Review

Poverty in childhood and adverse health outcomes in adulthood

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ABSTRACT

The experience of poverty during childhood is a potent predictor of a variety of adverse health outcomes during middle and late adulthood. Children who live in poverty are more likely as adults than their peers to develop and die earlier from a range of diseases. These effects are especially strong for cardiovascular disease and type II diabetes. Most disturbingly, these effects appear in large part to be biologically embedded such that later improved life circumstances have only a modest ameliorative effect. Considering these findings and the relatively high rates of child poverty in nations such as Canada, UK, and USA, those concerned with improving the health of citizens should focus their attention on advocating for public policy that will reduce the incidence of child poverty.

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1. Introduction

The experience of material and social deprivation is strongly related to adverse health outcomes at each period of the lifespan. These effects can be contemporaneous. As examples, children in poor quality housing have greater risk of asthma; adults who experience employment loss have greater risk of depression; isolation during later adulthood increases risk of early mortality. More disturbing, deprivation during childhood serves as a potent predictor of adverse health outcomes during middle and late adulthood. And in many cases, these effects persist regardless of later life circumstances.

A variety of processes are responsible for this. First, children experiencing deprivation due to their social location (e.g., social class, gender, race, etc.) frequently continue to experience deprivation – and adverse health outcomes – later in life. Second, children experiencing deprivation manifest developmental delays that block access to health protecting resources during adulthood. Third, the experience of deprivation during childhood becomes biologically embedded increasing risk of later adverse health outcomes regardless of later life circumstances [1].

In both developed and developing nations the term childhood poverty describes the experience of material and social deprivation shown to be such a potent predictor of adverse health outcomes. The term “absolute poverty” refers to deprivation so severe as to threaten biological integrity (i.e., lack of shelter, clothing, and food) and is the stuff of child poverty in developing nations, though also present in wealthy developed nations. “Relative poverty” refers to deprivation that does not allow the individual to carry out the usual activities expected within the society (i.e., employment, leisure, and cultural). International consensus identifies individuals or families receiving less than half the median income of the jurisdiction as living in relative poverty. Use of this definition finds childhood poverty rates of 21% in the USA, 15% in Canada, 10% in the UK, 8% in France, and 3% in Denmark [2]. Ample evidence exists to show that children living in relative poverty experience significant threats to health across the lifespan.

The article reviews how child poverty – using the relative poverty definition – leads to adverse health outcomes during adulthood in wealthy developed nations. Such analysis is especially timely. First, there is increasing evidence that exposures to adverse conditions associated with living in poverty are important predictors of a variety of adverse health outcomes during middle and late adulthood. Second, despite this accumulating evidence, there continues to be an inordinate emphasis on modifying behavioural risk factors during adulthood that plays out as “healthy lifestyle choices” approaches to promoting health. Third, public policy decisions in many wealthy developed nations have done little to reduce child poverty rates and in many instances have served to increase them. The goal of this review is to draw attention to the importance of reducing childhood poverty as a means of avoiding adverse health outcomes during middle and later adulthood.

2. Disciplinary perspectives

A variety of literatures inform this review: epidemiology, developmental psychopathology, developmental and physiological psychology, sociology, and political economy.

2.1. Epidemiology

Adverse experiences associated with living in poverty during childhood manifest in illness during adulthood [3]. These associations hold for a remarkable range of adverse physical and mental health outcomes. Longitudinal studies show that in some important instances, these child-acquired experiences increase the risk for adverse health outcomes regardless of later adult circumstances [4].

2.2. Developmental psychopathology

During pregnancy poverty affects the integrity of specific body organs [5]. Later, poverty experiences alter children’s bodies to affect emotional regulation, sensory regulation, gross and fine motor skills, generalized brain development, and hypothalamic–pituitary–adrenal function [6]. Greater incidence of infections leads to later adverse health outcomes [7].

2.3. Developmental psychology

Children in poverty do less well in school, develop a weaker sense of control over the environment, and show a greater likelihood of adopting health threatening behaviours, all of which are powerful determinants of health [8]. Poverty experiences disrupt cognitive, affective, and social competencies that reduce future access to economic and social resources that protect health [9].

2.4. Physiological psychology

Ongoing elicitation of the stress reaction – associated with living in poverty – threatens health [10]. Elevated levels of the stress hormones cortisol and adrenaline contribute to endocrine, metabolic, and immune systems problems during adulthood. The elevated presence of these among children affects brain functioning and development [11].

2.5. Sociology

The operation of economic and political systems skew the distributions of influence, power, and resources that create childhood poverty [12]. Societal discourses – or explanations – are developed to justify poverty’s presence and the adverse health outcomes during adulthood that result.

2.6. Political economy

In liberal welfare states such as Canada, the UK, and US, governments tend to avoid intervening in the operation of the market economy. The result is skewed distributions of resources that create poverty. This is less so among social democratic (e.g., Norway and Sweden) and conservative (e.g., France and Belgium) welfare states. Reducing child poverty – thereby improving adult health outcomes – requires addressing a range of political and economic issues [13].

3. The evidence

The strong relationship between material and social deprivation and adverse health outcomes has been known since the mid 1800s but an extensive literature is now available of how deprivation during childhood – i.e., child poverty – leads to adverse health outcomes during adulthood.

3.1. All-cause and specific disease mortality

Two studies illustrate typical findings of the effects of childhood deprivation using the proxy of manual occupations in the UK. Davey Smith et al. [14] report that lower socioeconomic position during childhood is significantly related to relative mortality rates among Scottish men even after adjusting for adult socioeconomic position. Men whose parents were in the lowest positions (IV and V, manual
labour) had a 54% greater mortality risk (RR = 1.54) as compared to the baseline provided by men whose parents were in the highest positions (I and II). Adjusting for adult social class retained a 26% greater risk for these men who grew up with level IV and V parents (RR = 1.26). Similar findings (showing original rate related to childhood circumstances and then adult social class-adjusted rates) are seen for death from coronary heart disease (1.53, 1.26); stroke (1.70, 1.66); lung cancer (1.80, 1.24); stomach cancer (2.95, 2.95); and respiratory disease (2.75, 2.10).

Similar findings are reported in a study of mothers in the 1958 British Cohort Study [15]. Women in groups IV and V had a 38% (HR = 1.38) greater mortality rate compared to women in groups I and II. The greater risk remained statistically significant (HR = 1.13) once adult socioeconomic position, body mass index, and smoking were taken into account. Similar findings are seen for mortality from circulatory disease (1.66, 1.29); coronary heart disease (1.89, 1.37); stroke (1.51, 1.28); respiratory disease (2.19, 1.51); chronic obstructive pulmonary disease (2.19, 1.48); lung cancer (1.92, 1.21); and stomach cancer (5.78, 4.15). A collection of studies with additional similar findings is available [4] as is a popular summary [16]. These findings indicate that mortality rates during adulthood are influenced by two independent sources: growing up under conditions of deprivation and living as an adult under conditions of deprivation.

3.2. Cardiovascular disease and stroke

In 2000, the prevalence of coronary heart disease among British women aged 60–79 in the British Women’s Heart and Health Study ranged from 9.4% among women whose father were professional (level I) to 16.5% among those whose father was partly skilled (level IV) or unskilled 18.5% (level V) [17]. Each increase in social class category was associated with a 15% increase in coronary heart disease. Once controls for adult socioeconomic position were applied, the 15% increase per category was weakened by a negligible 1%. The study provides strong evidence for the lasting effects of childhood conditions upon adult health outcomes.

Barker and colleagues provide a number of studies that show that low birth weight – itself strongly related to mothers living in poverty – is an excellent predictor of incidence of coronary heart disease during adulthood [5]. Lynch and Davey Smith provide an extensive review of similar findings of how incidence of cardiovascular disease during adulthood is related to greater incidence of numerous other adult disorders such as arthritis, osteoporosis, and Alzheimer’s disease, and adult social class is itself strongly predicted by childhood social class, the possibility of a childhood poverty link to these adult afflictions seems likely.

3.3. Type II diabetes

Similar findings are emerging in relation to type II or adult-onset diabetes. Among a large sample of American men and women, those who were as children of lower socioeconomic position had 80% greater risk (HR = 1.8) than those of higher position of developing type II diabetes as adults. When this difference was corrected for a wide range of factors such as adult education attainment, income, occupation, body mass index, physical activity, alcohol intake and smoking, the increased risk of lower position as a child was still 50% (HR = 1.5). The unadjusted and adjusted heightened risk for men was 1.5 and 1.2, and for women 2.1 and 1.7 [19].

Similar findings were seen among UK women [20]. Among women who were manual workers, their diabetes rate was 8.3% if their parents were also manual workers and 6% if their parents were non-manual workers. Among women who were not manual workers, their diabetes rate was 4.9% if their parents were non-manual workers but was an elevated 8.1% if their parents were manual workers. Childhood circumstances appeared to be the primary predictor of the incidence of type II diabetes.

Among a similar sample of women it was observed that diabetes was 241% more likely (OR = 2.41) among UK women of manual socioeconomic position at both childhood and adulthood as compared to women of higher position at both childhood and adulthood. Being of manual socioeconomic position at childhood and not at adulthood still gave an increased risk of 55% (OR = 1.55) for experiencing type II diabetes as adults [17].

3.4. Other adulthood afflictions

Though not as extensively researched there is evidence that the same kind of relationship between childhood deprivation and adverse adult health outcomes holds for such diverse afflictions as respiratory diseases and allergies, hypertension, some cancers, and a range of psychiatric disorders [3]. In addition, since social class during adulthood is related to greater incidence of numerous other adult disorders such as arthritis, osteoporosis, and Alzheimer’s disease, and adult social class is itself strongly predicted by childhood social class, the possibility of a childhood poverty link to these adult afflictions seems likely.

4. Pathways

Numerous models of how childhood influences – including poverty – shape adult health outcomes are available. Fig. 1 shows one model where childhood socioeconomic circumstances (a) are explicitly related to childhood health; (b) set a life-course trajectory that, if left unchanged, will continue to accumulate socioeconomic advantage or disadvantage over time; and (c) have both direct influence upon adult health and an indirect effect upon adult health through mediating processes of personality and health behaviours. These mediating processes include psychological sense of personal control and efficacy, and the eventual adoption of health threatening behaviours such as tobacco use, inadequate diet, and alcohol use. Childhood poverty is therefore the launch pad for a lifetime of health problems.

Adverse living conditions during childhood shape adult health outcomes [21]. For Hertzman: “Long-term-exposure-to-expression relationships” (i.e., associations of childhood circumstances with health outcomes) cluster into three generic patterns, which while probably overlapping, provide a heuristic for examining the determinants of children’s health.

Latency effects are about how specific exposures during pregnancy and early childhood manifest in both childhood and adult health status. Cumulative effects identify how children living in advantaged or adverse living circumstances over time come to express such different health and developmental outcomes. Pathways effects draw attention to how children’s life course trajectories are shaped by prior circumstances and whether various societal institutions (e.g., childcare, communities, schools, etc.) either maintain or shift these trajectories.

4.1. Latency effects

Biological embeddedness describes how specific exposures and experiences come to have long-lasting effects upon health and developmental outcomes. There is clear evidence – based on human longitudinal studies – that early childhood and even pre-birth experiences predispose children to either good or poor health regardless of later life circumstances. Latency effects result from biological processes during pregnancy associated with poor maternal diet, risk behaviours, or experience of stress [22]. Early childhood experiences such as numerous infections or exposures to adverse housing conditions also appear to have later health effects regardless of later life circumstances. Psychological health-related effects may also result from early experience. A general non-adaptive reaction to stress may be established during early childhood as well as a gen-
eral sense of hopefulness and control, both of which are important determinants of health.

4.2. Pathways effects

Children’s exposures at one point may not have immediate health effects but can lead to their experiencing situations that do have health consequences [21]. An important instance of this would be young children’s lack of readiness to learn as they enter school. This by itself is not necessarily a health issue, but it leads to experiences that clearly are.

Socioeconomic position is strongly related to school readiness. Much of this has to do with the quality of parental interaction and the ability of parents to provide supportive, nourishing, and stimulating environments. Lack of school readiness leads to lower educational and employment attainments, both of which come to have clear health effects.

School readiness is therefore both a result of socioeconomic position and a predictor of later socioeconomic position, the latter of which is clearly related to health outcomes. One way of interrupting this sequence is to weaken the relationship between parents’ socioeconomic position and children’s developmental outcomes through the provision of early childhood education. Sadly, the nations with the highest child poverty rates (i.e., Canada, UK, and USA) also score lowest in provision of early childhood education and care [23].

4.3. Cumulative effects

Cumulative effects are illustrated by findings that the longer children live under conditions of material and social deprivation, the more likely they are to show adverse health and developmental outcomes. These can be cognitive deficits that contribute to lack of school readiness for children (e.g., physical health and well-being, social competence, emotional maturity, language and cognitive development, and communication skills and general knowledge) upon entering the education system. Cumulative adverse experiences during early childhood predispose children towards learned helplessness where children feel unable to act effectively upon their world. Such helplessness is a strong determinant of health in general and a precursor of adopting health threatening behaviours.

Hertzman and Power suggests that the policy response provided by the latency argument is to intervene “the earlier the better” [21]. The message of the pathways view is “to intervene at strategic points in time.” The suggestion of the cumulative model is “intervene wherever there is an effective intervention.” But these arguments beg two questions: Why is such intervention required? and Why are there such differences in life circumstances among children in wealthy developed nations such as the UK, Canada, and the USA.? To answer this requires attention to issues raised about the political economy of these nations.

5. The political economy perspective

While descriptions of the processes by which circumstances of poverty during childhood come to shape adult health outcomes are valuable, perhaps the primary focus should be on understanding why so many children in the UK, Canada, and the USA live in poverty. The political economy approach considers how the broader social, political, and economic context creates health advantaging or disadvantaging living conditions [24]. Nations differ profoundly in how their institutions distribute income and wealth among the population and the extent to which governmental authorities allocate greater national resources to aspects of social infrastructure. Nations where there is more equitable economic distribution are also the ones that allocate more resources...
to social infrastructure and it appears that these nations provide superior living circumstances and health outcomes for children.

The UK, Canada, and the USA have a more skewed distribution of income and wealth among the population and spend less on social infrastructure than most other wealthy developed nation members of the Organisation for Economic Co-operation and Development [25]. Not surprisingly, UK, Canadian, and USA children show a greater incidence of poverty and fare much worse than children in most OECD member states on measures of child health such as infant mortality, low birth weight, teenage pregnancy and deaths from childhood injuries rates [26]. Not surprisingly life expectancy is shorter for the UK and USA than the Organisation for Economic Co-operation and Development average. Canada’s life expectancy continues to be higher than the OECD mean but has been losing ground in relative rank over the past 10 years [27].

6. Conclusion

The findings of childhood poverty being an important predictor of adverse health outcomes during adulthood highlight the importance of reducing its incidence. Experiences associated with child poverty become embedded within a variety of health-threatening processes. They also set children off on a life trajectory that leads to health-threatening circumstances.

These insights have not gone unnoticed. International, national, and local organisations have taken up this call and outlined the public policies that would reduce child poverty [26]. But governmental responses in Canada and the USA have been muted [25]. The UK response over the term of the recent Labour government was more favourable, but much of the progress made in reducing child poverty is now under threat by the newly elected Coalition [28].

The implications of this analysis are clear: we can make the investments necessary to reduce the health-threatening conditions associated with child poverty or we can pay the more extensive costs associated with treating the disease and illness during adulthood that child poverty spawns. In addition to the strong health promotion and illness prevention case for reducing child poverty, child poverty is the cause of a variety of social problems, reduced economic productivity, and waste of human potential [29]. Finally, reducing child poverty is also the right and just thing to do.

Provenance and peer review

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Contributors

Dennis Raphael is the sole contributor.

Competing interest

Dennis Raphael declares no competing interests.

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