

Are retrospective measures of childhood socioeconomic position in prospective adult health surveys useful?

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Background

Birth cohort studies have long been accepted as the 'gold standard' for studying a wide-range of exposure-disease associations in individuals across the lifecourse. Two birth cohort studies in New Zealand have shown associations between childhood socioeconomic disadvantage and dental health, physical functioning, mental health and smoking at different time points in the lifecourse.¹⁻³ However, these studies are expensive to set up and maintain for long periods and few researchers are fortunate enough to use them. Historical cohorts and record linkage studies are another method used to test early life exposure. But these are usually limited to one or two exposures within a specific time window and have limited or no data on other periods across the lifecourse.⁴

Due to the scarcity of lifecourse studies, investigators have taken to examining the role of childhood social conditions in cohorts of middle aged to older persons using adult health surveys and are therefore dependent on retrospective childhood reports. These studies have shown significant but modest associations between experiencing a disadvantaged background and having a higher risk of cardiovascular disease^{5,6}, obesity⁷, common mental disorders^{8,9}, depression¹⁰, smoking and drinking¹¹, poorer self-rated health¹²⁻¹⁴, physical functioning^{13,14} and psychosocial functioning^{11,15}, and greater mortality.¹⁶

This paper argues that although retrospective childhood socioeconomic position (SEP) measures have their limitations they provide a useful opportunity to empirically examine theoretical lifecourse models in the absence of complete data across the lifecourse.

Lifecourse models

The lifecourse approach offers an alternative way of linking early life factors such as socioeconomic status to adult disease. It allows researchers to study how socially patterned exposures during childhood, adolescence, and early adult life influence adult disease risk and SEP, potentially accounting for social inequalities in adult health.^{17,18}

Three general conceptual lifecourse models describe how health unfolds over the lifecourse.^{4,17} The 'critical period model' hypothesises that exposures acting during a specific period such as gestation result in permanent and irreversible damage to body systems which is not modified by later experience. Also known as

'biological programming' it is the basis of the 'foetal origins of adult disease' hypothesis.¹⁹ The 'accumulation of risk model' argues that adult chronic disease reflects cumulative lifetime exposure to damaging physical and social environments. The emphasis is on a greater range of biological and social experiences over the lifecourse. It posits that disadvantage (and privilege) accumulates across the lifecourse and as the number and/or duration of exposures increases, there is increasing cumulative damage (or resilience) to biological systems leading to poor health. The 'chain of risk model' or 'pathways model' is a special version of the previous model and refers to a sequence of linked exposures that leads to impaired function and increased disease risk because one bad exposure leads to another and so on.¹⁷

What are we measuring?

Ambiguity about what retrospective measures of childhood SEP actually measure is a major limitation in lifecourse research.²⁰ In most adult health surveys, SEP in childhood is thought of as the family socioeconomic circumstances or context that the child is born into and brought up in such as material circumstances, household income, parental occupation, education or social class, or financial hardship. A limitation of research using retrospective childhood SEP is that it tends to focus on long-term or structural dimensions of childhood SEP such as parental education or occupation. However, such measures ignore the potentially critical role of more periodic factors and economic shocks experienced by the family such as periods of parental unemployment, which may impact on children's long-term well being.²¹ Different measures of parental SEP such as occupation or education may also reflect distinct aspects of the childhood environment. Harper et al¹⁵ have hypothesised that parental education represents the childhood intellectual environment whereas parental occupation represents material resources. It is therefore difficult to generate hypotheses regarding how specific domains of childhood SEP are relevant for any particular health outcome.²²

Although various childhood SEP measures are used, there is no single best indicator suitable for all study aims and applicable at all time points in all settings. Most SEP indicators are, to different degrees, correlated with each other because "they all measure aspects of the underlying socioeconomic stratification".²³ Often the choice of particular SEP indicators, whether collected prospectively or retrospectively, reflects which data are available, the health outcomes being investigated, the

lifecourse approach shaping the research question and the time and place in which the data are collected rather than any explicit theorisation of the possible effects of different dimensions of socioeconomic disadvantage.²⁴

A further limitation is that retrospective SEP measures are often asked at a single point in time (e.g. parent's occupation at age 10). This is often because limited adult health survey time is devoted to assessing early life conditions. This limited information is a weak proxy for more complete information spanning the entire childhood period.³ However, in the absence of complete information across the lifecourse we argue that a single point in time measure still allows researchers to examine theoretical lifecourse models.

How are we measuring it?

There has been little systematic evaluation of the validity of recall of early life circumstances or of the potential for such recall error to bias exposure-outcome associations. There is however evidence to suggest that adults accurately recall their parents SEP during their childhood^{25,26}, especially when using parent's main occupation.²⁷

There are two major biases in the measurement of retrospective childhood SEP. Firstly, asking adult respondents to recall parental information or early financial circumstances from childhood can be biased by problems in the remembering and reporting of early exposures leading to measurement error. Secondly, missing data on childhood SEP may introduce selection bias into the findings.

Recall bias is an issue in estimating effects of childhood SEP on adult health status if differential recall of childhood SEP exposure by health outcome or by adult SEP exists. Responding to retrospective questions concerning childhood circumstances might be influenced by negative affectivity⁹, that is, some people may be disposed to report both adverse socioeconomic circumstances and ill-health. This imprecision in the measurement of exposure can lead to misclassification of childhood SEP exposure which will in turn underestimate the long-term effect of childhood experiences on adult health.

Missing data on childhood SEP may occur for a number of reasons such as an inability to remember, refusal to answer or lack of information about childhood circumstances. However, often information about the nature of the non-responses is unavailable and there is a risk of not being able to obtain information from a substantial fraction of the very people who are most at risk of poor health. This leads to the possibility of introducing selection bias or systematic error into study results if those individuals who have missing data have a different childhood SEP-adult health association compared to those with no missing data. Selection bias will arise if the exposure-outcome association among those excluded from analysis is different to those included. If individuals in the lowest childhood SEP

groups are more likely to have missing exposure data then this group may be under-represented in the total study sample. However, this alone will not create selection bias. If those adults from the lower childhood SEP group who have missing exposure data are also those whom are at the highest risk of ill health then the study will underestimate the effect of low childhood SEP on adult health outcomes.

Conclusions

There has been substantial discussion of the methodological problems that plague lifecourse epidemiology.^{4,18,20,22,28} This paper highlights additional difficulties in the use of retrospective measures of childhood SEP in adult health surveys, namely lack of clarity about what we are measuring with childhood SEP and the potential for bias in its measurement.

Despite the methodological shortcomings of retrospective measures of childhood SEP, the promising results that have been generated by the use of these measures in adult health surveys^{5,6,8-15} confirm they do provide a useful opportunity to examine theoretical lifecourse models empirically in the absence of complete data across the lifecourse. However, work is still needed to quantify the validity of childhood exposures reported in adulthood.

The use of retrospective childhood SEP measures combined with adult SEP measures provide researchers with indicators that reflect the accumulation of lifecourse social disadvantage in the absence of complete data across the lifecourse. It also allows researchers to examine whether one particular measure of SEP is more closely related to a health outcome than another assuming measurement error is constant over time. This in turn can point to the temporal nature of the exposure-outcome association, even if it is unable to demonstrate whether childhood SEP matters more or less than other points in the lifecourse.

In New Zealand, the Survey of Families, Income and Employment (SoFIE) study²⁹ collects longitudinal information on health-related quality of life, psychological distress, co-morbidities, lifestyle factors and primary care usage. This study includes a retrospective measure of childhood SEP based on parental occupation when respondents were aged 10 years. Preliminary analyses have shown that the relationship between childhood SEP and adult mental health is largely mediated by adult SEP.³⁰ We are planning to investigate this further using other health outcomes.

Although many of the problems of using retrospective childhood SEP reports could be addressed by using birth cohorts for whom SEP at multiple time points has been collected, it is a challenge to collect longitudinal records of SEP as it changes over the lifecourse. In the absence of complete data over the lifecourse, retrospective measures of childhood SEP in adult health surveys remain a valuable opportunity for furthering the area of lifecourse epidemiology.

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