

## Letter to the Editor

# Comments to Moretti Anfossi *et al.*'s (2022) 'Work Exposures and Development of Cardiovascular Diseases: A Systematic Review': What Is Current Scientific Consensus?

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Findings and conclusions from a recent review article by Moretti Anfossi *et al.* (2022) have drawn our attention. The authors stated that 'there was sufficient evidence of a harmful relationship between job strain, shift work, and cardiovascular diseases (CVDs)' on which we agree. However, we disagree with the conclusions that 'Evidence of no relationship was found between long working hours and shift work with ischaemic heart disease and hypertensive disease, respectively. The other associations of work exposures and CVDs had limited or inadequate evidence of harmfulness', in particular research evidence on long working hours and effort–reward imbalance. Our concerns are as follows:

First, Moretti Anfossi *et al.* did not separate case–control studies from cohort studies during the stage of data synthesis. Given the different objectives and epidemiological power of these study designs for causal inference, it was inappropriate to do so.

Second, the Navigation Guide framework was applied in this systematic review without meta-analyses.

Whereas the methodology was sound (Moretti Anfossi *et al.*, 2022) and in line with the approaches which were developed by a large international panel of experts for the WHO/ILO Joint Estimates of the Work-related Burden of Disease and Injury (Li *et al.*, 2018), some methodological discrepancies between this review (Moretti Anfossi *et al.*, 2022) and our recently published systematic reviews (Descatha *et al.*, 2020; Li *et al.*, 2020) are apparent. For instance, only studies with CVDs verified by medical records were included in the review by Moretti Anfossi *et al.* (2022), while both medical records and self-reports were included in our reviews, based on sensitivity analyses that did not find differences by outcome measurement (Li *et al.*, 2020). More importantly, the definition of exposure to long working hours was not identical across reviews. Forty-eight or more hours per week was defined as long working hours by Moretti Anfossi *et al.*, whereas '≥55 hours/week' was identified as a risk threshold in our reviews (Descatha *et al.*, 2020; Li *et al.*, 2020). Our decision was substantiated by findings

that the effect on ischaemic heart disease and stroke due to working 49–54 h/week showed ‘inadequate evidence of harmfulness’ or ‘limited evidence of harmfulness’ (Descatha *et al.*, 2020; Li *et al.*, 2020). By contrast, evidence of exposure to working  $\geq 55$  h/week was judged as ‘sufficient evidence of harmfulness’ for ischaemic heart disease and stroke in our reviews (Descatha *et al.*, 2020; Li *et al.*, 2020; Pega *et al.*, 2021). Merging the two exposure categories ‘49–54 hours/week’ and ‘ $\geq 55$  hours/week’ may reduce power and conflates the group of workers at high risk with a group at lower risk.

Third, we were surprised to see that out of 17 studies identified for long working hours and 6 studies identified for effort–reward imbalance, only 9 studies of the former and 2 studies of the latter predictor were selected by focusing on cohort studies on cerebrovascular disease and ischaemic heart disease with medical records (Moretti Anfossi *et al.*, 2022). Their exclusion of review articles seemed problematic, because published articles were not produced from all relevant cohort studies. Instead, some findings were published in review articles as ‘unpublished studies’, such as a large number of cohort studies in the Individual-Participant Data Meta-analysis in Working Populations (IPD-Work) Consortium. To the best of our knowledge, at least 7 cohort studies for long working hours and cerebrovascular disease (Kivimäki *et al.*, 2015), 12 cohort studies for long working hours and ischaemic heart disease (Holtermann *et al.*, 2010; Netterström *et al.*, 2010; Kivimäki *et al.*, 2015), 10 cohort studies for effort–reward imbalance and ischaemic heart disease (Dragano *et al.*, 2017), and 2 cohort studies for effort–reward imbalance and total cardiovascular diseases (Kivimäki *et al.*, 2002; Wu *et al.*, 2019) were NOT included in the current review (Moretti Anfossi *et al.*, 2022). For details see [Supplementary Table](#) (available at *Annals of Occupational Hygiene* online). We maintain that the current research evidence suggests that exposure to working  $\geq 55$  h/week is associated with significantly elevated risks of cerebrovascular disease and ischaemic heart disease, and that exposure to effort–reward imbalance is also associated with significantly increased risk of ischaemic heart disease.

As a result, given the restricted quality of the systematic review by Moretti Anfossi *et al.*, their statement that ‘our results concur with previous reviews’ may not be appropriate. Moreover, their policy implication that ‘these findings are relevant for approaches that suggest that worksite interventions could be a suitable alternative to reduce cardiovascular risks with job strain and shift work as possible targets for those interventions’ fails to recognize additional important intervention targets in the

workplace for primary prevention of cardiovascular diseases, particularly long working hours and effort–reward imbalance (Trudel *et al.*, 2021; Pega *et al.*, 2022).

## Supplementary Data

Supplementary data are available at *Annals of Work Exposures and Health* online.

## Acknowledgements

The authors declare no conflict of interest relating to the material presented in this letter. Its contents, including any opinions and/or conclusions expressed, are solely those of the authors.

## Data Availability

No data were used in this study.

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