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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 disproportionally impacted by detrimental unemployment outcomes.[1,2] Stable, good quality employment provides more than just financial resources and a sense of security[3]; employment is an important determinant of life satisfaction and self-worth,[4] 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.[5–9] Equally, unemployment can increase risks of harmful behaviours such as substance abuse.[10] 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,[11] can impact relationship quality and exacerbate pre-existing discord.[12] Thus, unemployment has been identified as a risk factor for intimate partner violence.[13] The negative impacts of unemployment on physical and mental health can be further exacerbated during economic crisis,[14,15] 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.[16,17]

Parental unemployment can have negative health and developmental outcomes for children[18] and may also contribute to negative parenting behaviour, including adverse childhood experiences (ACEs).[19,20] 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.[21–23] Furthermore, ACEs often co-occur and have cumulative impacts on health, with vulnerability to poorer outcomes increasing with the number of ACEs individuals suffer.[24]

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.[25] 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,[24,26] 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[27] 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,[28] 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 ≥3 studies. All but three extracted estimates were ORs.

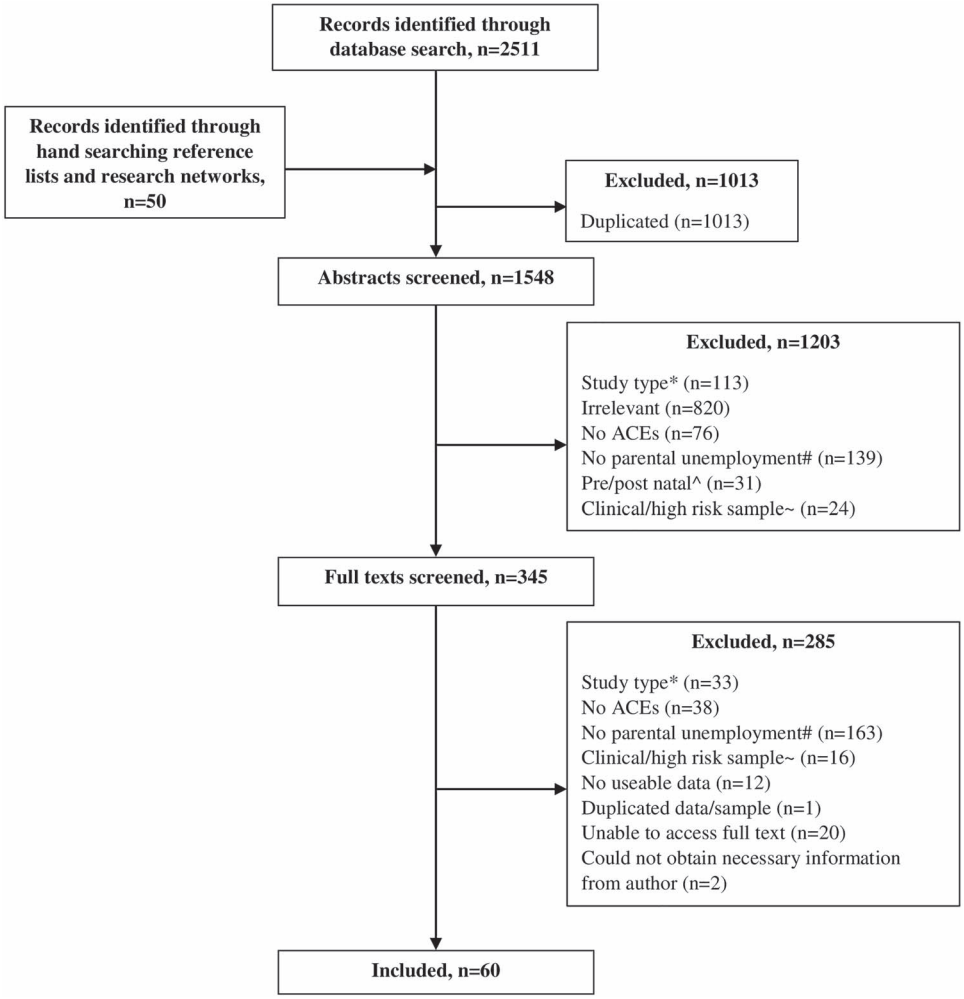

Fig. 1 Flow diagram of study selection. *Qualitative study, not individual-level data or not original research; #Or parental unemployment was not measured independently from other socioeconomic factors; ^Studied the prenatal/postnatal period only; ~With no comparison or control group.

Table 1 Inclusion and exclusion criteria

Include	*Exclude*
• Cross-sectional, cohort and case–control studies • Study provides quantitative data • Study comprises a control or comparison group • Study provides (a) Adults' retrospective reports of their parents' employment status and their own experiences of ACEs; (b) Children's reports of current/recent exposure to ACEs and parental unemployment or (c) Data on the employment status of adults who were identified as parents and described their child(ren)'s exposure to ACEs	• Qualitative studies and reviews • Study examines high-risk or clinical populations • Study focuses solely on pregnancy and the immediate postnatal period

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[29–40] 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[30–32,35,37] 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[29,32,36,38,39] measuring paternal/any parental unemployment was 2.16 (1.62–2.88), with substantial heterogeneity between estimates. Excluding the study with highest risk estimate[39] reduced the pooled OR to 1.88 (1.60–2.19) and reduced heterogeneity (Table 3; Fig. AII). Three studies[33,34,40] did not provide suitable data for pooling, but indicated increased risk of child maltreatment associated with any parental unemployment.

Physical abuse

Twenty studies[35,40–58] examined associations between parental unemployment and physical abuse (Table 2; 14 rated good quality). Combining estimates from six studies[35,43,45,47,52,56] 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[42–44,47,49,50,53–58]) 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[40,48] reported increased risk of physical abuse and three[41,46,51] reported no association.

Corporal punishment

Nine studies[43,45,46,51,57,59–62] 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

	Number of studies (n)	*Maternal unemployment*				*Paternal unemployment*				*Any parental unemployment#*			
		*Direction of risk**				*Direction of risk**				*Direction of risk**			
ACE type		↑	*ns*	↓	*Total*	↑	*ns*	↓	*Total*	↑	*ns*	↓	*Total*
Child maltreatment	12	1	3	1	5	3	0	0	3	4	0	0	5[a]
Physical abuse	20	1	5	0	6	4	3	0	7	5	4	0	10[a]
Corporal punishment	9	0	4	0	5[a]	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[b]
Parental mental illness	8	2	1	0	4[a]	—	—	—	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.

[a]One study reported mixed findings.

[b]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^2 (95% CIs)*	*Samples (n)*	*Pooled OR (95% CIs)*	*I^2 (95% CIs)*
Any child maltreatment	5	1.02 (0.81–1.30)	67.1% (0–85.2%)	5	**2.16 (1.62–2.88)**	79% (31.2–89.4%)
Excluding outlier	–	–	–	4	**1.88 (1.60–2.19)**	15.7% (0–72.6%)
Physical abuse	6	1.16 (0.85–1.57)	71.1% (2.7–85.7%)	16	**1.60 (1.28–1.99)**	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	**1.40 (1.20–1.63)**	73.1% (13.8–86.4%)
Excluding outlier	—	—	—	5	**1.29 (1.21–1.37)**	0% (0–64.1%)
Neglect	4	1.04 (0.78–1.38)	0% (0–67.9%)	3[a]	**1.54 (1.00–2.36)**	54.3% (0–85.5%)
Parental mental illness	—	—	—	4[a]	**2.13 (1.64–2.76)**	87.8% (65.7–93.5%)
Excluding outlier	—	—	—	3[a]	**1.89 (1.82–1.96)**	0% (0–72.9%)
General population studies						
All forms of child maltreatment[b]	7	1.09 (0.86–1.37)	78% (44.9–87.8%)	9	**1.82 (1.38–2.39)**	90.3% (84.2–93.3%)

[a]All included studies measured 'any parental unemployment'

[b]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[43,45,59–61]) 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[43,46,51,57] of five studies reported no association with corporal punishment while the other[62] reported increased risk.

Emotional abuse

Eleven studies[35,40,41,43,45,50,51,55,57,62,63] examined associations between parental unemployment and emotional abuse (Table 2; nine rated good quality). Three estimates[35,43,45] 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 ($n = 6$[43,50,55,57,62,63]) 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[40] reported increased risk of emotional abuse with any parental unemployment while the other[51] reported no association.

Sexual abuse

Seven studies[40,47,55,63–66] examined associations between parental unemployment and sexual abuse (Table 2; six rated good quality). Combining six suitable estimates[47,55,63–66] 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[47] reduced the pooled OR to 1.29 (1.21–1.37) and substantially reduced heterogeneity (Table 3; Fig. AIX). One study[40] 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[47] found associations with increased risk of sexual abuse and one[64] found no association.

Neglect

Twelve studies[35,40,41,52,55,62,67–72] examined associations between parental unemployment and neglect (Table 2; eight rated good quality). Combining suitable risk estimates for maternal unemployment ($n = 4$[35,52,71,72]) gave a pooled OR of 1.04 (0.78–1.38) and low heterogeneity between estimates (Table 3; Fig. AX). The one study[68] that did not contribute to pooling reported no association. Three studies[41,55,62] 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[40,67,69,70] (Table 2).

Parental mental illness

Eight studies[73–80] examined associations between parental unemployment and parental mental illness (Table 2; eight rated good quality). Estimates from four[76–79] 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[77] 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[73–75,80] were mixed (Table 2).

Domestic violence between parents

Six studies[40,48,55,81–83] 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[44,78,84,85] 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[86] (rated good quality) found an increased risk of parental incarceration associated with any parental unemployment. One study[44] (rated good quality) found positive correlations between any parental unemployment and parental separation (Table 2).

Cumulative ACE exposure

Four studies[41,63,87,88] 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,[63] 3+ ACEs,[87] 4+ ACEs[88]) with parental unemployment (Table 2). The remaining study[41] 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.[25] 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[10,89]; 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.[90,91] Critically, substantial evidence shows wide-ranging harms associated with ACEs across the life-course.[24] Thus, individuals who suffer ACEs are at increased risk of outcomes including low educational achievement, mental illness, health-harming behaviours and chronic disease.[21,92] Unemployment has also been identified as a life-course outcome for those who experience ACEs.[23]

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[93]), which can affect parenting behaviours.[94,95] 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.[96,97] In our review, three studies on maternal employment compared employed mothers to those defined as 'housewife'. These studies were from Iran[35,71] and Hong Kong,[54] 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[13]); 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.

References

1. Francis-Devine B, Powell A, Foley N. *Coronavirus: Impact on the Labour Market*; 2020. https://www.ousedale.org.uk/ckfinder/userfiles/files/House%20of%20Commons%20LMI.pdf (21 April 2022, date last accessed).
2. Gray BJ, Kyle RG, Song J *et al.* Characteristics of those most vulnerable to employment changes during the COVID-19 pandemic: a nationally representative cross-sectional study in Wales. *J Epidemiol Community Health* 2022;**76**:8–15.
3. Blustein DL, Guarino PA. Work and unemployment in the time of COVID-19: the existential experience of loss and fear. *J Humanist Psychol* 2020;**60**:702–9.
4. Della Giusta M, Jewell SL, Kambhampati US. Gender and life satisfaction in the UK. *Fem Econ* 2011;**17**:1–34.
5. van der Noordt M, Ijzelenberg H, Droomers M *et al.* Health effects of employment: a systematic review of prospective studies. *Occup Environ Med* 2014;**71**:730–6.
6. Wanberg CR. The individual experience of unemployment. *Annu Rev Psychol* 2012;**63**:369–96.
7. Paul KI, Moser K. Unemployment impairs mental health: meta-analyses. *J Vocat Behav* 2009;**74**:264–82.
8. Clemens T, Popham F, Boyle P. What is the effect of unemployment on all-cause mortality? A cohort study using propensity score matching. *Eur J Public Health* 2015;**25**:115–21.
9. Bender KA, Economou A, Theodossiou I. The temporary and permanent effects of unemployment on mortality in Europe. *Int Labour Rev* 2013;**152**:275–86.
10. Henkel D. Unemployment and substance use: a review of the literature (1990-2010). *Current Drug Abuse Reviewse* 2011;**4**:4–27.
11. Booth AL, van Ours JC. Job satisfaction and family happiness: the part-time work puzzle. *Econ J* 2008;**118**:F77–P99.
12. Maitoza R. Family challenges created by unemployment. *J Fam Soc Work* 2019;**22**:187–205.
13. Capaldi DM, Knoble NB, Shortt JW *et al.* A systematic review of risk factors for intimate partner violence. *Partn Abus* 2012;**3**:231–80.
14. Thern E, de Munter J, Hemmingsson T *et al.* Long-term effects of youth unemployment on mental health: does an economic crisis make a difference? *J Epidemiol Community Health* 2017;**71**:344–9.
15. Urbanos-Garrido RM, Lopez-Valcarcel BG. The influence of the economic crisis on the association between unemployment and health: an empirical analysis for Spain. *Eur J Health Econ* 2015;**16**:175–84.
16. Hill K, Webber R. *From Pandemic to Cost of Living Crisis: Low-income Households in Challenging Times*. York: Joseph Rowntree Foundation, 2022. file:///C:/Users/Ka123061/Downloads/from_pandemic_to_cost_of_living_crisis_-_low-income_families_in_challenging_times_0%20(1).pdf (21 December 2022, date last accessed).
17. International Labour Organization. *World Employment and Social Outlook: Trends 2022*. Geneva: ILO Publishing, 2022. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_834081.pdf (21 April 2022, date last accessed).
18. Pillas D, Marmot M, Naicker K *et al.* Social inequalities in early childhood health and development: a European-wide systematic review. *Pediatr Res* 2014;**76**:418–24.
19. Repetti R, Wen WS. Parent employment and chaos in the family. In: Evans GW, Wachs TD (eds). *Chaos and its Influence on Children's Development: An Ecological Perspective*. Washington DC: American Psychological Association, 2009, 191–208.
20. Cui M, Conger RD. Parenting behavior as mediator and moderator of the association between marital problems and adolescent maladjustment. *J Res Adolesc* 2008;**18**:261–84.
21. Bellis MA, Hughes K, Ford K *et al.* Life course health consequences and associated annual costs of adverse childhood experiences across Europe and North America: a systematic review and meta-analysis. *Lancet Public Health* 2019;**4**:e517–28.
22. Hardcastle K, Bellis MA, Ford K *et al.* Measuring the relationships between adverse childhood experiences and educational and employment success in England and Wales: findings from a retrospective study. *Public Health* 2018;**165**:106–16.
23. Bellis MA, Lowey H, Leckenby N *et al.* Adverse childhood experiences: retrospective study to determine their impact on adult health behaviours and health outcomes in a UK population. *J Public Health* 2014;**36**:81–91.
24. Hughes K, Bellis MA, Hardcastle KA *et al.* The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. *Lancet Public Health* 2017;**2**(**8**):e356–66.
25. Walsh D, McCartney G, Smith M *et al.* Relationship between childhood socioeconomic position and adverse childhood experiences (ACEs): a systematic review. *J Epidemiol Community Health* 2019;**73**:1087–93.
26. National Center for Injury Prevention and Control, Division of Violence Prevention, Centers for Disease Control and Prevention. *Behavioural Risk Factor Surveillance System Adverse Childhood Experience (ACE) Module*. Atlanta: Centers for Disease Control and Prevention. https://www.cdc.gov/violenceprevention/acestudy/pdf/BRFSS_Adverse_Module.pdf (12 January 2022, date last accessed).
27. Wells G, Shea B, O'Connell D *et al. Newcastle-Ottawa Quality Assessment Scale Cohort Studies*. Ontario: University of Ottawa, 2014.

28. Coleman DL, Dodge KA, Campbell SK. Where and how to draw the line between reasonable corporal punishment and abuse. *Law Contemp Probl* 2010;**73**:107–66.
29. Baldwin H, Biehal N, Allgar V *et al.* Antenatal risk factors for child maltreatment: linkage of data from a birth cohort study to child welfare records. *Child Abuse Negl* 2020;**107**: 104605.
30. Beimers D, Coulton CJ. Do employment and type of exit influence child maltreatment among families leaving temporary assistance for needy families? *Child Youth Serv Rev.* 2011;**33**:1112–9.
31. Bussemakers C, Kraaykamp G, Tolsma J. Co-occurrence of adverse childhood experiences and its association with family characteristics. A latent class analysis with Dutch population data. *Child Abuse Negl* 2019;**98**:104185.
32. Christoffersen MN. Growing up with unemployment: a study of parental unemployment and children's risk of abuse and neglect based on national longitudinal 1973 birth cohorts in Denmark. *Childhood* 2000;**7**:421–38.
33. Curenton SM, McWey LM, Bolen MG. Distinguishing maltreating versus nonmaltreating at-risk families: implications for foster care and early childhood education interventions. *Fam Soc: J Contemp Soc Serv* 2009;**90**:176–82.
34. Euser S, Alink LRA, Pannebakker F *et al.* The prevalence of child maltreatment in the Netherlands across a 5-year period. *Child Abuse Negl* 2013;**37**:841–51.
35. Hosseinkhani Z, Nedjat S, Aftatouni A *et al.* Socioeconomic inequality and child maltreatment in Iranian schoolchildren. *East Mediterr Health J* 2015;**21**:819–27.
36. Paavilainen E, Åstedt-Kurki P, Paunonen-Ilmonen M *et al.* Risk factors of child maltreatment within the family: towards a knowledgeable base of family nursing. *Int J Nurs Stud* 2001;**38**:297–303.
37. Sidebotham P, Heron J. Child maltreatment in the "children of the nineties": a cohort study of risk factors. *Child Abuse Negl* 2006;**30**:497–522.
38. Sidebotham P, Heron J, Golding J. Child maltreatment in the "children of the nineties:" deprivation, class, and social networks in a UK sample. *Child Abuse Negl* 2002;**26**:1243–59.
39. van Berkel SR, Prevoo MJL, Linting M *et al.* Prevalence of child maltreatment in the Netherlands: an update and cross-time comparison. *Child Abuse Negl* 2020;**103**:104439.
40. Doidge JC, Higgins DJ, Delfabbro P *et al.* Economic predictors of child maltreatment in an Australian population-based birth cohort. *Child Youth Serv Rev* 2017;**72**:14–25.
41. Ahmed A, Wan-Yuen C, Marret MJ *et al.* Child maltreatment experience among primary school children: a large scale survey in Selangor state. *Malaysia PLoS One* 2015;**10**:e0119449.
42. Cantrell PJ, Carrico MF, Franklin JN *et al.* Violent tactics in family conflict relative to familial and economic factors. *Psychol Rep* 1990;**66**:823–8.
43. Chan KL, Emery CR, Ip P. Children with disability are more at risk of violence victimization. *J Interpers Violence* 2016;**31**:1026–46.
44. Fuller-Thomson E, Sawyer JL. Is the cluster risk model of parental adversities better than the cumulative risk model as an indicator of childhood physical abuse?: findings from two representative community surveys. *Child Care Health Dev* 2014;**40**:124–33.
45. de Gebara CF, Ferri CP, de Bhona FM *et al.* Psychosocial factors associated with mother–child violence: a household survey. *Soc Psychiatry Psychiatr Epidemiol* 2017;**52**:77–86.
46. Guterman NB, Lee Y, Lee SJ *et al.* Fathers and maternal risk for physical child abuse. *Child Maltreat* 2009;**14**:277–90.
47. Jonas KAWM, Tang H, Chao DL *et al.* Prevalence and risk factors associated with physical and/or sexual abuse among female middle school students: a cross-sectional study in Kinshasa, DRC. *J Interpers Violence* 2020;**37**:NP8405–NP8429.
48. Kobayashi LC, Farrell MT, Payne CF *et al.* Adverse childhood experiences and domain-specific cognitive function in a population-based study of older adults in rural South Africa. *Psychol Aging* 2020;**35**:818–30.
49. Kvist T, Dahllöf G, Svedin CG *et al.* Child physical abuse, declining trend in prevalence over 10 years in Sweden. *Acta Paediatr* 2020;**109**:1400–8.
50. Lawson M, Piel MH, Simon M. Child maltreatment during the COVID-19 pandemic: consequences of parental job loss on psychological and physical abuse towards children. *Child Abuse Negl* 2020;**110**(**Pt2**):104709.
51. Lee SJ, Guterman NB, Lee Y. Risk factors for paternal physical child abuse. *Child Abuse Negl* 2008;**32**:846–58.
52. Lo CKM, Tung KTS, Chan KL *et al.* Risk factors for child physical abuse and neglect among Chinese young mothers. *Child Abuse Negl* 2017;**67**:193–206.
53. Sariola H, Uutela A. The prevalence and context of family violence against children in Finland. *Child Abuse Negl* 1992;**16**:823–32.
54. So-kum TC. The rate of physical child abuse in Chinese families: a community survey in Hong Kong. *Child Abuse Negl* 1998;**22**: 381–91.
55. Tran NK, van Berkel SR, van Ijzendoorn MH *et al.* Child and family factors associated with child maltreatment in Vietnam. *J Interpers Violence* 2021;**36**:NP2931–53.
56. Wolfner GD, Gelles RJ. A profile of violence toward children: a national study. *Child Abuse Negl* 1993;**17**:197–212.
57. Wong JYH, Wai AKC, Wang MP *et al.* Impact of COVID-19 on child maltreatment: income instability and parenting issues. *Int J Environ Res Public Health* 2021;**18**:1501.
58. Yamaoka Y, Morisaki N, Noguchi H *et al.* Comprehensive assessment of risk factors of cause-specific infant deaths in Japan. *J Epidemiol* 2018;**28**:307–14.
59. Fréchette S, Romano E. Change in corporal punishment over time in a representative sample of Canadian parents. *J Fam Psychol* 2015;**29**:507–17.
60. MacKenzie MJ, Nicklas E, Brooks-Gunn J *et al.* Who spanks infants and toddlers? Evidence from the fragile families and child well-being study. *Child Youth Serv Rev* 2011;**33**:1364–73.
61. Masuda R, Lanier P, Hashimoto H. The association between paternal job stress and maternal child corporal punishment: evidence from a population-based survey in metropolitan Japan. *J Fam Violence* 2019;**34**:119–26.

62. Lee SJ, Ward KP, Lee JY *et al.* Parental social isolation and child maltreatment risk during the COVID-19 pandemic. *J Fam Violence* 2021;**37**:813–824.
63. Murphy S, Shevlin M, Elklit A *et al.* Validating childhood maltreatment typologies using data linkage. *J Loss Trauma* 2018;**23**:99–112.
64. Chan KL, Yan E, Brownridge DA *et al.* Associating child sexual abuse with child victimization in China. *J Pediatr* 2013;**162**:1028–34.
65. Christoffersen MN. Sexual crime against schoolchildren with disabilities: a nationwide prospective birth cohort study. *J Interpers Violence* 2020;**37**:NP2177–205.
66. Priebe G, Svedin CG. Prevalence, characteristics, and associations of sexual abuse with sociodemographics and consensual sex in a population-based sample of Swedish adolescents. *J Child Sex Abus* 2009;**18**:19–39.
67. Berliana SM, Augustia AW, Rachmawati PD *et al.* Factors associated with child neglect in Indonesia: findings from National Socio-Economic Survey. *Child Youth Serv Rev* 2019;**106**:104487.
68. Hua J, Mu Z, Nwaru BI *et al.* Child neglect in one-child families from Suzhou City of Mainland China. *BMC Int Health Hum Rights* 2014;**14**:8.
69. Pasian MS, Benitez P, Lacharité C. Child neglect and poverty: a Brazilian study. *Child Youth Serv Rev.* 2020;**108**:104655.
70. Slack KS, Holl JL, McDaniel M *et al.* Understanding the risks of child neglect: an exploration of poverty and parenting characteristics. *Child Maltreat* 2004;**9**:395–408.
71. Stephenson R, Sheikhattari P, Assasi N *et al.* Child maltreatment among school children in the Kurdistan Province, Iran. *Child Abuse Negl* 2006;**30**:231–45.
72. Yang MY, Maguire-Jack K. Predictors of basic needs and supervisory neglect: evidence from the Illinois families study. *Child Youth Serv Rev.* 2016;**67**:20–6.
73. Garbarski D, Witt WP. Child health, maternal marital and socioeconomic factors, and maternal health. *J Fam Issues* 2013;**34**:484–509.
74. Guo J, de Carli P, Lodder P *et al.* Maternal mental health during the COVID-19 lockdown in China, Italy, and the Netherlands: a cross-validation study. *Psychol Med* 2021;**52**:3349–3359.
75. Harkness S. The effect of employment on the mental health of lone mothers in the UK before and after new Labour's welfare reforms. *Soc Indic Res* 2016;**128**:763–91.
76. Luciano A, Nicholson J, Meara E. The economic status of parents with serious mental illness in the United States. *Psychiatr Rehabil J* 2014;**37**:242–50.
77. Mensah FK, Kiernan KE. Parents' mental health and children's cognitive and social development. *Soc Psychiatry Psychiatr Epidemiol* 2010;**45**:1023–35.
78. Pierce M, Abel KM, Muwonge J *et al.* Prevalence of parental mental illness and association with socioeconomic adversity among children in Sweden between 2006 and 2016: a population-based cohort study. *Lancet Public Health* 2020;**5**:e583–91.
79. Plass-Christl A, Haller AC, Otto C *et al.* Parents with mental health problems and their children in a German population based sample: results of the BELLA study. *PloS One* 2017;**12**:e0180410.
80. Wickham S, Whitehead M, Taylor-Robinson D *et al.* The effect of a transition into poverty on child and maternal mental health: a longitudinal analysis of the UK millennium cohort study. *Lancet Public Health* 2017;**2**:e141–8.
81. Burlaka V, Grogan-Kaylor A, Savchuk O *et al.* The relationship between family, parent, and child characteristics and intimate-partner violence (IPV) among Ukrainian mothers. *Psychol Violence* 2017;**7**:469–77.
82. Meltzer H, Doos L, Vostanis P *et al.* The mental health of children who witness domestic violence. *Child Fam Soc Work* 2009;**14**:491–501.
83. Vameghi M, Feizzadeh A, Mirabzadeh A *et al.* Exposure to domestic violence between parents: a perspective from Tehran. *Iran J Interpers Violence* 2010;**25**:1006–21.
84. Menees MM, Segrin C. The specificity of disrupted processes in families of adult children of alcoholics. *Alcohol Alcohol* 2000;**35**:361–7.
85. Turney K, Olsen A. Household member substance problems and children's health in the United States. *SSM Popul Health* 2019;**7**:100400.
86. Merrick MT, Henly M, Turner HA *et al.* Beyond residential mobility: a broader conceptualization of instability and its impact on victimization risk among children. *Child Abuse Negl* 2018;**79**:485–94.
87. Mossige S, Huang L. Poly-victimization in a Norwegian adolescent population: prevalence, social and psychological profile, and detrimental effects. *PloS One* 2017;**12**:e0189637.
88. Soares ALG, Howe LD, Matijasevich A *et al.* Adverse childhood experiences: prevalence and related factors in adolescents of a Brazilian birth cohort. *Child Abuse Negl* 2016;**51**:21–30.
89. Zhang S, Bhavsar V. Unemployment as a risk factor for mental illness: combining social and psychiatric literature. *Adv Appl Sociol* 2013;**03**:131–6.
90. MacDonald Z, Shields MA. Does problem drinking affect employment? Evidence from England. *Health Econ* 2004;**13**:139–55.
91. Stuart H. Mental illness and employment discrimination. *Curr Opin Psychiatry* 2006;**19**:522–6.
92. Su S, Jimenez MP, Roberts CTF *et al.* The role of adverse childhood experiences in cardiovascular disease risk: a review with emphasis on plausible mechanisms. *Curr Cardiol Rep* 2015;**17**:88.
93. van der Meer PH. Gender, unemployment and subjective well-being: why being unemployed is worse for men than for women. *Soc Indic Res* 2014;**115**:23–44.
94. Kohl PL, Jonson-Reid M, Drake B. Maternal mental illness and the safety and stability of maltreated children. *Child Abuse Negl* 2011;**35**:309–18.
95. Walsh C, MacMillan H, Jamieson E. The relationship between parental psychiatric disorder and child physical and sexual abuse: findings from the Ontario Health Supplement. *Child Abuse Negl* 2002;**26**:11–22.
96. Raissian KM. Does unemployment affect child abuse rates? Evidence from New York state. *Child Abuse Negl* 2015;**48**:1–12.
97. Derakhshanpour F, Shahini N, Hajebi A *et al.* Demographic characteristics and risk actors of children and parents in child abuse subtypes: findings from a psychosocial support department. *J Fund Mental Health* 2017;**19**:459–67.