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**The long-term consequences of family violence victimisation: An umbrella review of longitudinal meta-analyses**

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### Summary

**Background** Child maltreatment (CM) and intimate partner violence (IPV) can have far-reaching consequences to the psychological and physical health of victims. While multiple evidence syntheses support this, they are typically limited by a narrow outcome focus, the inclusion of non-causal study designs, and a lack of indication of the true clinical impact of family violence.

**Methods** This umbrella review of meta-analyses included prospective or longitudinal primary studies examining the long-term consequences of CM and IPV. We searched five databases (PsycInfo, PubMed, Web of Science, Cochrane Library, Proquest), from inception to Jun 12, 2023. We critically appraised the included meta-analyses on their methodological quality using the Assessment of Multiple Systematic Reviews tool, and assessed the quality of evidence for each outcome on five additional factors. We calculated ORs by family victimisation type and outcome, and population attributable fractions (PAFs) to estimate the reduction of impact if family violence was eliminated. This study is registered with PROSPERO, CRD42023445072.

**Findings** We screened 4,284 records and identified a total of 18 meta-analyses. A total of 27 pooled effect sizes were extracted, covering 19 distinct long-term outcomes related to CM and IPV. CM and IPV were significantly linked to 16 out of the 19 adverse psychiatric, psychosocial, and physical health outcomes. ORs ranged from 1.04 [95% CI 0.99, 1.10] to 2.70 [95% CI 2.10, 3.47] with a median OR of 1.73. For CM, the strongest association was found with anxiety (OR = 2.70 [95% CI 2.10, 3.47]), and for IPV with hard drug use (OR = 2.05 [95% CI 1.19, 3.52]). While the methodological quality was moderate to high across all included meta-analyses, the quality of evidence was generally lower. PAFs ranged from 0.9% to 25.6%, indicating that up to a quarter of cases of some psychiatric disorders can be attributed to family violence victimisation.

**Interpretation** Family victimisation is clearly linked to a multitude of psychiatric and physical health consequences, yet the magnitude of impact varies by type of violence and outcome. High-quality research on the specific mechanisms underlying this long-term relationship is needed to gain a deeper understanding on effective intervention strategies.

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**Registration** PROSPERO CRD42023445072

*Keywords:* Child maltreatment, intimate partner violence, family violence, victimisation, psychiatric disorders, physical health

### **Panel: Research in context**

#### **Evidence before the study**

Previous meta-analyses indicate that CM and IPV can have long-term health implications but findings from these meta-analyses merit a more thorough examination in a grand synthesis. First, findings have largely relied on cross-sectional studies, drastically limiting conclusions about long-term effects and causal pathways. Second, multiple meta-analyses provided findings for a narrow outcome subset, leading to a proliferation of evidence that is not easily accessible for policy makers. Third, findings were limited to the interpretation of statistical significance between family victimisation, while the population-wide clinical significance remains unknown. Five databases were searched (from inception to Jun 12, 2023) using the following keywords: (*violen\** OR *homicid\** OR *aussault\** OR *bully\** OR *maltreatment* OR *abuse*) AND *meta-analysis*.

#### **Added value of the study**

In this umbrella review of 18 longitudinal meta-analyses, we determined that CM and IPV are associated with a range of adverse psychiatric, psychosocial, and physical health consequences. We found the strongest association between CM and anxiety, and IPV and hard drug use. Furthermore, we found that a quarter of cases of multiple psychiatric disorders in a population can be attributed to CM or IPV.

#### **Implications of all the available evidence**

Our findings indicate the potential for severe, far-reaching, and long-term health implications after family violence victimisation. Furthermore, this work provides a unique insight into the actual and large disease burden in the population by providing population attributable fractions of family victimisation. Findings highlight a clear need for investments in evidence-based prevention strategies of family violence victimisation. Notably, more geographically-wide research is needed to improve the generalisability of these findings globally.

## Introduction

Family violence victimisation is a global public health concern affecting up to a billion individuals each year.<sup>1,2</sup> Childhood maltreatment (CM) and intimate partner violence (IPV) are of particular worry as they are widespread globally,<sup>3,4</sup> often co-occur and take place behind closed doors,<sup>5,6</sup> and are believed to have spiked in recent years due to COVID-19 lockdown measures.<sup>7,8</sup> Despite progress made by the World Health Organization in addressing this pressing issue, the consequences of family violence remain profound and far-reaching.<sup>9–11</sup> Extensive meta-analyses have demonstrated the detrimental associations of CM and IPV with various psychiatric disorders, such as depression,<sup>12–14</sup> anxiety,<sup>15,16</sup> post-traumatic stress disorder,<sup>16,17</sup> substance abuse,<sup>18–20</sup> and overall poor physical well-being, including chronic illness<sup>21,22</sup> and mortality.<sup>23</sup>

However, these previous attempts to synthesise the consequences of family violence victimisation are limited by several factors. Firstly, each of them has focused on a narrow subset of outcomes (e.g., sleep problems<sup>24</sup>), leading to a proliferation of meta-analyses. Combined with the wide variation in quality, the interpretability of the full range of findings is challenging. This poses a burden on policymakers, who may struggle to keep up with the evolving research landscape.<sup>25</sup> Secondly, many meta-analyses have relied on cross-sectional studies,<sup>26</sup> drastically limiting conclusions about causal pathways between family violence exposure and its consequences.<sup>27</sup> Cross-sectional designs also fail to give insights into the long-term effects of family violence victimisation due to their inherent limitation of only providing a snapshot in time.<sup>27</sup>

To address these limitations, we conducted an umbrella review of meta-analyses that included solely prospective or longitudinal primary studies examining the long-term consequences of family violence victimisation. Together with a comprehensive quality assessment of each included article, this grand synthesis will help guide the development of new clinical and policy interventions.

## Methods

### Preregistration and guidelines

Our methods and analyses were preregistered with PROSPERO, an international prospective register of systematic reviews (CRD42023445072). We report this umbrella review according to

the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.<sup>28</sup>

### **Search strategy and eligibility criteria**

We searched five digital databases (PsycInfo, PubMed, Web of Science, Cochrane Library, and Proquest) without year or language restrictions using the following search string: (*violen\** OR *homicid\** OR *aussault\** OR *bully\** OR *maltreatment* OR *abuse*) AND *meta-analysis*. Google Scholar and PsyArXiv were additionally searched manually. An article was considered eligible for inclusion if it (1) was a meta-analysis that reported quantitative data, (2) investigated the prospective or longitudinal impact of family violence victimisation, including CM and IPV, (3) provided results on psychosocial, psychiatric, or physical health outcomes, and (4) was published in either a peer-reviewed journal or in form of grey literature (e.g., preprint or dissertation). Reviews without quantitative data (e.g., narrative reviews), or an exclusive focus on non-longitudinal primary studies, childhood neglect, sexual abuse (has been done elsewhere<sup>29</sup>), and violence perpetration were excluded.

### **Data extraction and analysis**

The selection of eligible articles followed a two-step process, in which titles and abstract were screened first, followed by a thorough review of the full texts. To mitigate a potential inflation of effects in cases where primary studies overlapped across different articles, only the largest meta-analysis was included. However, if these reported results on different outcomes (e.g., depression vs. suicide), they were included despite overlap. Study selection and data extraction were performed by MB. SB evaluated a randomly selected subset of 20%. Interrater agreement was 98%. Any conflicts that arose were resolved through discussion until consensus was reached. If an article did not provide sufficient information to determine the pooled effect size or to evaluate any of the quality assessments, the corresponding author was contacted.

Following current guidelines for umbrella reviews,<sup>25</sup> extracted pooled effect sizes were converted to a common metric, i.e., odds ratio (OR). Notably, all ORs were transformed such that values greater than 1 indicate a positive association between family violence exposure and adverse outcomes. Furthermore, when meta-analyses also included primary studies with a design other than prospective or longitudinal, the analyses were replicated using only the relevant subset of studies. The required data for this purpose were taken from descriptive tables or forest plots.

Since the focus of interest was violence, the same approach was used when primary studies were included that solely examined the effects of physical or emotional neglect.

It is important to acknowledge that ORs primarily convey statistical significance rather than clinical significance.<sup>30</sup> To gain insights into the true public health impact of family violence, we also estimated population attributable fractions (PAFs). A PAF represents the fraction of an adverse outcome within a population that can be attributed to a given exposure.<sup>31</sup> Essentially, it quantifies the proportional reduction in the occurrence of an adverse outcome (e.g., depression), if exposure to family violence (e.g., CM) could be eliminated. PAFs were computed using both global and US-specific prevalence rates. These prevalence estimates were taken from recent reviews and are reported in the supplementary material (Supplementary Table 1). All analyses were performed with the latest version of R and the *metafor* package.<sup>32</sup>

### **Quality assessment**

We followed the established approach of previous umbrella reviews to assess both the methodological quality and the quality of evidence of each included meta-analysis.<sup>33</sup> The former was evaluated using the Assessment of Multiple Systematic Reviews (AMSTAR), an 11-point checklist indicating low (0 – 3 points), moderate (4 – 7 points), or high (8 – 11 points) level of methodological quality.<sup>34</sup> To determine the quality of evidence, we considered several important factors, including (1) excess of statistically significant findings (i.e., excess statistical significance),<sup>35</sup> (2) publication bias, (3) between-study heterogeneity, (4) number of individuals included in meta-analysis, and (5) 95% prediction intervals. Each of these five factors was given a score of 0 or 1, ultimately resulting in an overall quality score ranging from 0 (low quality of evidence) to 5 (high quality of evidence). Of note, unlike the methodological quality, the quality of evidence was assessed for each outcome (i.e., extracted pooled effect size) rather than for each article.

### **Pre-registration of Review**

The protocol of this umbrella review was registered with PROSPERO (CRD42023445072).

### **Role of the Funding Source**

The funders of this study had no role in study design, data collection, data analysis, data interpretation, or writing of the article.

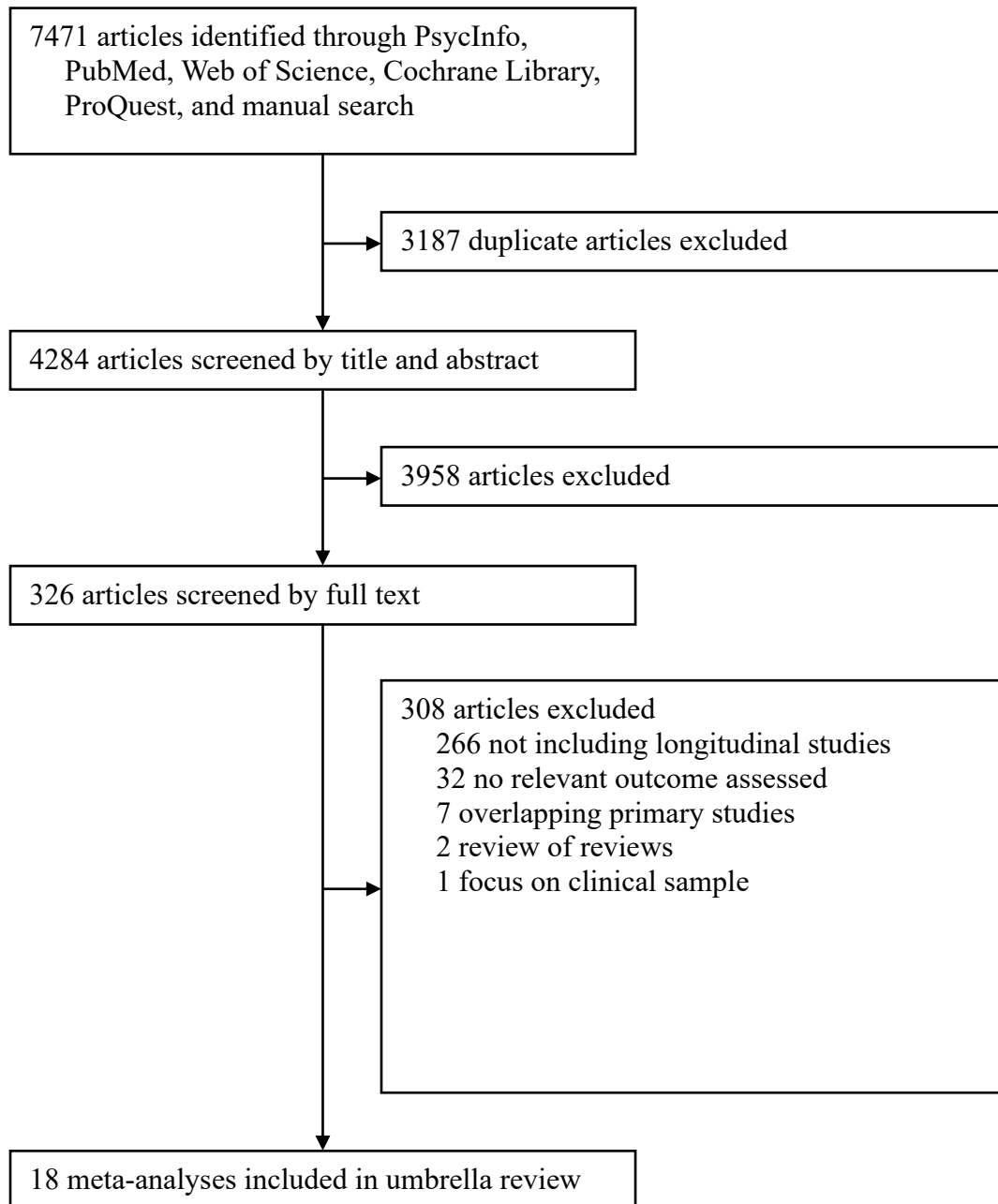


## Results

Our initial search yielded 4,284 unique articles (Figure 1). After the screening, 326 remained. Of these, 25 meta-analyses met our inclusion criteria, of which 18 were included in our final sample (seven were removed because of overlap; Supplementary Table 2).

A detailed description of all included meta-analyses is given in Table 1. Publication years ranged from 2010 to 2022, with more than half published within the last five years. Ten meta-analyses reported on the impacts of CM, six on IPV, and two on both. A total of 27 pooled effect sizes were extracted, covering 19 distinct long-term outcomes related to CM and IPV. These included psychiatric ( $n = 6$ ), psychosocial ( $n = 7$ ), and health outcomes ( $n = 6$ ). Although the exact number of primary studies and individuals across all meta-analyses could not be determined, in total a minimum of 150 studies (range per meta-analysis: 2 – 28) and 3 million individuals (range per meta-analysis: 859 – 3,149,331) were included. The majority of primary studies originated from the United States (53%), being the dominant country in almost every included meta-analysis. Average follow-up periods varied in length and ranged from 1 to 17 years with a median of 5 years. Lastly, all meta-analyses comprised primary studies with mixed measures of family violence exposure (i.e., none limited their inclusion criteria to studies that used only official records, for example). While self-report measures were most commonly used, official records and third-party substantiated reports were also prevalent methods of assessment.

**Figure 1.** PRISMA flow diagram of the study selection process



**Table 1.** Descriptive information of all included meta-analyses

| Study                                    | Form of violence<br>(measure)  | Outcome(s)   | Number of<br>databases searched | AMSTAR<br>(methodological<br>quality) | Countries covered<br>by primary studies |
|--|--|--|---------------------------------|---------------------------------------|---|
| Bacchus et al.<br>(2018) <sup>18</sup>   | Physical,<br>psychological, sexual<br>IPV within the last 12<br>months (self-report)                       | Cannabis use, hard<br>drug use, sexually<br>transmitted infections | 3                               | 6                                     | India, Puerto Rico,<br>USA*             |
| Braga et al. (2017) <sup>36</sup>        | General, physical,<br>emotional, sexual<br>CM (self-report,<br>substantiated reports,<br>official records) | Antisocial behaviour<br>in adolescence                             | 19                              | 7                                     | Australia, Israel,<br>Korea, UK, USA*   |
| Braga et al. (2018) <sup>37</sup>        | General, physical,<br>sexual CM (self-<br>report, official<br>records)                                     | Antisocial behaviour<br>in adulthood                               | 19                              | 7                                     | Australia, USA*                         |
| Castellví et al.<br>(2017) <sup>38</sup> | Any IPV (NA);<br>any, physical, sexual<br>CM (NA)  | Suicide attempts   | 5                               | 10                                    | Canada, New<br>Zealand, UK, USA*        |

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|   |  |                              |    |   |                                   |
|---|--|------------------------------|----|---|-----------------------------------|
| D'arcy-Bewick et al. (2022) <sup>23</sup> | Any, physical, emotional, sexual CM (self-report, substantiated reports)   | Adult mortality              | 6  | 5 | UK*, USA*                         |
| Devries et al. (2013) <sup>12</sup>       | Physical, sexual IPV (self-report)   | Depression                   | 20 | 4 | Australia, India, Nicaragua, USA* |
| Devries et al. (2014) <sup>39</sup>       | Physical, sexual IPV (self-report)   | Alcohol use                  | 23 | 6 | New Zealand, USA*                 |
| Ferguson (2013) <sup>40</sup>             | Spanking and corporal punishment (NA)                                      | (Poor) cognitive performance | 4  | 5 | USA*                              |
| Halpern et al. (2018) <sup>19</sup>       | Physical, sexual CM (self-report, substantiated reports, official records) | Illicit substance abuse      | 3  | 6 | Australia*, New Zealand, USA*     |
| Li et al. (2016) <sup>15</sup>            | General, physical, sexual CM (official records)                            | Anxiety, depression          | 5  | 8 | Australia, New Zealand, USA*      |
| Marin et al. (2021) <sup>41</sup>         | Physical CM (self-report, official records)                                | Chronic pain                 | 4  | 8 | Canada, USA*                      |

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|--|---|---|---|---|--|
| McKay et al. (2022) <sup>42</sup>        | Any CM (self-report, substantiated reports, official records)         | Mental disorder in adulthood  | 4 | 8 | Australia, UK, USA*  |
| Noonan & Pilkington (2020) <sup>43</sup> | Any IPV (self-report)   | (Insecure) child attachment   | 2 | 7 | Israel, USA*   |
| Pastore et al. (2022) <sup>44</sup>      | Any CM (self-report, official records)                                | Psychosis   | 5 | 7 | Australia, Belgium, Denmark, Germany*, Greece, Ireland, Netherlands*, Sweden, UK |
| Shah & Shah (2010) <sup>45</sup>         | Physical, emotional domestic violence (self-report, official records) | Low birth weight births, preterm births, small for gestational age births   | 3 | 7 | Brazil, Canada, Nicaragua, Saudi Arabia, Uganda, USA*                            |
| Vu et al. (2016) <sup>46</sup>           | Children's exposure to IPV (NA)                                       | Externalising problems, internalising problems, general adjustment problems | 3 | 4 | NA   |
| Yu et al. (2022) <sup>24</sup>           | Adverse childhood experience including physical, emotional,           | Sleep problems in adulthood   | 5 | 8 | Australia, Finland, New Zealand, UK, USA*  |

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|                                   |   |                          |   |   |   |
|-----------------------------------|---|--------------------------|---|---|---|
|                                   | sexual abuse, neglect,<br>and family<br>dysfunction (self-<br>report, substantiated<br>reports, official<br>records)                  |                          |   |   |   |
| Zhang et al. (2019) <sup>47</sup> | Any, physical,<br>emotional, sexual<br>maternal violence<br>(self-report);<br>any, physical,<br>emotional, sexual<br>CM (self-report) | Postpartum<br>depression | 7 | 7 | Australia *,<br>Bangladesh, Brazil,<br>Canada, China,<br>France, India, Iran,<br>Israel, Japan, Nepal,<br>Norway, Tanzania,<br>Turkey, South Africa,<br>USA * |

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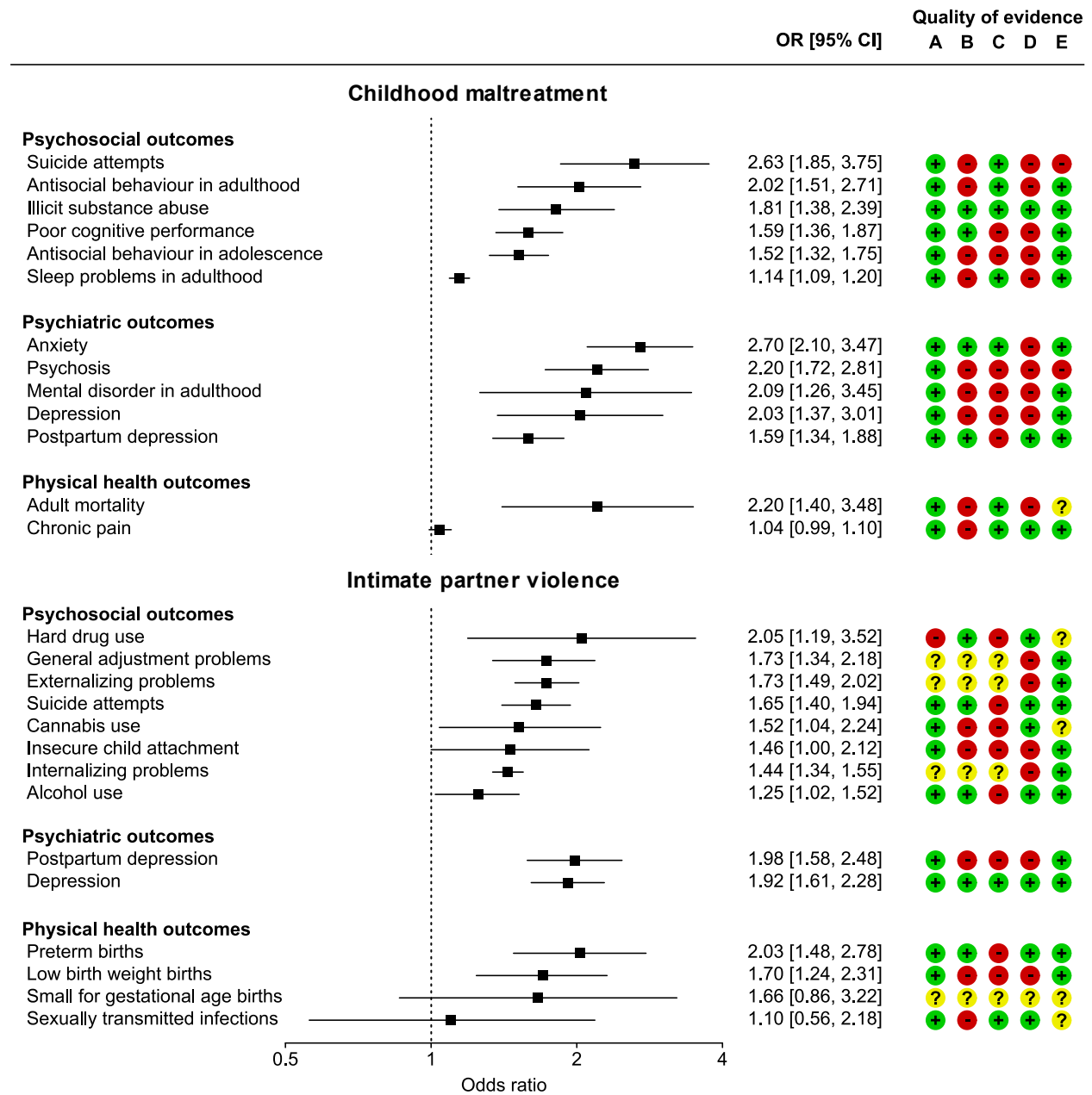
*Note.* CM = childhood maltreatment; IPV = intimate partner violence; NA = not available.

\*Origin of the majority of primary studies (if there are two asterisks, it is a tie between two countries).

Overall, ORs ranged from 1.04 to 2.70 with a median OR of 1.73 (Table 2, Figure 2). For CM, the strongest association was found with anxiety (OR = 2.70), and for IPV with hard drug use (OR = 2.05). All but three outcomes (i.e., chronic pain, sexually transmitted infections, and small for gestational age births) excluded the null effect (i.e., OR = 1), indicating a statistically significant long-term adverse impact of family violence victimisation on a multitude of psychiatric and physical health outcomes. Considering global prevalence rates of CM and IPV exposure, PAFs ranged from 0.9% to 25.6%, suggesting that for some outcomes family violence accounts for a substantial portion of the disease burden within a population. Notably, the largest PAFs were found for suicide attempts and anxiety (both with PAFs larger than 25%). When accounting for US-specific prevalence rates, the results remained unchanged. Here, PAFs ranged from 0.6% to 26.5%.

As for our quality assessment, AMSTAR scores indicated moderate ( $n = 13$ ) to high ( $n = 5$ ) methodological quality (range: 4 – 10, median = 7; Table 1). The quality of evidence was generally lower with a median of 2 (range: 0 – 5; Table 2, Figure 2, Supplementary Table 3). This was mainly due to excess statistical significance (18/27), large levels of between-study heterogeneity (17/27), and wide prediction intervals that include the null effect (18/27). Insufficient numbers of individuals in analyses (5/27) and publication bias (7/27) were of less overall concern. It is worth noting that instances where too few primary studies were included to assess publication bias were also scored as 0. Ignoring these, publication bias was present in only two outcomes, namely suicide attempts after CM (OR = 2.63) and psychosis after CM (OR = 2.20).

**Figure 2.** Evidence and its quality on the long-term consequences of childhood maltreatment and intimate partner violence (ranked by effect size)



**Quality of evidence legend**

- (A)  $N > 1,000$
- (B) Prediction interval excludes null effect (i.e., OR = 1)
- (C) Absence of excess statistical significance
- (D)  $I^2 < 50\%$
- (E) Absence of publication bias



**Table 2.** Long-term effects and population attributable fractions of childhood maltreatment and intimate partner violence (ranked by quality of evidence)

| Outcome   | <i>k</i> ( <i>m</i> ) | <i>N</i>  | OR<br>[95% CI]    | PAF <sub>global</sub><br>[95% CI] | PAF <sub>USA</sub><br>[95% CI] | Follow-up (M) | QoE |
|---|-----------------------|-----------|-------------------|-----------------------------------|--------------------------------|---------------|-----|
| <b>Childhood Maltreatment</b>                     |                       |           |                   |                                   |                                |               |     |
| <b>Psychosocial outcomes</b>                      |                       |           |                   |                                   |                                |               |     |
| Illicit drug abuse <sup>19</sup>                  | 7 (12)                | 22,527    | 1.81 [1.38, 2.39] | 11.5% [5.8, 18.3]                 | 12.3% [6.2, 19.5]              | 16y           | 5   |
| Sleep problems in adulthood <sup>24</sup>         | 8 (11)                | 82,520    | 1.14 [1.09, 1.20] | 2.7% [1.8, 3.8]                   | 2.8% [1.8, 3.9]                | 11y           | 3   |
| Poor cognitive performance <sup>40</sup>          | 6 (8)                 | 23,763    | 1.59 [1.36, 1.87] | 11.8% [7.5, 16.4]                 | 12.4% [8.0, 17.3]              | 7y            | 3   |
| Antisocial behaviour in adulthood <sup>37</sup>   | 12 (16)               | 20,050    | 2.02 [1.51, 2.71] | 16.9% [9.2, 25.4]                 | 17.2% [9.4, 25.8]              | NA            | 3   |
| Antisocial behaviour in adolescence <sup>36</sup> | 21 (29)               | 14,615    | 1.52 [1.32, 1.75] | 9.3% [6.0, 12.9]                  | 9.5% [6.1, 13.2]               | 5y            | 2   |
| Suicide attempts <sup>38</sup>                    | 12 (20)               | 33,950    | 2.63 [1.85, 3.75] | 25.6% [15.2, 36.8]                | 26.5% [15.8, 37.9]             | 14y           | 2   |
| <b>Psychiatric outcomes</b>                       |                       |           |                   |                                   |                                |               |     |
| Anxiety <sup>15</sup>                             | 4 (4)                 | 3,149,331 | 2.70 [2.10, 3.47] | 25.3% [17.9, 32.9]                | 25.7% [18.3, 33.5]             | 3y            | 4   |
| Postpartum depression <sup>47</sup>               | 5 (5)                 | 5,046     | 1.59 [1.34, 1.88] | 10.5% [6.3, 14.9]                 | 10.7% [6.5, 15.2]              | NA            | 4   |

|  |          |        |                   |                    |                    |     |   |
|--|----------|--------|-------------------|--------------------|--------------------|-----|---|
| Depression <sup>15</sup>                   | 5 (5)    | 4,579  | 2.03 [1.37, 3.01] | 17.0% [6.9, 28.5]  | 17.4% [7.0, 29.1]  | 5y  | 2 |
| Mental disorder in adulthood <sup>42</sup> | 4 (5)    | 12,100 | 2.09 [1.26, 3.45] | 17.8% [4.9, 32.7]  | 18.2% [5.0, 33.3]  | NA  | 2 |
| Psychosis <sup>44</sup>                    | 15 (15)  | 85,006 | 2.20 [1.72, 2.81] | 19.3% [12.5, 26.5] | 19.7% [12.8, 26.9] | 9y  | 1 |
| <b>Physical health outcomes</b>            |          |        |                   |                    |                    |     |   |
| Chronic pain <sup>41</sup>                 | 3 (3)    | 15,155 | 1.04 [0.99, 1.10] | 0.9% [0, 2.2]      | 1.0% [0, 2.3]      | 7y  | 4 |
| Adult mortality <sup>23</sup>              | 2 (4)    | 10,223 | 2.20 [1.40, 3.48] | 19.3% [7.4, 33.0]  | 19.7% [7.5, 33.6]  | 17y | 2 |
| <b>Intimate Partner Violence</b>           |          |        |                   |                    |                    |     |   |
| <b>Psychosocial outcomes</b>               |          |        |                   |                    |                    |     |   |
| Suicide attempts <sup>38</sup>             | 4 (7)    | 26,769 | 1.65 [1.40, 1.94] | 14.9% [9.7, 20.2]  | 14.5% [9.4, 19.6]  | 7y  | 4 |
| Alcohol use in women <sup>39</sup>         | 5 (5)    | 4,709  | 1.25 [1.02, 1.52] | 6.3% [0.5, 12.3]   | 6.1% [0.5, 11.9]   | 3y  | 4 |
| Insecure child attachment <sup>43</sup>    | 5 (5)    | 3,437  | 1.46 [1.00, 2.12] | 11.0% [0.0, 23.2]  | 10.7% [0.0, 22.6]  | 7y  | 2 |
| Cannabis use <sup>18</sup>                 | 2 (2)    | 3,375  | 1.52 [1.04, 2.24] | 6.3% [0.5, 13.9]   | 3.0% [0.2, 6.9]    | 4y  | 2 |
| Hard drug use <sup>18</sup>                | 2 (2)    | 859    | 2.05 [1.19, 3.52] | 12.0% [2.4, 24.7]  | 5.9% [1.1, 13.1]   | 2y  | 2 |
| Externalising problems <sup>46</sup>       | NA (201) | NA     | 1.73 [1.49, 2.02] | NA <sup>a</sup>    | 11.2% [7.8, 15.0]  | 5y  | 1 |
| Internalising problems <sup>46</sup>       | NA (158) | NA     | 1.44 [1.34, 1.55] | NA <sup>a</sup>    | 7.1% [5.6, 8.7]    | 3y  | 1 |

|  |         |         |                   |                    |                    |    |   |
|--|---------|---------|-------------------|--------------------|--------------------|----|---|
| General adjustment problems <sup>46</sup>      | NA (17) | NA      | 1.73 [1.34, 2.18] | NA <sup>a</sup>    | 11.2% [5.6, 17.0]  | 4y | 1 |
| <b>Psychiatric outcomes</b>                    |         |         |                   |                    |                    |    |   |
| Depression <sup>12</sup>                       | 9 (10)  | 27,334  | 1.92 [1.61, 2.28] | 19.9% [14.1, 25.7] | 19.3% [13.7, 25.0] | 3y | 5 |
| Postpartum depression <sup>47</sup>            | 28 (28) | 103,056 | 1.98 [1.58, 2.48] | 20.9% [13.5, 28.6] | 20.3% [13.1, 27.8] | NA | 2 |
| <b>Physical health outcomes</b>                |         |         |                   |                    |                    |    |   |
| Preterm births <sup>45</sup>                   | 8 (8)   | 19,320  | 2.03 [1.48, 2.78] | 21.8% [11.5, 32.5] | 21.1% [11.1, 31.6] | NA | 4 |
| Sexually transmitted infections <sup>18</sup>  | 2 (2)   | 2,166   | 1.10 [0.56, 2.18] | 1.3% [0.0, 13.3]   | 0.6% [0.0, 6.6]    | 1y | 3 |
| Low birth weight births <sup>45</sup>          | 12 (12) | 27,000  | 1.70 [1.24, 2.31] | 15.9% [6.1, 26.1]  | 15.4% [5.9, 25.4]  | NA | 2 |
| Small for gestational age births <sup>45</sup> | 3 (3)   | NA      | 1.66 [0.86, 3.22] | 15.1% [0.0, 37.5]  | 14.6% [0.0, 36.6]  | NA | 0 |

*Note.* CI = confidence interval;  $k$  = number of primary studies included in analyses;  $m$  = number of effect sizes included in analyses; M = mean;  $N$  = number of individuals included in analyses; NA = not available; OR = odds ratio; PAF = population attributable fractions; QoE = quality of evidence, ranging from 0 (low quality) to 5 (high quality);  $y$  = years.

<sup>a</sup> These outcomes are related to witnessing IPV, for which there are currently no estimates of global prevalence rates.<sup>48</sup>

### Discussion

This umbrella review of 18 longitudinal meta-analyses examined the severe long-term consequences of family violence victimisation, specifically CM and IPV. Twenty-nine pooled effect sizes were extracted relating to 19 distinct psychiatric, psychosocial, and health outcomes, with all but three being statistically significant. Our findings highlight the wide scope of consequences these forms of violence have on the psychological and physical well-being of those affected.

Exposure to CM was most strongly associated with the development of psychiatric disorders such as anxiety, depression, and psychosis, as well as psychosocial vulnerabilities including suicide attempts. CM has long been considered a causal risk factor for the development of mental health problems later in life,<sup>49,50</sup> a notion that is strengthened by the longitudinal nature of our findings. However, from a pure statistical perspective, the long-term consequences are small.<sup>51</sup> That is, a substantial number of children do not develop psychiatric, psychosocial, or health-related problems after CM victimisation. This indicates the presence of protective factors that can buffer the detrimental effects of CM by increasing resilience.<sup>52</sup> Identifying and fostering these factors in children could therefore be key for promoting their mental and physical well-being.<sup>53</sup> Further research in this area could provide valuable insights into the mechanisms that contribute to resilience and ultimately inform the development of strategies that effectively support at-risk children.<sup>54,55</sup>

For IPV, the largest effect was found for hard drug use. However, this was based on IPV occurring only within the last 12 months. Looking at lifetime IPV, the strongest association was with preterm births and postpartum depression. Together with the statistically significant effect of low-birth-weight births, this emphasises the harmful impacts of IPV not only on the direct victims, but also on their offspring. Healthcare providers can therefore play a central role in combating these consequences. For instance, pregnant women with known histories of IPV should be offered additional resources and support to address the heightened risk of potential complications. The same applies to the postpartum period, when women affected by IPV are particularly vulnerable to developing depression. Previous research has already demonstrated the effectiveness of intensive postpartum rehabilitation programs.<sup>56</sup>

As noted above, while the reported pooled effect sizes in this umbrella review may be considered small from a statistical perspective, such a narrow view underestimates the true clinical

importance of our findings.<sup>30</sup> A more appropriate assessment involves interpreting PAFs. Considering global prevalence rates of CM and IPV, our umbrella review revealed PAFs of around 10-15% for most outcomes assessed, with some reaching as high as 25% (i.e., suicide attempts and anxiety). While most studies were implemented within the U.S., these PAFs do not change in magnitude when U.S.-specific prevalence rates are considered, underscoring the pressing relevance of family violence across countries. This point is further demonstrated when adopting a more conservative approach where the lower bound of the 95% confidence interval of the pooled effect sizes are used to compute PAFs.<sup>15</sup> These conservative PAFs range on average between 1-6% across all outcomes, which, using depression as an example, indicates that about 6% of cases of depression in the U.S. can be attributed to family violence victimisation. In absolute numbers, this translates to 2.8 million individuals with depression due to CM and IPV exposure.<sup>57</sup> Extrapolated to a global scale, these numbers are staggering and stress the immense clinical relevance of family violence victimisation.

The biggest strength of this umbrella review is the focus on meta-analyses comprising only longitudinal primary studies.<sup>26</sup> This enables us to make inferences about a potential causal relationship between family violence victimisation and its negative consequences. However, our review is not free of limitations. Firstly, the follow-up periods across the primary studies varied widely, and in some cases were not possible to obtain. The length of follow-up is vital not only for understanding the long-term impacts of family violence, but also for determining the timing of violence exposure. Several studies have shown that individuals are more vulnerable to the impacts of violence at certain periods of life.<sup>58,59</sup> While our own findings support this notion, with generally larger effect sizes for CM than for IPV (i.e., childhood vs. adulthood), we were unable to perform more nuanced assessments (e.g., toddlerhood vs. late childhood). Secondly, most of the research in this review is based on U.S. samples, with studies from the U.S. comprising the majority of all included articles in 16 out of 18 meta-analyses. Albeit evidence from low- and middle-income countries finds similar associations between family violence victimisation and psychiatric problems,<sup>60-62</sup> the generalisability of our findings is limited to the geographical distribution of primary studies included in this review. Finally, although the methodological rigor of all included meta-analyses was moderate to high, the evidence itself was of lower quality. This can be largely attributed to the substantial heterogeneity between the primary studies, which in turn directly affects prediction intervals and, to some extent, excess of

statistically significant findings.<sup>35</sup> The presented evidence is therefore not less informative, but rather suggests the presence of important moderating factors that influence the association between family violence victimisation and its consequences. Exploring and understanding these moderators should be a key objective of future research.

In summary, the consequences of CM and IPV are long-lasting and far-reaching, affecting the psychological and physical well-being of those affected. Although the associations may appear statistically small, their clinical significance is of immense global importance. Moving forward, the primary goal should be to i) uncover the mechanisms that moderate the relationship between family violence victimisation and its consequences, and ii) move research more globally.

### **Declaration of interests**

The authors declare no conflict of interest.

### **Contributor statement**

**Matthias Burghart:** Conceptualisation, methodology, formal analysis, investigation, data curation, writing – original draft, writing – review & editing, visualisation, funding acquisition.

**Sophia Backhaus:** Conceptualisation, methodology, investigation, writing – original draft, writing – review & editing, funding acquisition.

### **Data sharing**

The review protocol is publicly available on PROSPERO. Extraction data sheets will be made publicly available upon publication of key findings.

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