

# Why Income Inequalities Matter for Young People's Health: A look at the evidence

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## WHY INCOME INEQUALITIES MATTER FOR YOUNG PEOPLE'S HEALTH: A LOOK AT THE EVIDENCE

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**Abstract:** Although child and adolescent inequalities are still less understood than those of adults (1), we have made progress in understanding the pathways that lead to negative outcomes and the limitations of some 'adult-specific' indicators as proxies of young people's health and well-being. Nonetheless, the academic literature has been able to establish a clear negative relationship between a person's material circumstances and their health outcomes and behaviours such as being overweight, lack of physical activity, higher levels of smoking and mental health problems; all of which persist throughout a person's life. The personal and societal toll of these effects is clear yet policies are still lagging behind, tackling proximal causes rather than 'the causes of the causes' (2) of these health inequalities. Policymakers, researchers and the public must come together to ensure that no child is a victim of inequalities through no fault of their own. This paper aims to summarise relevant knowledge on the socio-economic causes of health inequalities in children. It will not only provide a foundation to the Innocenti Report Card 13 in terms of outlining our knowledge regarding the drivers of health inequality but it will also help us shed light on its consequences.

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*"Children born into socioeconomically disadvantaged families suffer worse child well-being and its lifelong implications, in all societies, worldwide."*

Kate E. Pickett & Richard W. Wilkinson (3)

*"By helping adolescents to realise their rights to health, well-being, education and full and equal participation in society, we are equipping them to attain their full potential as adults."*

Ban Ki-moon, UN secretary general (4)

## 1. INTRODUCTION

All young people are entitled to a life full of love, attention and nurturing, as well as the opportunity to fully develop their capabilities; a life that enables them to be active participants in society. For too many, life prospects are determined by the income and education levels of their parents and the environment in which they grow up. Some argue that as much as 60 per cent of a person's income is determined merely by where he/she was born and an additional 20 per cent is predicted by how rich the parents were (5). Are children hostage to conditions beyond their innate abilities or desire to excel? This relative disadvantage early in life, which reveals itself through poorer health behaviours and outcomes, turns into an empowerment disadvantage (6), one that can take the air out of even the most resilient of children. We can no longer ignore the damage that children's life circumstances can have for their future health as well as their devastating societal effects. In rich and poor countries, health inequalities are fostering a generation unable to achieve full potential.

In this paper we aim to summarise the available knowledge on child and adolescent inequalities in health and drive home the message that health inequality is an indicator of general injustice in the society (7). This material will not only provide a foundation to Report Card 13 in terms of outlining our knowledge regarding the drivers of health inequality but it will also help us shed light on its consequences. The paper begins by discussing the importance of a life course perspective and the period of adolescence. We then look at the social determinants of health with a focus on the relationship between income inequality and health looking at the pathways, mediators and outcomes of the relationship, as well as suggestions for future research. The paper concludes with a summary of why inequalities matter, especially for children.

## 2. METHODS

The background paper stems from a scope review of the literature available on child and adolescent health inequalities that answered the question *'What does the academic literature say about the drivers and consequences child and adolescent health inequalities?'* We were particularly interested in material well-being, especially income inequality and its effect on health, as well as the perspective of children on the subject. While the first issue proved to be a topic of considerable study, pursuit of literature on the latter proved more difficult. The summary presented in this paper has been derived from material mostly designed and executed by adult researchers doing primary or secondary research on the subject of income inequality and child and adolescent health. The main review period took place between June and September 2015 and was updated in March 2016. Given resource and time limitations, we began our search on existing systematic

reviews on the subject published in peer-reviewed journals. We did not set a date limit, since the type of publication already considerably reduced the potential pool of articles. Articles were mostly in English and geographic provenance did not constitute a limitation. We undertook online searches in a number of databases including PubMed, Web of Science, Science Direct, and Scopus.

Fields searched included Title, Abstract and Keywords. Search terms included: adolescent/s/ce, young people; inequalities/inequities/disparities; social determinants of health; health inequalities, income/wealth inequalities, socio-economic inequalities; poverty; life course; review. These were combined to identify systematic reviews of health inequalities explicitly linked to adolescence and income/wealth inequalities or socio-economic differences. We also reviewed reports from internationally recognized organizations such as UNICEF and the OECD. The authors of this paper also reviewed a number of relevant references related to HBSC data and analysis.

Contributors hand-searched the reference list submitted and added other relevant material provided by consulted experts and reviewers who helped identify additional sources.

### 3. THE LIFE COURSE PERSPECTIVE AND ADOLESCENCE AS A CRITICAL PERIOD

Health is experienced over the life course. In fact, the life trajectory of health begins during (and probably even before) gestation. Offspring of mothers from low socio-economic positions (SEP) have 'higher risk of premature mortality, low birth weight, congenital anomalies and preterm delivery' (8). But their fate is not only determined by their mother's socio-economic status; the circumstances of the physical and emotional environment impact children's health and development in early life and set the groundwork for future vulnerabilities and resiliencies (9-15). 'Parental experience of adversity is passed on to children through pathways that include parental mental distress, longer working hours, higher levels of debt, and domestic conflict' (3). The very social conditions affecting parenting can also be major determinants of the social gradient in early child development (16). A life course perspective of inequality thus makes it possible to acknowledge that social and economic contexts shape patterns of health and behaviour differently across generations. For example, risk factors associated with poor health and inappropriate living conditions tend to accumulate over the life course (17). Thus children growing up in these conditions tend to end up with lower overall levels of education, worse employment opportunities and therefore lower income levels. But it is the length of time over which people experience such deprivation that affects the likelihood of them being able to enjoy a healthy old age because with increased exposure comes higher physiological 'wear and tear' (18).

Childhood and adolescence are life stages that are highly sensitive to external influences, given multiple maturation processes and the development of social and cognitive skills. Adolescence, for example, is associated with greater independence from parental influence. It is also a particularly susceptible developmental period due to the biopsychosocial maturation that occurs (19), making it a 'formative life stage for adult health' (20). Development at this stage is very sensitive to external influences such as disparities in the distribution of the social determinants of health: income, education, and access to health services. With increased attention to adolescence as an important period in a person's life, we have begun to document the changes that this age group is experiencing. For example, adolescents are being raised in an environment quite different to what is considered 'traditional'. Changes have touched all aspects of a young

person's life, i.e. family environments, educational status, employment, and even use of electronic media. We are now seeing greater university enrollment and later age at marriage and childbearing.

In addition, recent changes in family structure, which are known to affect young people's health (21), have been recorded in the form of a rapid increase in single-parent families – mainly attributed to births to unmarried women and high divorce rates. This is problematic as often the percentage of children living in poverty is much higher within single-parent families than two-parent households (22). However, it must be noted that the “association between income inequality and compromised well-being for children cannot be explained [solely] by family breakdown” since there is “no international association between child well-being and the prevalence of single-parent households” (23). We are also seeing a rising number of young people suffer from chronic diseases or mental disorders (24). Finally, the significant percentage of young adults who are not in employment, education or training (NEETs) necessitates further study to explore the extent to which social and behavioural factors in early adolescence increase the risk of becoming a young NEET, and the effects this has on health.

Although there are strong reasons to believe that inequalities are mostly established early on and well before adult life, inequality among young people has been far less discussed than among the adult population (1). Some claim that evidence on inequalities for children and young people is inconsistent (8, 25-27), especially for older children and adolescents (27, 28). For example, there is evidence that the social gradient in health diminishes with age into adolescence (25, 28) and that it widens again as adolescents age into adulthood (29, 30). This could be a methodological handicap (31) given that some of the proxies used to calculate socio-economic status (SES) in childhood are not as good as when they are used with adults. For example, it is not always possible to get accurate reports from children about parental employment, income or education (32, 27) and “there is disagreement on which are the most appropriate measures of SEP for this age group” (31).

In addition, as children age other forces come into play, for example young people's own social networks and educational level (28); forces that can influence a young person's awareness of social difference. However, children become aware of SEP differences before they leave primary school and can rank occupations hierarchically and place people in different social classes (23). Nonetheless, there is no disagreement that child well-being is powerfully shaped by child poverty, parental unemployment, and low family SEP (33, 23). The life course perspective allows us to evaluate the cumulative effects of negative context factors on trajectories and opportunities for young people as they grow up and become adults. This approach represents a possible explanation for the persistence of health inequalities in society, one that is strongly related to income inequality. In sum, the presence of inequalities in early life stages potentiates future inequities in adulthood by restraining the life course and opportunities of young people.

#### 4. SOCIAL STRUCTURES AND HEALTH

In order to understand the forces at play we need a conceptual framework that allows us to map the relationship between health behaviours and outcomes and income/wealth, as well as to identify the factors that mediate and moderate this relationship. Well-established evidence examining the relationship between social factors and health and developmental outcomes of young people



supports the argument and provides evidence for the existence of a social gradient of health and development in young people (34, 35). There is also strong evidence that the health and well-being of adolescents is strongly determined by the 'fundamental structures of the nation state that generate social stratification, such as national wealth, income inequality, educational status, sexual or gender norms, or ethnic group' (1). These structural mechanisms are entrenched in the socio-economic and political contexts of countries and result in the SEP of individuals which produce the source of health inequities (36). Income, education and occupation are the most commonly measured components of social position (or social class). The conceptual framework of the World Health Organization (WHO) Commission on Social Determinants of Health enables the identification of structural and intermediary determinants of health described below and their levels of operation (36).

It has been well established that "the structural determinants and conditions of daily life constitute the social determinants of health and cause much of the health inequity between and within countries" (37). Young people at the bottom of the income distribution are those most likely to be excluded from essential health care services, improved water and sanitation facilities, and primary and secondary education (38). Thus, socio-economic differences in adolescent health shape future inequities in education, employment prospects, and adult health (5, 23). These determinants operate through intermediary determinants of health, which are material (e.g. housing and overall material living standards); psychosocial (e.g. psychosocial stressors, social support, family and peers relationship and coping styles); behavioural and/or biological (e.g. nutrition, physical activity, tobacco and alcohol consumption) circumstances or factors including access to the health system (36). These factors determine the individual differences in exposure and vulnerability to health risk factors (1). The WHO conceptual framework also documents social cohesion and social capital as aspects of societies that provide a link between structural and intermediary levels (36). General agreement on this conceptual framework has created consensus across sectors about the need to understand and address the effects of health inequalities.

## 5. INEQUALITIES IN HEALTH THROUGH THE LENS OF INCOME

Health follows a social gradient, meaning that with better SEP, regardless of the life course stage, health improves (39). Individuals of higher SEP are more likely to engage in positive health behaviour and have greater social and psychological resources. There is a "very strong and consistent association between household SEP and child health and well-being in almost every country in the world" (23). Yet in many advanced, emerging and developing countries (40, 41) income inequality has increased creating considerable worry about its economic and social costs. One such concern relates to impaired societal health as an outcome of widening income gaps.

In 1992 Richard Wilkinson suggested that population health, in this case through death rates, is affected by income distribution (42). GNP per capita, as the prime measure of economic growth, was not related to the health of the population. The argument (43) challenged the prevailing idea that the average income standard in industrialized developed countries was the appropriate measure of prosperity. Instead, it suggested that the more egalitarian the society, the better the health of the population. In other words, the greater the gap between the incomes of the rich and poor, the worse the health status of citizens (43).

In the wake of Wilkinson's research, the number of studies relating to income inequality and health increased considerably. Within the decade multiple studies explicitly investigated a possible association between income inequality and health in different countries and country groupings (44-59) with mixed findings. There is concern with different interpretations, different approaches for the analyses, the generalizability from the predominantly used US data, and appropriateness of the data used. Further, the development of powerful statistical techniques such as multilevel analysis enabled the analyses of the impact of income inequality and health on hierarchical data sets (60). At the beginning of the new century the questions surrounding the impact of income inequality on health often concerned the inability of the current studies to conclude whether the observed association at the national level was an effect from individual level income or individual level poverty since an ecologic effect could be a 'true' effect at the ecological level or it could reflect an association between people with low incomes residing in an unequal nation (61).

In light of the different theories regarding the mechanisms by which income inequality might affect health across the life course there have been a number of proposed groupings to make sense of the existing hypothesis. For example, Wagstaff and Doorslaer (62) grouped the hypotheses into: the Relative Income Hypothesis which proposes that it is the income relative to others that affects the health of individuals; the Absolute Income Hypothesis which suggests that it is the absolute income which is important for health; the Deprivation Hypothesis implying that it is not the absolute income that matters but rather the degree of deprivation; the Relative Position Hypothesis which advocates that it is the relative position in the entire income distribution that matters; the Income Inequality Hypothesis which suggests that distribution of income within societies is an important determinant of that population's health and the income distribution has an effect over and above the effect from the absolute income.

Lynch et al (63), suggested another way of structuring the proposed hypotheses with three broad interpretations of the association between income inequality and health: the individual income interpretation, the psychosocial environment interpretation, and the neo-material interpretation. The individual income interpretation is similar to the Absolute Income Hypothesis, while the psychosocial environment interpretation and the neo-material interpretation might be the mechanisms underlying the Income Inequality Hypothesis. According to Bartley (64) the first explanation, referring to the psychological effect of living in stressful conditions, is backed by an ever-growing body of literature documenting psychosocial effects of income inequality (23). The second, known as neo-materialistic explanation, looks at differences in social policies between countries, and provision of high quality social services to all families in all income groups (65). Evidence on the latter shows "little or no explanatory role" (66) while there is an ever-growing body of literature documenting the psychosocial role and effects of income inequality (66-68).

## **6. WHAT DO WE KNOW ABOUT THE RELATIONSHIP BETWEEN INCOME INEQUALITY AND HEALTH IN YOUNG PEOPLE?**

Regional disparities can be observed at a number of levels – between countries, between regions within the country and between small areas within regions (such as town districts). Researchers are paying greater attention to the material and social characteristics of local area, beyond the urban-

rural dichotomy, which posits that poor health outcomes are generally observed among residents of inner-city highly deprived areas. As a result, more research has focused on the impact of the neighbourhood on adolescent health (78, 79). In some countries, the Health Behaviour in School-aged Children (HBSC) study has found that family affluence is often a weaker predictor of health problems than the SES of the place of residence and the quality of social bonds.

Many researchers have attempted to measure the relationship between income inequality and health at national and subnational level (80). Recent studies in municipalities, provinces and other levels of local communities indicated a negative correlation between income inequality and individuals' self-rated health in areas with political autonomy (81-86). In the smaller administrative entities, without any political autonomy, such as neighbourhoods, no association has been found between self-rated health and neighbourhood income inequality after adjusting for various contextual factors (average local level income and other individual and household level predictors such as gender, age, marital status and income) (see 82 and 87 for examples in Stockholm and in Hong Kong). The dissimilar findings at different administrative levels reveal the importance of paying attention to the level of aggregation when studying the effects of income inequality on health.

### **Measuring material inequality in adolescence nationally and cross-nationally: HBSC Family Affluence Scale**

*The Health Behaviour in School-aged Children (HBSC) study, a WHO Collaborative Study, is one of the only sources of data around the social determinants of health for young people. The study describes and analyses the socio-economic patterning of health behaviours among adolescents (69-70). Information collected from the study is provided by young people in 44 countries in Europe and North America. Therefore, the socio-economic variations across HBSC member countries are considerable: for example, the Gross National Income (GNI) per capita varies from about \$3780 to \$67,000 USD (71). Income inequality, as measured by the Gini coefficient, varies from approximately 25% to about 40% in countries with high income inequality (72). Thus one of the challenges facing the HBSC study has been the need to develop items that are appropriate for differentiating poor and affluent families in national and cross-national samples.*

*The Family Affluence Scale (FAS) was developed as an objective measure of family assets. The scale was first used in the 1993/94 and 1997/98 HBSC surveys (FAS I) and it was based on typical measures of material and social deprivation. An additional item was added (FAS II) in subsequent rounds (2002/02, 2005/06 and 2009/10) to improve the scale's discrimination in affluent countries where the original items were commonplace. In 2012/2013 the scale was once again reviewed, the FAS III consists of 6 items (73). The average FAS in a country corresponds to objective measures of wealth in the country, e.g., GNI (74-76). Andersen et al (77) described a high agreement between parents' and students' response on the FAS items in six countries.*

*With the involvement of new countries from Eastern Europe, the Caucasus, Central Asia, as well as from other regions of the world, HBSC will be able to research, identify and learn more about the determinants of health behaviours in low- and middle-income countries. FAS will provide valuable information about the magnitude of socioeconomic differences across health behaviours and outcomes in these settings. This will be valuable information in the formulation of relevant and effective educational, social and economic strategies that foster positive behaviours and the prevention of negative health outcomes during adolescence.*

The impact of income inequality on health tends to be stronger when countries, rather than smaller-area geographic entities, are considered (88, 89, 67). A plausible explanation for the size-strength relationship is that within larger contexts "income inequality serves as a measure and determinant of the scale of social stratification, or how hierarchical a society is" (90). Another explanation is that when inequality is higher there is the possibility that residential segregation between rich and poor also increases, which provokes greater "inequality between areas and diminish[es] the inequality within them" (3). Pickett et al would argue that deprived neighbourhoods have poor health because of their deprivation relative to the wider society, not because of inequality inside them (67).

Data from participating countries in the HBSC study indicates that gaps in adolescent health and life satisfaction have been associated with unequal income distribution. For instance, recent trend data from 34 countries participating in the HBSC study has shown that greater income inequality is strongly associated with higher frequency of psychological and physical symptoms among school-aged children (20). Similar findings from 27 European and North American countries, suggests that school-aged children from countries with higher income inequality tend to report more health complaints than those from countries with lower income inequality (91). This corroborates previous findings from Holstein et al (25) that stated a relation between level of income inequality and health complaints. Additionally, life satisfaction among school-children from European and North American countries, was also found to be higher in countries with more equal income distribution (92).

Rodgers (93) compared cross-national data from 56 countries in which data on income distribution were available to assess income and income inequality as determinants of mortality. He concluded that the income distribution variable was consistently significant regardless of the health outcome measured. Lynch et al (94) also found that countries with high income inequality show greater infant mortality. Further, international cross-country studies suggest that "health is less good in societies where income differences are bigger" (90, 67).

It has also been suggested that the relationship of income inequality and health outcomes might be different in developed and developing countries. In the latter, income inequality as a determinant of health may become second to the often pervasive absolute poverty and lack of material resources (23). In this context, it is low income per se that matters to health and mortality, rather than income relative to other people's incomes (95). This suggests that results of the impact of income inequality on health in developed countries do not necessarily hold for developing countries and inequality matters more for health in developed countries than for health in developing countries.

Empirical evidence on the health effects of income inequality for developing countries may not be as robust as that for developed countries, one of the reasons being lack of data on income inequality for large samples and over time (96). Thus while material factors play a strong role in this context we cannot forget "that psychosocial factors play an important role in all societies and for people at all socio-economic levels" (23).

To test the association in each group, Herzer and Nunnenkamp (97) assessed the effect of income inequality on life expectancy by performing separate estimations for developed and developing

countries. They found that the effect of income inequality on life expectancy is significantly negative in developing countries while income inequality slightly increases life expectancy in developed countries. Although, quantitative effects are minor, the contrast between the two country groups proves to be robust to modifications in measurement, specification and methodological choices (97). Hence this challenges the view that the impact of income inequality on health in developed countries does not necessarily hold for developing countries. There is a difference in the kind of impact of income inequality on health between the two country groups; nevertheless the impact of income inequality on health in developing countries exists.

There is no doubt that income inequality has the potential to impact health and that social inequalities in health vary across health outcomes. But how does the relationship reveal itself? Income inequality affects health through various materialistic and psychosocial mechanisms (23, 98-100). For example, the HBSC study has found that material factors contribute the most to socio-economic differences in self-rated health (75), a finding that is universal in European and North American countries (101). Macinko et al (102) summarised the theoretical and empirical literature on the pathways through which income inequality could influence health. Cabieses et al (23) argue, for example, that we know less about the psychosocial pathway from income inequality to compromised well-being in children than that of adults. Elgar et al (68) found that psychosomatic symptoms in adolescents are more related to relative than to absolute affluence. Cabieses et al (23) argue that there are at least 3 processes through which children are affected by inequality and relative social status: indirectly through the quality of family life and relationships; directly through increased awareness of status difference; and epigenetically whereby the psychosocial environment affects gene expression. Along this line, there are two interesting hypothesis linking growth in childhood with exposure to disadvantages in early life. First, through an effect on shortened height for age and sex; observed increases in average heights for developed countries could be due to improved diet and living conditions (103). The second, through shortened telomere length, a biomarker of chronic stress seen in African-American children in the United States exposed to low incomes, low maternal education, unstable family structure, and harsh parenting (104).

Although it is accepted that the determinants of collective health are primarily socio-economic, it is still unclear to what extent this is an outcome of income levels or income inequality. The bulk of studies on the association on income inequality and health seems to suggest that there is at least some substance to the proposition but no consensus in the findings. Supporting this view is evidence that health inequalities have reduced in periods when structural inequalities have diminished, and have risen when such inequalities have increased (105, 106); that the health of communities has improved when they have been given more resources by chance (107); and, most convincingly, that the people with the most resources within any society are always the healthiest, regardless of their behaviours (108).

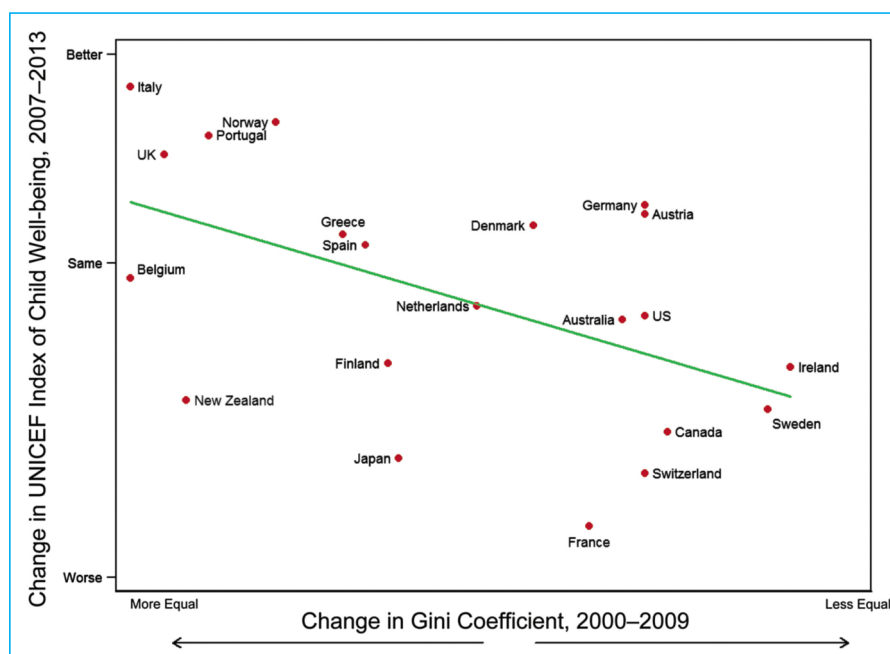
Pickett and Wilkinson (3) sought to explore the hypothesis that large income differences between rich and poor lead to worse outcomes in child well-being. They used the UNICEF Index of Child Well-being,<sup>1</sup> which combines measures of and factors conducive to child well-being against

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<sup>1</sup> A description of the UNICEF Index of Child Well-being Index from 2007 and 2013 is included in the paper by Pickett and Wilkinson (3).

changes in inequality by country between 2000 and 2009 (3). The resulting graph (Figure 1) is one of the most explicit pictures of the negative relationship between child well-being and income inequality in rich countries. That is, the higher the income inequality in a country, the worse off

**Figure 1 – Relationship between change in income inequality and change in the UNICEF Child Well-being Index (3)**



children fare. From this figure we can see that child well-being scores improved most in Italy, Norway, Portugal, the United Kingdom, and Germany, while Sweden, Canada, Japan, Switzerland, and France saw the biggest declines (3). The take home message is that countries that experienced the largest increases in income inequality in the study period had significantly greater declines in child well-being (3).

Macro-level determinants may be indirectly associated with youth health inequalities. That is because the effects of income inequality on health may be mediated by underinvestment in social goods, such as public education and health care (109). Macinko et al (102) for example, stressed the role of a health system as a potential mediator of the relationship between income inequality and health. O'Neill and Lowry (110) also found that the healthcare regime can moderate inequalities but barriers to access (e.g. fees) hurt low SES children in particular. HBSC survey data from Israel and 32 countries of Europe and North America has also shown that welfare systems mediate the effect of socio-economic position on school-aged children's health (111). This suggests that countries with higher income inequality also have welfare systems to which young people from low socio-economic backgrounds have limited access, especially to state benefits. Thus the effects of income inequality on health seem to be a result of a combination of individual socio-economic factors along with insufficient investment by countries in social protection and socio-economic living conditions (112).

In the models describing determinants of health inequalities, health related behaviours are looked at in two different ways – as an alternative health indicator (113) and/or as a health determinant (114). In the latter case, social status may be a significant modifying factor. It is assumed that many health behaviours are established in adolescence and produce a variety of undesirable health outcomes in the same period of life or in adulthood. The adverse health effects of lower income accumulate over children's lives. And part of the intergenerational transmission of socio-economic

status may work through the impact of parents' income on children's health (115). Knowing to what extent health behaviours are socially determined in adolescence may help to identify pathways by which adult health inequalities are generated. Moreover, there is a need to examine changes in the social patterning of health outcomes over time (116). Changes in the strength and direction of the social gradient may be interpreted as a part of epidemiological/health transition. For instance, and contrary to what would be expected, in many countries risk behaviours were for many years displayed more frequently by youth from affluent families (e.g. smoking). A positive health promotion message may reach higher social classes faster and cause a turn in the social gradient to the disadvantage of poor families.

A sharp social gradient is frequently encountered in wealthy countries being at the later stage of transition, as the overall improvement in health coexists with a widening socio-economic gap (117). A recent study conducted in the United Kingdom confirmed that children from deprived families have benefitted the least from general improvements in population health, and have experienced the largest increases in health risks (118). It is clear that factors determining indicator differences between countries are different to those within-countries. In general, a model of behaviour among adolescents from 'poor' and 'rich' families is different in countries with low and high GNI and there is a need to understand these differences.

HBSC has found that family affluence is positively associated with better health outcomes, health behaviours and positive social context with respect to family, peers and school (69, 70). Higher family affluence is associated with better self-rated health and life satisfaction, as well as a lower number of health complaints (true across genders and in most countries surveyed) (69, 70). HBSC countries show a positive correlation between family affluence and better communication with parents, higher classmate support, more close friends, and perceived school achievement (69, 70). It has been posited that peer, school and media influences have an equalising effect on adolescent health outcomes (28).

Other research focused on children indicates that socio-economically disadvantaged children and adolescents are two to three times more likely to develop mental health problems (119) and are more likely to feel lonely (67). This could be due to disruption of social cohesion and the erosion of social capital, and the psychosocial effects of social comparisons (109). When low SES persisted over time it was strongly related to higher rates of mental health problems; a decrease in SES was associated with increasing mental health problems (119). In addition, research has also found consistent relationships between socio-economic position and infant (102) and child mortality; food habits and nutrition; health behaviours; non-accidental injuries, mental health and health-related quality of life; and chronic conditions (120).

Viner et al. (1) found negative relationships to behaviour and mental health (smoking, bullying, violence, injuries); sexual health (teenage births, HIV prevalence); mortality (all-cause mortality, injury mortality, non-communicable disease mortality; communicable disease mortality). Others have found consistent negative relationships between income inequality and life expectancy, all-cause adult mortality and, self-rated health (102). Poor self-rated health, poor life-satisfaction,

multiple health complaints, obesity, infrequent intake of fruit and vegetables, and bullying are generally more prevalent in lower socio-economic groups (121-129, 1, 27, 92). There are inconsistent findings regarding risk behaviours (69), physical injuries and physical fighting (130, 131) and medically attended injuries (27, 132-134).

However, some health behaviours do not follow 'expected' patterns in countries with lower socio-economic indicators. For instance, in many countries soft drink consumption is commonly associated with low affluence. However, the results of the 2009/2010 HBSC survey show that in Armenia, Russia and the Baltic countries the prevalence of soft drinks intake is higher among adolescents from families with higher income and therefore is considered to be an indicator of wealth (70). The most recent HBSC survey (69) shows that the trend continues in Albania, Armenia, Estonia, Republic of Moldova Romania and Ukraine, all countries which revealed higher prevalence of soft drink consumption among high affluence groups. The same could be said about watching television, which is more common among children with lower affluence in most countries, but more prevalent among adolescents with higher affluence from the Bulgaria, Republic of Moldova, Romania and the former Yugoslav Republic of Macedonia (69).

In most HBSC countries research shows a positive correlation between affluence and life satisfaction, but when comparing data from different countries it paints a different picture. For example, life satisfaction amongst 13- and 15-year-olds is amongst the highest in Armenia, a country with the one of lowest GNI figures of the group that also fares poorly in other socio-economic indicators. The pilot survey conducted in Turkmenistan, results of which were published in 2015, showed the same tendency (135). This difference warrants further study to understand the socio-cultural influences at play.

Research indicates that neighbourhood social capital can act as a mediator between deprivation and health in young people (136). The association between neighbourhood characteristics and health is considered as a result of compositional (social class of residents) or contextual factors (environmental characteristics). The concentration of poverty in spatial areas provides an important pathway from income to health, causing a greater concentration of risk factors for poor health or various social and environmental stressors. There are at least three mechanisms leading to spatial disparities: lack of available resources (e.g. parks), more physical stressors (e.g. pollution, poor housing), and more social stressors (e.g. crime) (137). Protective factors in low-income communities include better family relationships, high educational attainment, and appropriate health and social services.

A supportive social climate in the school and the general quality of education are important factors. For example, improved educational outcomes are associated with better health, thus students from more advantaged backgrounds tend to perform better at school. However, data from PISA (Programme for International Student Assessment) has shown the positive effects of school impact on student resiliency through students who have good school achievement despite low SES. Van Ewijk and Sleegers (138) described it as 'school-effect.' As a result, many countries have introduced value-added measures of schools' and teachers' effectiveness (139, 140) that tackle this very effect.



A key concept often discussed in the context of health inequalities during adolescence is resilience, which is defined as an outcome of successful adaptation to adversity, a situation involving both a level of adversity and an unanticipated positive result. Research on the concepts of risk, vulnerability and resilience has been supported by solid theoretical foundations and differentiated for adolescent health. Garnezy and Nuechterlein (141) were among the first who found that many children and adolescents can overcome the limitations resulting from living in poverty and living in disorganized environments. Werner and Smith (142) described three attributes related to resilient adolescents, individual, family and related to broader social networks. Social support is particularly important in mediating adverse conditions and moderating health inequalities, for example, through education (especially the educational context, experience and opportunities, school-based peer relations and personal resources) and parental interventions (such as those targeting parental health and health outcomes) (110). Researchers underscore the need to establish 're-entry' points in later childhood to sustain the benefits of such interventions (110).

Epidemiologists agree that the determinants of population health are mainly socio-economic (143) and social inequalities are a pre-eminent cause of preventable disease. Action and policy targeting health inequality must consider both structural and intermediary determinants, since structural factors are considered the major mechanisms generating social stratification and inequitable distribution of the determinants of health among population groups (36). The social gradient in health and developmental outcomes observed throughout the life course may be partly explained by gradients initiated in early childhood, suggesting that prevention and early interventions are effective strategies to tackle the complex embedding, clustering and cumulative nature of social disadvantage in early life (34). But the persistence of inequalities and social gradient can affect even the most resilient of children. Therefore, childhood and adolescence are significant and effective periods to tackle social inequalities (144, 1, 6).

It has been argued that tackling these inequalities earlier in the life course yields greater returns on population health than investment in older age groups (145). Thus policymakers have a responsibility to tackle not just the outcomes of such deprivation, but also the determinants of health inequalities (2, 146). As such, we should consider the degree to which social and economic policies have a determining effect on the developmental potential of youth and opportunities to thrive (37, 147).

The authors recognise that although questions remain, for example about the impact of interventions to reduce health inequalities and their effectiveness for different social groups, there is a strong case to be made for tackling them. Future research in this area should focus on filling the existing knowledge gaps and addressing methodological considerations, including measurement strategies. Our review confirmed the need for high-quality longitudinal research (23) on the socio-economic determinants of child and adolescent health because this type of study can provide better evidence on the causal relationship between socio-economic status and health outcomes. It can also increase our understanding of the relationship between policies, income inequality and health during the life course.

A life course perspective can help identify windows of susceptibility and risk accumulation, which can increase our understanding of health behaviour trajectories over time. For example, it is important to understand the socio-economic and behavioural factors from early adolescence

which may increase the risk of becoming a young NEET and its effects on health. Additionally, better insight into the different aspects of social stratification can also help us understand the magnitude of its effect in shaping youth health and well-being. Following HBSC work on the Family Affluence Scale (see Figure 1) more efforts should be made to develop standardized SES measurement tools adapted for adolescent respondents. Additionally, it is critical to develop robust analytical approaches based on relative rather than absolute family affluence distribution (69), especially for systematic international comparisons and the evaluation of time trends. In short, research has a strong role to play in identifying and raising the profile of key issues for the international policy agenda and interventions as well as to increase the society's awareness of the social determinants of health during adolescence.

## 7. WHY INCOME INEQUALITIES MATTER FOR YOUNG PEOPLE'S HEALTH

Income inequality "has a robust and consistent" relationship with negative child health well-being (23). Simply put, young people's well-being and health outcomes are highly shaped by the socio-economic context in which they grow up. Available evidence shows that an adolescent's socio-economic context holds substantial effects on their health and well-being, such that better family affluence correlates with better health and well-being outcomes. These socio-economic differences matter for young people because they can affect, for example, (a) their access to material resources such as healthy foods, quality schools, recreational areas (69); (b) the psychosocial aspects of their life for example through the undue anxiety and stress of living in deprivation (69); (c) their relative SEP within society which has been identified as a robust determinant of adolescent health (148, 149); and (d) gene expression and intergenerational trajectories of health and well-being (23). Clearly, this is a complex problem and although there has been increased understanding of the pathways linking socio-economic inequality to young people's health, policies are still lagging behind, tackling the proximal causes, rather than 'the causes of the causes' (2), of these health inequalities.

Relative differences in SEP account for the health and social consequences of income inequality (67, 68) because being in a lower position causes chronic stress that impacts on the body and increases vulnerability to disease (150, 151, 6). Children are aware, very early on, of socio-economic differences and inequitable opportunities (23, 152-154). Although this awareness does not eliminate the long-term effects of such unequal distribution, it can disempower young people in the face of adversity (6). Marmot (6) would further add that one of the worst outcomes of inequality is an absolute disadvantage in empowerment, affecting a young person's psychosocial functioning, including elements of self-efficacy, self-esteem and educational aspirations (155, 67). Health inequalities experienced by youth shape their future opportunities – academically, professionally, health-wise and their life-expectancy (1). These aspects of a person's life affect the choices that they perceive are plausible, not what could in fact be possible.

Health inequalities are established early in a person's life and have life-long consequences. Those inequalities are closely related to the deprivation experienced during childhood. Their presence in our societies underscores the need to strengthen re-distributive and/or pre-distributive social policy, especially those aimed at families with children. Our work supports

the view that health inequality reflects a general injustice in our society (7) and that by fostering increased equality we support social cohesion and solidarity. The relationship between income inequality and health is undisputable and there is general consensus that people and societies benefit from lower levels of inequality (67, 23). We must finally come to acknowledge the scale and depth of the effects of income inequality on health in order to clear the path for more forceful and determined action to ensure that we change the course for future generations. This will help eliminate wastage of young potential and lower social mobility negatively affecting young people's ability to maximise their lives.

One of the most compelling arguments as to why inequality matters for young people is that it is a pivotal time in a person's life. "The biological, social, behavioural, and relational changes of this life period may lead to special windows of susceptibility and imprint behaviour, health, and lives in ways which profoundly influence future health" (156). Surveys such as HBSC, which facilitate young people's voice about their lives and aim to develop adolescent specific measures of family affluence enable a comprehensive review of social inequalities and reveal the relationship between risk and protective factors to maximise well-being in this critical stage of the life course.

If we aim to bolster our societies' opportunity and potential then we need to focus on addressing the effects of inequality for children and young people. "Unless we do so, we will continue to need expensive, remedial interventions for every generation" (3). Ignoring the detrimental effects of socio-economic inequalities on health during the second decade of life can result in an accumulation of various factors that significantly diminish a young person's opportunities for full participation in social life and proper transition into adulthood. Disadvantage can be extremely damaging to young people's psyche and by tackling health inequalities "as a means to equalize health and educational outcomes in youth [we will] increase human capital and social mobility." (3) This will in turn provide hope and aspiration for future generations.

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