

Part 1

Health inequalities: understanding patterns over time and place

The chapters in Part 1 of the book underline the importance of time and place for understanding health inequalities.

Two chapters – by Catherine Law and by Mel Bartley and David Blane – are centrally concerned with time. They discuss how an appreciation of time, and of individual lifetimes in particular, is contributing to explanations of health inequalities. They do so by introducing the concept of life-course. The concept draws attention to how people's health is shaped by the course of their lives, with life-course research illuminating the processes through which social inequalities in infancy, adulthood and older age all have their part to play in the socio-economic gradient in health.

An appreciation of time is particularly important in societies where chronic diseases, like heart disease and cancer, are the major killers. These are diseases with complex aetiologies where multiple factors are often involved and where there can be time-lags of years or even decades between exposure and evidence of effect. An appreciation of life course and biography is also needed to inform the development of policy. If the life course matters – for example, if disadvantage in early life has life-long effects on life chances and health chances – then policies which tackle inequalities in people's circumstances across their lives are an essential part of an equity-oriented public health strategy.

Two chapters – by Danny Dorling and Bethan Thomas and by Sally Macintyre and Anne Ellaway – are centrally concerned with place and, particularly, the places in which people live. Their chapters are set against a backcloth of the spatial polarization of poverty and affluence in the UK, on the one hand, and government investment in area-based strategies to tackle social and health inequalities, on the other.

The chapter by Danny Dorling and Bethan Thomas combines a focus on place with a consideration of trends in area inequalities over time. It reviews evidence on geographical inequalities in health in Britain across the last hundred years. The chapter by Sally Macintyre and Anne Ellaway outlines the processes through which areas can influence the health of those that live there, illustrating the processes through a focus on access to a key health resource, namely nutritious food.

1.1 Life-course influences on children's futures

Catherine Law

Introduction

The true measure of a nation's standing is how well it attends to its children – their health and safety, their material security, their education and socialization, and their sense of being loved, valued, and included in the families and societies in which they are born.

So opens UNICEF's report card on child well-being in rich countries (UNICEF Innocenti Research Centre, 2007). The report goes on to describe huge variations between countries in the well-being of their child populations, with the USA and UK consistently in the lowest-ranked countries for most domains. In a further analysis of the UNICEF data, Pickett and Wilkinson (2007) note that the overall index of well-being, and several of its domains, including health, are related not to mean income but to income inequality, with poorer levels of health and well-being in rich countries with more unequal incomes. It is a paradox that the increasing wealth of nations has not necessarily been accompanied by overall improvements in children's health and that within some, if not all, rich nations, the health and other benefits of national prosperity are not shared equally (Li et al., 2008). For example, in the UK the prevalence of mental health problems is increasing and their distribution is socially patterned. Mental health problems are more common in children living in families with a low educational or occupational status (British Medical Association, 2006).

However, to appreciate the true impact of inequality on the health of individuals, it is necessary to consider the whole of their lives. A life-course approach, which has its origins in the discipline of epidemiology, does this. Life-course epidemiology is the study of long-term biological, behavioural and psycho-social processes that link adult health and disease risk to physical or social exposures acting during gestation, childhood, adolescence, earlier in adult life, or across generations (Kuh and

Ben-Shlomo, 1997). Although life-course epidemiology has traditionally focused on health in later adult life, there is no reason not to apply such an approach to earlier periods of individuals' lives, and in relation to both their current and future health. For example, consider the current rising prevalence of childhood obesity. As well as its immediate impacts on children's health and well-being (Lobstein et al., 2004), childhood obesity predicts adult obesity (Parsons et al., 1999). If current trends in obesity are maintained, it is estimated that the development of type 2 diabetes in about one-third of today's birth cohort in the USA will significantly shorten life expectancy and increase morbidity (Olshansky et al., 2005). Given that childhood obesity is socially patterned (Shrewsbury and Wardle, 2008), this reduction in life expectancy may be expected to exacerbate current differences in longevity between social groups.

A life-course approach also recognizes the unusually high number of critical or sensitive periods during childhood and adolescence. A critical period occurs when there are rapid and usually irreversible changes towards greater complexity taking place. Influences in these periods can have long-lasting, permanent effects. A sensitive period is also a period of rapid change, but one in which there is some scope to modify, or even reverse, the changes at a later time (Kuh and Ben-Shlomo, 1997). Fetuses, infants, children, and adolescents pass through many critical and sensitive periods as they develop to maturity, particularly between conception and early childhood. This makes not only pregnancy but also childhood and adolescence, particularly in the early years, an unparalleled time during which external influences, both good and bad, can influence an individual's health and well-being across their whole life. Of particular importance is the health and circumstances of mothers, which links to their children's health through biological, behavioural and social mechanisms (Kuh and Ben-Shlomo, 1997).

A life-course approach illuminates the role of childhood disadvantage in determining adult health and inequalities in adult health. Graham and Power (2004) describe two main pathways through which childhood disadvantage results in poor adult health. First, childhood circumstances may influence adult circumstances which in turn affect adult health. For example, poor educational attainment is associated with increased risk of unemployment, and joblessness is associated with poor adult health. Second, the circumstances that children experience as they grow up influence their childhood health and development (considered in their widest sense, to include mental, social and emotional health as well as physical health and health behaviours). Good childhood health tends to lead to good adult health and vice versa. For example, a mother living in disadvantaged circumstances has a high risk of giving birth to a low birth weight child, and

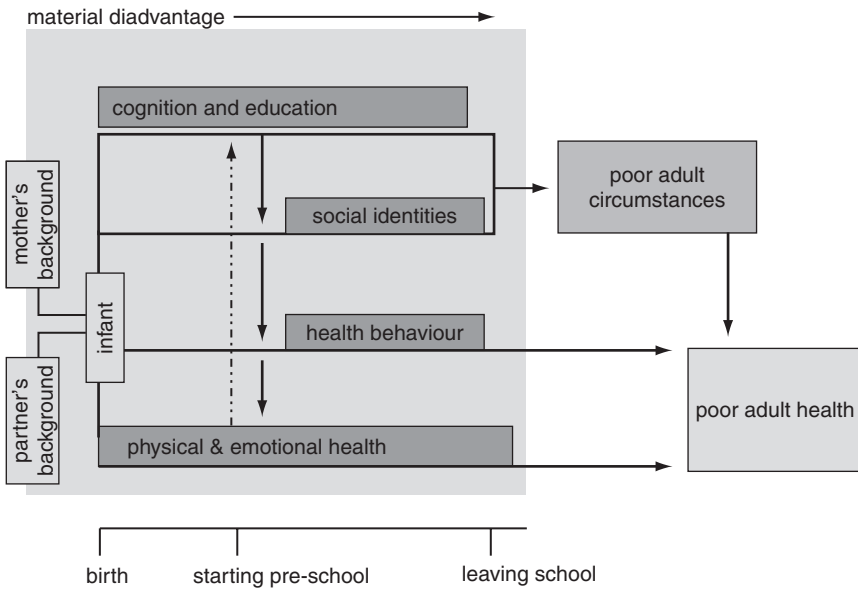


Figure 1.1.1 Life-course framework linking childhood disadvantage to poor adult health.

Source: Graham and Power (2004: figure 7), reproduced with permission from the publishers.

low birth weight is associated with a range of adverse health outcomes in childhood as well as adult life (Graham and Power, 2004). Graham and Power describe how earlier or current disadvantage shapes interlinked trajectories through childhood, during which resources are accumulated or lost, and development is optimized or harmed (Figure 1.1.1). The trajectories describe pathways related to physical and emotional health, health behaviours, social identities, and cognition and education.

The chapter will first consider how inequalities in the determinants of health are affecting children's health and life chances now. It will focus on indicators which illustrate the extent to which variability in the trajectories of childhood experience conceptualized by Graham and Power (Figure 1.1.1) is relevant today. While the data presented relate mainly to England and to younger children, many of the patterns are found throughout the UK and in other rich countries like the USA as well as in older children and adolescents. The chapter will then present examples of analyses from the Millennium Cohort Study which demonstrate that inequalities in the life chances of children of the new century still exist, despite government

commitments to eradicate them, and how policies and practice may address these.

Socio-economic inequalities in children's health

Infant mortality is inversely related to living standards and so has been a useful indicator of how circumstances in society at large affect children's health (Ferguson et al., 2006). To reflect this, in 2001, the government set a target for England to reduce inequalities in infant mortality, by narrowing the gap in infant mortality by at least 10 per cent by 2010 between children in the routine and manual group (defined as those with fathers who recorded their occupations at the time of birth registration as routine/manual) and the population as a whole. However, despite this policy focus and overall falls in infant mortality for all social groups since the baseline year for the target (1997–9), inequalities in infant mortality have increased over the last ten years. The infant mortality rate among routine and manual groups was 17 per cent higher than in the total population in 2004–6 compared to 13 per cent higher in 1997–9 (DH, 2008). A widening of the gap in infant mortality between socio-economic groups has also been observed in the USA. For the period 1985–9, infants in the most 'deprived' group (defined according to indicators representing local educational, occupational, economic and housing conditions) had a 36 per cent higher risk of neonatal mortality than infants in the least deprived group, which increased to a 46 per cent higher relative risk during 1995–2000 (Singh and Kogan, 2007).

Other indicators of early health in UK children also show persisting inequalities. For example, poorer mothers are more likely to give birth to smaller babies or to deliver before term (Spencer, 2003). Cerebral palsy, the most common childhood physical disability, occurs at higher rates in families with lower socio-economic position (Dolk et al., 2001), as does both unintentional (Ferguson et al., 2006) and non-accidental injury (Cawson et al., 2000), and emotional and behavioural problems (Meltzer et al., 2000). Childhood obesity, sometimes described as one of the greatest threats to public health, is also more common among disadvantaged children (Shrewsbury and Wardle, 2008).

Socio-economic inequalities in children's health behaviours

Compared to later adult life, childhood after infancy is a period of relatively low mortality and morbidity. However, childhood is also

a time when health behaviours become established and so inequalities in health behaviours of children or their families are particularly important. Even in early childhood, socio-economic patterns are emerging.

Overall, there is reasonable evidence that children from poorer families are eating a less healthy diet than their richer peers (Batty and Leon, 2002). For example, young children from families in poorer socio-economic circumstances are less likely to eat the recommended amount of fruit and vegetables and more likely to eat burgers, chips and sugary confectionery than children from more advantaged families (Nessa and Gallagher, 2004). However, patterns in physical activity are less clear. There is some evidence that sedentary behaviour is more common in children, particularly girls, from less well-off families (see, for example, Brodersen et al., 2007) but inconsistent findings in relation to physical activity (Batty and Leon, 2002; Ferguson et al., 2006). The social patterning of sedentary behaviour is of particular concern when set against the backdrop of the high overall levels of sedentary leisure activity reported by children now.

Parents are a critical influence in establishing health behaviours. For example, children are much more likely to smoke if one or both parents are a smoker (Fuller, 2007). Similarly, the presence of parental obesity is a strong predictor of childhood obesity which persists into adulthood (Lake et al., 1997). While shared genes may play a role, environmental factors relating to diet and physical activity are also influential, and are critical in the expression of some genetic tendencies to being overweight (Lobstein et al., 2004). Both smoking and obesity in adulthood (particularly in women) are socially patterned, with higher rates in disadvantaged groups (Craig and Mindell, 2008). Thus the strong relationships in smoking and obesity within families leads to inter-generational transmission of inequalities in health disorders which are associated with cigarette smoking and overweight, particularly as smoking in pregnancy is also a risk factor for offspring obesity. A further parental behavioural influence on young children's health is infant feeding. Mothers from lower socio-economic groups are less likely to start or continue breastfeeding, and they also tend to introduce solid foods earlier than mothers from more advantaged families (Griffiths et al., 2005; Ferguson et al., 2006; Bolling et al., 2007). Similar patterns are found in the USA. In the 2005/06 birth cohort of the US National Health and Nutrition Examination Survey, 57 per cent of infants from families of lower income had been 'ever breastfed' compared with 74 per cent of infants from higher income families. Breastfeeding was also significantly more likely among Mexican American (80%) and non-Hispanic white (79%) infants compared with non-Hispanic black infants (65%) (McDowell et al., 2008).

Inequalities in the determinants of health in childhood

The data presented so far show that socio-economic differences in health status and health behaviours in childhood are widespread. If all of the population, including children, occupied similar socio-economic positions then these differences would have a small impact on public health. Unfortunately, this is not the case. This section will demonstrate that there are marked discrepancies in the material circumstances of children's lives which are likely to have profound influences on their health.

The last ten years has seen unprecedented commitment to tackle child poverty in the UK, with the aim of eliminating it by 2020 (DWP, 2006). This commitment is supported by all the major political parties. While there has been progress, what is striking is the number of children still living in poverty. In 2006–7, 2.9 million children were living in poverty using the government's measure (household income below 60% median income before housing costs) (Brewer et al., 2008). Although this is 500,000 fewer than in 1996–7, it remains an unacceptably high figure. Children remain disproportionately represented in low-income households in the UK and some children are particularly at risk of experiencing poverty. These include children in lone-parent families, in families where the parents work less than full-time or are unemployed, those in families of more than two children, and those whose mother is under 25 years old (DWP, 2007). Many children in the USA also live in poverty. Eighteen per cent (13.2 million) of all children in the USA in 2007 were classified as living below the 'federal poverty level' (US \$21,200 for a family of four, US \$17,600 for a family of three, or US \$14,000 for a family of two), with a further 21 per cent (15.6 million) in families whose income was less than twice the federal poverty level (Douglas-Hall and Chau, 2008).

The poor material circumstances in which many children live their lives are documented in the quality of their homes. Twenty-eight per cent of social tenants and almost a third of vulnerable private households (those receiving one of the main means-tested or disability-related benefits) live in dwellings which do not meet standards required to be classified as a 'decent' home (DCLG, 2008), with children disproportionately represented within these households. Furthermore, the number of homeless families with children living in temporary accommodation remains fairly constant (around 60,000) although great improvements have been made in reducing the number of families having to live in bed and breakfast accommodation (DH, 2008).

Differentials in educational achievement have been identified as one of the main determinants of inequalities in health (WHO, 2008) and tackling educational inequalities is one of the most politically acceptable policy

solutions in the UK. There is some evidence that investment in education focused on disadvantaged areas may be closing the gap in educational achievement. For example, the proportion of pupils achieving good GCSE passes (equivalent to five GCSE grades at A* to C) has increased for all children over the last five years, from 49 per cent in 2002 to 59 per cent in 2007. The increase among children who are eligible for free school meals (a means-tested benefit) has been more marked – from 23 per cent in 2002 to 35 per cent in 2007. However, there is still a large difference in achievement between children from disadvantaged families and their better-off peers. The picture for looked-after children in England is even bleaker, with their rate of good passes at GCSE being less than 13 per cent (DCSF, 2008).

Children's health also varies according to where they live. Place differences are particularly important in developing policy to tackle health inequalities because area-level differences are often easier to measure and monitor than individual differences. Furthermore, policies can be targeted at areas through existing delivery mechanisms and settings (for example, through financial allocations to local authorities and directives to schools) rather than at individuals. As an example of variability in child health at regional level, in 2002–4, overall mortality rates for children and young people up to 19 years of age ranged from 41 per 100,000 in the South East of England to 58.6 per 100,000 in the West Midlands. Other child health indicators showed marked regional variations but not necessarily in the same directions. For instance, the West Midlands had the lowest mean number of missing decayed or filled teeth in five-year-old children (1.02) and the North West the highest (2.17). In contrast, London had the highest under-18 years conception rate and the East of England the lowest (Ferguson et al., 2006).

Place differences reflect a complex mix of differences in geography, quality of the environment, and characteristics of the people who live there (see Chapters 1.3 and 1.4). This is well illustrated by a recent analysis of infant mortality and its risk factors across London primary care trusts (PCTs). There were marked variations between PCTs in rates of infant deaths and also in risk factors for infant deaths such as area-level deprivation, breastfeeding, and smoking in pregnancy, but these were not always coincident. For example, Haringey had the highest infant mortality of any London PCT in 2003–5 and relatively high rates of smoking in pregnancy. However, it also had high rates of breastfeeding, a protective factor for infant mortality. Eighty-six per cent of Haringey mothers started to breastfeed their babies compared to a range for all London PCTs of 51–91 per cent (London Health Observatory, 2007). The apparent mismatch between area-level infant mortality and some of its risk factors is probably due to the ethnic mix of residents. Haringey has a high proportion

of mothers from minority ethnic groups as well as having many areas of disadvantage within its boundaries. Infants from minority ethnic groups are likely to be breastfed, but are also at high risk of low birth weight and congenital anomalies, risk factors for infant mortality which are not influenced by breastfeeding.

Looking back at Figure 1.1.1, it is apparent that the data presented so far in this chapter do not indicate an optimistic future for many UK children or for the health of the nation. Many children are experiencing the adverse health, education, social and behavioural trajectories that accompany disadvantage and that will, if unchecked, lead to poor adult health. Yet with each new birth comes the opportunity for change. The remainder of the chapter will focus on analyses of children of the new century, members of the Millennium Cohort Study (MCS). Through specific examples, it will illustrate how inequalities in health are persisting and how analysis of cohorts such as the MCS can inform policies to address them.

An introduction to the Millennium Cohort Study

The Millennium Cohort Study (MCS) is the most recent in a valuable series of UK cohort studies (Centre for Longitudinal Studies, 2008). It aims to study the influence of society on children's lives now and into the future and there are aspirations to follow the cohort for decades. Unlike the birth cohort studies of 1946, 1958, and 1970, the Millennium Cohort focuses on a cohort of children identified at nine months of age, but for whom there is good recalled data of pregnancy and birth. A particular feature of MCS is the relatively high numbers of children from minority ethnic groups and from disadvantaged areas, both groups that have been under-represented in previous cohorts and in research more generally. Thus it presents one of the best opportunities so far to study inequalities in health using a life-course approach.

There were 18,819 children in the original cohort. So far data have been collected and made available from MCS children when they were nine months, three years (14,630 children), and five years (12,989). In addition, in 2007 and 2008 data were collected on the children at age seven years and will become available in due course. A wide range of data was and is being collected – for example, on the material and financial circumstances of families, characteristics of the areas where children live, how they get on at school and relate to their peers, the health of family members and so on. A great strength of the MCS is that, in the future, all of the trajectories – physical, social, educational and behavioural – postulated to influence adult health across the life course can be examined separately

and together. The examples of analyses presented here will focus on physical health and health behaviours up to three years.

Inequalities in immunization

Immunization is a highly cost-effective health service intervention to protect individuals and promote public health. Such protection often lasts for life, and protects children from early diseases, some of which have long-term consequences. Childhood immunization rates are generally high in the UK, and over the last 50 years increasing numbers of safe and effective vaccines have been introduced. However, in 1998, a research study was published which was widely interpreted as showing a link between the measles, mumps and rubella vaccine (MMR), a vaccine recommended by the government for nearly all children, and both autism and bowel disease (Wakefield et al., 1998). Following this, levels of immunization with the MMR vaccine declined dramatically, although some parents opted for single vaccines against measles, mumps and rubella instead.

Before the 1998 ‘scare’, immunization rates showed marked inequalities, with lower rates in lone-parent and larger families, and for children living in disadvantaged areas. After 1998, the inequalities in vaccine uptake were lessened. Unfortunately, this was because of declining rates of uptake among advantaged families, rather than increased uptake in disadvantaged families (Middleton and Baker, 2003). Paradoxically, this decline in inequalities in vaccine uptake increased the absolute risk of vaccine-preventable disease in disadvantaged children, because the level of vaccination in the population as a whole was not sufficient to ensure herd immunity (where sufficient numbers of the population are immunized to prevent pathogen transmission), making epidemics among unimmunized children more likely. The MCS was unusual in collecting not only information on MMR but also on single measles, mumps and rubella vaccines. These data were used to assess the geographic, socio-economic and cultural risk factors for not accepting MMR (Pearce et al., 2008).

In the cohort overall, 88.6 per cent of children had been immunized with MMR by age three years, 5.2 per cent had received at least one of the single vaccines, and 6.1 per cent were unimmunized. Regression models were used to compare children who had received MMR with those who were completely unimmunized and also to compare those who had received MMR with those who had received one or more single vaccines. Table 1.1.1 shows some of the variables that predicted being unimmunized or receiving single vaccines, compared to being immunized with the recommended schedule of MMR vaccine.

Table 1.1.1 Adjusted risk ratios (RR)* and 95 per cent confidence intervals (CI) for immunization status

Social characteristics†	Column A			Column B		
	%‡ (No.)	Adjusted RR‡ (95% CI) for being unimmunized against MMR~	p-value	%‡ (No.)	Adjusted RR‡ (95% CI) for being immunized with at least one single antigen vaccine~	p-value
Maternal age at cohort birth						
14–19	8 (1101)	1.41 (1.08 to 1.85)		7 (1021)	0.14 (0.05 to 0.36)	
20–24	17 (2544)	1.07 (0.86 to 1.31)		17 (2431)	0.63 (0.45 to 0.87)	
25–29	28 (3874)	1	<0.001	28 (3826)	1	<0.001
30–34	30 (4175)	1.11 (0.91 to 1.34)		31 (4186)	1.36 (1.11 to 1.66)	
35–39	15 (1991)	1.60 (1.32 to 1.95)		15 (1933)	1.40 (1.10 to 1.77)	
≥40	2 (293)	2.34 (1.70 to 3.23)		2 (284)	3.04 (2.05 to 4.50)	
Single parent						
No	85 (11678)	1	<0.001		Not related	
Yes	15 (2148)	1.31 (1.07 to 1.60)				
Household income (£)						
<10400				22 (3068)	1	
10400–20800				32 (4118)	1.20 (0.86 to 1.69)	
20800–31200				22 (2639)	1.88 (1.33 to 2.66)	<0.001
31200–52000				17 (1974)	2.05 (1.42 to 2.95)	
≥52000				7 (694)	2.98 (2.05 to 4.32)	

Maternal education					
None	16 (2477)	1	15 (2043)	1	
Other	2 (361)	1.06 (0.68 to 1.66)	2 (293)	1.76 (0.66 to 4.66)	
GCSE grades D–G	11 (1502)	0.81 (0.62 to 1.06)	11 (1343)	1.48 (0.74 to 2.97)	
O level/GCSE grades	35 (4664)	0.98 (0.81 to 1.19)	35 (4258)	2.66 (1.52 to 4.66)	
A*-C		0.01			<0.001
A/AS level	9 (1323)	1.35 (1.01 to 1.80)	10 (1230)	3.37 (1.85 to 6.13)	
Diploma	9 (1222)	1.15 (0.87 to 1.54)	10 (1161)	3.31 (1.92 to 5.69)	
Degree	17 (2277)	1.41 (1.05 to 1.89)	18 (2165)	3.15 (1.78 to 5.58)	
Ever smoked in pregnancy					
No	65 (9004)	1			Not related
Yes	35 (4822)	1.22 (1.04 to 1.43)			
		0.02			

* An adjusted risk ratio shows the relative increase in risk associated with a factor, after adjusting for all effect of full other factors. For example in this table, children were 31% more likely not to be immunised if their mother was a lone parent compared to if their mother had a partner, after taking into account the other factors in the model such as age and income.

Notes

‡ Percentages and risk ratios calculated with sample and non-response weights.

† Variables not significantly adding to model and therefore omitted:

Column A: household income, household language;

Column B: maternal age at first live birth, ward type, interview language, household language, lone parenthood, sex of child, ever smoked in pregnancy.

~ Other variables significantly predicting:

Column A: number of children in the household, UK country, maternal employment status, gender of child;

Column B: UK country, number of children in the household, mother's employment status, ethnicity.

Source: adapted from Pearce et al. (2008), Tables 3 and 4.

As the table suggests, being completely unimmunized was associated with indicators of disadvantage (Column A). For example, children whose mothers smoked during pregnancy, were lone parents, or were younger than 20 when they were born had higher risks for being unimmunized. However, children whose mothers had high educational qualifications or who were older at the birth of the cohort child (generally an indication of advantage) were also less likely to have been immunized with MMR. A different pattern emerged when comparing those who had received single vaccines to those who had had MMR vaccine (Column B). Predictors of being protected by the single vaccine, which is only available privately and for a fee, were in general associated with better-off families. Single vaccines were used more in families with a high household income and level of maternal education, and an older mother.

Although the commonest reason for not accepting MMR was a conscious decision to refuse it, a significant number of mothers of unimmunized children cited practical reasons for their child not being immunized. This suggests a need for more flexible and accessible immunization services. The complex inequalities in vaccine uptake indicate that information about the advantages of immunization need to be sensitive to the different concerns, questions and beliefs of different groups. Because of the need to ensure herd immunity, tackling low rates of immunization only in some groups is unlikely to protect those living in disadvantage, who remain at the highest risk.

Inequalities in breastfeeding

Breastfeeding provides the optimum nutrition for most babies and protects them from infection, in addition to possible longer-term benefits, including a lower risk of becoming overweight (Gartner et al., 2005). Breastfeeding rates are lower among mothers from disadvantaged groups, increasing health risks for their children (Bolling et al., 2007). However, data from surveys are not usually sufficiently detailed to examine the inter-relationships between individual characteristics and breastfeeding. The next section will show how analysis of the MCS has furthered understanding of the relationship between disadvantage and breastfeeding, and how policies and trends in maternal employment and migration may influence inequalities in breastfeeding (and so life-course health) in the future.

At the time the members of the MCS were born (2000 and 2001), the UK government recommended that babies should be breastfed for at least four months. However, analysis of the 18,150 women who were natural mothers of singleton babies in MCS showed that while 70 per cent of mothers had ever put their baby to the breast, only 38 per cent were still

being breastfed at four months (Griffiths et al., 2005). These low overall proportions for breastfeeding mask even lower rates in some groups. Table 1.1.2 shows an analysis of independent socio-economic risk factors for initiating breastfeeding (that is, ever putting the baby to the breast). In addition to assessing the contribution of individual characteristics, the analysis also considered community-level indicators of social advantage, with wards being categorized according to whether or not they were materially advantaged or had high proportions of minority ethnic residents (referred to as 'ethnic wards'). Mothers who were living in advantaged or ethnic wards, those with managerial and professional occupations, and those who were educated to degree level or above were more likely to start breastfeeding than their less advantaged peers. Mothers in couple families and older mothers were also more likely to start breastfeeding than lone mothers or younger mothers. The risk ratios show that, for example, breastfeeding rates for mothers in couple families would be expected to be 20 per cent higher than rates for lone mothers, even if all other risk factors for breastfeeding (socio-economic status, maternal education and so on) were the same (Griffiths et al., 2005).

Table 1.1.2 also illustrates that mothers from minority ethnic groups were more likely to start breastfeeding than white mothers. Although being a member of a minority ethnic group is often associated with material disadvantage, it seems that this is not accompanied by the low rates of breastfeeding seen among disadvantaged white women. Furthermore, as noted earlier, living in an ethnic ward was associated with an increased rate of starting to breastfeed, this result being demonstrated for both white and minority ethnic women. This suggests that cultural and community factors associated with being from a minority ethnic group may be exerting a beneficial influence on the majority white population. Indeed, white women who had a partner of different ethnicity to themselves were 14 per cent more likely to breastfeed than white women with a white partner (Griffiths et al., 2005). Together, these results suggest that peer influences, at personal and community levels, are effective at influencing breastfeeding behaviour and might be a suitable mechanism for development of policy. Indeed, policies based on neighbourhood renewal, community engagement and the development of social capital (DH, 2003) recognize the power of peer influence, and some health services use peer-support programmes to promote breastfeeding (National Institute for Health and Clinical Excellence, 2008).

The higher rates of breastfeeding among minority ethnic mothers, as well as the apparent breastfeeding-promoting effect of partner and community minority ethnicity for all mothers, are likely to be connected to the preservation of cultural and social attitudes to breastfeeding within minority ethnic groups. Although these may vary by ethnic group, in the

Table 1.1.2 Adjusted risk ratios (RR) and 95 per cent confidence intervals (CI) for initiation of breastfeeding among mothers in England

<i>Measures</i>	<i>Adjusted^a RR (95% CI)</i>
Ward type	
Disadvantaged	1
Advantaged	1.15 (1.10 to 1.21)
Ethnic	1.11 (1.04 to 1.17)
Ethnic group	
White	1
Other-white	1.24 (1.19 to 1.29)
Mixed	1.45 (1.35 to 1.56)
Indian	1.25 (1.16 to 1.34)
Pakistani	1.27 (1.19 to 1.35)
Bangladeshi	1.56 (1.45 to 1.66)
Black Caribbean	1.57 (1.48 to 1.68)
Black African	1.55 (1.46 to 1.65)
Other ethnic group	1.36 (1.29 to 1.43)
Socio-economic status	
Managerial and professional occupations	1.13 (1.09 to 1.18)
Small employers and own account workers	1.08 (1.04 to 1.13)
Intermediate occupations	1.13 (1.07 to 1.20)
Lower supervisory and technical occupations	1.07 (1.00 to 1.14)
Semi-routine and routine occupations	1
Never worked and long-term unemployed	1.03 (0.97 to 1.09)
Highest academic qualification	
Degree/higher degree	1.39 (1.30 to 1.48)
Diploma in higher education	1.33 (1.25 to 1.42)
A/AS/S levels	1.40 (1.31 to 1.49)
GCSE grades A–C	1.19 (1.12 to 1.27)
GCSE grades D–G	1.11 (1.04 to 1.18)
Other or overseas qualifications	1.22 (1.14 to 1.30)
None of these qualifications	1
Lone-mother status	
Lone mother	1
Non-lone mother	1.20 (1.15 to 1.26)
Age at first ever live birth ^b	1.06 (1.04 to 1.08)
Parity	
Cohort baby not first live born	1
Cohort baby first live born	1.08 (1.05 to 1.11)

Notes

^aAdjusted for ward type, ethnic group, socio-economic status, academic qualification, lone mother status, age at MCS birth, age at first live birth, parity.

^bPer five-year increase in maternal age.

Source: adapted from Griffiths et al. (2005), Table 3.

UK, overall they seem to promote breastfeeding. However, after immigration, acculturation – the adoption of health behaviours from the new dominant culture and loss of health behaviours from the original culture – may erode the high rates of breastfeeding among minority ethnic groups. In the MCS, questions were asked of the mothers of the cohort member about their parents' country of birth and how long their family had lived in the UK. This allowed analysis of how indicators of acculturation (for example, whether the mother was an immigrant or was born in the UK) were related to breastfeeding (Hawkins et al., 2008). Although breastfeeding rates vary by ethnic group (as shown earlier), for this analysis, all minority ethnic mothers were considered together, in order to assess the effect of acculturation regardless of ethnicity. First- and second-generation mothers (those who had been born in the UK) were less likely than immigrant mothers to either start breastfeeding or continue to four months (Table 1.1.3). The most pronounced differences were seen for second-generation mothers, who were only half as likely to breastfeed for four months as immigrant mothers. These analyses indicate that the positive breastfeeding patterns among minority ethnic women and communities should be actively protected and supported, because prevalent cultural influences within the UK tend to undermine them (Hawkins et al., 2008).

A major plank in the current government's policies to tackle child poverty is to encourage paid employment for one or both parents (HM Treasury, 2004). For low-income couple families, this often means both parents going to work and in the UK support is provided for lone parents to find employment if their children are under 16. In recent decades, maternal employment has increased rapidly. In 2000, nearly 30 per cent of mothers returned to work by the time their baby was four or five months old (Hamlyn et al., 2002). In 2005, this figure was 13 per cent, but with the percentage on paid or unpaid maternity leave increasing from 22 per cent in 2000 to 43 per cent in 2005 (Bolling et al., 2007). Employment of mothers of children under five years of age has increased from 27 per cent in 1984 to 56 per cent in 2005, with a greater increase among lone parents (ONS, 2006). However, maternal employment in infancy is associated with lower rates of breastfeeding (Bolling et al., 2007). The detailed data on maternal employment and social circumstances in the MCS were used to assess whether breastfeeding is linked to patterns of maternal employment and, if so, whether employment policies might be developed to support breastfeeding among women in paid work.

The analysis was conducted on 6917 white mothers who were employed when the nine-month data collection of MCS was carried out. After adjustment for confounding factors (such as socio-economic position), many features of employment influenced whether a woman continued breastfeeding (Table 1.1.4). Women were more likely to breastfeed for

Table 1.1.3 Adjusted risk ratios (RR) and 95 per cent confidence intervals (CI) for breastfeeding among mothers from minority ethnic groups, according to generational status

Generational status	Breastfeeding initiation		Breastfeeding for at least four months	
	% of participants who breastfed*	Adjusted [†] RR (95% CI)	% of participants who breastfed*	Adjusted [†] RR (95% CI)
Immigrant	87	1	44	1
First generation	85	0.92 (0.88 to 0.97)	35	0.72 (0.62 to 0.83)
Second generation	83	0.86 (0.75 to 0.99)	26	0.52 (0.30 to 0.89)

Notes

*Weighted percentage.

[†]Adjusted for ethnic group, socio-economic circumstances, family income, highest academic qualification, single motherhood, age at cohort birth, parity.

Source: adapted from Hawkins et al. (2008), Table 3.

Table 1.1.4 Weighted percentages, adjusted risk ratios (RR) and 95 per cent confidence intervals (CI) for breastfeeding for at least four months among British/Irish white employed mothers

	<i>Breastfeeding for at least four months</i>		<i>Adjusted* RR (95% CI)</i>
	<i>n</i>	<i>(weighted %)</i>	
<i>Employment characteristics</i>			
<i>Employment status</i>			
Full time	1787	25	1
Part time	4648	26	1.30 (1.17 to 1.44)
Self-employed	482	41	1.74 (1.46 to 2.07)
<i>Return to employment</i>			
3 months or less	1204	18	0.81 (0.68 to 0.96)
4 months	1475	16	0.74 (0.63 to 0.87)
5 months	1244	22	1
6 months	874	32	1.25 (1.07 to 1.47)
7 months	1031	39	1.53 (1.34 to 1.74)
8 months or more	1064	39	1.54 (1.36 to 1.73)
<i>Number of hours (h) working</i>			
1–10	676	34	1
11–20	2499	25	0.79 (0.70 to 0.90)
21–30	1832	28	0.68 (0.58 to 0.79)
31–40	1578	25	0.63 (0.45 to 0.90)
41+	327	28	0.63 (0.43 to 0.92)
<i>Working atypical hours</i>			
Yes	2931	25	1.05 (0.97 to 1.14)
No	3985	28	1
<i>Working for financial reasons</i>			
Yes	4918	25	0.86 (0.80 to 0.93)
No	1999	32	1
<i>Working because used up maternity leave</i>			
Yes	2148	28	1.01 (0.92 to 1.11)
No	4757	27	1
<i>Employer offers any family-friendly arrangements</i>			
Yes	1004	37	1.14 (1.02 to 1.27)
No	5395	24	1
<i>Employer offers any flexible arrangements</i>			
Yes	5777	27	1.24 (1.00 to 1.55)
No	648	19	1
<i>Number of employees</i>			
Works alone	481	43	1.60 (1.35 to 1.91)
2–24	2256	21	1
25 or more	4163	28	1.15 (1.05 to 1.27)

(continued)

Table 1.1.4 (Continued)

	Breastfeeding for at least four months		Adjusted* RR (95% CI)
	n	(weighted %)	
<i>Day care</i>			
Type of day care			
Mother/partner	1869	25	1
Informal	2859	19	0.81 (0.71 to 0.91)
Formal	1969	38	1.07 (0.95 to 1.20)
<i>Maternity leave</i>			
Maternity leave pay			
Statutory Maternity Pay plus additional pay	3275	31	1.13 (1.02 to 1.26)
Statutory Maternity Pay only	2406	23	1
Other pay	173	39	1.27 (0.98 to 1.63)
None	279	28	1.15 (0.93 to 1.42)

Note

*Adjusted for highest academic qualification, socio-economic status, UK country, lone mother status, age at birth of cohort child, age at first live birth, number of children in household and employment status.

Source: adapted from Hawkins et al. (2007), Table 1.

four months if they worked part time or were self-employed (compared to working full time), returned to work after four months, or if they worked fewer hours. They were less likely to breastfeed if they worked atypical hours, returned to work for financial reasons, and did not have access to family-friendly or flexible working arrangements. They were also more likely to breastfeed if they worked alone or in large organizations (25 or more employees) than if they worked in a small organization (2–24 employees). While residual confounding remains possible, these results were robust to adjustment for a range of confounding variables (Hawkins et al., 2007). This suggests that greater use of employment policies such as family-friendly and flexible working might help mothers who choose or are obliged to work to continue to breastfeed. Since the MCS babies were born, maternity leave provision has become more generous. This MCS analysis suggests this change in provision may also promote breastfeeding. However, it also indicates that policies which encourage maternal employment in infancy (even if indirectly) to reduce family poverty may also increase inequalities in breastfeeding. It also illustrates that policies and their resultant changes on families may be both causes of, and solutions to, health inequalities.

Conclusion

A life-course approach to children's health considers not only their health now but the health of the adults they will become. It describes how the different paths through childhood vary by children's social circumstance and how this variation permits or prevents children from accumulating the resources necessary for a healthy, productive and long life. From the overview of data describing UK children's current health and circumstances presented in this chapter, it is apparent that unacceptable variation exists in children's circumstances with consequent inequalities in their current health and likely inequalities in their future adult health. Poorer children are less likely to live to their first birthday than babies born to richer parents (discussed further in Chapter 1.3). And, as they go through their early years, childhood and adolescence, children from families living in disadvantaged circumstances are more likely than their more advantaged peers to be exposed to poverty, poor educational opportunities and a low-quality environment, and to engage in a range of health-related behaviours that are likely to lead to poorer health as they grow up. The detailed examples from the UK's Millennium Cohort Study show the inequalities that are present in the youngest members of our society. Immunization and breastfeeding both promote lifelong health, yet are socially patterned in complex ways, leaving many children without their benefits. However, the analysis also shows the potential for policy and practice to tackle those inequalities, for example, through making services responsive to people's different needs, through building on strengths in communities, and through promoting family-friendly employment policies.

Neil Postman (1982) said that 'Children are a living message we send to a time we will not see'. We need to act swiftly and decisively to ensure that the message we send is a positive one.

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