Written evidence submitted by University of Bristol (EYI0086)

Executive summary

- Long-term (i.e. mid- to later-life) consequences of adversity in childhood for cardiovascular health, physical capability and cognitive function are unclear
- Studying the health consequences of adversity in childhood is important for providing evidence to support the potential benefits of public interventions seeking to prevent adversity in childhood
- We conducted studies to examine whether socioeconomic (e.g. low head of household social class, household overcrowding and low parental education) and psychosocial adversity (e.g. emotional, sexual or physical abuse, parental divorce) in childhood are associated with cardiovascular disease (CVD) risk factors and ageing-related outcomes (physical capability and cognitive function) in mid-life in two representative population-based cohorts
- We found no evidence that psychosocial adversity in childhood is associated with CVD risk in mid-life. Previous studies have demonstrated that low socioeconomic position is associated with greater CVD risk in mid-life
- We found evidence that lower socioeconomic position in childhood is detrimental to cognitive and physical capability in mid-life, at least in part, independently of subsequent socioeconomic position in adulthood
- Greater psychosocial adversity in childhood was associated with poorer physical capability, independently of social disadvantage in childhood, but we found no evidence of association of psychosocial adversity with cognitive function
• Our findings imply that interventions to prevent psychosocial adversity in childhood are unlikely to yield benefits to long-term health outcomes, but that broader social interventions aimed at reducing inequality and disadvantage will confer the greatest benefits by reducing CVD risk and improving both cognitive and physical capability in later-life.

The authors

Dr Emma Anderson is a Research Fellow and Dr Laura Howe is a Reader in Epidemiology at the Medical Research Council (MRC) Integrative Epidemiology Unit, University of Bristol. The unit conducts some of the UK’s most advanced population health science research, using genetics, population data and experimental interventions to look for the underlying causes of chronic disease. This evidence has been submitted to summarise three studies conducted by the authors to examine the long-term effects of adversity in childhood and make evidence-based recommendations for policy. The research reported in this evidence is from a US National Institute on Aging and ESRC funded investment. The views and statements expressed are those of the authors and do not necessarily reflect the views of the funders.
Introduction

This report is based on three published studies that were conducted to examine whether adverse childhood experiences are associated with long-term (i.e. mid- to later-life) health outcomes, using data from two representative population-based samples. The reference for each of these studies is provided in the bibliography.\textsuperscript{1-3} Our studies focus on examining associations with cardiovascular disease (CVD) risk factors, physical capability (i.e. the ability to carry out the daily activities of living) and cognitive capability in mid-life, as these are all key markers of healthy ageing. Here, we outline the rationale for studying these particular health outcomes; describe the methods and results of the studies conducted and make evidence-based recommendations for policy.

Adverse childhood experiences can encompass both socioeconomic (for example, low head of household social class, household overcrowding and low parental education) and psychosocial (for example, emotional, sexual or physical abuse, parental divorce) factors. Studying the long-term health consequences of adversity in childhood is important for providing evidence to support the potential benefits of public interventions that seek to either prevent adversity in childhood or provide support to those people who experience adversity.

There is now consistent evidence showing socioeconomic adversity in childhood to be associated with CVD risk factors\textsuperscript{4, 5} and cognitive capability in adulthood\textsuperscript{6-11}. Less evidence
exists for the impact of childhood socioeconomic adversity on objective (as opposed to self-report) measures of physical capability.\textsuperscript{12,13} 

Very few studies have examined whether psychosocial adversity carries additional risks for these outcomes over and above socioeconomic disadvantage in childhood. Existing studies have that have examined psychosocial adversity have reported associations between specific types of psychosocial adversity, particularly sexual or physical abuse,\textsuperscript{14-17} with increased CVD risk and with poorer physical and cognitive capability. However, very few studies have considered the co-occurrence of multiple forms of psychosocial and/or socioeconomic adversity in relation to these health outcomes. Assessing the effects of cumulative psychosocial adversity acknowledges that adverse experiences tend to co-occur and that experiencing multiple types of psychosocial adversity in childhood may have a greater adverse effect on health outcomes than experiencing only one. In our studies, we aimed to examine associations of socioeconomic and psychosocial adversity in childhood with several established risk factors for CVD (detailed in methods section), cognitive capability and physical capability in mid-life, in two representative population-based cohorts. For psychosocial adversity, we considered maternal lack of care, maternal overprotection, parental mental illness, household dysfunction, sexual abuse and physical or emotional abuse or neglect in childhood (each individually) as well as cumulative psychosocial adversity.
Methods

Given there is now consistent evidence to suggest socioeconomic adversity in childhood is associated with greater CVD risk\textsuperscript{4,5}, our analysis did not seek to replicate these findings. Rather, we focused on the less studied psychosocial risk factors in relation to CVD risk. We conducted two studies to examine whether psychosocial adversity in childhood was associated with CVD risk in mid- to late-life, over and above social disadvantage. We examined this question in two nationally representative cohorts; the first was the mothers of the Avon Longitudinal Study of Parents and Childhood (ALSPAC) and the second was the MRC National Survey of Health and Development (NSHD). ALSPAC is a prospective birth cohort study from southwest England\textsuperscript{18,19} that recruited 14,541 pregnant women with expected delivery dates between April 1, 1991 and December 31, 1992. NSHD is a population-based study of both men and women, based on a social class stratified sample of 5,362 births of all singleton births that occurred within marriage in a week in March 1946 in England, Scotland and Wales. In ALSPAC, we additionally conducted a study to examine whether both socioeconomic and psychosocial adversity in childhood is associated with cognitive and physical capability in mid-life. Details of data collection and statistical analyses in each of these studies are provided in full in the publications\textsuperscript{1-3}.
Key findings

**Socioeconomic adversity in childhood and later health outcomes**

The association between socioeconomic adversity in childhood and later CVD risk is well documented\(^4,5\). We found strong evidence in the ALSPAC dataset to suggest that, in addition to greater CVD risk, socioeconomic adversity in childhood is also associated with poorer physical and cognitive capability in mid-life. For example, in the ALSPAC study there was a clear trend for lower physical and cognitive capability with lowering childhood SEP, with the magnitude of association getting larger with progressively lower SEP groups. These associations remained even after adjustment for potential confounding by age, ethnicity and total psychosocial adversity in childhood.

**Psychosocial adversity in childhood and later health outcomes**

In both ALSPAC and NSHD, we found no consistent evidence to suggest that any specific form of psychosocial adversity, or cumulative psychosocial adversity, was consistently associated with the CVD risk factors. We also found no evidence in the ALSPAC dataset to suggest that psychosocial adversity (specific forms or cumulatively) in childhood was related to cognitive capability. We did, however, find evidence that greater total psychosocial adversity in childhood was associated with lower physical capability, even after adjusting for age at outcome assessment, ethnicity and socioeconomic position in childhood.

**Discussion**

This report summarises evidence from three published studies examining the long-term health outcomes of childhood adversity. Specifically, we report associations of
socioeconomic and psychosocial adversity in childhood with CVD risk factors, cognitive and physical capability. These outcomes were examined because they are key markers of healthy ageing and because there is evidence that they are socially patterned. Previous studies have reported associations of psychosocial adversity with long-term health outcomes in targeted, high risk populations. In the ALSPAC study, we found very little evidence to suggest that, in this general population cohort, psychosocial adversity is associated with these long-term health outcomes over and above social disadvantage. The lack of observed associations between psychosocial adversity and CVD risk was consistent across two independent, nationally representative cohorts which lends confidence to our findings. In contrast to our findings, Felitti et al have reported a strong graded relationship between the number of categories of retrospectively reported adverse childhood exposures and the presence of adult diseases including ischemic heart disease, in a study of 9,508 adults. It is possible that this study may be subject to initial publication bias, or that our two studies were underpowered to detect associations.

In line with a large body of existing evidence showing socioeconomic adversity to be associated with greater CVD risk in adulthood, we found that it is additionally associated with poorer ageing outcomes, with marked associations between childhood SEP and both cognitive and physical capability in mid-life. Thus, the evidence from our studies and others strongly implies that focusing on improving more broad, socioeconomic determinants of health is likely to bring the most benefit to long-term health outcomes.
There were a few key limitations to our studies. Firstly, the ALSPAC study participants included in our analyses were all women and so it is not clear that associations of childhood adversity with cognitive and physical capability would also generalise to men. That said, associations between childhood adversity and CVD risk were similar in both ALSPAC (women only) and NSHD (men and women). Secondly, all the studies in this report are observational; thus, we (and others) are unable to rule out confounding bias. In our studies, we attempted to adjust for all the key potential confounders, but residual or unmeasured confounding is still a possibility. Lastly, we cannot rule out that the lack of observed associations between psychosocial adversity and the outcomes was due to a lack of sufficient power to detect small effect sizes. That said, our sample sizes are relatively large in comparison to most of the published studies in this area.

**Recommendations for policy**

In the general population there is little evidence to suggest that interventions to prevent exposure to psychosocial adversity, or support those who experience psychosocial adversity, would have benefits to long-term health outcomes. However, there is strong evidence from both our analyses and a large body of evidence to support broader social interventions to reduce socioeconomic inequality in order to improve health in later-life.

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