# INCOME-RELATED INEQUALITY: EQUALISATION IN ADOLESCENCE

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## Introduction

There is a clear social gradient for health, with increased affluence related to better health (Adler & Newman, 2002). However, there have been suggestions that the association between socio-economic status (SES) and health is not constant across the life-span.

Specifically, there is some empirical support for the concept of 'equalisation' in adolescence. The theory posits that due to the increasing influence of peer and school factors on health (usurping family and SES of origin factors) adolescence constitutes a period of reduced health inequalities (West, 1997). These school/peer factors include access to health-promoting resources and skills within schools, increased homogeneity in health-promoting behaviours (such as school meals and mandated exercise), and peer influence in regards to health and health behaviours (Wickrama et al., 2009; West et al., 2004).

The current study examines socioeconomic-related health inequalities in a number of domains across the life-span to examine the evidence for equalisation in adolescence.

## Method

We used data from the cross-sectional nationally-representative Health Survey for England (HSE). Pooling across five survey years (2006-2010) resulted in a total sample size of 64,699.

### Measure of SES

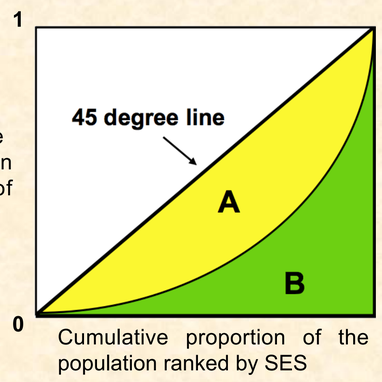
Household income: weighted to account for household composition and transformed to 2010 prices.

### Measures of Health

- Self-reported **general health**: fair, bad or very bad
- Self-reported **longstanding illness** (LSI)
- LSI limits activities (**limiting LSI**)
- **Psychosocial wellbeing**: SDQ score 17+ (age 4-15), GHQ score 4+ (16+)
- **Obesity**: BMI>30 kg/m2 (18+); IOTF cut-offs (2-17)
- Currently **smokes** cigarettes

### Measure of Inequality: Concentration Indices (CIs)

CIs measure the disproportionality of a share of a given outcome (in our case, health) with regards to a ranking variable (household income). CIs take account of the full distribution of health outcomes across household income, rather than simply comparing the extreme ends of the SES spectrum.




**CI represented by area "A", between 45 degree line (equal distribution of health) and actual distribution.**

### Age

We calculated separate odds ratios for:

- Childhood:0-11
- Early adolescence: 12-15
- Late adolescence: 16-19
- Early adulthood: 20-24
- Mid-adulthood: 25-44
- Late adulthood: 45-64
- Elderly: 65+

### Analyses

All analyses were stratified by gender and controlled for age, ethnicity, area of residence and survey year. We tested for:

1. CIs significantly different from zero.
2. Significant differences between size of CI for each age group compared to subsequent age group.

## Results

### Inequalities throughout the life-span

The results are indicative of a clear health gradient across all health outcomes. In all cases, lower SES was associated with an increased burden of poor health. Most CIs were significantly different from zero, with the following exceptions:

- LSI in late adolescence for both genders, early adulthood and elderly for females.
- Limiting LSI in early adolescence and elderly for males, early adulthood for females.
- Psychosocial distress for late adolescent females
- Obesity in late and early adolescence for both males and females and late adulthood in males

### Equalisation in adolescence

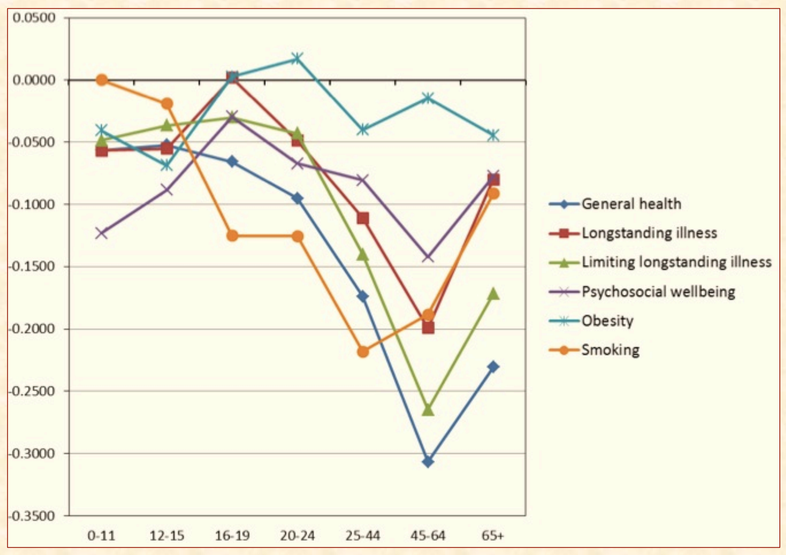
Absolute levels of inequality were generally lower in adolescence and early adulthood compared to childhood and later adulthood. However, we only found significant reductions in inequalities for:

- General health in males (lower in late adolescence than inearly adolescence)
- Psychosocial wellbeing in females (lower in late adolescence than in early adolescence)

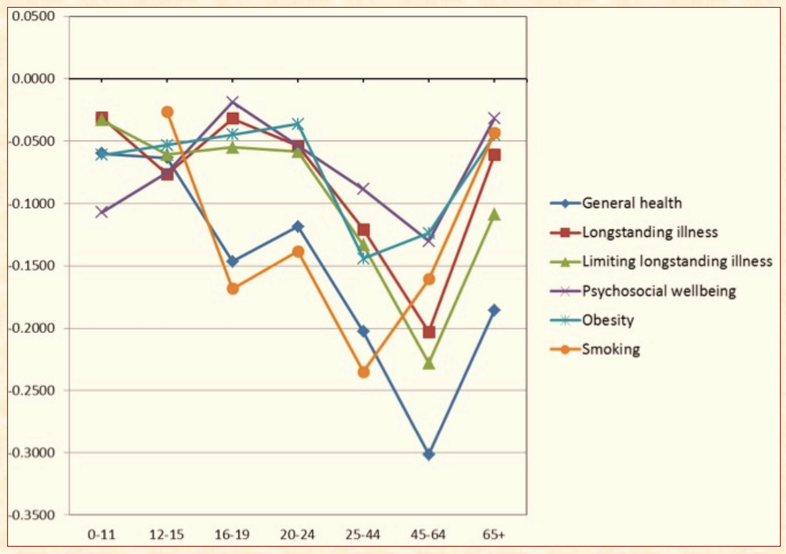
### 'Re-emergence' of inequalities

For most outcomes, there was evidence for a 're-emergence' of inequalities at some point after adolescence. We found significantly higher inequalities for:

- General health in males and females (higher in mid-adulthood than in early adulthood)
- LSI in males (higher in late adulthood than in mid-adulthood) and females (higher in mid-adulthood than in early adulthood)
- Limiting LSI in males (higher in late adulthood than in mid-adulthood) and females higher in mid-adulthood than early adulthood))
- Psychosocial distress in females (higher in late adulthood than mid-adulthood)
- Obesity in females (higher in mid-adulthood than early adulthood)




**Adjusted concentration indices (CIs) of health and health-related behaviour indicators by age group in males (above) and females (below).**




## Discussion

The results show general trends towards equalisation in adolescence, though these are small and inconsistent, at least when comparing adolescence to childhood. However, in contrast to the wider literature, our results suggest that equalisation takes place not through adolescence, but in late adolescence through early adulthood. This calls into question explanations of equalisation focusing on direct effects of secondary school, as the respective timings do not coincide. However, there is evidence that school effects supercede family effects on health indicators and mediators of health including self-esteem, coping skills and norm-breaking behaviours in mid-adolescence (Vuille & Schenkel, 2001). These mediators may play a key role in equalisation, but may take time to impact on health inequalities creating a lag between the commencement of secondary school and equalisation.

A later period of equalisation may also be related to longer periods of dependence on family and parents: a "delayed adulthood". For example, young people increasingly remain financially dependent later into adulthood and move out of the family home later than previous generations (Furstenberg, 2010). This may cause a general lag on the entire process of equalisation and re-emergence of inequalities. As West (1997) states, "given the changing nature of the youth-adult transition, the age at which health inequalities 're-emerge' is likely to vary" (p. 852).

The findings suggest that the health inequalities bestowed by early-life SES can be at least partially overridden by other factors including peer and school effects. Since inequalities re-emerge during the transition period into employment during late adolescence and early adulthood when earlier SES-related factors supersede those which drove equalisation, a key policy focus should be on facilitating this transition. This may include improving educational and occupational opportunities throughout early adulthood and continued access to health resources beyond secondary school. Relatedly, improving the transition from adolescent health services to adult services could feasibly attenuate the re-emergence of health inequalities (Viner, 1999).

The findings also have clear implications for monitoring the progress of policy-driven efforts to reduce health inequalities. At the most basic level, it is important that typical periods of equalisation in adolescence and early adulthood are not seen as evidence of reductions in inequalities attributable to successful health interventions.

### Conclusions

Our work suggests that inequalities occur across the life-course but offers evidence of a period of equalisation in late adolescence and early adulthood, particularly for females. Inequalities then re-emerge to be greater than at any earlier period in the life-course. The equalisation period does not map onto the timing of adolescence or secondary school. This suggests that either some of the hypothesised mechanisms such as direct secondary school effects are either less important than once thought or that there is a lag before their effects are reflected in the reduction and re-emergence of health inequalities.

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