

# Is parental unemployment associated with increased risk of adverse childhood experiences? A systematic review and meta-analysis

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## ABSTRACT

**Background:** Unemployment has adverse consequences for families and can put children at risk of harm. This study presents a systematic review and meta-analysis of global evidence on associations between parental unemployment and adverse childhood experiences (ACEs).

**Methods:** Systematic literature searches across four databases identified cross-sectional, cohort or case-control studies measuring associations between parental employment and individual or cumulative ACEs in children. Available risk estimates were extracted and pooled odds ratios calculated using random-effects models.

**Results:** Of 60 included studies, 37 provided risk estimates suitable for pooling across seven ACE types. Paternal/any parental unemployment was associated with a 29% increased risk of sexual abuse, 54% increased risk of neglect, 60% increased risk of physical abuse and around 90% increased risk of child maltreatment and parental mental illness. No associations were found between maternal unemployment and ACEs. Pooling estimates from representative general population studies also identified increased risk of child maltreatment with paternal/any parental unemployment (82%) but not maternal unemployment.

**Conclusions:** Children who grow up with parental unemployment can be at increased risk of ACEs. A combination of socioeconomic measures to increase employment opportunities and parental support targeting fathers and mothers may help break multigenerational cycles of abuse and deprivation.

**Keywords** adverse childhood experiences, child maltreatment, unemployment, violence

## Introduction

Unemployment is a social, economic and political concern that impacts millions of people across the world. There are considerable inequalities in unemployment, with ethnic minority groups, women, younger workers, and those in low-paid or lower-skills roles disproportionately impacted by detrimental unemployment outcomes.<sup>1,2</sup> Stable, good quality employment provides more than just financial resources and a sense of security<sup>3</sup>; employment is an important determinant of life satisfaction and self-worth,<sup>4</sup> and its relationship with health is well evidenced. Thus, reviews identify negative impacts of unemployment on many physical and mental health outcomes, such as depression and mortality.<sup>5–9</sup> Equally, unemployment can increase risks of harmful behaviours such as substance abuse.<sup>10</sup> Furthermore, stressors

such as economic strain may extend to those closest to the unemployed worker, and such stress, along with feelings of personal failure or decreased life satisfaction,<sup>11</sup> can impact relationship quality and exacerbate pre-existing discord.<sup>12</sup> Thus, unemployment has been identified as a risk factor for intimate partner violence.<sup>13</sup> The negative impacts of unemployment on physical and mental health can be further exacerbated during economic crisis,<sup>14,15</sup> with coronavirus

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disease 2019 (COVID-19) and the 2022 cost-of-living crisis having highlighted the financial precariousness of many low-income families.<sup>16,17</sup>

Parental unemployment can have negative health and developmental outcomes for children<sup>18</sup> and may also contribute to negative parenting behaviour, including adverse childhood experiences (ACEs).<sup>19,20</sup> The term ACEs refers to intensely stressful experiences suffered by children, such as being a victim of child maltreatment or living in a household affected by domestic violence or parental mental illness. ACEs can have long-term implications for children's health and well being, including poor educational achievement, adoption of health-harming behaviours, development of mental illness and unemployment.<sup>21–23</sup> Furthermore, ACEs often co-occur and have cumulative impacts on health, with vulnerability to poorer outcomes increasing with the number of ACEs individuals suffer.<sup>24</sup>

A previous review found associations between lower childhood socioeconomic position and risk of ACEs, concluding that there was a need to better understand relationships between childhood socioeconomics and ACEs.<sup>25</sup> While empirical research has identified associations between parental unemployment and ACEs, to our knowledge findings from such studies have not been systematically synthesized. Thus, this systematic review and meta-analysis aimed to synthesize quantitative research examining associations between parental unemployment and ACEs. The review focuses on commonly measured ACEs that affect children in home environments, and included studies measuring ACEs both individually and cumulatively.

## Methods

### Search strategy and selection criteria

This review was carried out in adherence to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. A prospectively registered protocol was followed (PROSPERO registration number CRD42021241796). Systematic searches were conducted in four databases (Medline, PsycINFO [via ProQuest platform], Applied Social Sciences Abstracts and Criminal Justice Abstracts [via EBSCO platform]) to identify peer-reviewed journal articles describing associations between parent/caregiver employment status and individual or cumulative ACEs for their children. Search terms covered various household ACEs drawn from existing ACE studies and measurement tools,<sup>24,26</sup> and included child maltreatment (physical, emotional, sexual abuse; neglect) and parental domestic violence, separation, mental illness, substance abuse and incarceration. The full search strategy is provided in [Appendix Table AI](#) and was limited to studies

published in English between 1 January 1990 and 29 January 2021. The search was subsequently updated to include studies published to 14 November 2022.

Searches retrieved 1548 unique references ([Fig. 1](#)). Titles and abstracts were independently screened by two reviewers (KHa and NJ; see [Table 1](#) for inclusion criteria), with 345 studies selected for full-text review. Full texts were independently screened by the same reviewers and conflicts resolved through discussion with a third (MB). Sixty studies were included.

### Data extraction

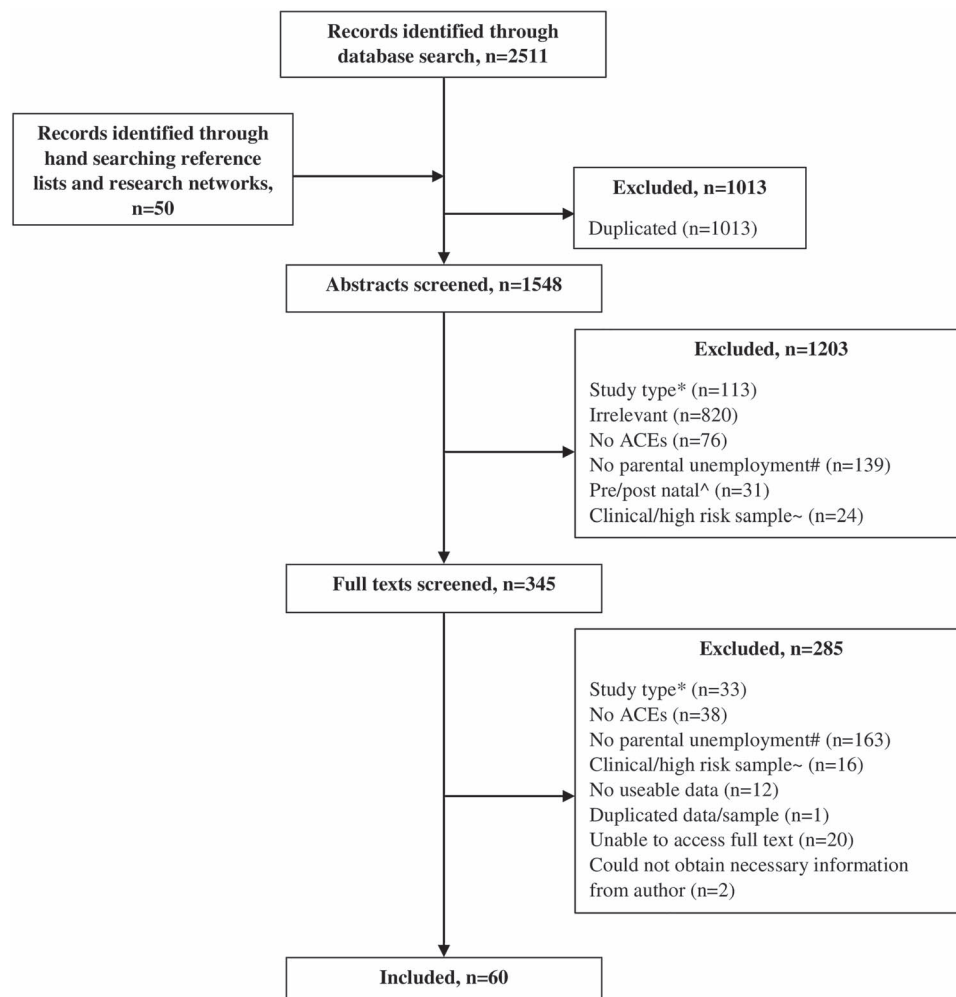
Study data were extracted by one reviewer (KHa or NJ) and checked by another (KHa, NJ or KHu). Discrepancies were discussed until consensus was reached. The following data were extracted: country; study methodology (e.g. cross-sectional); sample size; sample characteristics; definition of unemployment; target of unemployment measure (e.g. mother); ACEs measured and tool used; method of unemployment and ACE data capture (e.g. self-report); prevalence of ACEs and/or published risk statistic(s).

### Study quality assessment

Study quality was assessed using the Newcastle–Ottawa Scale (NOS) for cohort studies<sup>27</sup> and adapted NOSs for cross-sectional and case–control studies ([Appendix Table AII](#)). Studies were assessed independently by NJ and RA, and discrepancies resolved through discussion. Interrater reliability between reviewers was substantial ( $\kappa = 0.71$ ) before discussion and excellent ( $\kappa = 1.0$ ) following discussion. No studies were excluded based on quality.

### Data pooling

Extracted data were organized based on ACE type and target of unemployment measure (mother, father or other [e.g. either parent, both parents, undefined], referred to henceforth as ‘any parental unemployment’). ACE categories were child maltreatment (broad measure), physical abuse, corporal punishment, emotional abuse, sexual abuse, neglect, parental mental illness, domestic violence, substance (drug or alcohol) abuse, separation and incarceration. The line between corporal punishment and physical abuse is ill-defined,<sup>28</sup> but corporal punishment was included as a separate category as it was measured distinct from physical abuse in several studies. Data were categorized as physical abuse or corporal punishment according to the terminology used in included papers. Adjusted or, if not provided, unadjusted risk statistics (odds ratios [ORs], risk ratios, hazard ratios) were pooled for each ACE where risk statistics were available from  $\geq 3$  studies. All but three extracted estimates were ORs.



**Fig. 1** Flow diagram of study selection. \*Qualitative study, not individual-level data or not original research; #Or parental unemployment was not measured independently from other socioeconomic factors; ^Studied the prenatal/postnatal period only; ~With no comparison or control group.

**Table 1** Inclusion and exclusion criteria

Include	Exclude
<ul style="list-style-type: none"> <li>• Cross-sectional, cohort and case-control studies</li> <li>• Study provides quantitative data</li> <li>• Study comprises a control or comparison group</li> <li>• Study provides               <ol style="list-style-type: none"> <li>Adults' retrospective reports of their parents' employment status and their own experiences of ACEs;</li> <li>Children's reports of current/recent exposure to ACEs and parental unemployment or</li> <li>Data on the employment status of adults who were identified as parents and described their child(ren)'s exposure to ACEs</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Qualitative studies and reviews</li> <li>• Study examines high-risk or clinical populations</li> <li>• Study focuses solely on pregnancy and the immediate postnatal period</li> </ul>

Where risk statistics were not reported, ORs were calculated, where possible, from other available data (using numbers of participants in cross-tabulated categories [ACE yes/no; unemployed yes/no]). Where studies reported separate analyses by unique/mutually exclusive population groups (e.g. for fathers/mothers or by ethnicity), separate data points were used. Where multiple risk statistics were reported for different employment categories (e.g. part-time, full-time), *n* values were used to calculate a risk statistic for 'any employment' where possible. Risk statistics were inverted for studies using unemployment as the reference category (1/risk statistic). Where risk statistics were available from >1 study for the same sample and measurement, we selected the most recent study or that with the most appropriate analytical approach for inclusion. Studies were pooled using random-effects models in StatsDirect version 3.3.5 to calculate pooled ORs and 95% confidence intervals (CIs). Prediction intervals were calculated using Comprehensive Meta-Analysis v4. Studies within each ACE category were initially pooled across all parental unemployment categories, but visual inspection of plots identified common differences between estimates for maternal unemployment and those for paternal or any parental unemployment. Thus, pooling was conducted separately for maternal unemployment. Heterogeneity between studies was measured using the  $I^2$  statistic. Risk of publication bias was explored using Begg–Mazumdar and Egger tests and visual inspection of funnel plots where sufficient samples (>10) were available.

## Findings

### Study characteristics

Study characteristics are presented in the appendix (Table AIII). Study samples were drawn from 20 countries, including USA (*n* = 16), China, UK (*n* = 7 each), Netherlands (*n* = 4), Brazil, Denmark, Iran, Sweden (*n* = 3 each), Canada, Finland, Japan (*n* = 2 each), Australia, Democratic Republic of the Congo, Germany, Indonesia, Malaysia, Italy, Norway, South Africa, Ukraine and Vietnam (*n* = 1 each). Most studies were cross-sectional (*n* = 40) or cohort (*n* = 17), with two case–control studies and one cross-sectional cohort study. Twenty-four studies were conducted in household or community settings; 17 in education settings and others in health, welfare or online settings, or using population registers or birth cohorts. Most studies focused on associations between parental unemployment and forms of child maltreatment (e.g. physical abuse *n* = 20; neglect *n* = 12; broad measure of child maltreatment [i.e. no single type], *n* = 12), with fewer for other ACEs (e.g. domestic violence *n* = 6, parental substance abuse *n* = 4). Four studies

measured associations between parental unemployment and cumulative ACEs.

### Summary of literature findings

Table 2 summarizes the overall number of included studies for each ACE type and the number measuring associations with maternal unemployment, paternal unemployment and any parental unemployment, along with the direction of risk. Pooled estimates are presented in Table 3 and described later, along with findings from other studies for which pooling was not possible.

### Pooled effects

#### Child maltreatment

Twelve studies<sup>29–40</sup> examined associations between parental unemployment and a broad measure of child maltreatment (i.e. no single type) (Table 2; eight rated good quality). The pooled OR for five estimates<sup>30–32,35,37</sup> measuring maternal unemployment and any child maltreatment was 1.02 (95% CI 0.81–1.30), with substantial heterogeneity between estimates (Table 3; Fig. AI). The pooled OR from five suitable estimates<sup>29,32,36,38,39</sup> measuring paternal/any parental unemployment was 2.16 (1.62–2.88), with substantial heterogeneity between estimates. Excluding the study with highest risk estimate<sup>39</sup> reduced the pooled OR to 1.88 (1.60–2.19) and reduced heterogeneity (Table 3; Fig. AII). Three studies<sup>33,34,40</sup> did not provide suitable data for pooling, but indicated increased risk of child maltreatment associated with any parental unemployment.

#### Physical abuse

Twenty studies<sup>35,40–58</sup> examined associations between parental unemployment and physical abuse (Table 2; 14 rated good quality). Combining estimates from six studies<sup>35,43,45,47,52,56</sup> for maternal unemployment gave a pooled OR of 1.16 (0.85–1.57), with substantial heterogeneity between estimates (Table 3; Fig. AIII). Sixteen suitable estimates (from 12 studies<sup>42–44,47,49,50,53–58</sup>) were combined for paternal/any parental unemployment (Table 3; Fig. AIV). The pooled OR was 1.60 (1.28–1.99), with considerable heterogeneity between estimates (see Fig. AV in Appendix for funnel plot). Five studies measuring paternal/any parental unemployment did not contribute data for pooling: two<sup>40,48</sup> reported increased risk of physical abuse and three<sup>41,46,51</sup> reported no association.

#### Corporal punishment

Nine studies<sup>43,45,46,51,57,59–62</sup> examined associations between parental unemployment and corporal punishment (Table 2;

**Table 2** Summary of literature findings (all studies): number of studies measuring associations between parental unemployment and child ACEs and direction of effect sizes

ACE type	Number of studies (n)	Maternal unemployment				Paternal unemployment				Any parental unemployment#			
		Direction of risk*				Direction of risk*				Direction of risk*			
		↑	ns	↓	Total	↑	ns	↓	Total	↑	ns	↓	Total
Child maltreatment	12	1	3	1	5	3	0	0	3	4	0	0	5 <sup>a</sup>
Physical abuse	20	1	5	0	6	4	3	0	7	5	4	0	10 <sup>a</sup>
Corporal punishment	9	0	4	0	5 <sup>a</sup>	0	3	0	3	1	1	0	2
Emotional abuse	11	0	3	0	3	1	1	0	2	2	3	2	7
Sexual abuse	7	1	1	0	2	2	0	0	2	3	2	0	5
Neglect	12	0	5	0	5	1	0	0	1	2	2	0	6 <sup>b</sup>
Parental mental illness	8	2	1	0	4 <sup>a</sup>	—	—	—	0	4	0	0	4
Domestic violence	6	1	1	0	2	0	1	0	1	2	2	0	4
Parental substance abuse	4	—	—	—	0	—	—	—	0	4	0	0	4
Parental incarceration	1	—	—	—	0	—	—	—	0	1	0	0	1
Parental separation	1	—	—	—	0	—	—	—	0	1	0	0	1
Cumulative ACEs	4	1	0	0	1	1	0	0	1	2	1	0	3

\*↑, increased risk of ACE; ns, no significant association, ↓, reduced risk of ACE; —, no studies identified; #, either or both parents unemployed or target of unemployment not reported.

<sup>a</sup>One study reported mixed findings.

<sup>b</sup>Two studies reported mixed findings.

**Table 3** Pooled odds ratios (ORs) from random-effects meta-analyses

	Maternal unemployment			Paternal/any parental unemployment		
	Samples (n)	Pooled OR (95% CIs)	I <sup>2</sup> (95% CIs)	Samples (n)	Pooled OR (95% CIs)	I <sup>2</sup> (95% CIs)
Any child maltreatment	5	1.02 (0.81–1.30)	67.1% (0–85.2%)	5	<b>2.16 (1.62–2.88)</b>	79% (31.2–89.4%)
Excluding outlier	—	—	—	4	<b>1.88 (1.60–2.19)</b>	15.7% (0–72.6%)
Physical abuse	6	1.16 (0.85–1.57)	71.1% (2.7–85.7%)	16	<b>1.60 (1.28–1.99)</b>	81.9% (71–87.5%)
Corporal punishment	8	0.94 (0.78–1.14)	64% (0–81.3%)	—	—	—
Emotional abuse	3	0.98 (0.76–1.26)	0% (0–72.9%)	6	1.04 (0.69–1.57)	78% (37.8–88.3%)
Sexual abuse	—	—	—	6	<b>1.40 (1.20–1.63)</b>	73.1% (13.8–86.4%)
Excluding outlier	—	—	—	5	<b>1.29 (1.21–1.37)</b>	0% (0–64.1%)
Neglect	4	1.04 (0.78–1.38)	0% (0–67.9%)	3 <sup>a</sup>	<b>1.54 (1.00–2.36)</b>	54.3% (0–85.5%)
Parental mental illness	—	—	—	4 <sup>a</sup>	<b>2.13 (1.64–2.76)</b>	87.8% (65.7–93.5%)
Excluding outlier	—	—	—	3 <sup>a</sup>	<b>1.89 (1.82–1.96)</b>	0% (0–72.9%)
General population studies	—	—	—	—	—	—
All forms of child maltreatment <sup>b</sup>	7	1.09 (0.86–1.37)	78% (44.9–87.8%)	9	<b>1.82 (1.38–2.39)</b>	90.3% (84.2–93.3%)

<sup>a</sup>All included studies measured 'any parental unemployment'

<sup>b</sup>For maternal unemployment, including estimates for any child maltreatment, physical abuse and corporal punishment; for paternal/any parental unemployment, including estimates for any child maltreatment, physical abuse, emotional abuse and sexual abuse; see Appendix [Figs AXIII and AXIV](#) —, no data or insufficient data available for pooling. Significant values in bold. Forest plots are provided in the appendix ([Figs AI–AXIV](#)).



eight rated good quality). Pooling eight estimates (from five studies<sup>43,45,59–61</sup>) for maternal unemployment gave a pooled OR of 0.94 (0.78–1.14), with substantial heterogeneity between estimates (Table 3; Fig. AVI). Available estimates for paternal/any parental unemployment were considered too different to combine. Overall, four<sup>43,46,51,57</sup> of five studies reported no association with corporal punishment while the other<sup>62</sup> reported increased risk.

### Emotional abuse

Eleven studies<sup>35,40,41,43,45,50,51,55,57,62,63</sup> examined associations between parental unemployment and emotional abuse (Table 2; nine rated good quality). Three estimates<sup>35,43,45</sup> were combined for maternal unemployment, with a pooled OR of 0.98 (0.76–1.26) and low heterogeneity between estimates (Table 3; Fig. AVII). Combining suitable risk estimates for paternal/any parental unemployment ( $n = 6$ <sup>43,50,55,57,62,63</sup>) gave a pooled OR of 1.04 (0.69–1.57), with substantial heterogeneity (Table 3; Fig. AVIII). Two studies did not provide suitable data for pooling: one<sup>40</sup> reported increased risk of emotional abuse with any parental unemployment while the other<sup>51</sup> reported no association.

### Sexual abuse

Seven studies<sup>40,47,55,63–66</sup> examined associations between parental unemployment and sexual abuse (Table 2; six rated good quality). Combining six suitable estimates<sup>47,55,63–66</sup> for paternal/any parental unemployment gave a pooled OR of 1.40 (1.20–1.63), with substantial heterogeneity between estimates. Removing the study with the highest risk estimate<sup>47</sup> reduced the pooled OR to 1.29 (1.21–1.37) and substantially reduced heterogeneity (Table 3; Fig. AIX). One study<sup>40</sup> did not contribute to pooling but reported increased risk of sexual abuse with any parental unemployment. There were insufficient estimates to pool for maternal unemployment. Of two studies, one<sup>47</sup> found associations with increased risk of sexual abuse and one<sup>64</sup> found no association.

### Neglect

Twelve studies<sup>35,40,41,52,55,62,67–72</sup> examined associations between parental unemployment and neglect (Table 2; eight rated good quality). Combining suitable risk estimates for maternal unemployment ( $n = 4$ <sup>35,52,71,72</sup>) gave a pooled OR of 1.04 (0.78–1.38) and low heterogeneity between estimates (Table 3; Fig. AX). The one study<sup>68</sup> that did not contribute to pooling reported no association. Three studies<sup>41,55,62</sup> provided estimates suitable for combining for paternal/any parental unemployment, with a pooled OR of 1.54 (1.00–2.36) and moderate heterogeneity between estimates (Table 3;

Fig. AXI). Findings from studies that did not contribute to pooling were mixed<sup>40,67,69,70</sup> (Table 2).

### Parental mental illness

Eight studies<sup>73–80</sup> examined associations between parental unemployment and parental mental illness (Table 2; eight rated good quality). Estimates from four<sup>76–79</sup> studies measuring any parental unemployment were combined for a pooled OR of 2.13 (1.64–2.76), with considerable heterogeneity between estimates. Removing the study with the highest risk estimate<sup>77</sup> reduced the pooled OR to 1.89 (1.82–1.96) and substantially reduced heterogeneity (Table 3; Fig. SAXII). No studies provided risk estimates suitable for combining for maternal unemployment; findings from available studies<sup>73–75,80</sup> were mixed (Table 2).

### Domestic violence between parents

Six studies<sup>40,48,55,81–83</sup> examined associations between parental unemployment and domestic violence (Table 2; five rated good quality). There were insufficient estimates available for pooling. Study findings were mixed across both maternal and paternal/any parental unemployment (Table 2).

### Parental substance abuse

Four studies<sup>44,78,84,85</sup> examined associations between any parental unemployment and parental substance abuse (Table 2; three rated good quality), all of which reported positive associations. There were insufficient data suitable for pooling.

### Other ACEs

One study<sup>86</sup> (rated good quality) found an increased risk of parental incarceration associated with any parental unemployment. One study<sup>44</sup> (rated good quality) found positive correlations between any parental unemployment and parental separation (Table 2).

### Cumulative ACE exposure

Four studies<sup>41,63,87,88</sup> examined associations between parental unemployment and cumulative ACEs (Table 2; four rated good quality). Due to variation in the number and range of ACEs measured, pooling was not undertaken. Three of four studies reported an approximate doubling in risk of multiple ACEs (2 ACEs,<sup>63</sup> 3+ ACEs,<sup>87</sup> 4+ ACEs<sup>88</sup>) with parental unemployment (Table 2). The remaining study<sup>41</sup> reported no association between paternal unemployment and exposure to two or more forms of child maltreatment inflicted by a parent or teacher.

## All forms of child maltreatment—general population studies

With included studies having been conducted in a range of settings across a variety of different populations, a further analysis was undertaken combining estimates from representative general population samples for all forms of child maltreatment (i.e. any child maltreatment, physical abuse, corporal punishment, emotional abuse, sexual abuse or neglect). All such studies had been conducted in high-income countries (HICs). Seven estimates were combined for maternal unemployment, with a pooled OR of 1.09 (95% CI 0.86–1.37) and substantial heterogeneity between estimates (Table 3; Fig. AXIII). Nine estimates were combined for paternal/any parental unemployment, for a pooled OR of 1.82 (1.38–2.39) and considerable heterogeneity between estimates (Table 3; Fig. AXIV).

## Discussion

### Main findings of this study

By synthesizing findings from studies measuring associations between parental unemployment and ACEs across multiple countries, this review provides evidence for increased risk of ACE exposure among children whose parents experience unemployment. Of 60 included studies, 37 contributed risk estimates to meta-analyses across seven individual ACEs. Pooled random-effects models found paternal/any parental unemployment to be associated with a 29% increased risk of sexual abuse, a 54% increased risk of neglect, a 60% increased risk of physical abuse, and around a 90% increase in risks of child maltreatment and parental mental illness; no association was identified with emotional abuse. Conversely, no associations were observed between maternal unemployment and any ACE for which estimates could be pooled. Pooling estimates from representative general population studies across any form of child maltreatment also identified an increased risk of child maltreatment (82%) with paternal/any parental unemployment but not with maternal unemployment. All such general population studies had been conducted in HICs. There were critical gaps in evidence for several ACEs. Thus, there was insufficient data to pool estimates for associations between paternal/any parental unemployment and corporal punishment; maternal unemployment and sexual abuse or parental mental illness; and for any category of parental unemployment and domestic violence, parental separation, substance abuse and incarceration, or cumulative ACEs.

### What is already known on this topic

A previous review found associations between lower childhood socioeconomic position and risk of ACEs, concluding

that there was a need to better understand relationships between ACEs and childhood socioeconomics and for such relationships to be addressed in policy to reduce childhood adversity.<sup>25</sup> Our study focused specifically on associations between ACEs and parental unemployment. Research has linked unemployment to harmful outcomes including mental ill-health, substance use and intimate partner violence<sup>10,89</sup>; effects that can emerge as ACEs for children of unemployed parents. Equally, difficulties such as mental illness, substance abuse and domestic violence can inhibit parents' ability to work and reduce employment prospects.<sup>90,91</sup> Critically, substantial evidence shows wide-ranging harms associated with ACEs across the life-course.<sup>24</sup> Thus, individuals who suffer ACEs are at increased risk of outcomes including low educational achievement, mental illness, health-harming behaviours and chronic disease.<sup>21,92</sup> Unemployment has also been identified as a life-course outcome for those who experience ACEs.<sup>23</sup>

### What this study adds

Our study suggests that children living with parental unemployment can be at increased risk of ACEs. We found associations between paternal or any parental unemployment and most included ACEs, but no associations for maternal unemployment. This may reflect poorer mental well-being in unemployed men compared to unemployed women (e.g. due to lower perceived social approval<sup>93</sup>), which can affect parenting behaviours.<sup>94,95</sup> Equally, it may reflect traditional gender roles, whereby mothers stay home to care for children instead of working. Research has also suggested that when mothers choose to stay home, this may be protective against child maltreatment, for example, through reducing stress associated with the dual responsibility of employment and childcare.<sup>96,97</sup> In our review, three studies on maternal employment compared employed mothers to those defined as 'housewife'. These studies were from Iran<sup>35,71</sup> and Hong Kong,<sup>54</sup> but the lack of association between maternal employment and ACEs was generally consistent across countries. Parenting programmes to prevent risk to children often target mothers; results here suggest that these programmes should take a broader family view.

In addition, our review identified wide variations in data availability across ACE categories. Most studies measured child maltreatment (e.g. physical abuse, neglect), with fewer examining other ACE types. Thus, only six studies measured associations between unemployment and parental domestic violence (despite numerous studies linking unemployment to domestic violence in general<sup>13</sup>); findings from these studies were mixed, with insufficient data for pooling. Equally, only four studies measured relationships between parental

unemployment and child exposure to multiple ACEs; due to variation in the number and range of ACEs measured, data from these studies were not pooled.

### Limitations of this study

This review has several limitations. While our searches identified a relatively large body of studies for inclusion ( $n = 60$ ), they were limited to four databases and therefore may have missed other relevant studies. Most studies were cross-sectional, meaning causal pathways could not be explored and we cannot ascertain whether parental unemployment leads to ACEs; if factors underlying ACEs (e.g. parental substance abuse) lead to unemployment; or if the link is mediated through a third factor. Understanding pathways from unemployment to ACEs and vice versa should be a future research priority. Importantly, our analyses included estimates drawn from studies conducted across a range of geographies, settings and social/cultural contexts. Synthesizing global findings revealed consistencies across studies in associations between ACEs and paternal/any parental unemployment but not maternal unemployment. However, relationships between unemployment and ACEs are likely to vary across contexts, likely contributing to heterogeneity between study estimates. While there were insufficient data available for us to explore variation across contexts for individual ACE types, the relationships for maternal and paternal/any parental unemployment were sustained in analyses of representative general population surveys; however, all such studies had been conducted in HICs. With further data, more nuanced analyses could better explore factors impacting relationships between parental unemployment and ACEs. Studies would also benefit from greater consistency in outcome measurements. Thus, there was variation between studies in definitions and measurement of parental unemployment, and in some measures were poorly defined and did not distinguish between unemployment as a chronic or acute stressor; few studies explicitly stated the length of unemployment measured. Furthermore, while studies of maternal and paternal unemployment showed clear differences in associations with ACEs, many studies used broader parental unemployment measures whereby it was not possible to distinguish which parent was unemployed. However, findings from these studies generally aligned with those for paternal unemployment. While most studies controlled for demographic factors in their estimates, the range of confounding controlled for varied and some studies controlled for factors closely related to both ACEs and unemployment, potentially masking relationships. Furthermore, some studies did not present risk estimates for non-significant findings. Many studies relied on retrospective ACE reports and therefore may be affected

by recall bias. Equally, studies relying on parental reports of ACEs may be affected by under-reporting. In addition, it was not always possible to determine whether the unemployed parent was also the perpetrator of ACEs. Finally, while we included many commonly measured ACEs that affect children, this range is not comprehensive and future research could consider additional ACEs.

### Conclusions/implications

This study identifies associations between paternal/any parental unemployment and child exposure to ACEs. Such associations are important in recognizing vulnerabilities of children in families that face unemployment, and in targeting programmes to prevent ACEs and build resilience against their harmful impacts. They are particularly important in times of economic crisis, such as that imposed by the COVID-19 pandemic and rising costs of living. With economic uncertainty continuing, the need to prevent ACEs and build child resilience is paramount. Exposure to ACEs can increase children's risk of multiple health and social difficulties throughout life, including their risks of future unemployment, thus trapping families in cycles of socioeconomic deprivation and ill-health. While interventions for families facing unemployment or precarious employment may not solve the problem of unemployment, they could help reduce its harmful consequences and increase resilience. Although more work is required on causal links between unemployment and ACEs, existing evidence suggests that ACE exposure may reduce employment opportunities in adulthood, and subsequent unemployment may increase risks that ACEs are repeated for the next generation. Consequently, a combination of socioeconomic measures to increase employment opportunities and parental support interventions that target fathers and mothers may help break multigenerational cycles of ACEs and deprivation.

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### Supplementary data

Supplementary data are available at the *Journal of Public Health* online.



## Conflict of interest

All authors declare that they have no conflicts of interest.

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## Data availability

The data underlying this article are in the public domain and available in its online supplementary material.

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