors that influence disease risk.<sup>9</sup> These assumptions are clearly not met in this review and therefore it is completely inappropriate to calculate a PAR from these data.

Abortion and mental health is a politicised issue – it is therefore essential that research in this field is methodologically robust.

## Declaration of interest

T.M.-O. was the lead author of the population-based cohort study cited in this letter.

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- 9 Rockhill B, Newman B, Weinberg C. Use and misuse of population attributable fractions. *Am J Public Health* 1998; **88**: 15–9.

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There appear to be many methodological as well as logical inconsistencies and interpretational difficulties with the report of Coleman,<sup>1</sup> which might have diminished reviewers’ enthusiasm for its conclusions. Many of these have already been addressed by previous correspondence. We believe, however, that one methodological problem that has not yet been raised – the use of the population attributable risk (PAR) measure – is very important and merits comment. This might help readers avoid misunderstanding this study, and also other studies where the PAR is used.