



Public Health  
Research Consortium

**Will policies for the early years reduce inequalities in health?  
A synthesis of evidence to inform policy development, using the  
examples of unintentional injury and childcare.**

**Final report**

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## Abbreviations

A&E	Accident and emergency department
CI	95% confidence interval
DH	Department of Health
DCSF	Department of Children, Schools and Families
EHCS	English House Conditions Survey
GB	Great Britain
GCSE	General Certificate of Secondary Education
GHS	General Household Survey
GP	General Practitioner
HES	Hospital Episode Statistics
HSE	Health Survey for England
IFS	Infant Feeding Survey
IMD	Index of Multiple Deprivation
MCS	Millennium Cohort Study
NCB	National Children's Bureau
NS-SEC	National Statistics Socio-Economic Classification
OECD	Organisation for Economic Cooperation and Development
PEAR	Public Health, Education, Awareness, Research- young person's reference group
PHO	Public Health Observatory
PHRC	Public Health Research Consortium
PSA	Public Service Agreement
RCT	Randomised controlled trial
RoSPA	Royal Society for the Prevention of Accidents
RR	Risk ratio
SECs	Socio-economic circumstances
SEH	Survey for English Housing
SOA	Super Output Area
UK	United Kingdom
USA	United States of America

## **Preface- What the study adds**

A review of reviews was conducted to identify areas which potentially required further research with respect to the two case studies, unintentional injury and childcare. Some of these less well researched areas were then explored with secondary data, summarised below. Because these are based on observational data, causality cannot be assumed.

### *Policies and inequalities in unintentional injury in young children*

#### Home environment in relation to inequalities in injury

- Preschool children from less advantaged backgrounds were more likely to have visited a GP or A&E due to an unintentional injury which occurred in the home and they were also more likely to live in households with poorer housing conditions or that did not use safety equipment. However aspects of the home environment did not appear to mediate the association between socio-economic circumstances and unintentional injuries in the home in this instance.
- The results imply that steps to improve household environments are, in isolation, unlikely to reduce inequalities in childhood injuries. However this analysis carried a number of limitations and more research is needed. Regardless of these findings, many other aspects of wellbeing of all household members are likely to benefit from further improvements to housing quality.

#### Childcare in relation to inequalities in injury

- Overall there was no association between childcare use and unintentional injuries occurring to infants aged 9 months. However infants from more advantaged backgrounds were less likely to be unintentionally injured (anywhere) if they were cared for in formal childcare (compared to those cared for only by a parent) whereas those from less advantaged backgrounds were more likely to be injured.
- At age 3 years informal childcare was associated with an increased risk of injury overall, however when exploring the association in different socio-economic groups the detrimental effect was only seen in those from less advantaged backgrounds. There was no association between formal childcare use and injury by this age.
- Childcare has the potential to widen inequalities in injury. Further research is required to understand why childcare might be having a differential impact on unintentional injury, and how the beneficial influences seen in more advantaged groups can be extended to all children.

The two policy areas explored here in relation to inequalities in unintentional injury indicated null or negative effects. However findings from the review of reviews indicate that other policies can have a beneficial effect for injuries, for example parenting interventions can improve safety awareness and behaviours.

### *Childcare and inequalities in young children's health*

#### Childcare in relation to inequalities in breastfeeding

- Mothers were less likely to breastfeed (any amount) for at least 4 months if they used informal or formal childcare commencing before their infant turned 4 months that lasted at least 10 hours a week (compared to those who only used parental care).
- Mothers were less likely to breastfeed if they used part-time or full-time informal childcare than those who only used parental care, whereas for formal childcare the reduced likelihood was only seen if they used it full-time.
- The reduced likelihood of breastfeeding in informal childcare was seen for all socio-economic groups, whereas for formal childcare the detrimental impact was only seen in the more advantaged groups. Lone mothers who used formal childcare were more likely to breastfeed.
- Childcare offers a potential setting for breastfeeding promotion; further research is required to establish how this potential can be realised.

#### Childcare in relation to inequalities in overweight and obesity

- Three year olds who were cared for in informal childcare (75% of informal carers were grandparents) for at least 10 hours a week were more likely to be overweight or obese than children who were cared for only by a parent (or in childcare for less than 10 hours a week), particularly if they were cared for full-time.

- The increased risk of overweight in informal childcare (compared to care only by a parent) was limited to children from more advantaged groups.
- There was no association between formal childcare and overweight.
- Breastfeeding did not mediate the association between childcare use in infancy and overweight at age 3 years.
- Health-related information and support should be made available for informal and formal carers.

The findings from the secondary data analyses imply that childcare is likely to have a mixed impact on children's health and health inequalities. However only a few aspects of child health and wellbeing were explored in these analyses; evidence from the review of reviews indicated that childcare can also have a wide range of important benefits, particularly for children's development and long term outcomes.

## **1. Executive Summary**

### **Background**

In Britain between 1971 and 2007, the proportion of lone parent families increased more than three-fold, from 7 to 23%, and, in 2007, 72% of married and/or cohabiting mothers and 57% of lone mothers were in paid employment. Parallel to this, child poverty grew at a faster rate than for other age groups. Although population health has improved overall, social inequalities in health for both children and adults have widened. These dramatic changes led to an important shift in policy direction, with greater focus on reducing inequalities in health and increased investment in the early years. This report concentrates on children who grew up under these societal transformations and policy changes under the Labour administrations of 1997-2010.

### **Project Aims**

Government initiatives are typically set up in ways that make it difficult to estimate effects using experimental designs. We aimed to examine if and how government policies in the early years are likely to contribute to reducing health inequalities, by combining information from different sources to build a 'jigsaw' of evidence. The project comprised two case studies: the first focussing on a measure of health and the second on a policy area. The two case studies were chosen for their relevance to the early years and social inequalities, level of government priority, and, in the case of the health case study, potential for prevention. The health case study focussed on childhood unintentional injury and explored how inequalities in unintentional injury might be influenced by a range of policies. The policy case study focussed on childcare and how it might influence inequalities in different aspects of children's health.

### **Methods**

First a review of reviews was conducted in order to create a map of review evidence to demonstrate the links between policies and health inequalities for each case study (unintentional injury and childcare), highlighting areas requiring further research. These maps were then discussed with a group of young people, to provide them with an opportunity to be involved in public health research and in order to gain their perspectives.

Second, we undertook secondary data analyses to explore some links which were identified from the review of reviews as being less researched. These were prioritised according to level of government priority, relevance for preschool children, and data availability. For the unintentional injury case study we explored inequalities in injury in relation to 1) the home environment and 2) childcare. For the childcare case study, we explored the association between childcare use and 1) breastfeeding and 2) overweight (including obesity), in addition to the association between childcare and unintentional injury conducted as part of the injury case study. Our secondary analyses utilised national datasets to summarise prevalence, trends and inequalities in policies and health measures

applicable to these associations. The Millennium Cohort Study (MCS), a longitudinal survey of approximately 18,000 infants born in the UK at the turn of the century, was used to explore the associations between the policy exposures and health outcomes.

## **Main findings**

### Background to the two case studies

#### *Case study 1: Injury*

The first cross-Government strategy for improving children and young people's safety was published in 2008. Accompanied by a Public Service Agreement (PSA) policy goal to improve children and young people's safety, commitments included a new home safety equipment scheme and continued investment to make social sector housing safer.

Although there has been an overall decrease in childhood injury rates and death rates from injury over the past decade, data from Hospital Episode Statistics (HES) indicate that hospital admissions due to unintentional injuries in 1-3 year olds have remained constant, and they have increased for infants aged under 1 year. Prior to the policy changes outlined above, 8% of infants in the MCS (in 2001) had attended a GP or A&E due to an injury since birth, and 36% between age 9 months and 3 years (in 2004). Injuries were socially patterned in both HES and the MCS, and inequalities (measured by area deprivation) in hospital admissions in HES did not appear to have narrowed in the past decade.

Policy areas which appeared to be better covered in the reviews, in terms of their impact on injury, tended to be specific schemes or interventions designed to reduce accidents and injuries in children through modifying vulnerability to exposure. Distribution programmes, home safety interventions and parenting interventions appeared to, in some cases, improve safety behaviours.

#### *Case study 2: Childcare*

In 1998, the Labour Government launched a childcare strategy as part of their policy of promoting paid employment as a route out of poverty. In 2004, the 1998 strategy was replaced by a new 10-year childcare strategy, which aimed to increase the availability, flexibility, quality and affordability of childcare. This included increasing the free early years education places to all 3-4 year olds from 12.5 hours to 15 hours a week, extending these free places to 2 year olds living in deprived areas, and improving the training of childcare staff.

Informal childcare, and especially grandparental care, is an important part of the lives of many children, particularly in the early years and where the mother is in paid employment. The use of informal childcare (from friends, neighbours and relatives) and formal childcare (nurseries,

registered childminders) has increased in recent decades, as demonstrated by data from the Infant Feeding Survey (IFS) between 2000 and 2005.

In the MCS, 35% of infants were cared for in informal childcare (75% of informal carers were grandparents) compared to 17% in formal childcare between birth and 9 months. By the time the children were aged 3 years, this had changed to 31% and 28% respectively. Formal childcare use was socially distributed in the MCS at both ages, with those with better socio-economic circumstances (SECs) being more likely to be cared for in formal childcare, whilst those from less advantaged SECs were more likely to be cared for only by a parent. There were no clear social patterns for informal childcare use.

Reviews documenting the impact of childcare on children's health have tended to focus on formal childcare (often preschool interventions) rather than informal childcare types. These showed that childcare can have a beneficial effect on developmental and educational outcomes, and also long term outcomes such as employment.

#### Exploring the links: findings from routine data sources and the Millennium Cohort Study

##### *Home environment and inequalities in injuries in the home*

Data from the English House Conditions Survey (EHCS) and the General Household Survey (GHS) indicate that some aspects of the home environment have improved over the past decade (e.g. increased ownership of smoke alarm and central heating), whilst the proportion of households with preschool children living in flats or with low numbers of rooms per capita has increased. In the MCS, a low proportion of infants lived in households with 'poor environments', although those from less advantaged backgrounds were consistently more likely to live in these households. However, the elevated risk of being injured in the home observed in children from less advantaged backgrounds was unaffected when controlling for aspects of the home environment. This implies that the aspects of the home environment explored in this study do not lie on the causal pathway between SECs and injury, in this instance. However this is not to say that improvements to the home environment would not be beneficial in certain groups, or for other aspects of health and wellbeing.

##### *Childcare and inequalities in injuries*

Overall, there was no association between childcare use and unintentional injuries in infants between birth and 9 months. However, infants from more advantaged backgrounds were less likely to be unintentionally injured if they were cared for in formal childcare (compared to those cared for only by a parent) whereas those from less advantaged backgrounds were more likely to be injured. By age 3 years, informal childcare was associated with an increased risk of injury overall. However when exploring the association in different socio-economic groups, the detrimental effect was only seen in those from less advantaged backgrounds. There was no association between formal



childcare use and injury in any group between 9 months and 3 years. (NB: for this analysis injuries occurring at any time were explored, because in the MCS it was not possible to identify who the child was being cared for when the injury occurred).

#### *Childcare and breastfeeding*

According to data from the IFS, the proportion of women who initiate breastfeeding increased from 62% to 76% between 1990 and 2005. However, in 2005 only 34% breastfed for at least 4 months. Similarly, in the MCS 33% of mothers breastfed for at least 4 months and data from both studies indicate that mothers from more advantaged backgrounds were more likely to breastfeed. Mothers were less likely to breastfeed (either partially or exclusively) for at least 4 months if they used informal or formal childcare (lasting at least 10 hours a week) which commenced before their infant turned 4 months, compared to those whose infant was cared for only by a parent or in childcare for less than 10 hours a week. When considering time spent in childcare, mothers were less likely to breastfeed if they used part-time or full-time informal childcare, whereas for formal childcare the reduced likelihood of breastfeeding was seen only if it was full-time. The reduced likelihood of breastfeeding in informal childcare was consistent across all socio-economic groups, whereas for formal childcare the detrimental impact was seen only in the more advantaged groups.

#### *Childcare and overweight and obesity*

Data from the Health Survey for England (HSE) show that childhood overweight (including obesity) has levelled off in recent years, but still remains high, with around one quarter of children being overweight or obese by the time they reach school age. In the MCS 23% of children were overweight or obese at age 3 years. Children from less advantaged backgrounds were more likely to be overweight or obese in both the HSE and MCS, although data from the HSE between 2000 and 2007 show that these inequalities had not widened. In the MCS three year olds who were cared for in informal childcare (75% of informal carers were grandparents) for at least 10 hours a week were more likely to be overweight or obese than children who were cared for only by a parent (or in childcare for less than 10 hours a week), particularly if they were cared for full-time. When stratifying by socio-economic background, the increased risk of overweight in informal childcare (compared to parental care) was limited to children from more advantaged groups. There was no association between formal childcare and overweight. Breastfeeding did not mediate the association between childcare use in infancy and overweight at age 3 years.

Figure i summarises the potential impact that the examined policies could have on inequalities in child health, based on our analyses and assuming, for the purposes of illustration, that the associations we have observed are causal.

Figure i- Potential impact of policies for the early years on inequalities in health, assuming that associations observed are causal

HEALTH MEASURE	POLICY							
	INCREASE CHILDCARE				IMPROVE HOME ENVIRONMENT			
	Informal		Formal		Housing quality		Safety equipment	
	Overall	Inequalities	Overall	Inequalities	Overall	Inequalities	Overall	Inequalities
Injury 9 mths	–	↑	–	↑				
Injury 3 yrs	–	↑	–	–	–	–	–	–
Breastfeeding	↓	–	↓	↓!				
Obesity	↑	↓!	–	–				

■ Not applicable to the injury case study

– No change to prevalence or inequalities; ↑ Increase in prevalence or inequalities; ↓ Decrease in prevalence or inequalities; ↓! Reduction in inequalities but as a result of worse outcomes in more affluent groups.

## Conclusions

This report has attempted to demonstrate the usefulness of secondary data analysis using national datasets and a cohort study, alongside reviews of existing research, for contributing to the jigsaw of evidence. Our results indicate that unintentional injury rates in young children remain high and socially distributed. Some policies, such as those to increase childcare, have the potential to inadvertently widen inequalities; whilst others, for example the national home safety equipment scheme, may not have any effect on inequalities. However findings from the review of reviews also highlighted policy areas which can have beneficial effects for injuries, such as parenting interventions.

Childcare use has increased over the past few decades and its use is likely to continue to rise. However, childcare has the potential to widen inequalities in injury in infants and young children, and may also be having a detrimental impact on breastfeeding rates and levels of overweight and obesity (although sometimes more so in more advantaged families). However findings from the review of reviews indicated that childcare can also be beneficial, for example for development and educational outcomes. Strategies focussed on ensuring that good quality childcare is available to children from all backgrounds may reduce health inequalities. Such strategies might include, for example, improved training and the provision of free places in formal child care, and activities to support informal carers and to raise their awareness of children's health needs.

## Recommendations for further research

Due to time restrictions, we were unable to explore some of the links which were highlighted as requiring further research, for example the association between childcare use (informal and formal) and maternal and child wellbeing. Further research into these areas would be valuable. This project

has also highlighted specific potential areas for further research, for example on the impact of informal childcare on a range of child health outcomes. Since the analyses conducted in this project were based on observational data, further research is required to establish causality and qualitative research will help to better understand the associations observed.

The approach we have used for this project could be replicated for other areas of policy making and health and might be developed further, for example by incorporating a more complete range of information sources (such as qualitative research).

## 2. Introduction

In Britain between 1971 and 2007 the proportion of lone parent families increased more than three-fold from 7 to 23%(1) and the employment rate in working-age women rose from 56% to 70%(2). In 2007 72% of married and/or cohabiting mothers and 57% of lone parents were in employment(3). In this same period there has been a widening of income inequalities and child poverty grew at a faster rate than for other age groups(4). Whilst these societal changes were accompanied by improvements to population health, a widening in social inequalities in health for both children and adults also occurred. This has led to an important shift in policy direction, with increased investment in the early years and a general change in public and political opinion to prioritise the promotion of child wellbeing.

This policy shift was closely aligned to the Labour government's health inequalities agenda(5). Inequalities targets were set in 2001, with the infant mortality target designed to focus attention on health in the early years. The infant mortality target was accompanied by a range of interventions focussed on health and wellbeing in pregnancy and the early years, including the expansion of Sure Start services and creating more free childcare places in disadvantaged areas, improving the quality of social housing and poorer private households, and improving nutrition in pregnancy and support for infant feeding(5). The target is also supported by Every Child Matters, a programme for reform designed to protect children and maximise their potential, measured against 5 key areas: being healthy, staying safe, enjoying and achieving, making a positive contribution, and economic wellbeing(6). However the relative gap in infant mortality between routine and manual groups compared to the population as a whole between the baseline in 1994-6 and the most recent in 2006-8 has increased (to 16% from 15% at baseline), although remains stable since the previous measurement period in 2005-07(7).

Government initiatives are typically implemented in ways that make it difficult to measure either their overall effects or their impact on health inequalities(8). Alternative approaches utilising observational data can include comparing sub-groups within a cohort who are 'exposed' or 'unexposed' to a policy (for example comparing the health of children whose mothers do and do not use formal childcare), or populations in different countries with varying policy contexts(9). It has been highlighted by policy makers and academic researchers that the most valuable information for policy making rarely comes from one source alone, but many pieces of research of varying types which can be pieced together, creating a "jigsaw" of evidence(10).

### 3. Purpose of this study

Concentrating on children who were born at the turn of the century, and who grew up experiencing the societal transformations described previously and under the Labour administrations of 1997-2010, we examined if and how government policies in the early years are likely to contribute to reducing health inequalities, piecing together information from several sources on two case studies. The first case study explored unintentional injury, a measure of health which is socially distributed, preventable, and was deemed to be high priority under the Labour administration. In this case study we examined how inequalities in unintentional injury might be influenced by a range of policies. The second case study focussed on childcare, a policy which was relevant to the early years and likely to continue to feature highly on the policy agenda. For this case study we investigated how childcare might influence inequalities in different aspects of children's health.

The project was carried out in three phases. Phase 1 consisted of a review of the policy and scientific literature to map the evidence from the reviews, for the two case studies, demonstrating the links between policies and child health. In phase 2 we tested the links using literature review and secondary data analysis. Finally, in phase 3, we synthesised the results of these analyses. This report brings together findings from the three phases, in relation to current and potential policy. The remainder of the report is structured as follows:

Section 4. Methods: we summarise the methods used when conducting the reviews and constructing the maps for the two case studies in phase 1 (unintentional injury; childcare) and how these were used to organise our approach in phase 2. We then outline the approaches and statistical analyses used to assess the links.

Section 5. Main findings:

- a. Firstly we present background information for the two case studies (injury and childcare); providing the policy context, trends and inequalities, and the maps which demonstrate the potential links for each.
- b. We then go on to describe the links in the 2 maps (one at a time), summarising the evidence from existing reviews, presenting secondary data for each of the less well researched links, and synthesising findings from the links.

Section 6. Synthesis of findings: we draw together the information from the two case studies

Section 7. Strengths and limitations: these are summarised for the synthesis of findings

Section 8. Recommendations for future research: based on our findings and areas we couldn't explore

Section 9. Conclusions

The appendices contain more detailed information and are referenced throughout the main report.

#### 4. Methods

The project had two methodological stages. Firstly, we conducted a review of reviews to construct maps of how policies may link inequalities in child health outcomes for the two case studies; second, we undertook secondary data analyses, using key datasets, to investigate links which were highlighted as being important and under-researched in the review of reviews.

##### *Constructing maps to demonstrate links for the two case studies*

###### Review of reviews:

In order to establish possible and known links for the two case studies, a search for reviews, editorials or commentaries (but not original research papers) that would provide overviews of associations was conducted. In contrast to a formal systematic review, the intention was not to create a definitive picture of the existing evidence, describe findings from the reviews in detail, or quantify effect sizes. Instead, our search for relevant papers employed scoping review methodology(11;12), which is designed to broadly map research activity and identify research gaps, in order to help direct the focus of the secondary data analyses in Phase 2. Due to time and resource limitations it was not possible to conduct a full scoping review, such as the 'York framework' outlined by Arksey and O'Malley(11). Some elements of a standard scoping review were used, for example we explored a number of different databases, containing both academic and "grey literature". However other elements were more akin to a 'quick scoping review', a Rapid Evidence Assessment method used in the UK civil service to map the existing evidence on a particular topic(13), for example we used only key search terms.

Searches were conducted in the following databases in January-February 2008: PubMed, IBSS, PsychInfo, and EMBASE. ChildData, a catalogue of books, reports and journal articles, held by the National Children's Bureau (NCB) was also searched for any additional 'grey' literature. Search terms and combinations are listed in Appendix 1. Searches were conducted iteratively, for example, after reading the reviews it was thought that reviews exploring care by grandparents may not have been identified in the main searches. Therefore an additional search was conducted in PubMed in 2010 replacing the term "childcare" with "grandparent"; this identified no new reviews. Searches for policy documents and other 'grey' literature containing reviews or commenting on research gaps were also conducted, using the websites of government departments and other relevant bodies such as the DayCare Trust (<http://www.daycaretrust.org.uk/>) and the Joseph Rowntree Foundation (<http://www.jrf.org.uk/>).

Reviews were excluded if injury or childcare were not a main focus (or one of the main foci), as were those which focussed only on particular groups, such as teenage parents or fathers. However, those which focussed on certain socio-economic groups were included (usually these were in less affluent groups), because they could help map the evidence from an inequalities perspective.

Reviews conducted prior to 1980 were not considered due to lower rates of, and differing views regarding, maternal paid employment and childcare. Retrieved citations that reported primary research, that did not have abstracts available online, or were not written in English were also excluded (see Appendix 1).

Thirteen reviews were identified for the injury case study and six for the childcare case study. The searches for review papers have not been updated since they were first conducted in 2008, primarily because they were used to inform where secondary data analysis was most needed for Phase 2 of the project. However newly published reviews relevant to the project, which were brought to our attention via literature reviews carried out later on in the project, email alerts and colleagues, are also reported here (there were 2 for the injury case study and one for childcare).

#### Mapping the evidence:

Relevant reviews were identified and used to map the evidence from the reviews to demonstrate the links for each case study, highlighting links which were better researched. Areas which were highlighted as being under-researched in the reviews, that were mentioned in the titles and abstracts of the papers excluded for being individual studies, or were referred to anecdotally in the commentaries, editorials or policy documents, were also incorporated into the maps as areas potentially requiring further research. In depth discussions were then held with the project team to finalise the evidence maps and to ensure that there were no obvious gaps.

#### PHRC young person's reference group PEAR:

In order to engage young people in public health research, and to gain their views (as the next generation of parents), a session was held with the PEAR group (Public health, Education, Awareness, Research), a group of young people aged 12-15 years, whose meetings are facilitated by the National Children's Bureau, a main collaborator in the PHRC ([www.ncb.ork.uk/pear](http://www.ncb.ork.uk/pear)). Four members of the PEAR group attended the session, all male. We asked members to work in pairs to create flowcharts demonstrating how childcare could influence different aspects of child health, and what the government could do to reduce injuries in childhood. The flowcharts were then stuck up on the wall and discussed with the whole group. An outline of the session is in Appendix 2. After our meeting with PEAR we considered whether our maps required any modifications, based on these flowcharts and discussions (summarised for each of the case studies in section 5 of this report).

#### *Exploring links in the two case studies*

We used secondary data analysis to explore links in the two maps identified as being less researched, looking at both the overall association between the policy and health measures and also the potential impact on inequalities in health. The links were prioritised according to level of government priority, relevance for preschool children, and data availability.

For the unintentional injury case study the links identified for secondary data analysis were:

1. Home environment and unintentional injuries (occurring in the home)
2. Childcare and unintentional injuries (occurring anywhere)

The home environment and childcare were chosen because they both feature highly on the government agenda; investigating childcare in relation to injury also allowed an overlap between the two case studies. Community regeneration (which might encapsulate areas such as improvements in social capital) was also highlighted as being less well researched, although was thought to be of lower priority due to the limited time that preschool children spend in the local area or community (although communities factors could potentially influence health indirectly, through maternal wellbeing for example).

For the childcare case study the links identified for secondary data analysis were:

1. Childcare and breastfeeding (an aspect of maternal health behaviour)
2. Childcare and overweight (including obesity) (proxy for children's health behaviours [diet and physical activity])
3. Childcare and unintentional injury (overlapping with unintentional injury case study)

Breastfeeding was chosen to represent an aspect of maternal health behaviours, which is high on the government agenda and influences the health of preschool children. Childhood overweight was chosen to represent a dimension of child health, again because it is a government priority and also because it is an objective measure which is affected by both diet and physical activity. Maternal and child wellbeing were also identified as being less well researched in relation to childcare use. They were not explored in this project due to time limitations.

Data:

National level datasets applicable to the two case studies and their less researched links were assessed and the most informative used to summarise prevalence, trends and inequalities in:

Case study 1:

- Unintentional injury
- Home environment
- Childcare

Case study 2:

- Childcare
- Breastfeeding
- Overweight

The datasets used were: English House Conditions Survey (EHCS), General Household Survey (GHS), Infant Feeding Survey (IFS), Health Survey for England (HSE), Hospital Episode Statistics (HES), Survey of English Housing (SEH). Data were extracted from these datasets by Yorkshire and Humber Public Health Observatory (YHPHO) and cleaned for the purpose of this project. Information on the datasets is provided in Appendix 3.



The Millennium Cohort Study (MCS), the most recent of the British birth cohorts, was identified as being the best suited dataset for exploring early years' policy and inequalities in child health, due to its large sample size, over-representation of families living in deprived areas, and the broad range of information collected. In summary, the MCS is a longitudinal survey of approximately 18,000 infants born in the UK at the turn of the century. It collects a range of information relating to the social, economic, and health-related circumstances of the children and their families, and those living in more deprived areas were oversampled. Data are currently available for the children at age 9 months (sweep 1), 3 years (sweep 2), 5 years (sweep 3) and 7 years (sweep 4). We utilised data from the preschool years in this project (sweeps 1 and 2). Data were obtained from the UK Data Archive, University of Essex in April 2008. Some questions collected cross-sectional information (for example NS-SEC when the infant was aged 9 months) and others were longitudinal (e.g. childcare used between birth and 9 months). Information on the key variables used in the analyses is provided below; further detail on the MCS is provided in Appendix 4.

#### **Box 1: Description of injury and childcare measures used in the MCS analyses**

##### Injury

Injury was based on maternal report of attendance at a GP or A&E due to unintentional injuries occurring between birth and 9 months (0-9m), and between 9 months and 3 years (9m-3y). For injuries occurring 9m-3y, mothers were also asked where the most severe (or only) injury had occurred (e.g. home, road, playground).

*Home environment – injury analysis (9m–3y):* Injuries occurring only in the home.

Children whose most severe or only injury had occurred outside the home were reclassified as having not been injured in the home

*Childcare-injury analysis (0-9m;9m-3y):* Injuries occurring anywhere.

Because we were unable to determine whose care the child was in when they were injured, this analysis explored the wider impact that childcare might have on injuries occurring anywhere (for example through promoting safer behaviours).

##### Childcare

Childcare was derived based on the first reported non-parental care (childcare arrangements were given in order of priority) between birth and age 9 months (0-9m) and between 9 months and 3 years (9m-3y). Children were categorised as being cared for in informal (e.g. relatives, unregistered childminders) or formal (day care centres, registered childminders) childcare, or only by a parent.

*Childcare-injury analysis (0-9m; 9m-3y) – any amount of non-parental care*

For this analysis we explored any exposure to childcare might have on injuries occurring anywhere, on the basis that childcare has the potential to promote safety awareness in parents and children, as well as influencing injury risk when in childcare

*Childcare-breastfeeding analysis (0-9m) – childcare commencing before age 4 months and lasting, on average, at least 10 hours a week.*

Childcare lasting less than 10 hours a week was reclassified as 'parent only', since any less than this would be likely to have a limited impact on feeding habits.

*Childcare-overweight analysis (9m-3y) - childcare lasting, on average, for at least 10 hours a week*

As with the childcare-breastfeeding analysis, childcare lasting less than 10 hours a week was reclassified as 'parent only', since anything less would be likely to have a limited impact on diet and physical activity levels.

There are several approaches to describing and tackling socio-economic inequalities(14). All are based on to a 'levelling up' of health. A narrowing of inequalities which results from a decline in health in more affluent groups is not considered to be appropriate. In this report we present data for the highest and lowest socio-economic groups; data are presented in more detail (for example across the gradient) in Appendices 10 and 12-14 (published papers resulting from this project).

We used 4 measures to represent children's socio-economic circumstances (SECs): the mother's National Statistics Socio-economic Classification (NS-SEC) (comparing those in routine and manual groups to those in managerial and professional), lone parenthood (comparing lone parents to couple families), the Index of Multiple Deprivation (IMD), measured at the super output area level(15) (top vs. bottom quintile, for England only). Mothers' highest educational qualifications were collapsed differently for different analyses in line with patterns in the data, in order to maximize discrimination in the data. It was decided that the benefits of increased power from doing this for some analyses (e.g. the childcare-injury analysis, where only small proportions had been injured) outweighed the reduced comparability across analyses. The specific groupings used for each analysis are detailed in the results.

#### Analysis:

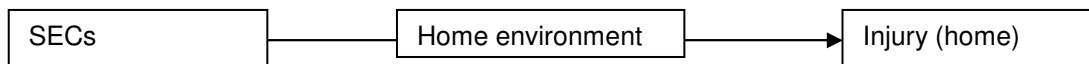
In the background to the two case studies, and for each of the links, we present data on trends and inequalities in prevalence for the relevant policy and health measures, using data from the national datasets and the MCS (where available). For figures derived from MCS analyses, we also indicate where the absolute *and* relative differences in prevalence between different SECs are statistically significant (at the 5% level). Following this we explore the potential impact of policies on inequalities in health using one of two approaches, depending on the link being explored.

The first approach involved exploring the association between SECs and the measure of health (using Poisson regression to estimate risk ratios), and then assessing whether entering the policy into the statistical model altered this association. This approach was used for the link between home environment and unintentional injury (see figure 1a), because the home environment may be a factor on the causal pathway between SECs and injury(16;17) and also since improving the home environment is the focus of several government policies as a strategy to reduce inequalities and prevent childhood injuries.

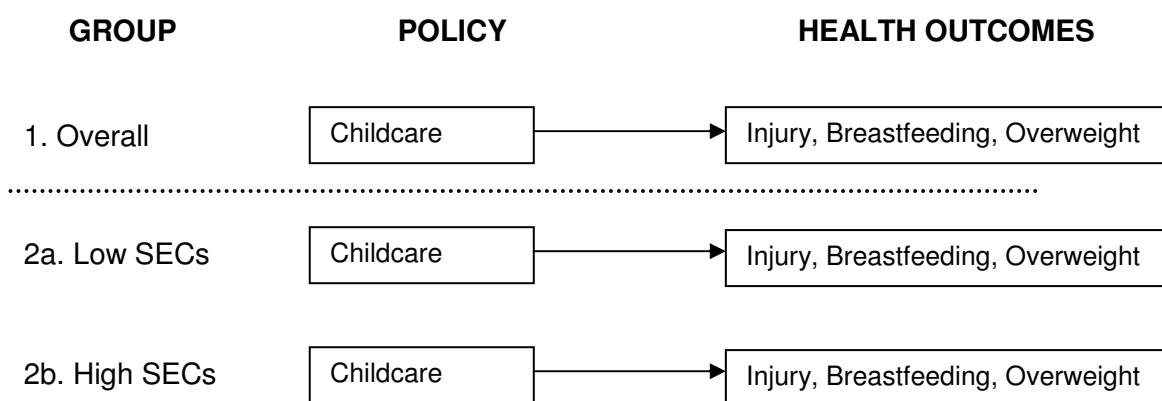
The second approach comprised of exploring the association between the policy and health outcome using Poisson regression to estimate risk ratios, overall and for different SECs. This approach was used for all of the childcare analyses, because it is plausible that the impact of childcare on health might vary for different SECs, for example due to affordability and accessibility of high quality childcare (see Figure 1b).

**Figure 1: The 2 approaches used for exploring the impact of policies on inequalities in health:**

*a) the home environment as a factor on the causal pathway between SECs and injury*



*b) exploring the association between the policy and health measures overall and by SECs*



We met with the PEAR group a second time, again to engage young people in public health research, and to gain their views on our results from the MCS, focussing on what might explain the relationships observed and what the government could do to improve young children’s health in these particular areas. This time 6 members of the PEAR group attended, four females and two males. Firstly the group went though an example together, looking at some data which explored childcare use in relation to breastfeeding. Then they divided into pairs and discussed one set of results each: childcare and injury, childcare and overweight, safety equipment use and injury. The material used for this session is provided in Appendix 11a. The results from the session are summarised in section 5, for each of the relevant links.

*Synthesising findings from the two case studies*

We used a simple narrative approach to synthesise the findings from the reviews, the prevalence, trends and inequalities derived from the national datasets and the regression analyses based on the MCS. We interpret the results in the context of current and future policy, considering the strengths and limitations of the approach and making recommendations for future research.

## 5. Main findings

### A) Background to two case studies

#### *Case study 1: Unintentional injury: background*

Unintentional injury is the main cause of death and morbidity in childhood in the UK and it is preventable. In England in 2004/5 there were almost 120,000 admissions to hospitals in 0-14 year olds and approximately 2 million visits to A&E were made due to unintentional injury in children, costing the NHS £146 million(18). These figures do not include children who were treated by family doctors or at home, or indirect costs such as the burden on family and carers from, for example, absence from work.

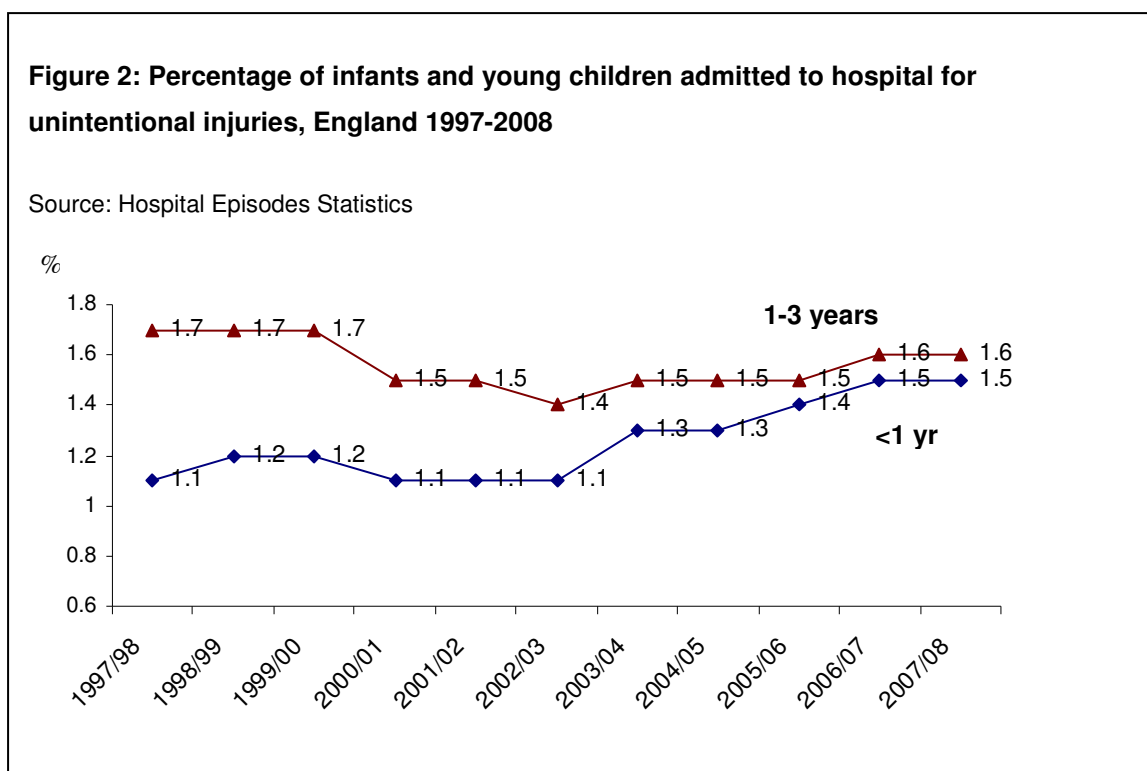
#### 1. Policy context (also see Figure 6- timeline)

Childhood injuries first featured highly on the Labour administration's political agenda in 1999 when the White Paper "Saving Lives: Our Healthier Nation" was launched(19). The report highlighted unintentional injury as the greatest single threat to children's lives and set two targets to reduce deaths and serious injuries from accidents, although neither focussed on children. In 2001 the prevention of unintentional injury in the home and on the road was identified as a key intervention to help reduce inequalities in life expectancy(20). Two years later the "Programme for Action" set targets to reduce inequalities in infant mortality and life expectancy, and one of the headline indicators to monitor progress towards included child casualty rates from road traffic accidents(5). The first cross-Government strategy for improving children and young people's safety "Staying safe: action plan" was published in 2008(21). The action plan was accompanied by a PSA goal to improve children and young people's safety and four indicators were identified to monitor it: bullying, initial assessments after referral to social care, preventable child deaths, and hospital admissions from unintentional and deliberate injuries. Government commitments to reduce hospital admissions from injuries included a review of local area accident prevention, a new home safety equipment scheme, continued investment to make social sector housing safer, and the promotion of fire safety messages(21). As can be seen in Figure 6, the majority of these policies came into effect after the MCS children were in their preschool years (the period during which we have explored their risk of injury).

#### 2. Trends and current levels of unintentional injury

Although there has been an overall decrease in childhood injury rates and death rates from injury over the past decade, rates remain high. Trends focussing only on injury in preschool children are not often reported. Our analysis (Figure 2) shows trends in the proportion of infants (< 1 year) and young children (aged 1-3 years) who were admitted to hospital for an unintentional injury in

England between 1997 and 2008, based on Hospital Episodes Statistics (HES). In children aged 1-3 years there has been an overall decline, although with some fluctuation. However for infants there has been a reasonably steady increase in the proportion admitted to hospital from 1.1 to 1.5%. However the definition of injury applied to the HES data in this instance includes undetermined causes. Therefore the rise in injuries seen for infants may in part be explained by a shift from recording codes for maltreatment syndrome to codes for maltreatment related features (mainly underdetermined cause and adverse social circumstances) which has been documented in the UK over the past decade(22).



In the MCS 8.1% of infants aged 9 months (in 2001-2002) had been taken to a GP or A&E for an unintentional injury (based on maternal report) since birth. By age 3 years (in 2003-04), 35.6% had attended a GP or A&E for an unintentional injury since the previous survey at age 9 months. The higher percentage by age 3 years is in part due to the higher rates of injury typically observed in this older age group, but also due to the longer period to which the question referred. The majority of these accidents (94%) did not require admittance to a ward and therefore these figures are not comparable to the data from HES.

### 3. Inequalities in unintentional injury

Unintentional injuries are one of the most socially distributed causes of ill health and disability in children(23). Children aged 0-15 years whose parents have never worked or who are long-term unemployed are 13 times more likely to die from unintentional injury, and 37 times more likely to

die as a result of exposure to smoke, fire and flames than children whose parents are in higher managerial and professional occupations(18). There is some evidence to suggest that socio-economic inequalities are more marked in the under 5s than older children(18;24).

Our analysis (Figure 3) demonstrates approximate trends in hospital admissions in England between 1997 and 2008, by quintile of area deprivation (using the Index of Multiple Deprivation, measured at the super output area, based on child's residence). This indicates that, for infants, inequalities in injury have not fallen in the past decade, although for those aged 1-3 years there does appear to have been a greater decline in injuries in those living in more deprived areas than those living in more affluent areas.

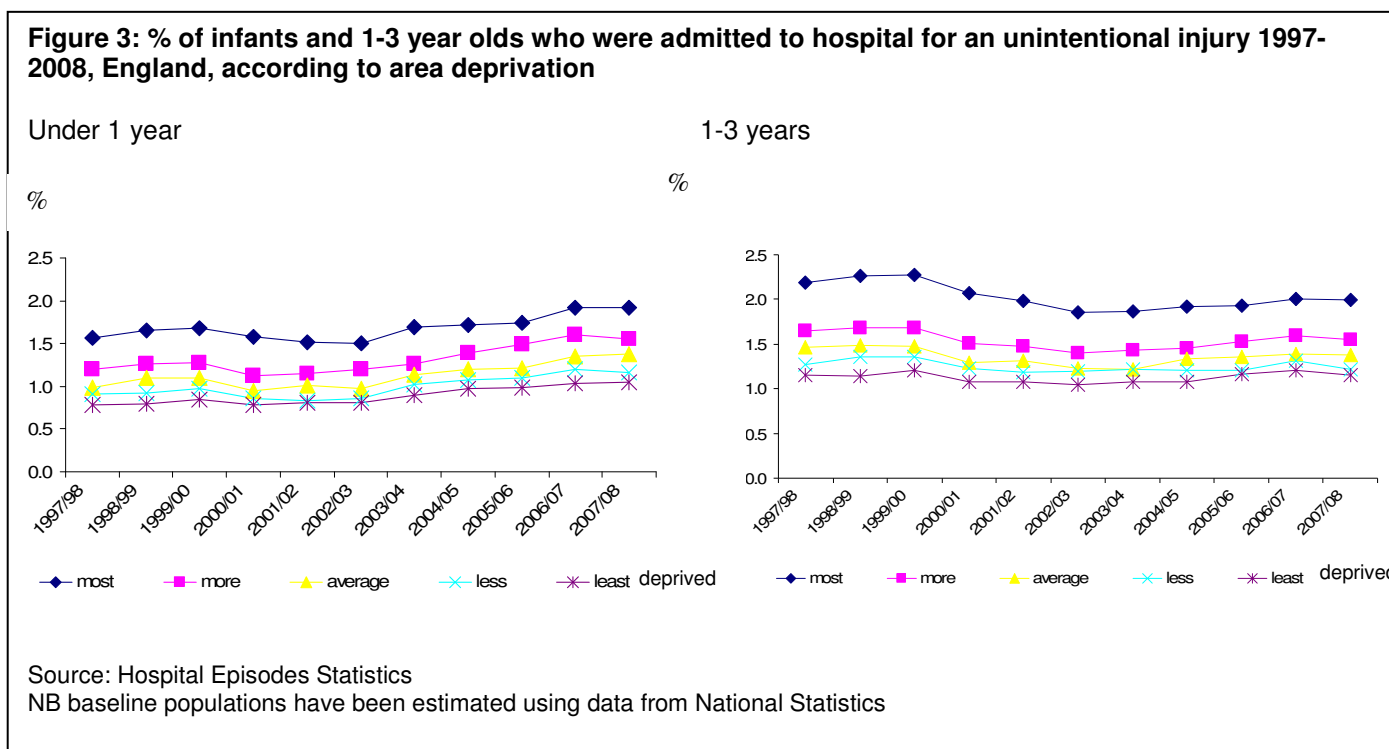
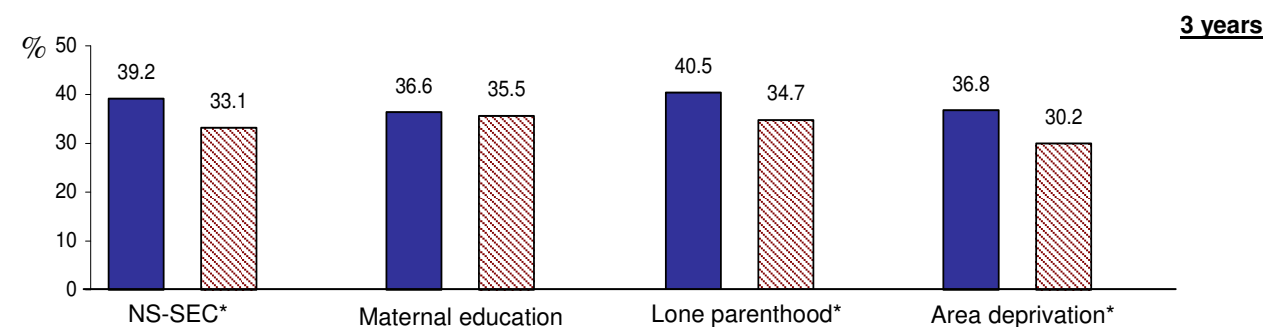
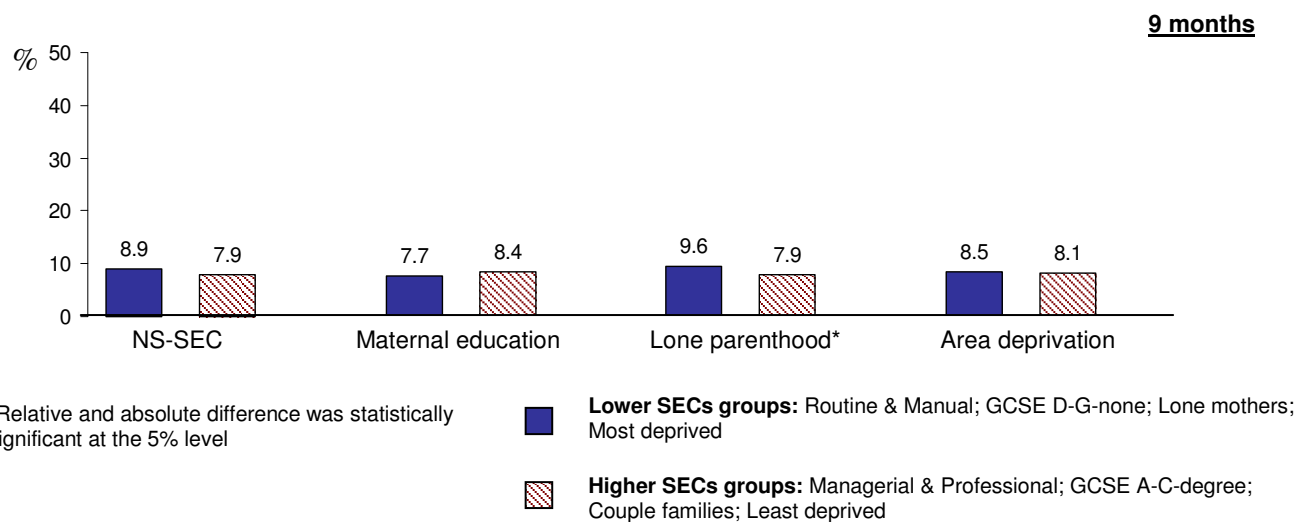


Figure 4 shows inequalities in unintentional injuries occurring to MCS children between birth and 9 months and 9 months and 3 years. By age 9 months infants whose mother was a lone parent were significantly more likely to be injured than those living in couple households. By age 3 the differences were significant for NS-SEC and area deprivation as well as lone parenthood.

**Figure 4: % injured between birth and 9 months, and 9 months and 3 years, in the high and low SECs groups, UK.**

Source: MCS

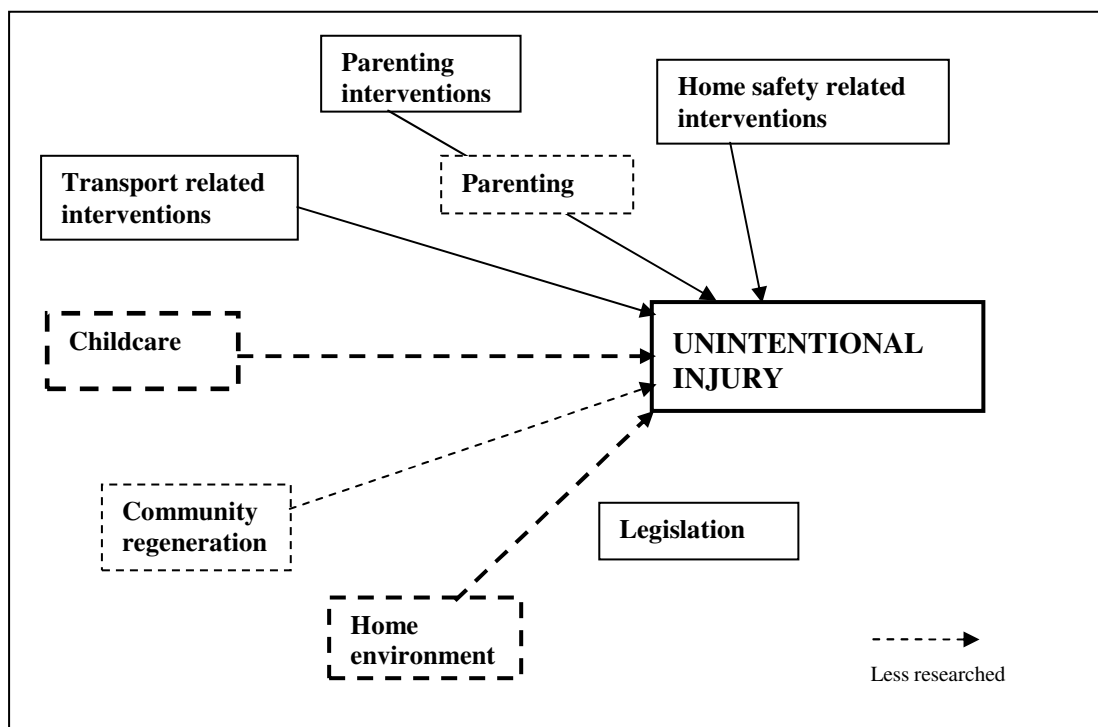


#### 4. Unintentional injury and the potential impact of policies

The map of review evidence in Figure 5 below demonstrates the links between potential policy areas and unintentional injuries in children which were identified in the review of reviews{Roberts, 1995 668 /id;Kerr, 2007 661 /id;Bruce, 2005 671 /id;Garzon, 2005 667 /id;Kendrick, 2007 660 /id;Kendrick, 2007 665 /id;Khambalia, 2006 664 /id;MacKay, 1999 666 /id;Schwebel, 2007 662 /id;Sellstrom, 2006 663 /id;Towner, 2001 659 /id;Turner, 2005 670 /id;Dowswell, 2002 674 /id}. Two new reviews were published in 2009 and these are also reported here{Garside, 2009 865 /id}{Pearson, 2009 854 /id}. Appendix 5 contains a more detailed version of this map. Policies which have solid lines were explored in the key reviews. These tended to be specific schemes or interventions designed to reduce accidents and injuries in children (not always preschool children) through modifying vulnerability to exposure. Areas which were identified as being less well researched were childcare(30), community regeneration (e.g. social capital, open space, fear of crime)(27;33), the home environment(25;27;32) (e.g. overcrowding, garden access, storey of main

living accommodation), and parenting(31;32); these are shown with dotted lines. The links with bold dotted lines are those we explored using secondary data analysis in phase 2.

**Figure 5- Map demonstrating known and potential links between policies and unintentional injuries in childhood, based on the review of reviews**

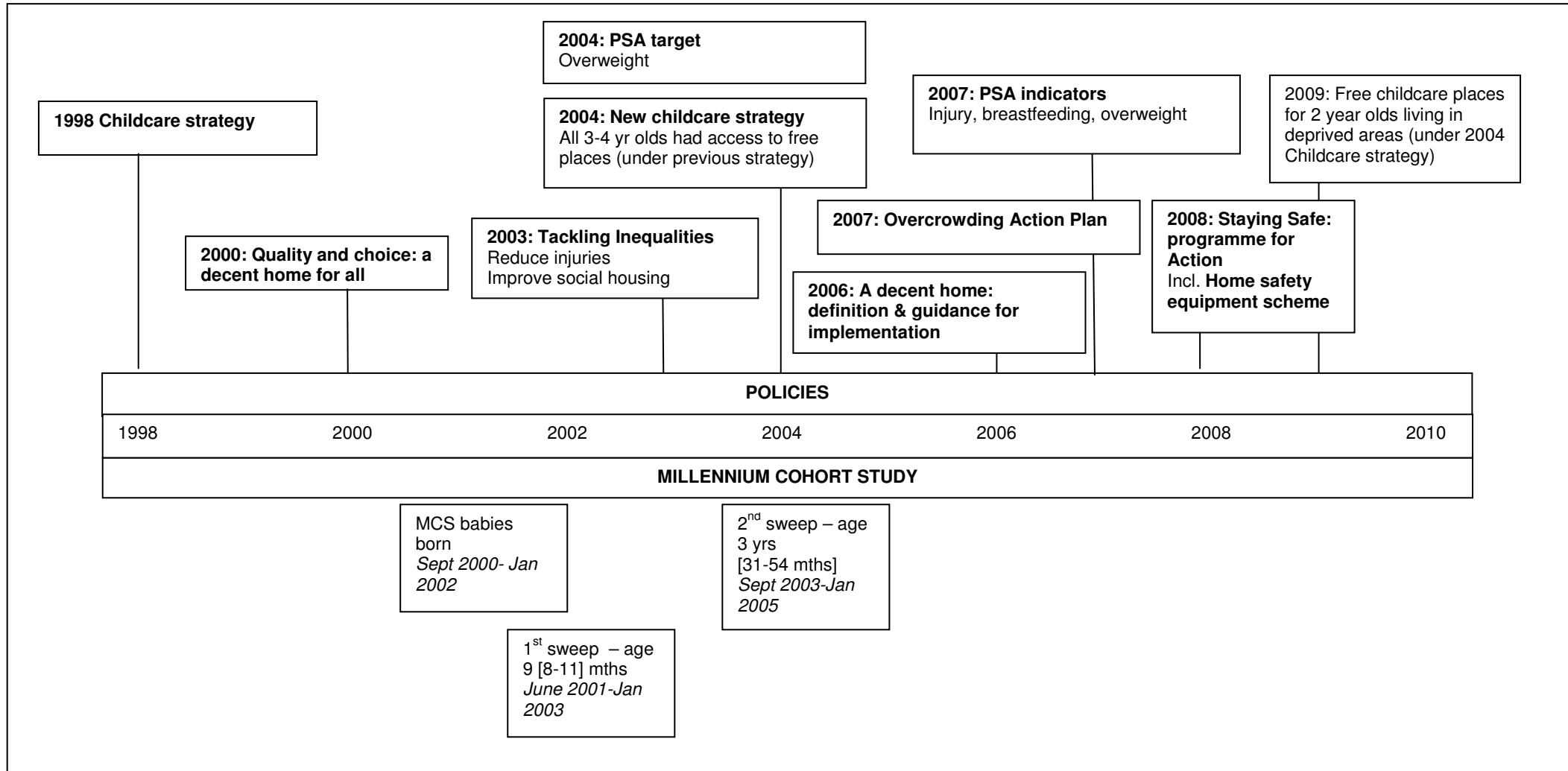


Note that the map does not demonstrate differential effects; this will be tackled for each link individually later on in the report.

In order to gain young people’s views on how policies might influence childhood injury, a session was held with the PEAR group. They were asked to create a flowchart to demonstrate how the government might influence injuries in childhood. They were provided with some examples of potential ‘government actions’ (laws on booster seat use, parental education, and safer playgrounds), and came up with their own ideas too. Their flowchart reflected the content of our map and so no further modifications were made. A photo of the flowchart that they created at the meeting is provided in Appendix 6.



**Figure 6- Timeline demonstrating implementation of key policies and Millennium Cohort Study dates**



### *Case study 2: Childcare: background:*

In the latter part of the twentieth century maternal employment increased dramatically(2). This in turn has led to an increased demand for childcare.

#### 1. Policy context (also see Figure 6)

In 1998 the new Labour government launched a childcare strategy, as part of their policy of promoting paid employment as a route out of poverty and in response to a shortage of childcare places, high costs and scarce information for parents(36). Over the following three years, the number of childcare places increased and the childcare workforce grew by one fifth; it was at about this time that the MCS children were born (see Figure 6). The Neighbourhood Nurseries Initiative targeted provision in disadvantaged neighbourhoods where it was more likely to be lacking and the Working Families Tax Credit with a childcare element was introduced. Furthermore it was promised that all children aged 3-4 years would be guaranteed an early year's education place by 2004 and National Standards were devised to outline minimum quality levels for childcare for children under the age of 8.

In 2002 an inter-departmental review of childcare was carried out(37). In order to meet the Government's targets to reduce child poverty and increase paid employment in lone parents, it was concluded that new investment in childcare was required. In 2004, a new 10-year childcare strategy(38) aimed to increase the availability, flexibility, quality and affordability of childcare in order to improve outcomes for children, reduce the gap between the rich and poor, and to support parents into work. By this time, the aim to provide free early years education places to all children aged 3 to 4 years had been achieved. In 2004 some of the older MCS children would have reached age 3 years and therefore would have been entitled to these free places (Figure 6). Under the new childcare strategy it was also pledged that the number of hours would be extended from 12.5 to 15 hours a week by 2010(38) and free places would be made available to 2 year olds living in deprived areas(39).

#### 2. Trends and current levels of childcare use

A recent UNICEF report highlighted that 80% of three-to-six year olds and 25% of under threes living in OECD (Organisation for Economic Co-operation and Development) countries are now cared for in early childhood education or childcare settings(40).

Our analysis (Figure 7) describes childcare use by employed mothers in the IFS in 2000 and 2005, when their child was 9 months old. Mothers were allowed to give multiple responses, in no particular order, and so this graph shows the distribution of all reported childcare, categorised as informal (neighbours, friends, grandparents, other relatives) or formal (registered childminders,

nurseries, childcare centres, nannies). Informal and formal childcare use increased slightly over the 5 years period, whilst using no childcare at all declined.

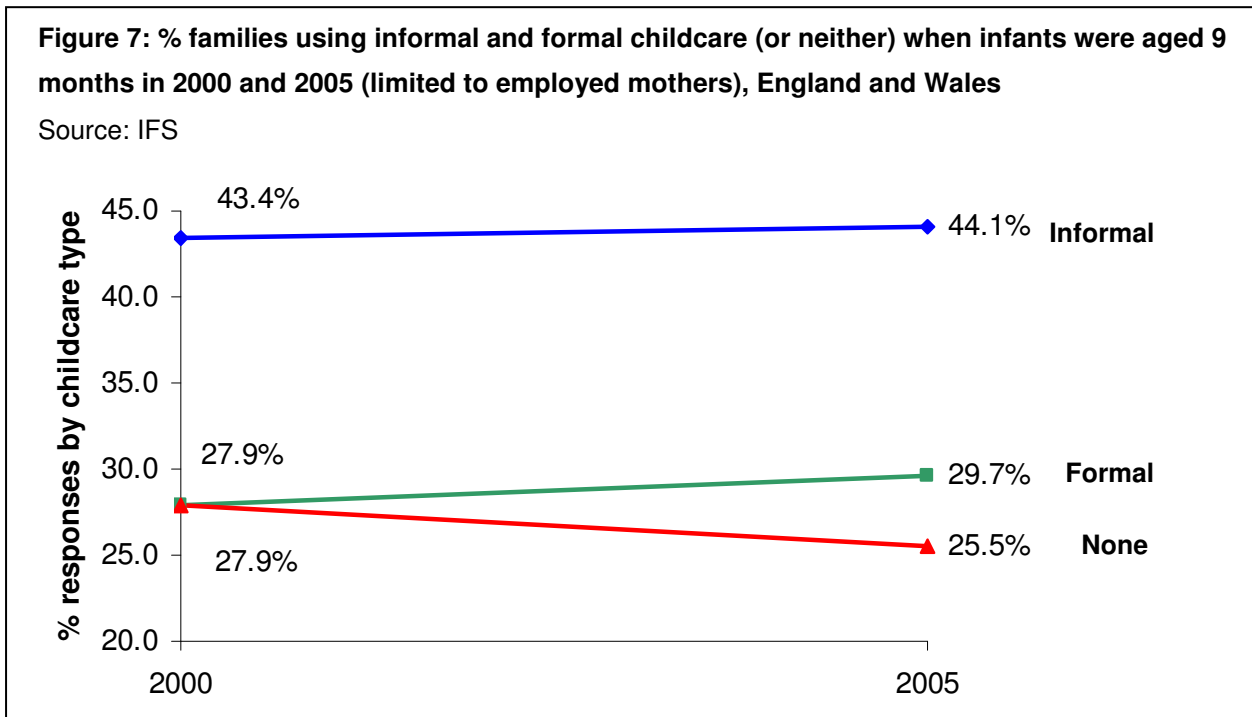
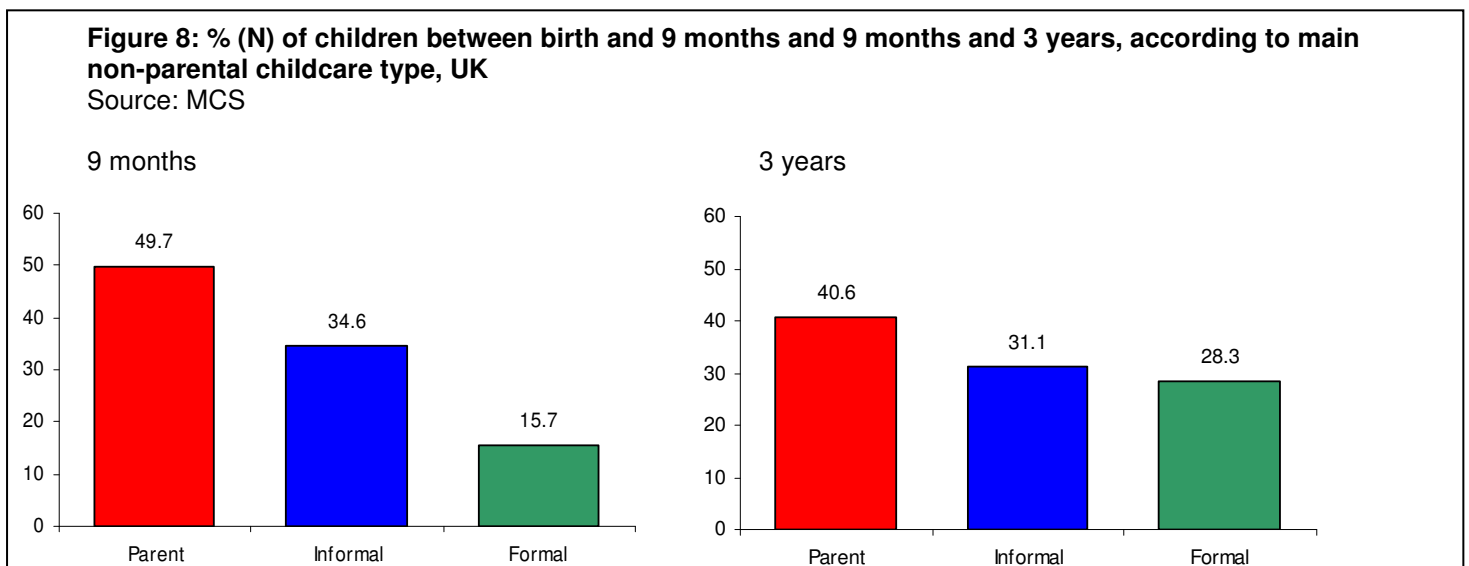


Figure 8 below shows the proportion of children in the MCS who were regularly cared for (for any amount of time) in informal childcare or formal childcare, and those who were cared for only by a parent, between birth and 9 months, and between 9 months and 3 years. The percentages are not directly comparable to the IFS due to the way in which the questions around childcare were asked.



### 3. Inequalities in childcare

Figure 9 below presents informal and formal childcare use in the MCS between birth and age 9 months by SECs. There is no clear pattern for informal childcare use, but children from higher socio-economic backgrounds were significantly more likely to be cared for in formal childcare for all measures of SECs and children from lower SECs were more likely to be cared for only by a parent.

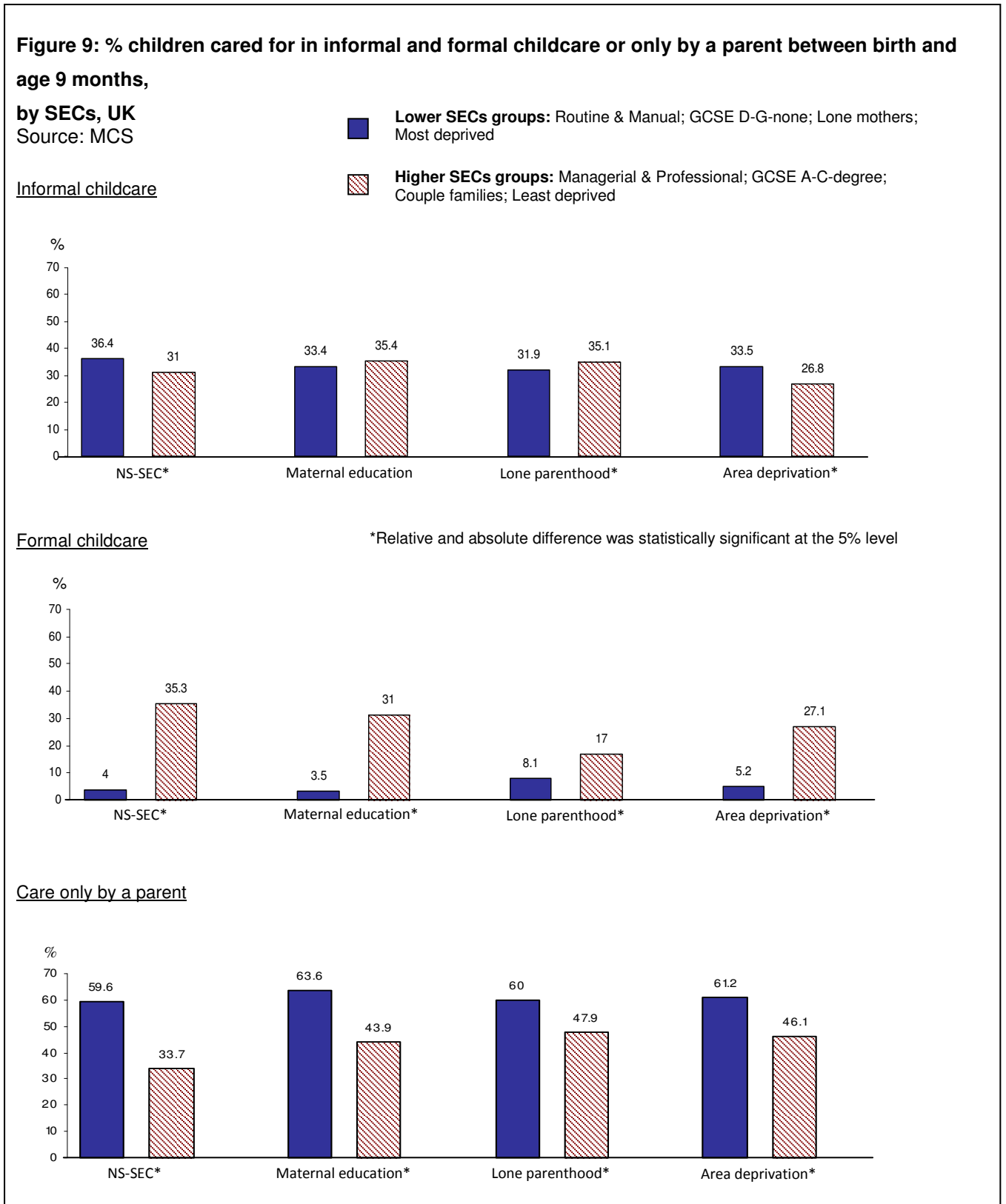


Figure 10 shows childcare use in the MCS between 9 months and 3 years. Again with informal childcare there was no clear socio-economic pattern, whilst children from higher socio-economic groups were significantly more likely to be cared for in formal childcare and less likely to be cared for only by a parent (except for lone parenthood).

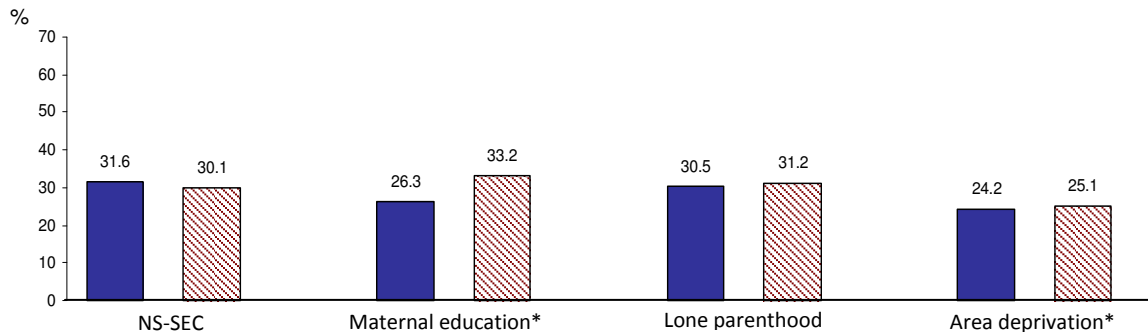
**Figure 10: % children cared for in informal and formal childcare or only by a parent between 9 months and 3 years, according to SECs, UK**

Source: MCS

**Lower SECs groups:** Routine & Manual; GCSE D-G-none; Lone mothers; Most deprived

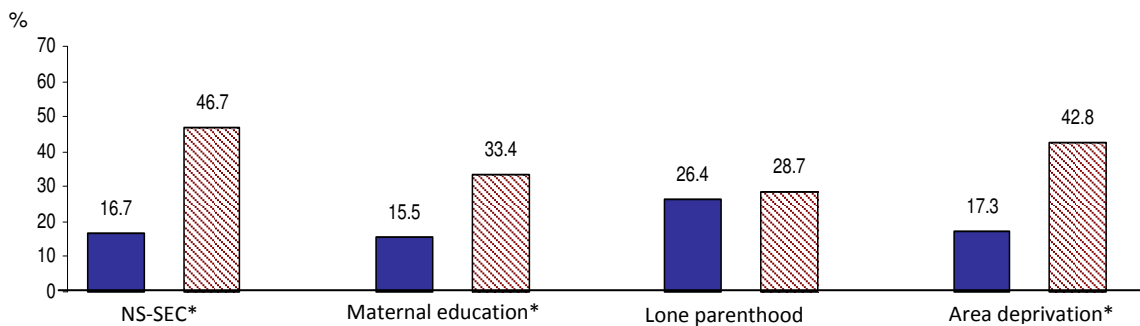
**Higher SECs groups:** Managerial & Professional; GCSE A-C-degree; Couple families; Least deprived

Informal childcare

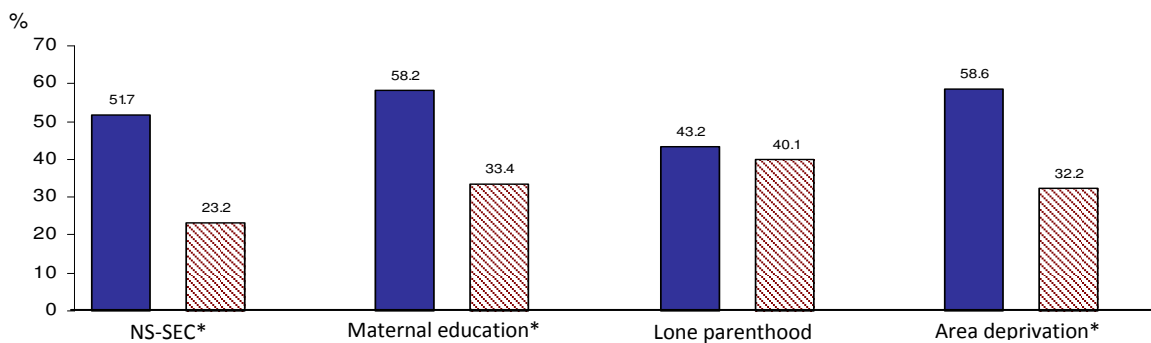


Formal childcare

\*Relative and absolute difference was statistically significant at the 5% level



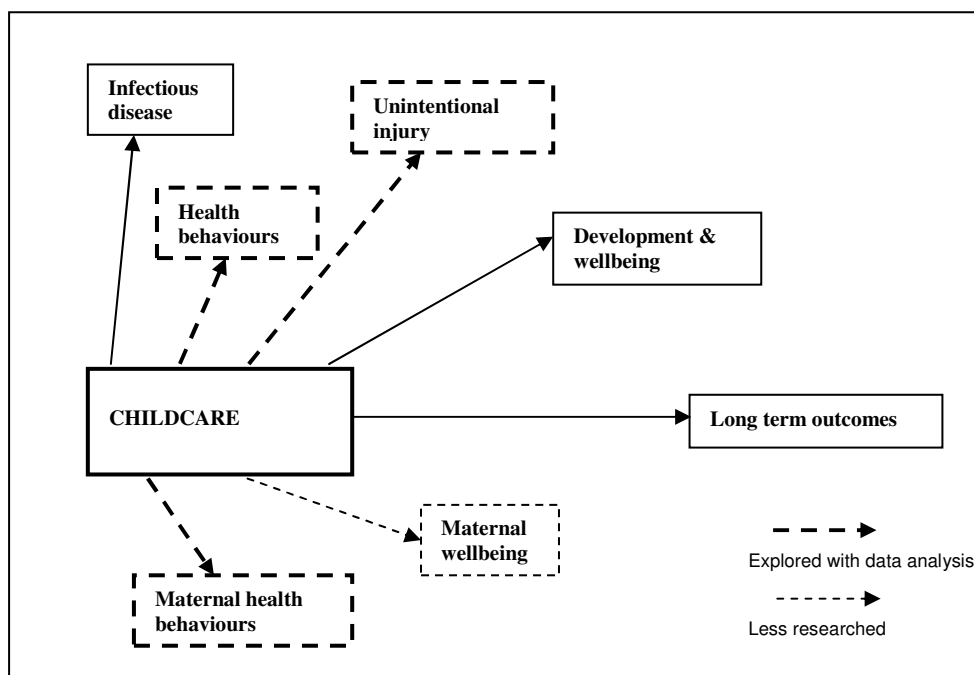
Care only by a parent



#### 4. Childcare and its potential impact on health

The map of review evidence in Figure 11 demonstrates the links between childcare and different aspects of child health which were identified in the review of reviews(41-46). One additional review was published in 2010 and is also reported here(47). Appendix 7 contains a more detailed version of this map. The areas with solid lines in the map identify links that had been explored in the key reviews. Research investigating the impact of childcare on children’s health has tended to focus on educational and developmental outcomes, long term outcomes and infectious disease. Areas which were identified as being less well researched were children’s health behaviours such as physical activity and diet(46;47), unintentional injury (as previously stated for the injury case study), and parental factors including health behaviours and maternal wellbeing(46). These are shown with dotted lines. Those with bold dotted lines are the links we explored using secondary data analysis in phase 2. It was also highlighted that research tended to focus on high quality group childcare and preschool settings rather than informal childcare(42;46).

**Figure 11- Map demonstrating known and potential links between childcare and child health, based on the review of reviews**



The map does not demonstrate differential effects; this is tackled for each link individually later on in the report.

At the PEAR group, the members were provided with some examples of health that might be influenced by childcare (IQ, physical activity, infectious disease), and came up with their own ideas too to produce a flowchart to demonstrate how childcare might influence health. As with the injury

map, the content of the flowchart and discussion were not dissimilar from that found in the literature and our map above, and so no modifications were necessary as a result of the meeting. A photo of the flowchart is provided in Appendix 8.

### B) Describing the links

Where the links were identified as being better researched, short summaries are provided below on the evidence identified in the reviews. Those which were less well researched have been explored using secondary data analysis. The review summaries and findings from the data analyses are presented firstly for the injury case study, and then for the childcare case study.

#### *Case study 1: Unintentional Injury*

##### *Better researched links: Evidence from the reviews*

###### Transport related interventions:

The review of reviews and policy literature found that there is a range of experimental research investigating the effect of transport-related interventions for reducing injury in childhood, although many are less relevant for younger children (such as the promotion of cycle helmet use and pedestrian skills training)(34). A systematic review of community based programmes to promote car seat restraints found that the programmes increased car restraint use in children aged 1-5 years and reduced motor vehicle occupant injury(35). Similarly, a review aiming to collate the evidence for injury prevention in children found that the loan of car seats and educational programmes increase the number of infants who are transported safely and that legislation for the restraint of children in cars is effective in reducing injury rates(34) Whilst some of these interventions were aimed at more disadvantaged groups, none compared the impact in different social groups or on inequalities in injury.

###### Home safety interventions:

A systematic review of 80 randomised controlled trials (RCTs) of home safety education programmes provided to children and young people (under 19 years) and their families found them to be effective in increasing a range of safety practices in the home such as fitted safety gates, functional smoke alarms, and the safe storage of medicines, cleaning products and sharp objects(28). Educational interventions were particularly effective when combined with the provision of low cost or free safety equipment, although it was not possible to demonstrate whether interventions were more or less effective in disadvantaged families, and also whether the interventions in turn lead to a reduction in injuries (due to the small number of studies investigating or presenting these data) (28). A systematic review of group interventions (such as interactive

learning and group activities) in children aged 3-6 years suggested that they could have the potential to enhance children's safety knowledge and behaviours, with 5 out of 9 studies reporting a positive effect (although 3 reported mixed effects)(26). A further review of the effectiveness of the provision of home safety equipment and home risk assessments also found some evidence for an increase in functional smoke alarm use, although evidence for other types of safety equipment was limited, particularly in relation to their impact on injuries rates (48), which was also pointed out in the discussion of Cochrane reviews (25).

#### Parenting interventions:

A systematic review of 15 studies (11 RCTs) assessed the impact of parenting interventions aimed at improving child health and wellbeing (two were purely educational, thirteen included other support services, and 11 also included home visiting programmes) on unintentional injury in children under the age of 18. Parenting interventions were found to reduce the number of hazards in the home, made home environments more conducive to child safety, and increased safety practices(29). Nine RCTs indicated a slightly reduced risk of injury. The authors concluded that there is some, but not conclusive, evidence that parenting interventions can reduce the risk of injuries in the home.

#### Legislation:

A recent review of strategic policies and regulatory or legal frameworks for the supply and/or installation of home safety equipment and home risk assessments was conducted to assess their impact on injury reduction within the home. There were no studies from the UK and findings from elsewhere were mixed. Window guard legislation in New York reduced injuries by half. Whilst some studies found that hot water tap temperature laws were associated with a non-significant reduced risk of burns, other studies found the risk increased. Smoke detector laws increased the proportion of homes with functioning smoke alarms and swimming pool fences were associated with a reduced risk of drowning. However the differences in legal systems, responsibilities and enforcement in the USA and Australia (where most of the studies were based) compared to the UK means that many of these findings are not likely to be transferable(49). However legislation for the restraint of children in cars has been found to reduce injury and death rates from road traffic accidents(34).

#### Mass media campaigns:

Mass media campaigns could relate to transported related interventions, and home safety and parenting interventions. However in some cases the effect of mass media was separated out from various packages of interventions and so are reported separately here (although not in Fig 5). A review of strategies to reduce childhood injuries found that although mass media campaigns increase safety awareness and knowledge, they did not appear to reduce injury rates(34),



although a review of car restraint use in children found that media campaigns targeted specifically at increasing uptake had a positive influence on use and also injury rates(35).

#### Inequalities:

Very few of the interventions discussed above assessed the impact in different social groups, and many were only aimed at high risk families (typically from less advantaged groups). A systematic review exploring the differential impact of all types of interventions on injury by social group confirmed this, stating that there is a paucity of evidence for addressing social inequalities in injury(50).

#### *Less researched links: Findings from the Millennium Cohort Study*

##### *Home environment and unintentional injury*

#### Home environment

##### 1. Policy context

Minimizing the impact of poor housing on health is an important component in the government's strategy to improve welfare and reduce health inequalities. Strategies include increasing opportunities for home ownership and grants to support renovation in the private sector(51-53), including the Green Paper "Quality and Choice: a decent home for all"(51); improving the quality of social housing(5), including providing good quality kitchens, bathrooms, external walls, and plumbing and access to a garden(5); ensuring that all homes have thermal comfort(54); and reducing overcrowding (including an overcrowding action plan)(21;55). Some of these policies came into effect before the MCS children were born or whilst they were in their preschool years (see Figure 6). However, the MCS children will have been unaffected by later policies, such as the 2008 "Staying Safe: action plan". Under this action plan it was pledged that £18 million would be spent on a new national home safety equipment scheme to provide free safety equipment and home safety consultations to families living in disadvantaged areas(21).

##### 2. Trends and current prevalence of aspects of the home environment

Figure 12 shows the proportion of households with preschool children living in a flat, without a smoke alarm and with no central heating in England between 1986 and 2006 in the EHCS. Over the twenty year period there has been a dramatic decline in homes without central heating. Between 2004 and 2006 there was also a drop in the proportion of households without a smoke alarm. The percentage of families living in a flat has remained relatively stable.

**Figure 12: proportion of households with preschool children which had no smoke alarm, no central heating or were living in flats, England 1986-2006**

Source: ECHS

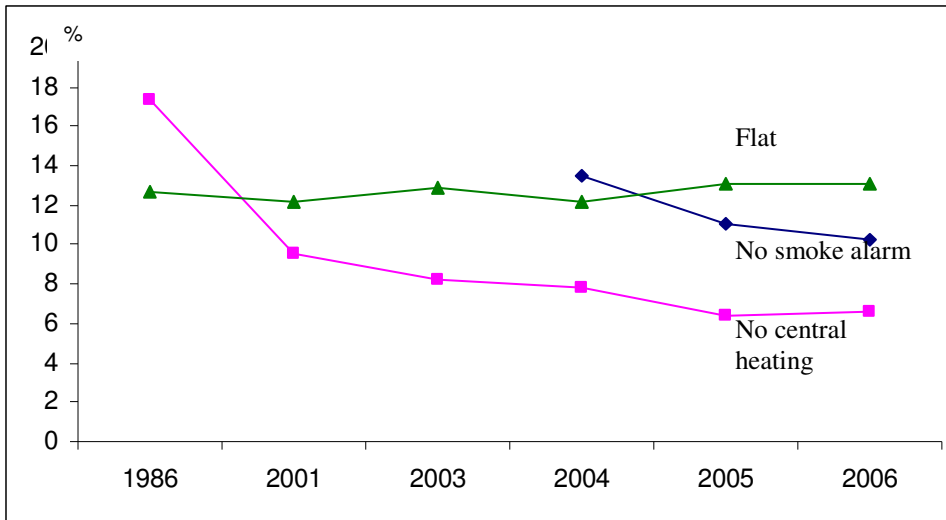


Figure 13, using data from households with preschool children in the GHS, also demonstrates a decline in the proportion of households without central heating in Britain between 2001 and 2006. There was a slight increase in the proportion of families living in flats or in households with less than one room per capita. The percentage of households living in a flat and with no central heating are lower than seen for ECHS, this may be due to the different survey areas (England, vs. Britain), sample design or random variation.

**Figure 13: proportion of households with preschool children which had no smoke alarm, no central heating or had less than 1 room per capita, Britain 2001-2006**

Source: GHS

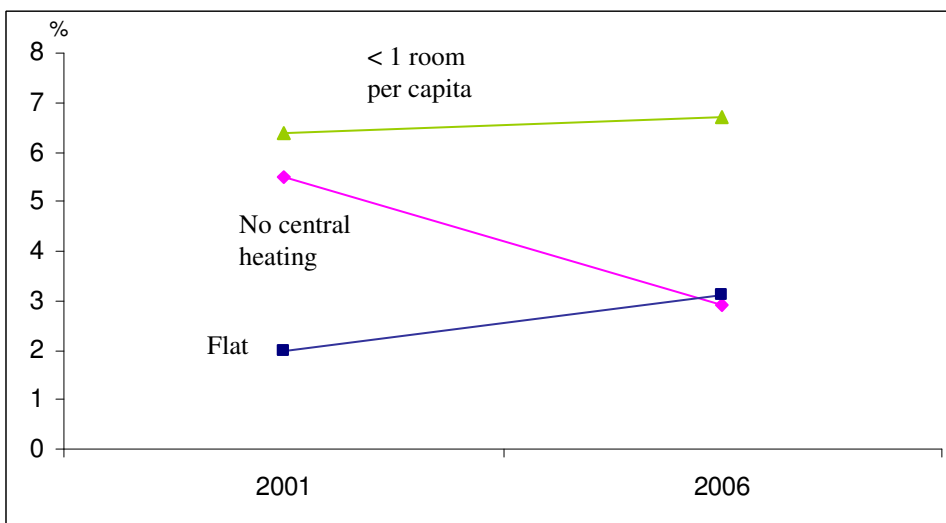
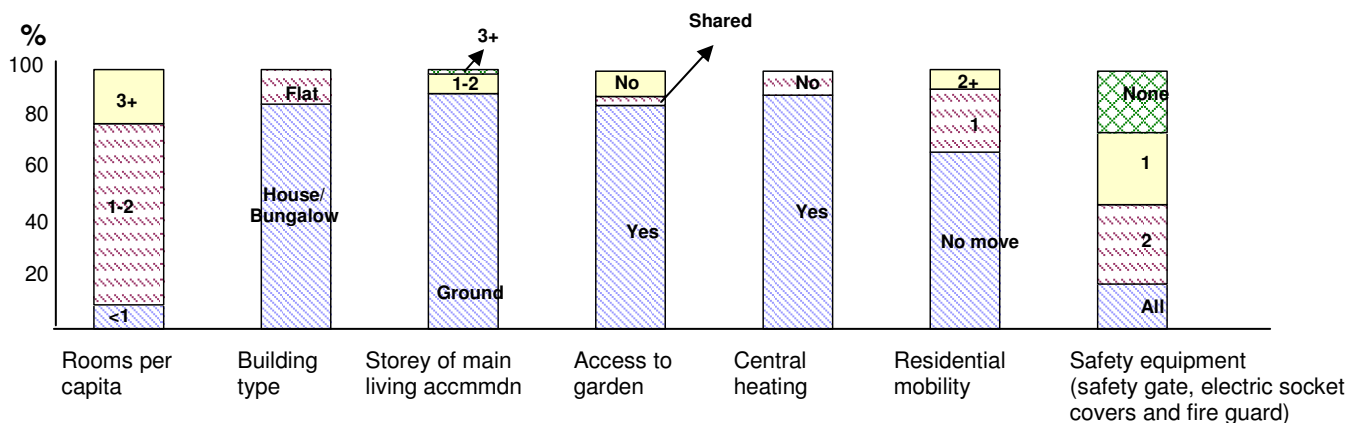


Figure 14 shows the characteristics of households in the MCS when the children were aged 9 months. As seen with the EHCS and the GHS, proportions of households living in a flat or with less than one room per capita were very low. There was little variation in the other measures of home environment, with the majority of children living in more favourable environments. Safety equipment use was more heterogeneous, with approximately one quarter of families owning no safety equipment at all.

**Figure 14: Proportion of households according to characteristics of the home environment, UK**

Source: MCS



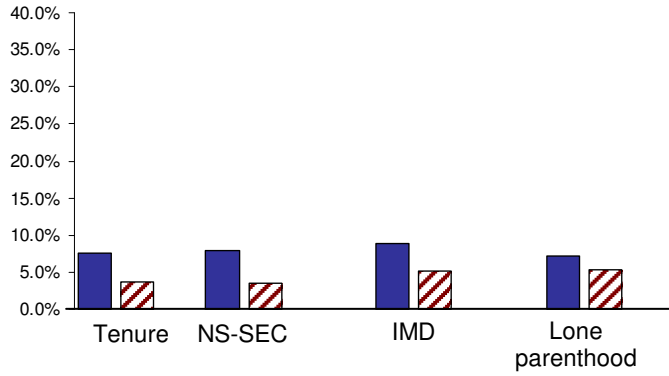
### 3. Inequalities in the home environment

Less affluent households with preschool children were more likely to live in a flat, to not have central heating and to not own a smoke alarm in the SEH (Figure 15). Similarly, poorer families were also more likely to live in homes with less favourable conditions in the GHS and EHCS (see Appendix 9) and also in the MCS when the children were age 9 months (Figure 16; NB absolute and relative differences were statistically significant for all of the household characteristics).

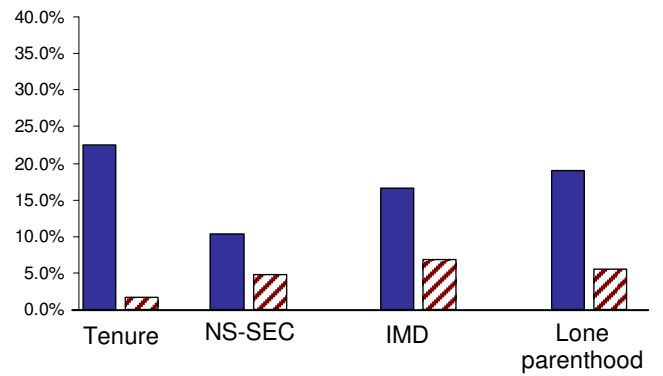
**Figure 15: Characteristics of the home environment in England 2005/6, by SECs**

Source: SEH

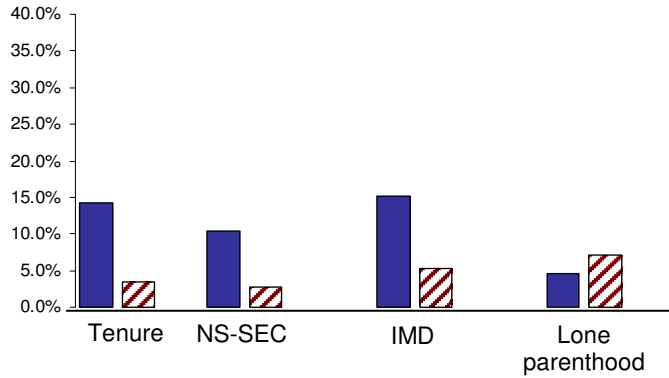
**No central heating**



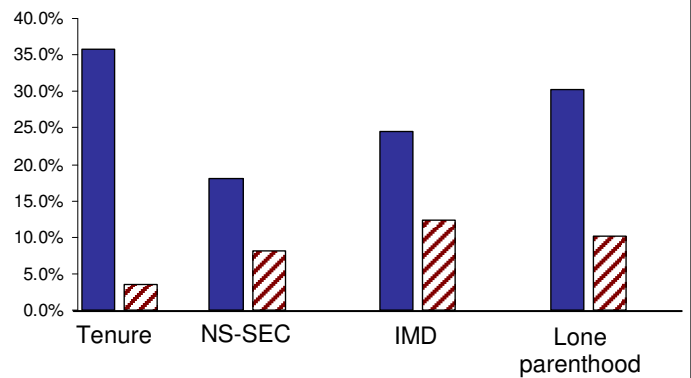
**No garden**



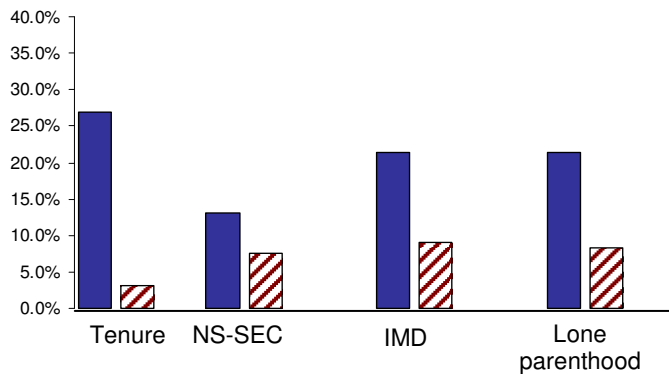
**< 1 room per person**



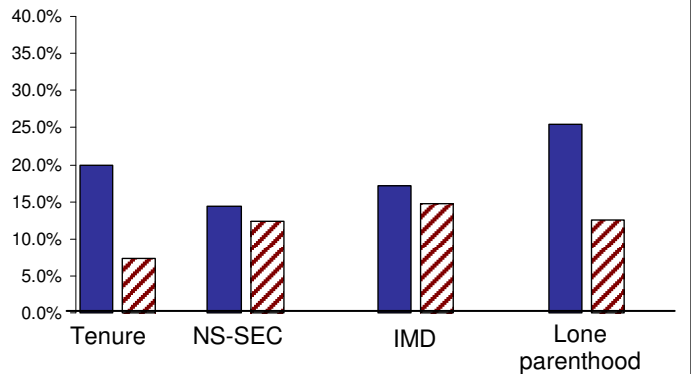
**Living in a flat**



**Not living on ground floor**



**Living at residence <12 months**



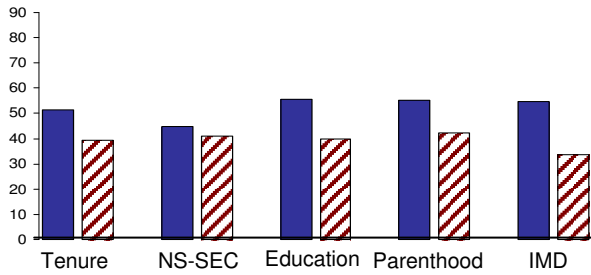
**■ Lower SECs: Socially rent; Routine & Manual; No educational qualifications, Most deprived areas; Lone parent**

**▨ Higher SECs: Own/mortgage; Managerial & professional; Degree; Couple family; Least deprived areas**

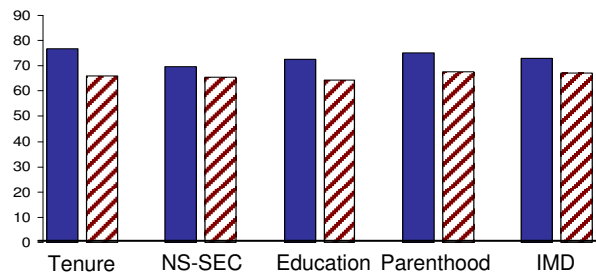
**Figure 16: Characteristics of the home environment UK, by SECs**

Source: MCS

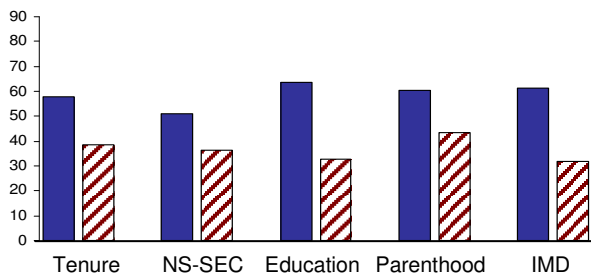
**Safety gate\* (% none)**



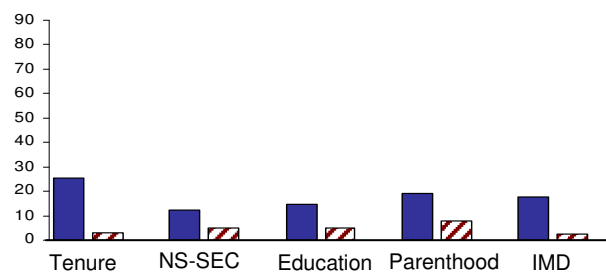
**Fireguard\* (% none)**



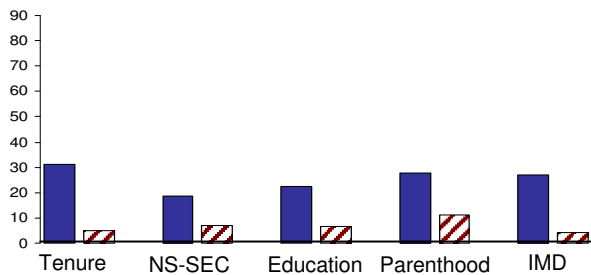
**Electric socket covers\* (% none)**



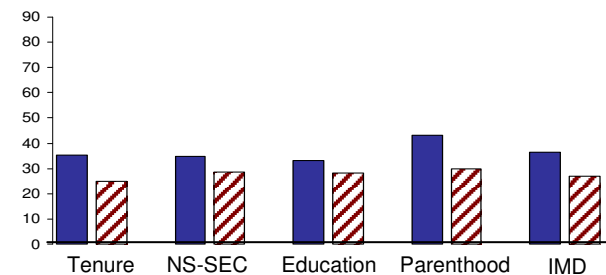
**Storey\* (% main living accommodation 1<sup>st</sup> floor +)**



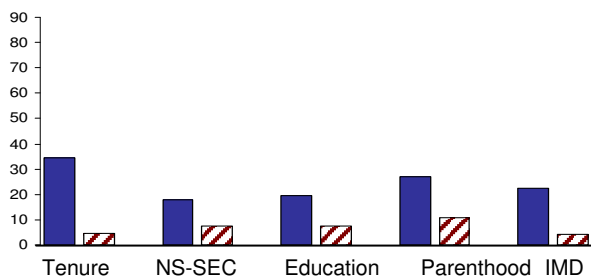
**Garden\* (% no private garden)**



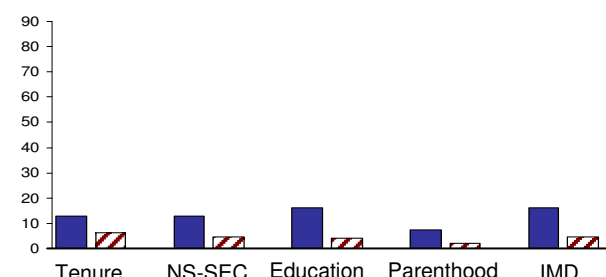
**Residential mobility\* (% changed address >0)**



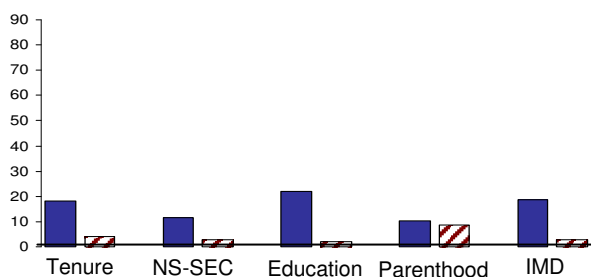
**Build type\* (% flat)**



**Central heating\* (% none)**



**Rooms\* per capita (% less than 1)**



Lower SECs: Socially rent; Routine & Manual; No qualifications; Lone parent; Most deprived areas  
 Higher SECs: Own/mortgage; Managerial & professional; Degree; Couple family; Least deprived areas

\*Relative and absolute difference was statistically significant at the 5% level

Trends in inequalities in the home environment:

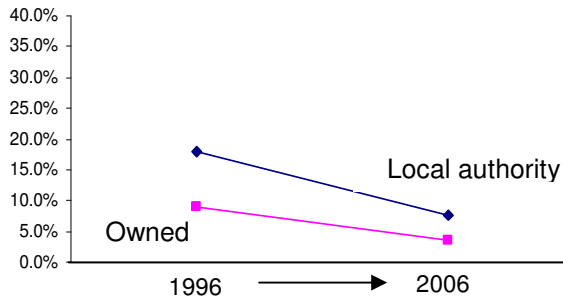
Data from the SEH indicate that disparities in not owning central heating over the past decade have narrowed for tenure and remained relatively stable for lone parents (Figure 17). Similar patterns are seen in the EHCS since 1986 (Appendix 9). Households in the SEH living in local authority housing have seen a widening in inequalities in not having access to a garden, having less than one room per capita, living in a flat, moving residence in the last year and not having the main living accommodation located on the ground floor. In contrast the difference in prevalence of these housing characteristics between lone parents and couple families has remained constant over time. Data from the EHCS confirms this for the proportion of households living in a flat (Appendix 9). Whilst the gap in build type has remained constant for lone parents over the same period in the SEH, it has widened by tenure, with families who socially rent being more likely to live in a flat than those who own their own home.

**Figure 17: Trends in characteristics of the home environment 1996-2006, by SECs, England 1996-2006**

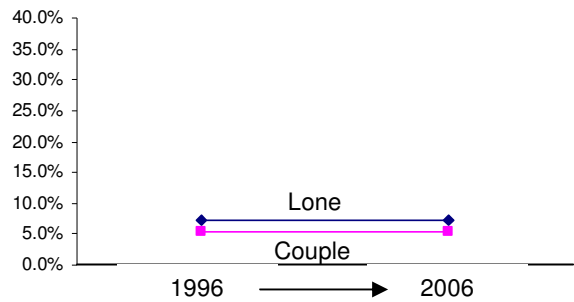
Source: SEH

**% no central heating**

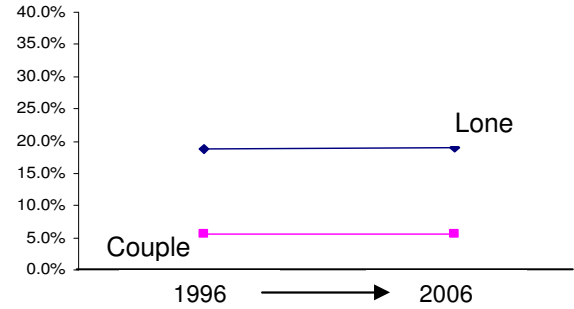
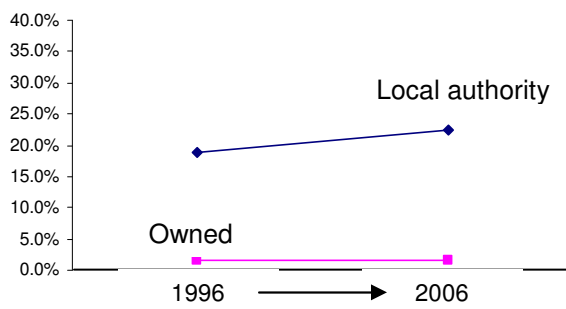
*Tenure*



*Lone parenthood*



**% no garden**



**% < 1 room per capita**

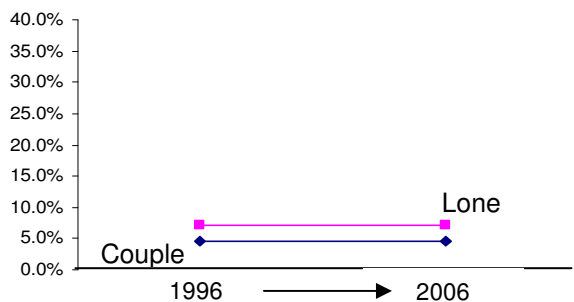
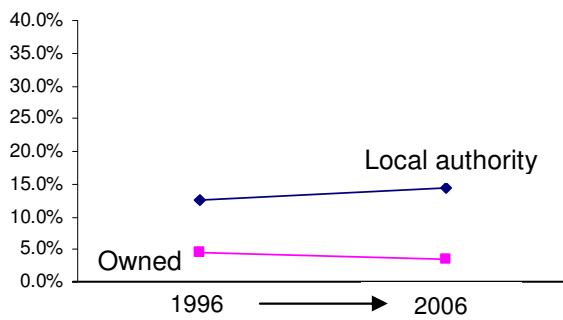
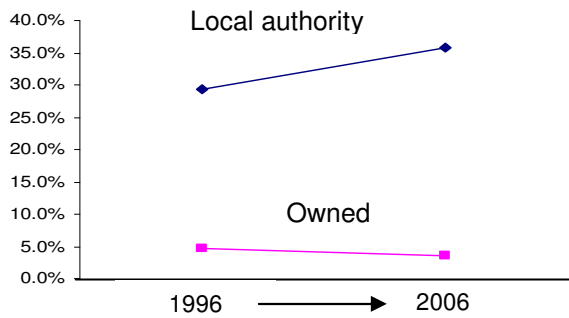


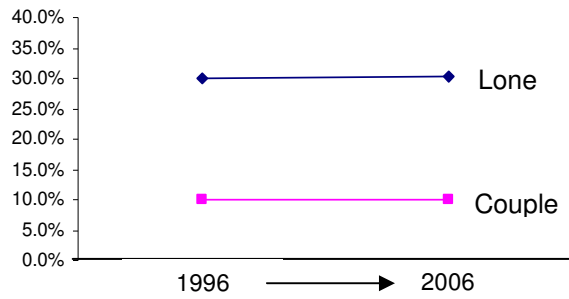
Figure 17 ctd...

**% flat**

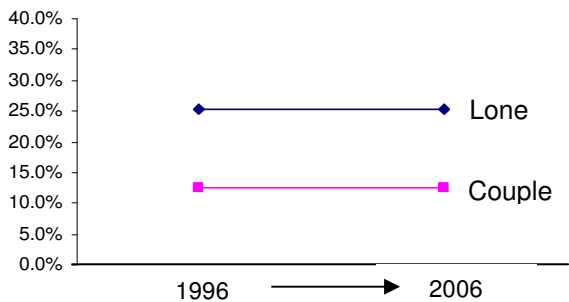
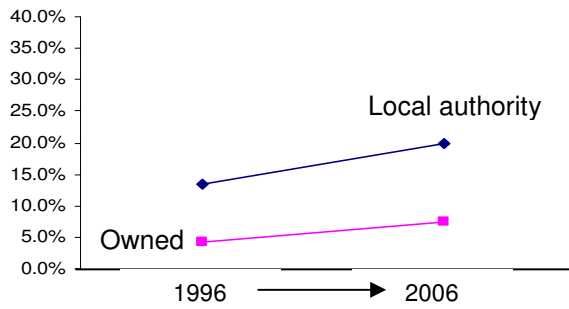
*Tenure*



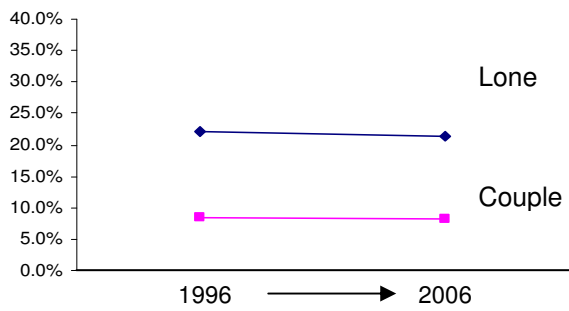
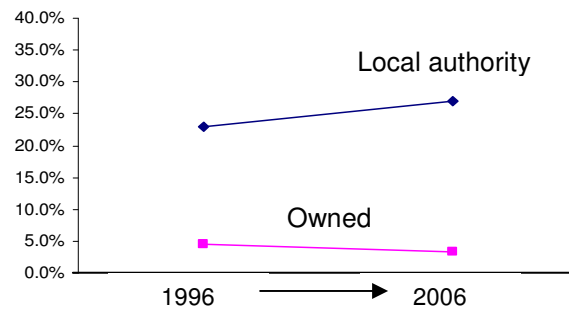
*Lone parenthood*



**% at residence < 12 mths**



**% not on ground floor**





Injuries occurring in the home:

1. Policy context

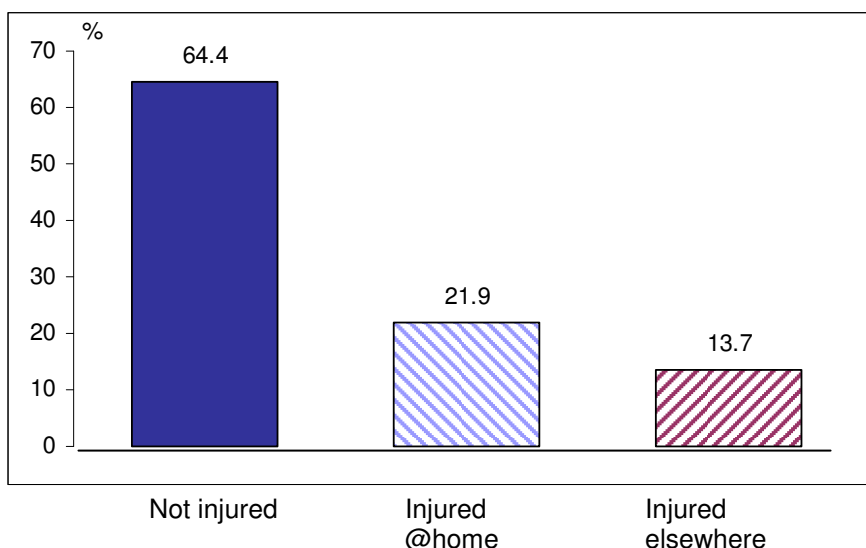
Most injuries in preschool children occur in the home due to the lengthy periods of time they spend there. The majority of injuries are from falls, ingestions, burns, drownings, suffocations and crushing injuries(56). Injury in infancy is primarily related to caregiver behaviour, but as children get older they become capable of independently encountering situations that place them at risk(57). As mentioned in section 5A (page 20), reducing unintentional injuries in children was a government priority at the time of writing and the prevention of injuries in the home featured in the safety strategy for children and young people, for example through a new national safety equipment scheme, improving the quality of social housing, and the promotion of fire safety messages.

2. Trends and current prevalence in injuries (which occurred in the home):

The background to injury (section 5A) presents national data for *all* injuries occurring in the UK over time. There is very little routinely available data on the incidence of injuries *in the home*, although it is known the majority of injuries in young children take place in the home. Figure 18 shows the proportion of children who were injured in their home or elsewhere in the MCS, based on their only or most severe injury (see Appendix 10 for more detail). As reported previously 35% of children had attended a GP or A&E due to an injury between the age of 9 months and 3 years. Below we can see that almost two thirds of injuries occurred at home.

**Figure 18: Proportion of children who had been injured at home between 9 months and 3 years, elsewhere, or not all, UK**

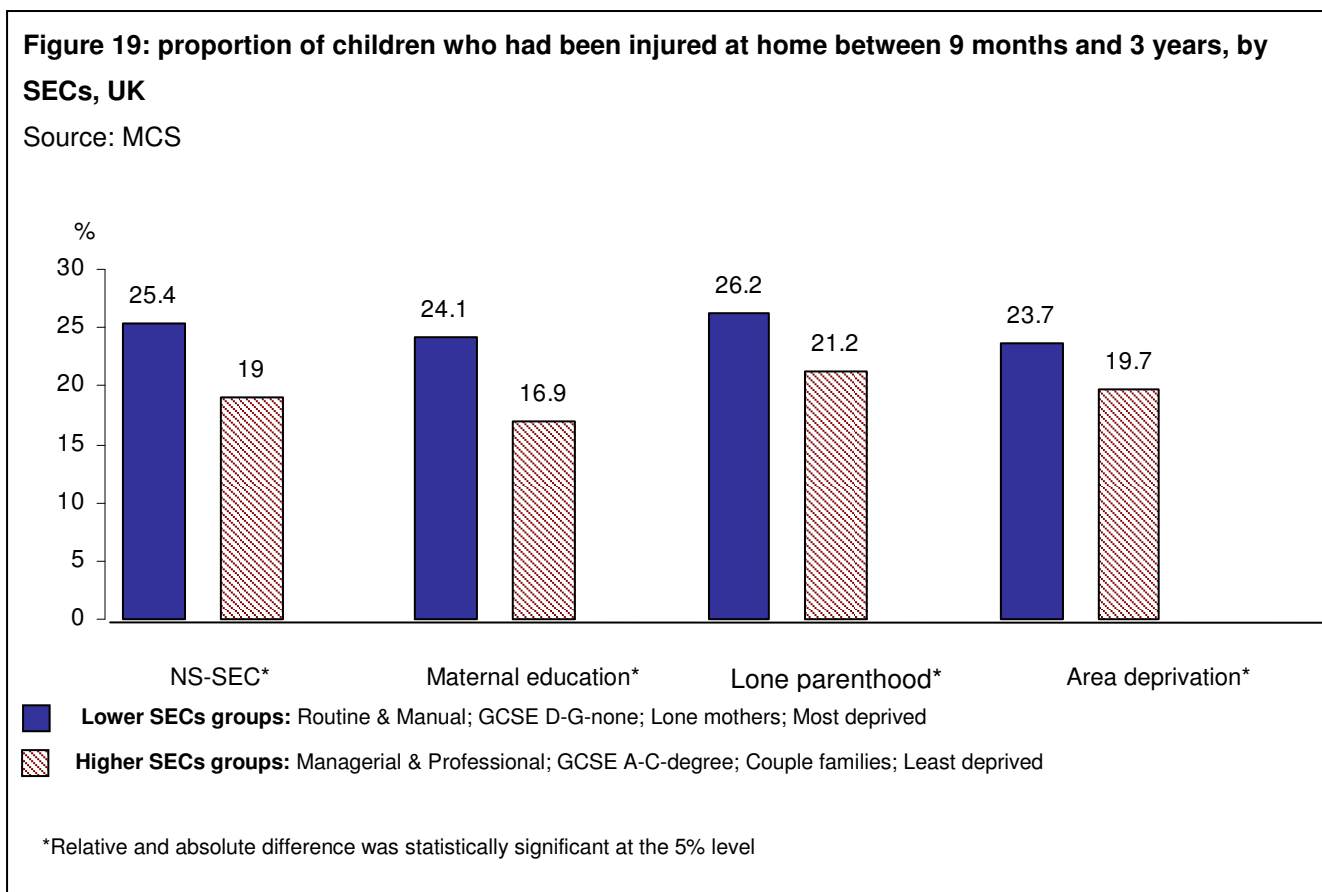
Source: MCS



Inequalities in injuries (which occurred in the home):

As highlighted in Box 1 (page 17), the MCS analysis for this link explored the association between the home environment and injuries occurring in the home. Inequalities in injuries occurring

anywhere are described on page 21-23; figure 19 presents inequalities in injuries which occurred in the home, comparing the higher and lower group for each of the socio-economic measures. Children from more affluent backgrounds were significantly less likely to have been injured in the home.



Home environment and inequalities in unintentional injury:

This section of the report has been written up in detail as an academic paper:

Pearce, A.; Li, L.; Abbas, J.; Ferguson, B.; Graham, H.; Law, C.; the Millennium Cohort Study Child Health Group. "Does the home environment influence inequalities in unintentional injury in early childhood? Findings from the UK Millennium Cohort Study".

This paper is provided in Appendix 10. A brief summary of findings is provided below:

1. What is already known on this topic?

- It has been hypothesised that characteristics of the home environment lie on the casual pathway between SECs and childhood injuries occurring in the home(17) (16)
- An ecological study in the US found that housing conditions mediated the association between poverty and injury rates, however to our knowledge there are no individual level

studies which have specifically aimed to address this(17)

- There is weak evidence to suggest that safety equipment use reduces the risk of childhood injuries(48), and there is a paucity of research exploring its impact in different social groups(50)

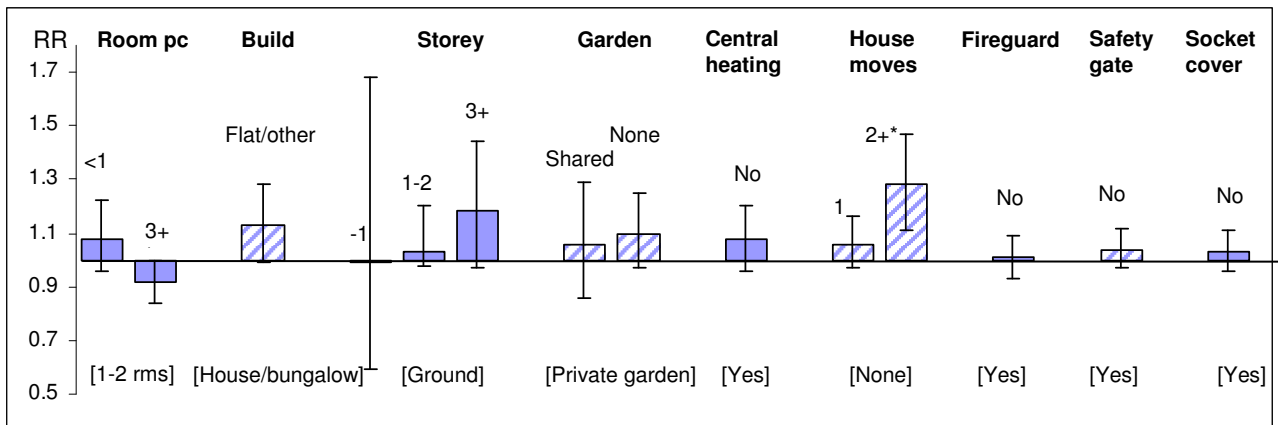
In this analysis injuries which had occurred in the home between 9 months and 3 years, and for which the child had visited a GP or A&E, were explored. For children who had only been injured once in this period, mothers reported where the injury had occurred (e.g. at home, in a playground, or on the road). For children who had been injured more than once, mothers were asked only to report the location of the most severe injury. We categorised children according to whether they had been injured in the home or not, based on these responses.

Home environment and injury:

Figure 20 shows risk ratios (RR) for being injured according to aspects of the home environment. Whilst living in a poorer home environment (compared to the most favourable as the baseline) was generally associated with an increased risk of injury, this was not statistically significant, with the exception of mobility (moving more than once was associated with a 28% increased risk of home injury compared to not moving at all between 9 months and 3 years)

**Figure 20: Unadjusted risk ratios (and 95% CIs) for being injured according to aspects of the home environment [baseline shown in brackets], UK**

Source: MCS



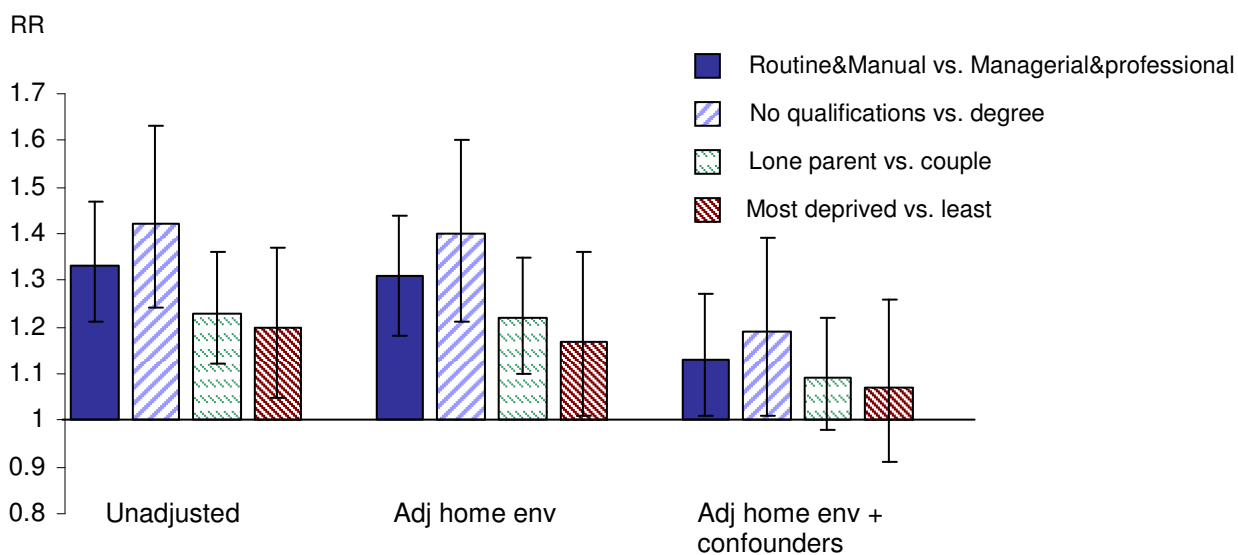
### Socio-economic circumstances and injury

The proportion of children injured (anywhere) by SECs was reported in the MCS children in part 1 of this report and the proportions injured at home are shown in Figure 18. Figure 21 below shows risk ratios for being injured in the home in the lowest group of each SECs measure, compared to the highest, with 95% confidence intervals. As expected, children from the least affluent

background for each measure were significantly more likely to have been injured at home than those from the most affluent group for all measures of SECs.

**Figure 21: Risk ratio for being injured at home, by SECs, and then controlling for aspects of the home environment and confounders, UK.**

Source: MCS



Confounders: maternal age, ethnicity, number of children in household, childcare

Home environment as a mediating factor:

Adjusting for the home environment made little difference to the risk of being injured in different SECs, as can be seen when comparing the middle set of bars to the unadjusted ones on the left hand side. This implies that children who lived in less affluent households were more likely to be injured, regardless of the aspects of the home environment that we have explored. When controlling for other potential confounding factors, the RRs were reduced and in some cases became non-significant, this was mainly due to the tendency for older mothers to come from higher socio-economic backgrounds and for their children to have a lower risk of injury.

Interpretation:

Children from less affluent backgrounds were more likely to be injured and to live in households with less favourable conditions. However controlling for the home environment did not change the association between SECs and injury, implying that these aspects of the home environment do not lie on the causal pathway between socio-economic circumstances and childhood injury.

Views from the PEAR group:

The group talked about what might explain the lack of the association between safety equipment use and injuries. It was thought that it may be because:

- Parents are more relaxed at home and worry about injuries less (and they are more risk aware when outside their home)
- The safety equipment explored (safety gates, fire guards and electric socket covers) cannot protect children from all injuries
- You can't stop everything!
- Safety equipment might not be used correctly or at all

They thought that the government could do the following to try and reduce injuries in the home:

- Provide information booklets to parents on how to use equipment correctly and also highlighting other potential hazards in the home
- Health visitors could give advice about hazards specific to each household in their routine visits
- Safety advice should be linked to the developmental stage of the child

A full write up, including photos taken at the session, was produced to feedback to the PEAR group and is provided in Appendix 11b.

Strengths and limitations:

Injury was based on maternal report of the child having attended a GP or A&E. Injuries for which no professional advice was sought have not been explored and attendance at a GP or A&E does not give an indication of the seriousness of the injury. It is possible that the propensity to seek professional advice about injuries, or to recall them, may vary by socio-economic background. Furthermore we were unable to determine whether the most severe (or only) injury occurred in the home. Thirty eight percent of children who had been injured more than once were recorded as their most severe injury occurring outside the home, and it is possible that a less severe injury had occurred in the home. This could potentially dilute the impact of the home environment on inequalities in unintentional injuries occurring in the home. In order to assess this possibility, the analyses were repeated excluding children who had experienced their most severe injury outside the home and the results were largely unchanged. There was limited variation in the housing quality measures, particularly central heating and storey of the main living accommodation, where less than 10% of the sample were classified as being 'poor'. This may explain why we found no association between home environment and childhood injury. We did not have sufficient power to explore specific injuries in relation to different aspects of the home environment or safety equipment. However we did conduct some sensitivity analyses focussing on particular types of injury in relation to safety equipment use (e.g. fireguard use in relation to burns and scalds in

children). These sensitivity analyses also implied that there is no association between safety equipment use and injuries.

Whilst maternal report of safety equipment use is reliable(58;59) we were often unable to tell whether certain pieces of equipment were relevant or necessary. For example bungalows and houses were categorised together in the data so we did not know if there were stairs in the home and therefore if safety gate use would be applicable. We were also not able to detect whether the equipment was used correctly. Finally, we were unable to capture other aspects of the home environment, for example potential hazards which are high risk for young children, such as unsafe storage of medicines. The PEAR group raised some interesting points that had not been previously considered, such as the potential for home visitors to give ad hoc safety advice tailored to the individual needs of each family.

Potential impact of home environment policy on inequalities in injury (assuming causality):

- Unintentional injury in childhood and aspects of the home environment are socially distributed, with the poorer groups being worse off.
- Despite this, findings from the MCS imply that steps to improve the home environment and to increase home safety equipment use will not necessarily reduce inequalities in childhood injuries that occur in the home.
- Although not explored in this study, other aspects of health and welfare are likely to benefit from improvements to the home environment, in young children and other household members.

## *Childcare and unintentional injury:*

### Childcare

1. Policy context- see page 26
2. Trends and current prevalence in childcare use- see pages 26-7
3. Inequalities in childcare use- see pages 28-29

### Childcare and unintentional injury

This section of the report has been written up in detail as an academic paper:

Pearce, A.; Li, L.; Abbas, J.; Ferguson, B.; Graham, H.; Law, C.; the Millennium Cohort Study Child Health Group. "Does childcare influence socioeconomic inequalities in unintentional injury? Findings from the UK Millennium Cohort Study". *Journal of Epidemiology and Community Health*. 2009. 26;2:161-166.

This paper is provided in Appendix 12. A brief summary of findings is provided below:

#### 1. What is already known on this topic?

- A small number of studies have explored the impact of childcare upon unintentional injury, and in general they have indicated that the risk of unintentional injury was lower when in formal childcare(60-63).
- However, all of these studies were based outside the UK and few have explored informal childcare.
- None of the studies explored whether childcare has a differential impact on injury according to socio-economic background.

For this analysis we explored the impact that any exposure to childcare might have on injuries occurring anywhere, on the basis that childcare has the potential to promote safety awareness in parents and children, as well as influencing injury risk when in childcare (see Box 1, page 17).

#### Overall association:

Between birth and 9 months there was no overall association between childcare and unintentional injury. By age 3 years there appeared to be a slight increased risk of injury (of 7%) for children cared for in informal childcare, although this was no longer significant after controlling for confounders (number of children in the household, ethnicity, maternal age).

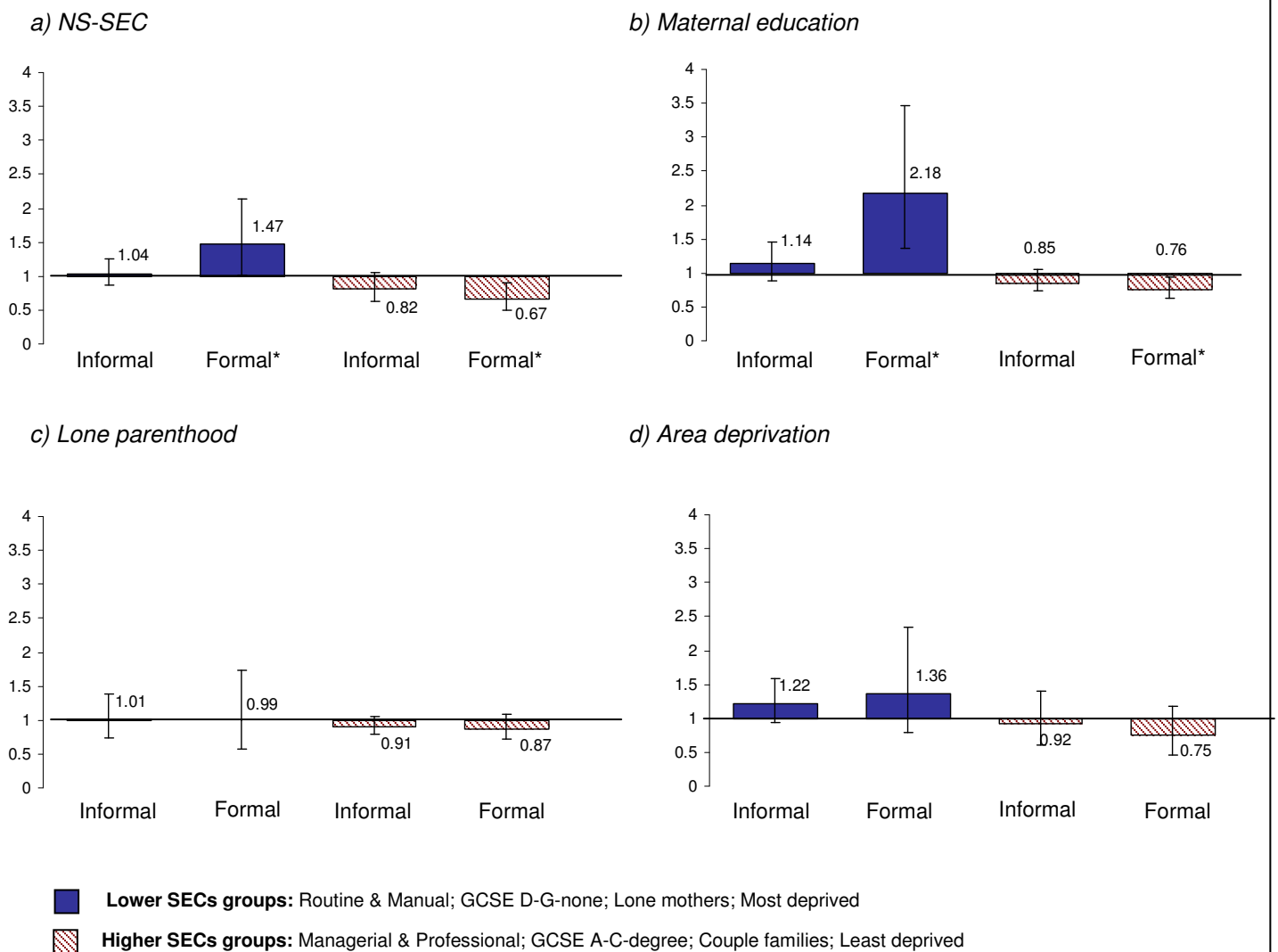
#### Association in different social groups:

When exploring the association between childcare and injury in different SECs between birth and 9 months some interesting patterns emerged. Infants from less advantaged groups (measured by

NS-SEC and maternal education) who were cared for in formal childcare were more likely to be injured than those cared for only by a parent, whereas infants from more advantaged backgrounds (again, measured by NS-SEC and maternal education) who were cared for in formal childcare were less likely to be injured (see Figure 22). There was no association for informal childcare in this age group.

**Figure 22: Adjusted risk ratio for being injured by childcare type by age 9 months, baseline=parental care: for higher and lower social group for the 4 measures of SECs, UK.**

Source: MCS



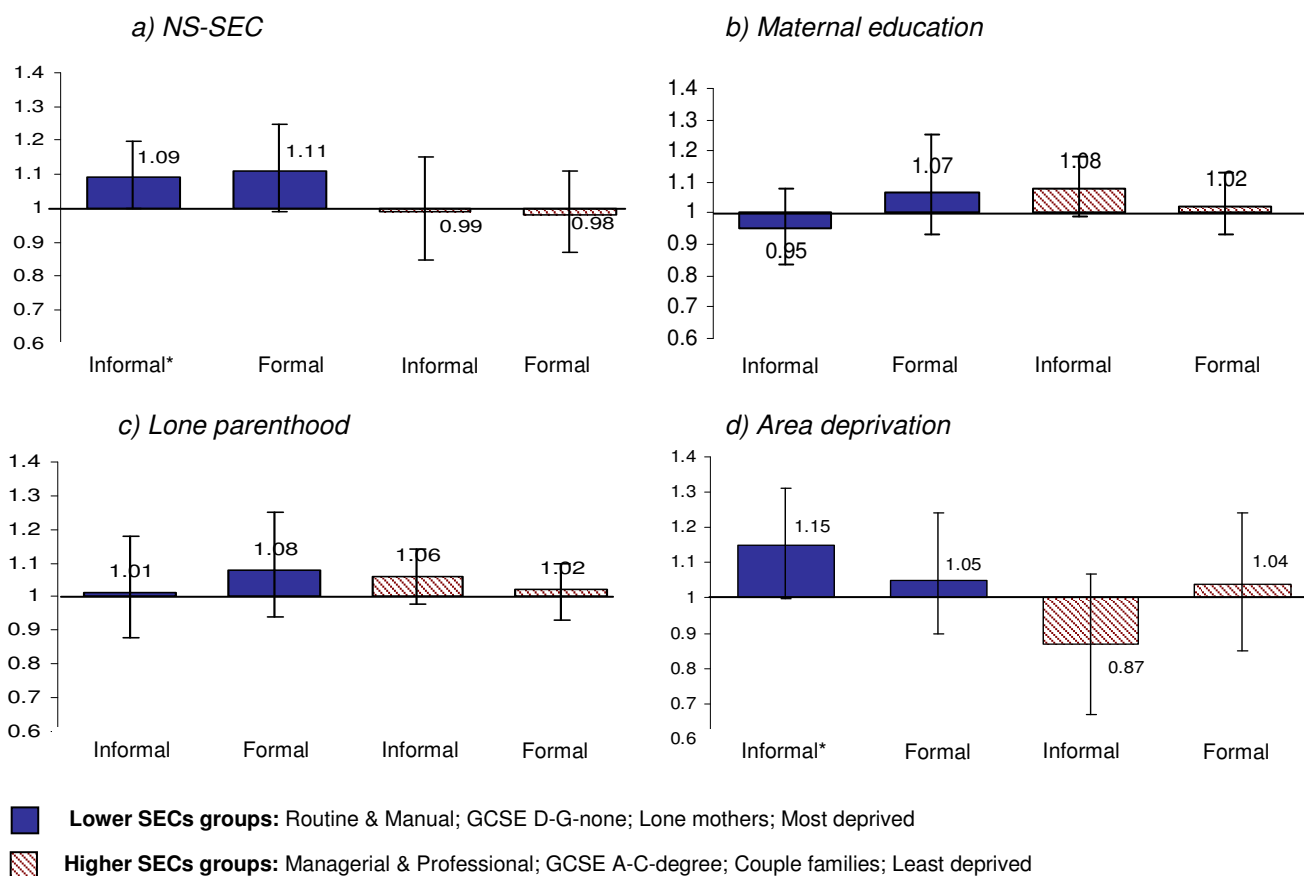
\*P<0.05. Adjusting for: maternal age, ethnicity, family size. For unadjusted results see Appendix 12.

Between 9 months and 3 years an increased risk of injury was seen for children who were cared for in informal childcare in several different social groups, although after controlling for confounders the increased risk only held for those from less advantaged groups (in the cases of NS-SEC and area deprivation), as demonstrated in Figure 23.



**Figure 23: Adjusted risk ratio for being injured by childcare type by age 3 years, baseline=parental care: for the higher and lower social group for the 4 measures of SECs, UK.**

Source: MCS



\*P<0.05. Adjusting for: maternal age, ethnicity, family size. For unadjusted results see Appendix 12.

**Interpretation:**

The differential impact of formal childcare for infants from lower and higher SECs might be explained by quality of childcare, although we were not able to explore this. By 3 years formal childcare no longer had a differential impact and this may be due to free government places for children 3-4 years equalizing the quality of childcare received. Further research is required to investigate this possibility. Informal childcare was associated with an increased risk for lower SECs at age 3, possibly due to the less safe environments of informal carers (for example, more cramped home conditions and less access to safe play space).

**Views from the PEAR group:**

The group discussed why infants from poorer backgrounds were more likely to be injured if they were cared for in formal childcare whilst those from richer backgrounds were less likely to be injured. Possible explanations raised by the group were:

- Babies from higher SECs attend better quality childcare centres which have safety equipment and safety policies, they have safer toys, more staff, and staff who are more aware of potential dangers
- Babies from lower SECs attend childcare centres which are not so high quality; they have less safe conditions and staffing issues (i.e. not enough staff). Children from lower SECs might also be attending different sorts of childcare than those from higher SECs.

When thinking about solutions, it was thought that the government might do the following:

- Subsidise childcare centres
- Enforce stricter rules in childcare centres about what children can and can't do and how they should be kept safe (although rules shouldn't be too strict as this will stop children from enjoying and learning)
- Promote safety in childcare
- Increase staff numbers and provide them with better training

A full write up, including photos taken at the session, was produced to feedback to the PEAR group and is provided in Appendix 11b.

Strengths and limitations:

To our knowledge, this is the first analysis to explore the association between childcare and unintentional injury in the UK and for different social groups and we were able to do this using a large and contemporary cohort. In addition to the limitations of using maternal report of injury discussed in the previous analysis, we were not able to determine whether the injuries occurred when in childcare. Therefore, we were unable to establish whether childcare influenced the risk of injury for the time when the child was in childcare, or factors linked to a childcare setting (e.g. health education) influenced risk taking behaviours elsewhere or safety within the home. The observed associations may also be explained by some other factor which we were unable to measure with the measures available. We used a simple categorisation of informal and formal childcare and only investigated the main childcare type used across the periods in question. On the whole the discussions held with the PEAR group confirmed what had been read in the literature and discussed with the project team. They also raised the important point that safety guidelines in childcare centres should not be made too strict and that children need opportunity to enjoy and learn.

Potential impact of childcare on inequalities in injury:

- Childhood injuries may still be increasing in preschool children and they are highly socially distributed
- An increase in formal childcare use, without addressing issues of quality, could widen inequalities in injury in infants further
- An increase in informal childcare use has the potential to lead to a widening of inequalities in injury in young children
- Further research is required into the quality of childcare experienced by children from different backgrounds, to help determine whether the associations observed here are causal

## *Case study 2: Childcare*

### *Better researched links: Evidence from the reviews*

Some of the studies in these reviews were specifically referring to early years' education or preschool. For brevity, we refer to the broader term formal childcare (or childcare centres), which typically involves some early years' education. The reviews did not report on the effects of informal childcare.

#### Infectious disease:

Children who are cared for in childcare centres have been found to be at higher risk of acquiring infectious diseases such as respiratory infections, otitis media, diarrhoea and varicella, when compared to children cared for at home(42;45). This risk often increases with time spent in childcare and the size of the childcare centre(42), and has also been found to vary according to hygiene practices and policies(45). There is some evidence that childcare affords immunity to colds as children reach primary school(42).

#### Child development and wellbeing:

The majority of research exploring childcare use in relation to child development has been motivated by the concerns about socio-economic inequalities in young children's language and cognitive development(43). Research from the 1980s and 1990s indicated that children who begin full-time childcare early in life are at risk of attachment insecurity, however many studies did not account for childcare quality or other potential mediators or confounders. More recently and allowing for these factors, studies have found that children exposed to long periods of childcare were only at risk if their mother was "highly insensitive". Findings regarding mother-child interactions are mixed(42). More hours in childcare are also associated with increased behavioural problems (although there is some evidence to indicate that these effects fade out over time). On the other hand, childcare attendance is associated with increased social competence and higher cognitive scores and IQs(38;42;44;47).

A review exploring cortisol levels in childcare, as a proxy for stress and therefore mental health, found that cortisol levels increased during the day for children in childcare, but reduced for those who were at home(41). A review was conducted to inform the 2004 childcare strategy, which largely focused on findings from the UK using the EPPE (Effective Provision of Preschool-Education) study, but also made comparisons with findings from the US and Scandinavia(38). Although the childcare strategy aimed to eliminate the distinction between early education and childcare, the evidence was presented separately. It concluded that the evidence surrounding childcare (as opposed to early education) is mixed and dependent on a variety of factors. High

levels of group care can have negative effects on behaviour, however this is dependent upon quality. Good quality childcare can have positive influences on cognitive and language development, although the findings are less consistent than for early years education.

#### Long term impacts:

Some of the immediate beneficial effects of formal childcare, such as improved cognitive abilities, fade out over time. However there is evidence to suggest that there are some long-term benefits, for example increased paid employment, higher socioeconomic status, and lower rates of teenage pregnancy and criminal behaviour. It has also been postulated that these improvements may be passed on to the next generation(43;44).

#### Health inequalities:

Existing research has given little consideration to the impact of formal childcare on health inequalities. The majority of interventions have focussed on the impact of childcare in disadvantaged groups and so differential impacts could not be assessed(43;44). One of the key reviews explored the potential impact of preschool on child development and social mobility, focussing on studies in the US(43). It found that uptake of preschool programmes was socially distributed, with children from lower income families less likely to participate. Since preschool attendance was associated with improved learning and developmental outcomes, and social mobility from improvements to educational achievement for example, they postulated that increasing rates of childcare use could help to reduce inequalities. On the other hand it has been postulated that, because childcare quality has been found to be important for some aspects of health and wellbeing, it could widen the gap as children from higher income groups benefit from more expensive and higher quality childcare(42).

#### *Less researched links: Findings from the Millennium Cohort Study*

#### *Childcare and injury*

This link is presented under the injury case study (page 47)

## Childcare and breastfeeding

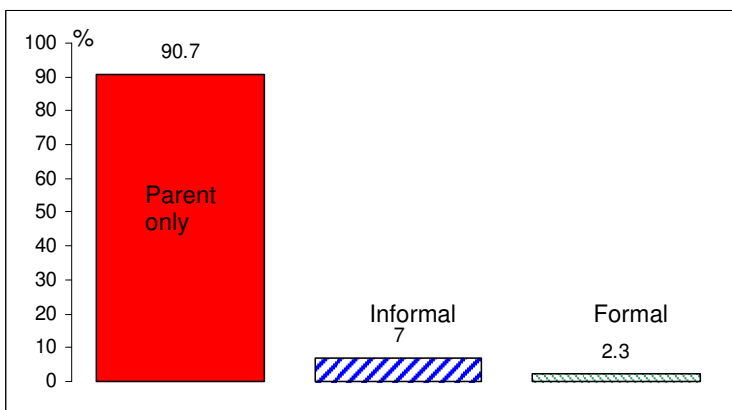
### Childcare

1. Policy context: see page 26
2. Trends and current prevalence in childcare use:

For this analysis, when using MCS data, we explored the prevalence of childcare use which lasted at least 10 hours a week and commenced before the age of 4 months (see Box 1, page 17). As Figure 24 shows, 7% of infants were cared for in informal childcare for at least 10 hours a week before the age of 4 months, and 2% were cared for in formal childcare.

**Figure 24: Proportion of infants who were cared for in informal and formal childcare for at least 10 hours a week before 4 months of age, UK**

Source: MCS



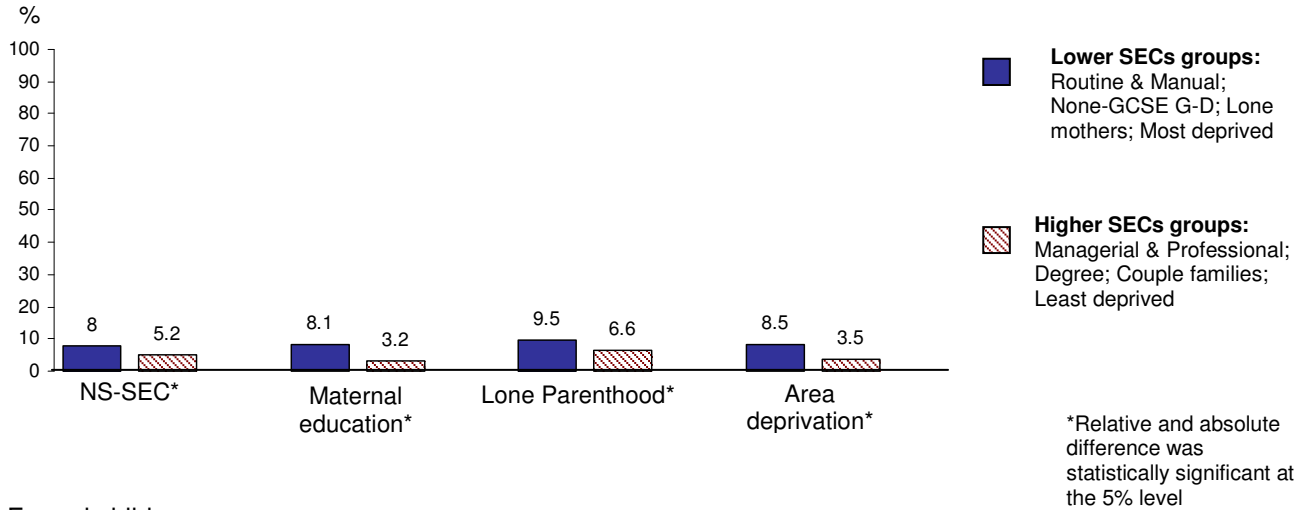
### 3. Inequalities in childcare use

Inequalities in any amount of childcare have been shown on pages 28-29. Figure 25 demonstrates inequalities in childcare use lasting at least 10 hours a week, which commenced before the age of 4 months, in the MCS. Children from less affluent groups for all 4 measures of SECs were significantly more likely to use informal childcare than those from more affluent groups. They were also less likely to use formal childcare, although this was not statistically significant when comparing lone parents to couple families.

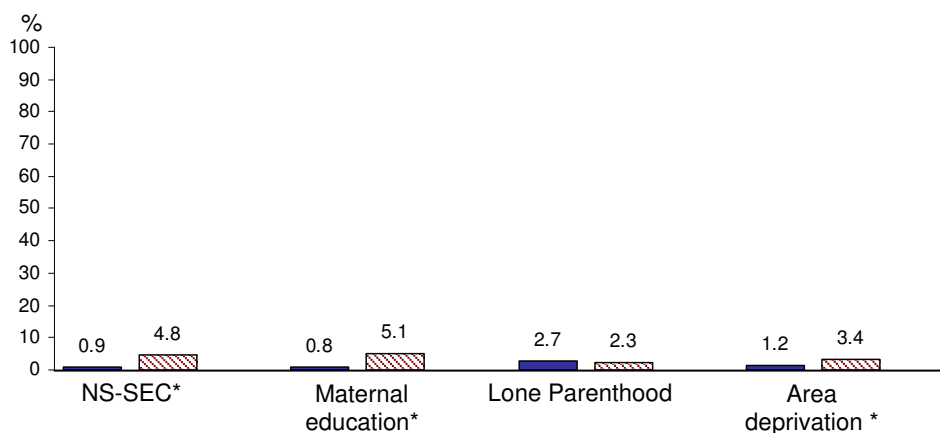
**Figure 25: Proportion of infants who were cared for in informal and formal childcare for 10 hrs a week before the age of 4 months, by SECs, UK**

Source: MCS

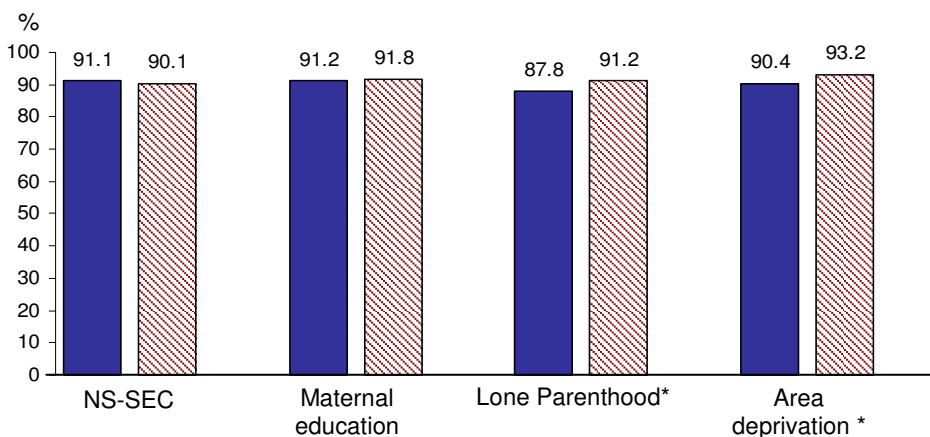
Informal childcare



Formal childcare



Care only by a parent



## Breastfeeding:

### 1. Policy context

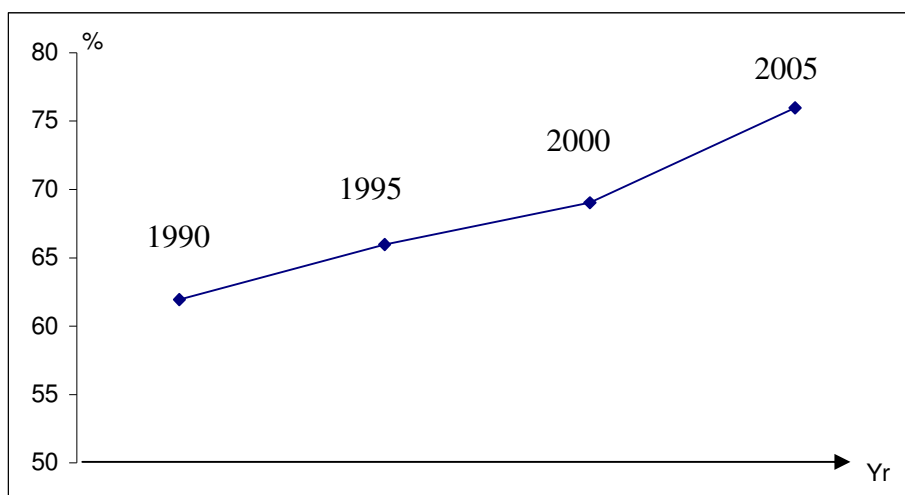
Breastfeeding is associated with a wide range of health benefits to the mother and child(64) and on this basis the World Health Organization recommends that infants be exclusively breastfed for 6 months(65). In 2001 (when the Millennium Cohort children were infants), the UK government recommended that infants be exclusively breastfed for at least 4 months and therefore that solids not be introduced before that age(66). However results from the IFS indicate that in 2005 only 7% of mothers exclusively breastfed for at least 4 months. A PSA policy goal was set for 2008-2011 to increase the proportion of infants who are breastfed for at least 6-8 weeks(67), supported by the Children's Plan(68) which built on the changes that Every Child Matters introduced at a local and national level, the Healthy Child Programme (formerly the Child Health Promotion Programme), and Healthy Start, which specifically targeted those from low income families.

### 2. Trends and current uptake of breastfeeding

Breastfeeding rates have increased in recent decades, as demonstrated by IFS data between 1990 and 2005 in Figure 26.

**Figure 26: Proportion of mothers who initiated breastfeeding, 1990-2005, UK**

Source: IFS



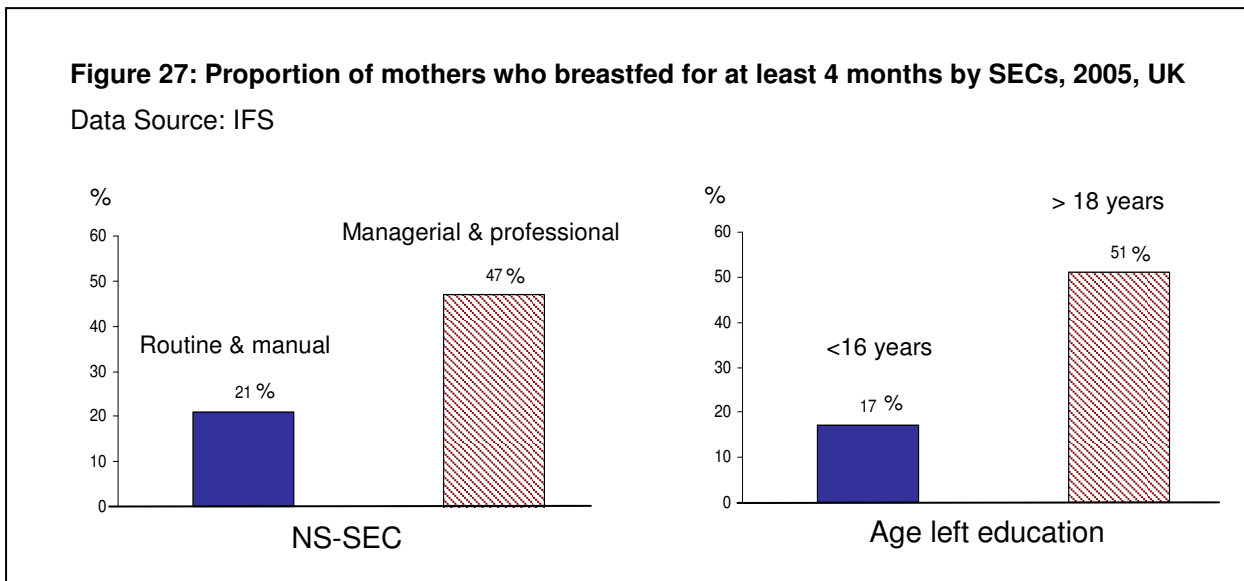
However whilst 76% of mothers in the 2005 IFS initiated breastfeeding, only 34% breastfed for 4 months or more (data not shown). Similarly in the MCS 66.5% of mothers initiated breastfeeding but only 33% breastfed for at least 4 months (data not shown).

### 3. Inequalities in breastfeeding

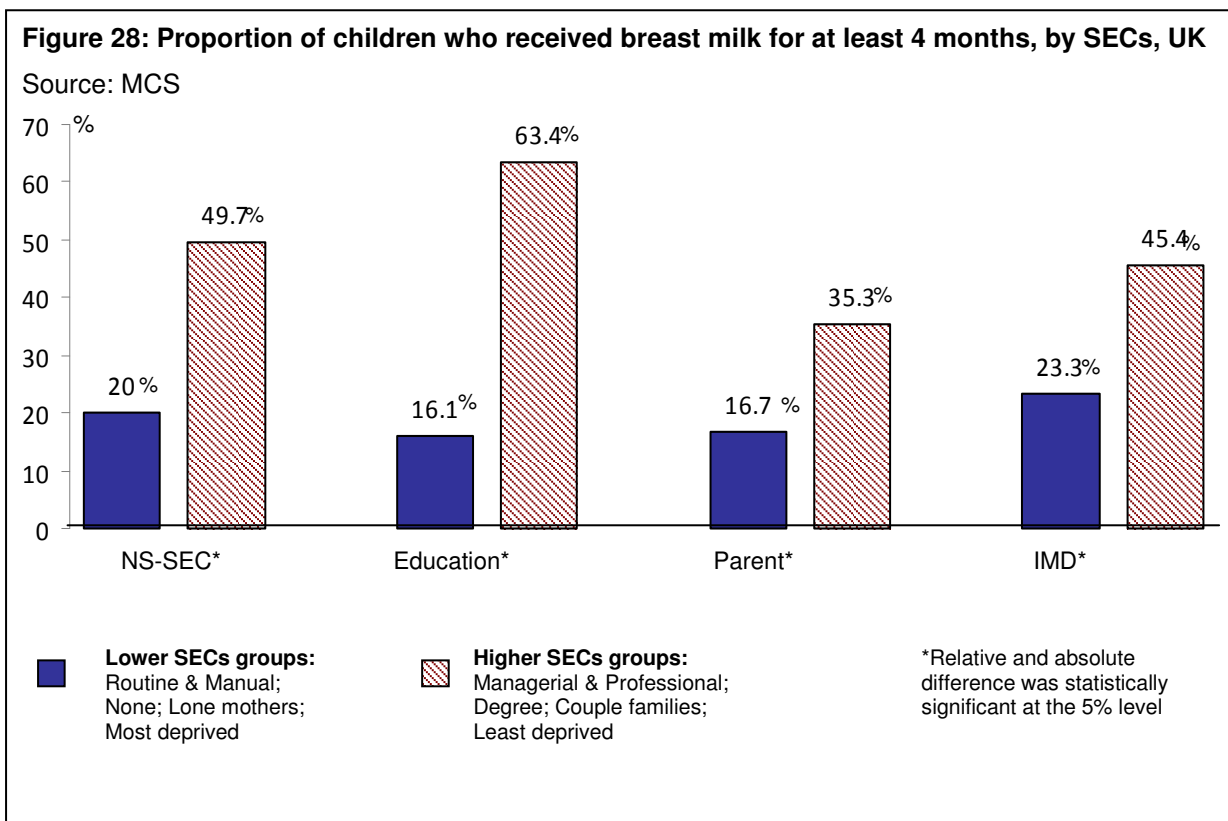
According to the IFS, mothers who were from managerial and professional backgrounds, and who



had stayed in education for longer, were more likely to breastfeed for 4 months or more, see Figure 27.



Similar patterns were also seen in the MCS: figure 28 shows the proportion of children who received breast milk for at least 4 months; children from less affluent backgrounds were significantly less likely to have been breastfed for all 4 measures of SECs.



Childcare and breastfeeding:

This section of the report has been written up in detail as an academic short report:

Pearce, A.; Li, L.; Abbas, J.; Ferguson, B.; Graham, H.; Law, C.; the Millennium Cohort Study Child Health Group. "Childcare use and inequalities in breastfeeding: Findings from the UK Millennium Cohort Study". In press; Archives of Disease in Childhood.

This paper is provided in Appendix 13. A brief summary of findings is provided below:

1. What is already known on this topic?

- UK breastfeeding rates are low and socially distributed(69)
- A small number of studies have found that infants being cared for in formal and informal childcare have lower rates of breastfeeding than those cared for only by their parents(70)
- However none have explored the association for different social groups

Overall association:

Children who had been cared for in informal childcare for at least 10 hours a week before the age of 4 months were half as likely to have been breastfed than those cared for only by a parent (RR=0.51 [0.43, 0.59]). Those who had been cared for in formal childcare were also less likely to have been breastfed, although to a lesser extent (RR=0.84 [0.72, 0.99]). For informal childcare, both part-time and full-time care was associated with a reduced risk of breastfeeding, whereas for formal care, only full-time childcare was associated with a reduced likelihood of breastfeeding (see Appendix 13).

Association in different social groups:

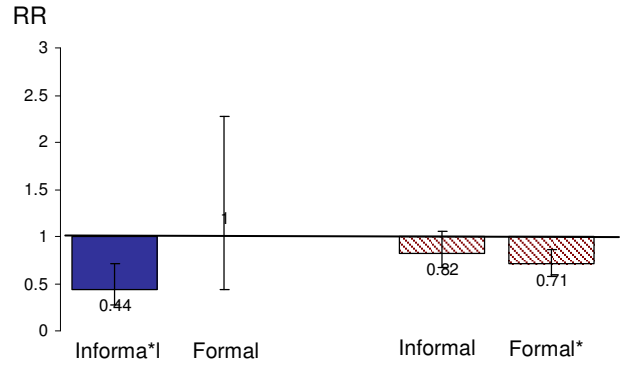
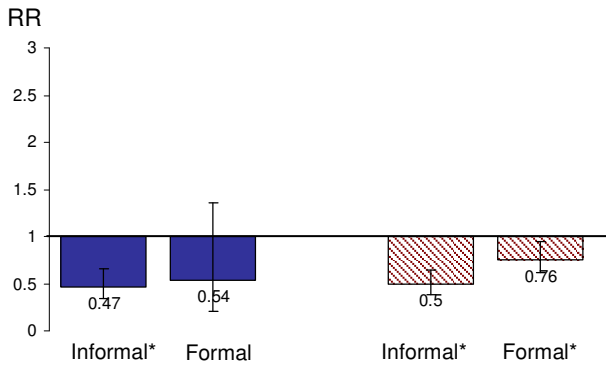
The reduced likelihood of breastfeeding in informal childcare compared to parental care was seen in all socio-economic groups, as shown in Figure 29 below. Formal childcare was associated with lower RRs for breastfeeding in mothers from the more advantaged backgrounds (measured by NS-SEC, maternal education and lone parenthood). In contrast, lone mothers were 65% more likely to breastfeed if the infant was cared for in formal childcare.

**Figure 29: Adjusted risk ratios for breastfeeding for => 4 months, by childcare type <4mths and 10+hrs/week, baseline=parental care: for higher and lower SEC groups**

Source: MCS

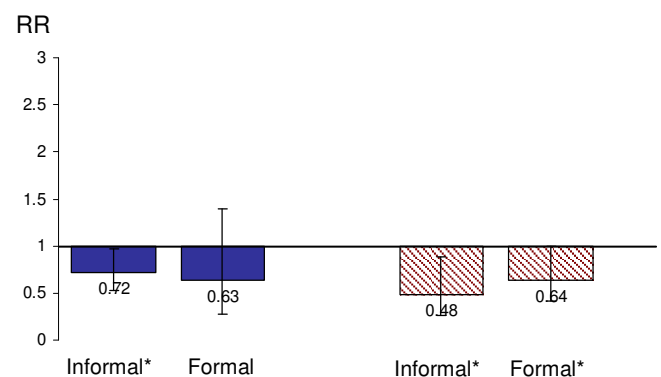
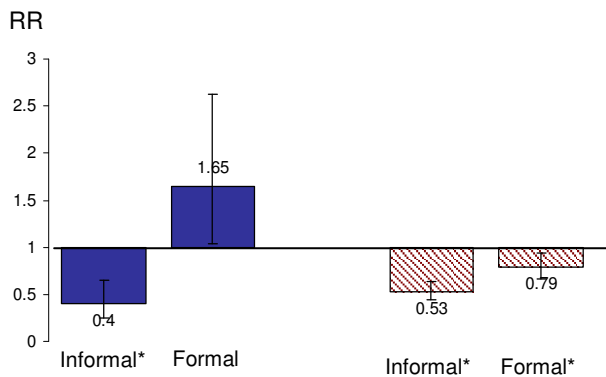
a) NS-SEC

b) Maternal education



c) Lone parenthood

d) Area deprivation



**Lower SECs groups:**  
Routine & Manual;  
GCSE D-G -None; Lone  
mothers; Most deprived

**Higher SECs groups:**  
Managerial & Professional;  
Degree; Couple families;  
Least deprived

\*P=<0.05. Adjusting for:  
mother's ethnicity, parity, age  
at first live birth, mother  
returned to paid employment <  
age 4 months. For unadjusted  
results see Appendix 13

**Interpretation:**

Childcare offers a potential setting to promote the continuation of breastfeeding, although our findings suggest that, on the whole, this potential is not currently being realised. These results indicate that informal childcare may be acting as a barrier for all social groups, whereas formal childcare was only associated with a reduced likelihood of breastfeeding if it was full-time or in mothers from more affluent groups and couple families. However formal childcare arrangements may be supportive for some groups, such as lone mothers, who traditionally do not breastfeed.

**Views from the PEAR group:**

Findings from the childcare-breastfeeding analyses were used as an introduction to the session in

order to stimulate the young people's thinking when split into pairs to discuss the other analyses (Appendix 11a). Examples were provided, and some prompting was also required to encourage discussion. The group discussed why they thought that mothers who used childcare were less likely to breastfeed. Possible reasons were:

- Mothers are busy with balancing work and their home life
- Because some babies will be receiving formula milk in childcare, those mothers decide to give them formula milk all of the time

They thought that lone mothers using formal childcare might be *more* likely to breastfeed because:

- These mothers are probably working and so can get information when at work
- They might also meet other mums at the childcare centre who can swap advice and information

When thinking about what the government could do in response to these findings the group came up with the following ideas:

- Employers could provide crèches so that mothers can breastfeed in lunch breaks
- Or they could provide rooms so that mum can express milk
- Childcare providers should provide fridges to store expressed breast milk

A full write up, including photos taken at the session, was produced to feedback to the PEAR group and is provided in Appendix 11b.

Strengths and limitations:

We explored the association between childcare commencing anytime before the age of 4 months and the likelihood of breastfeeding for at least 4 months. Childcare did not necessarily precede the cessation of breastfeeding within this 4 month window and some mothers did not initiate breastfeeding at all. We controlled for maternal employment and this did not change the association between childcare and breastfeeding, implying that childcare influences the likelihood of breastfeeding over and above the effect of entering paid employment. Nevertheless it is possible that it is not childcare use alone that influences breastfeeding, but a continuum of antenatal decisions made by the mother about feeding, childcare and paid employment which we have not been able to fully assess. In the session with the PEAR group, findings from the childcare-breastfeeding analyses were used as an introduction to the session. Therefore thoughts from PEAR group surrounding childcare and breastfeeding are likely to be more heavily influenced by the facilitators than for the other analyses. However the group did contribute their own thoughts to some extent, and the quality of the posters and discussion held regarding the other analyses implies that using this analysis as an example was valuable.

Potential impact of childcare on inequalities in breastfeeding:

- Mothers from less affluent backgrounds are less likely to breastfeed
- An increase in informal childcare use may lead to a reduction of breastfeeding in all groups, leaving current inequalities in breastfeeding unchanged
- An increase in formal childcare use could lead to a reduction in breastfeeding in more affluent groups, but increase rates in groups who do not traditionally breastfeed, such as lone parents
- This would lead to a reduction in inequalities in breastfeeding at the population level, however more affluent groups would experience a worsening in breastfeeding rates and this is not considered to be a positive contribution to the social gradient of breastfeeding.

*Childcare and overweight:*

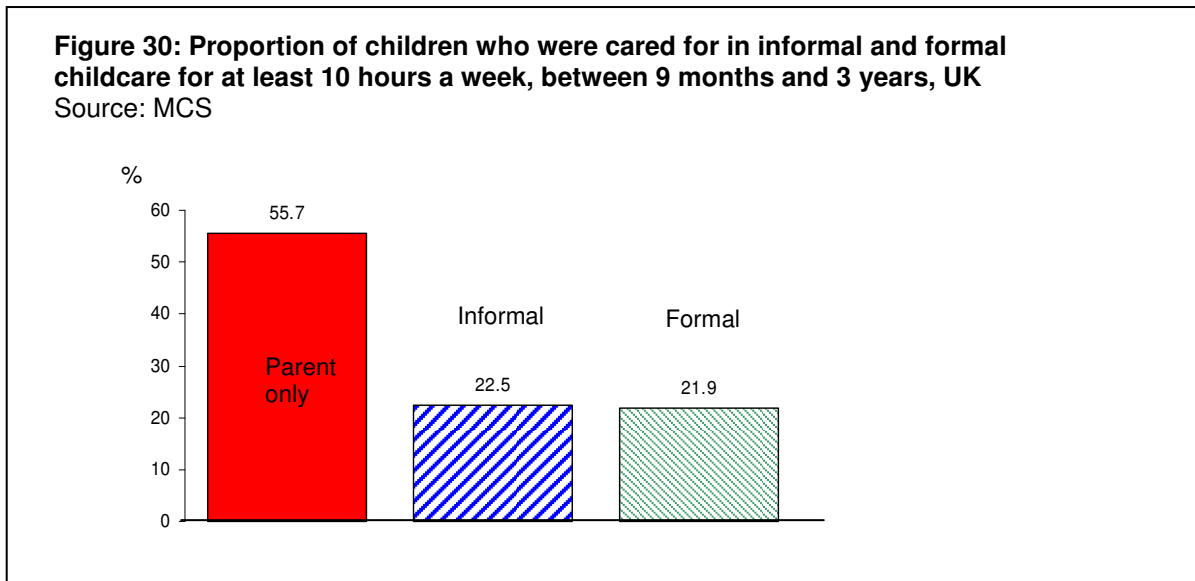
Childcare:

1. Policy context:- see page 26

2. Trends and current prevalence in childcare use

For the childcare-overweight analysis we explored the prevalence of childcare use between 9 months and 3 years which lasted at least 10 hours a week in the MCS (see Box 1, page 17).

Three-quarters of informal carers in the MCS were grandparents.



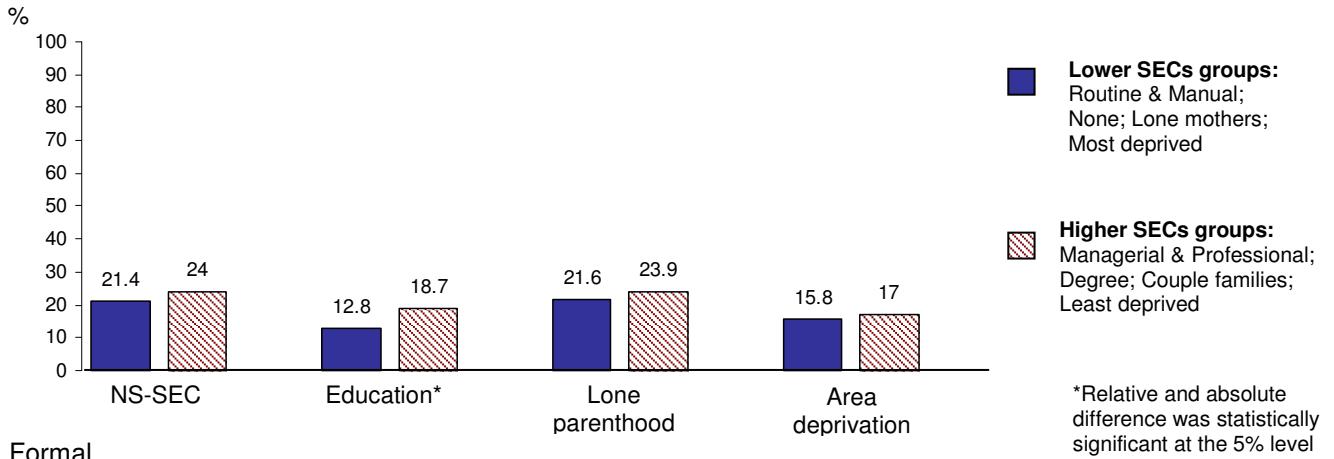
3. Inequalities in childcare use

Inequalities in childcare in general have been shown on pages 28-29. Figure 31 demonstrates inequalities in childcare use lasting at least 10 hours a week in the MCS between the age of 9 months and 3 years. Children whose mothers were less educated mothers were less likely to be cared for in informal childcare those who were more educated. Those from more advantaged SECs were more likely to be cared for in formal childcare and less likely to be cared for only by a parent, for all measures of SECs except lone parenthood.

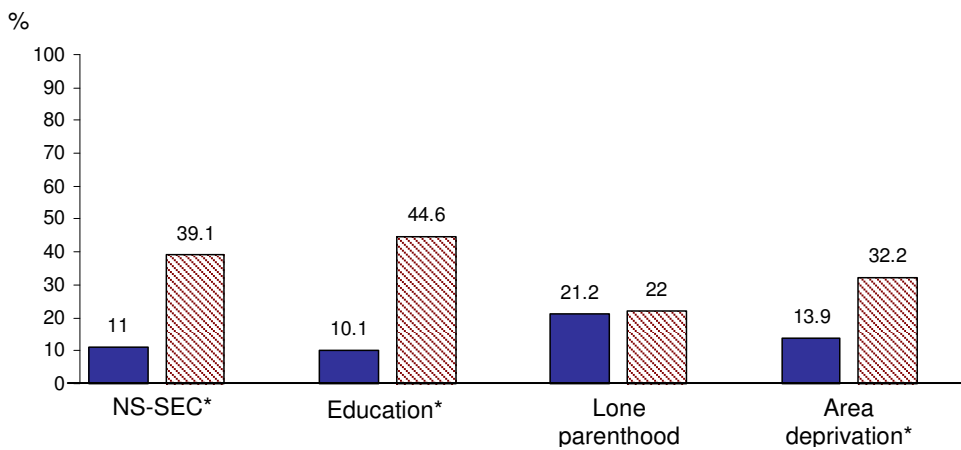
**Figure 31: proportion of children cared for in informal and formal childcare for at least 10 hours a week between 9 months and 3 years, UK, by SECs**

Source: MCS

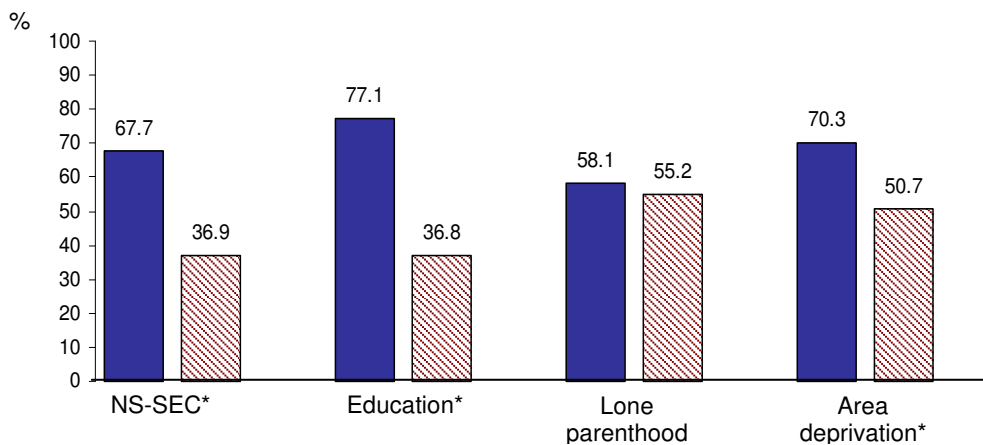
Informal



Formal



Parent only



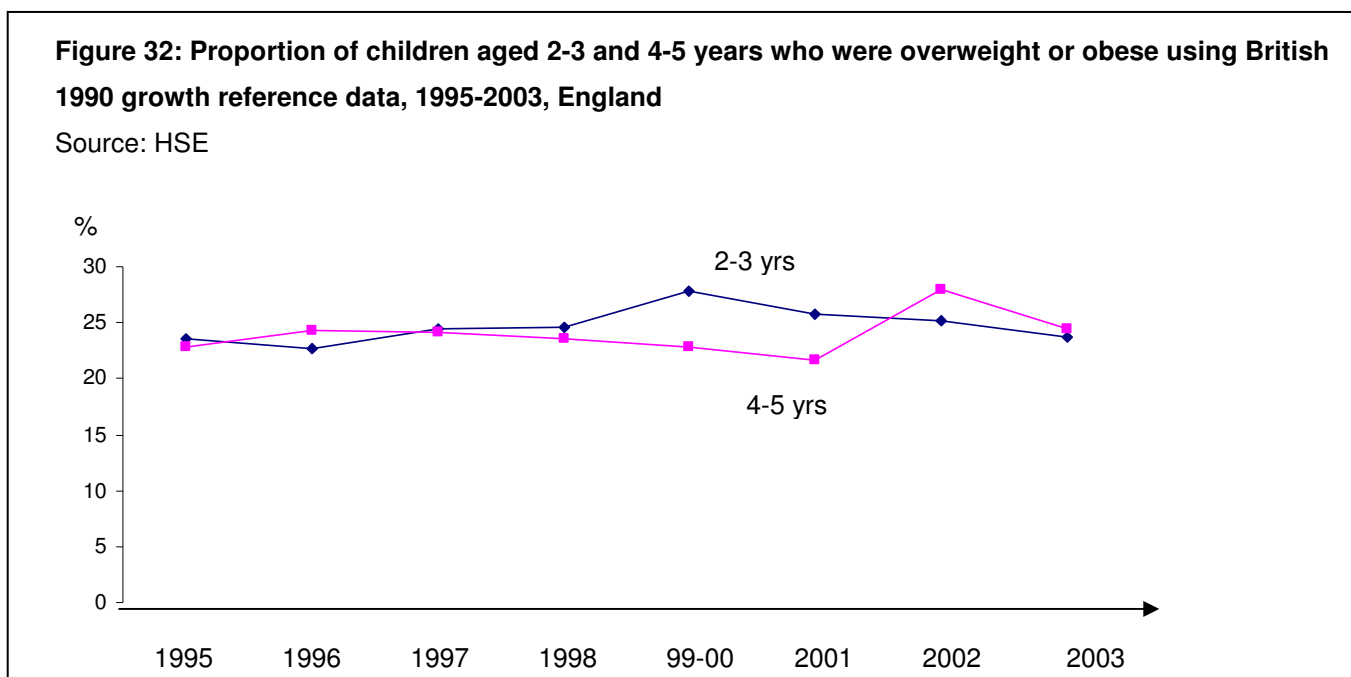
## Overweight and obesity

### Policy context

The growing recognition that childhood obesity is a major public health problem resulted in a cross-Government strategy for England “Healthy Weight, Healthy Lives” and a national PSA indicator to reduce the proportion of children and young people overweight or obese to 2000 levels by 2020(71). For young children, the strategy aimed to increase breastfeeding through the Healthy Child Programme and the Early Years Foundation strived to promote physical activity and healthy diets in childcare. Progress towards the policy goal was monitored through the HSE and at the time of writing was also being increasingly monitored through the National Child Measurement Programme (particularly at the local level), which measures children when they are aged 5-6 and 10-11 years old.

### Trends and current prevalence in overweight and obesity:

Figure 32 shows trends in overweight or obesity in 2-3 year olds and 4-5 year olds between 1995 and 2003 from the Health Survey for England (HSE). Whilst rates have not increased, they remain high, with around one quarter of children being overweight or obese by the time they start primary school.



Similarly, in the MCS, 18% of the children were overweight and 5.1% were obese when they were 3 years old.

### Inequalities in overweight and obesity:

Figure 33 shows the proportion of 2-5 year olds in the HSE who were overweight or obese



between 2000 and 2007 according to several measures of SECs. Children from less affluent families tended to be more likely to be overweight, although there does not appear to be any significant widening in inequalities over the 7 year period.

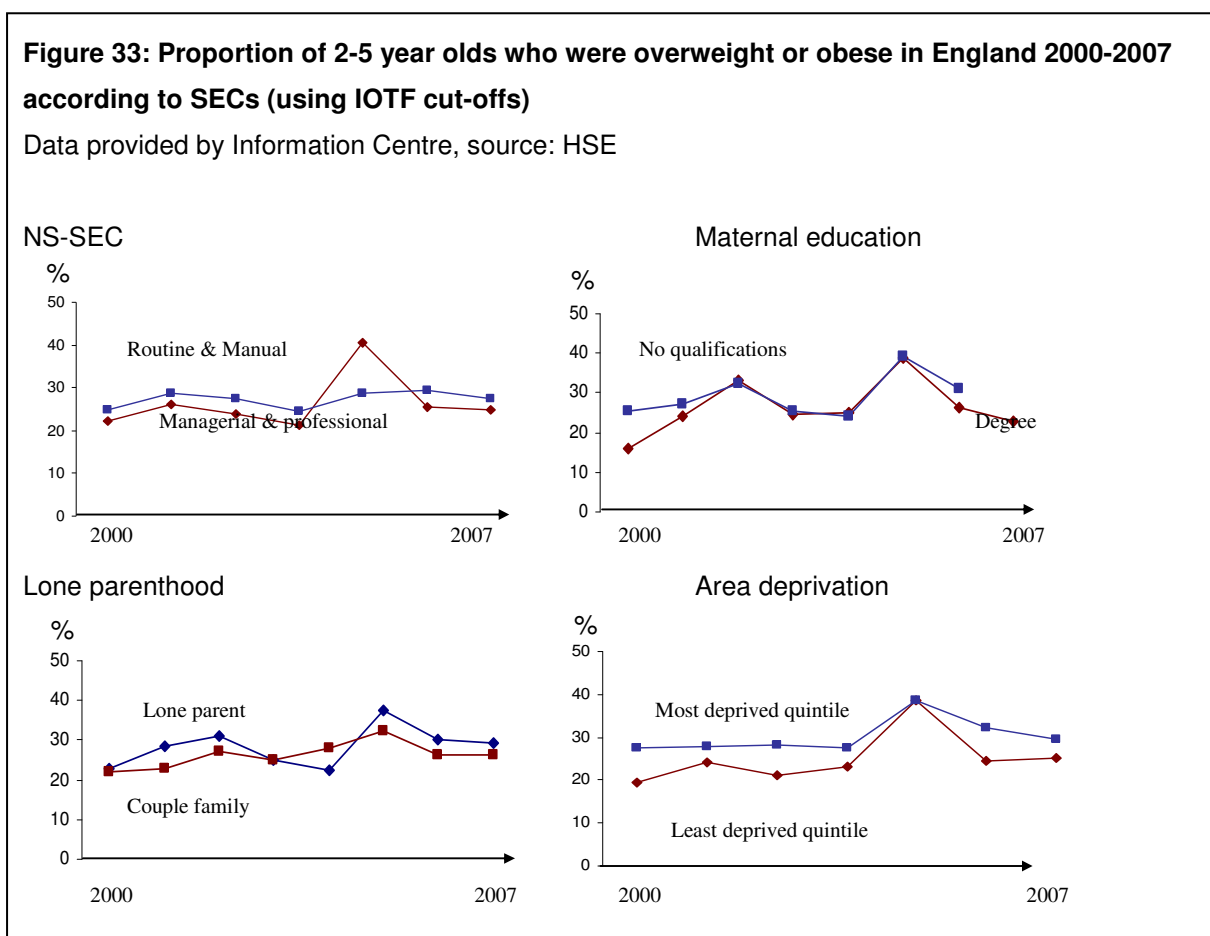
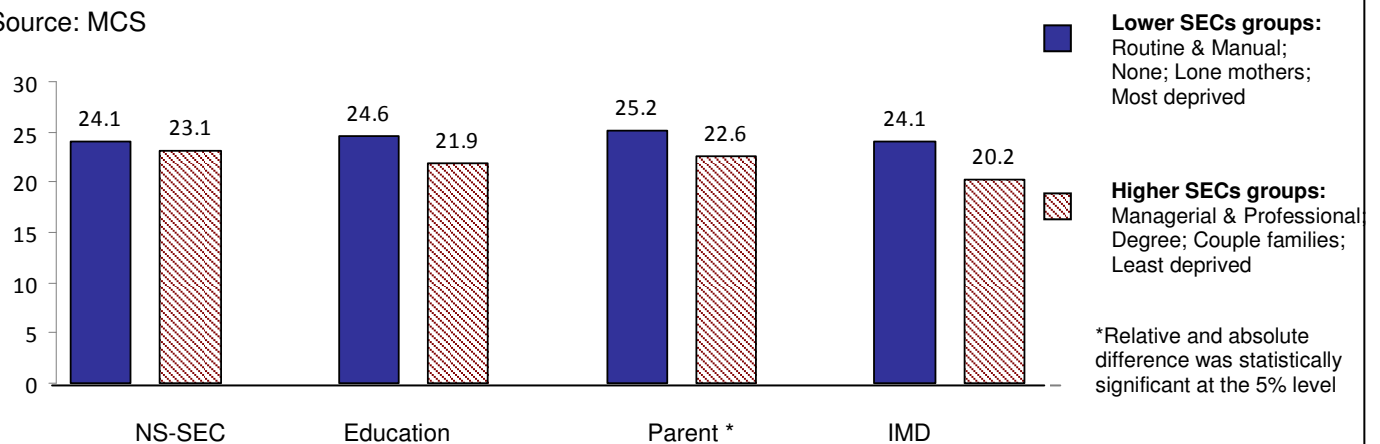


Figure 34 shows the proportion of children who were overweight or obese in the MCS, at 3 years, by SECs. As for the HSE, children from poorer backgrounds were more likely to be overweight or obese, although the differences were only statistically significant for lone parenthood. These figures are not directly comparable to those from the HSE because of the difference in age of the children and also survey areas (UK vs. England).

**Figure 34: Proportion of children who were overweight or obese at age 3 years, UK (using IOTF cut-offs)**

Source: MCS



#### Childcare and overweight and obesity:

This section of the report has been written up in detail as an academic paper:

Pearce, A.; Li, L.; Abbas, J.; Ferguson, B.; Graham, H.; Law, C.; the Millennium Cohort Study Child Health Group. "Is childcare associated with the risk of overweight and obesity in the early years? Findings from the UK Millennium Cohort Study". *International Journal of Obesity*. Online first, Feb 2010.

This paper is provided in Appendix 14. A brief summary of findings is provided below:

#### 1. What is already known on this topic?

- Childhood overweight has increased dramatically in recent decades and approximately one quarter of children are now overweight before they start school(72-75)
- Alongside this trend there has also been an increase in childcare use.
- A small number of US studies have found that children cared for in informal childcare are more likely to be overweight or obese(76-79).
- However no study has explored the association in the UK
- Two US studies tested for interactions with measures of affluence but with inconclusive results(76;79)

For this link we explored childcare lasting at least 10 hours a week, because it was thought that durations for less than this would be likely to have a limited impact on diet and physical activity.

Overall association:

Children who were cared for in informal childcare between 9 months and 3 years for at least 10 hours a week were more likely to be overweight or obese than children who were cared for only by a parent (RR=1.15 [1.04, 1.27]). When exploring hours spent in childcare, the increased risk in informal childcare was only seen for those who were cared for full-time (RR=1.34 [1.15, 1.57]). When differentiating between grandparents and other informal carers, the elevated risk was only seen in other informal carers if cared for full-time (RR=1.40 [1.06, 1.86]), whereas those cared for by grandparents were more likely to be overweight if cared for part-time (RR=1.15 [1.01, 1.30]) and full-time (1.34 [1.12, 1.60]). As shown in the previous analysis, childcare was associated with a decreased risk of breastfeeding, and breastfeeding has been linked to lower risk of overweight(64). Therefore we explored breastfeeding as a potential mediator between childcare and overweight. However when we controlled for breastfeeding the risk ratios changed very little (data not shown, see Appendix 14) implying that it does not lie on the causal pathway.

#### Association in different social groups:

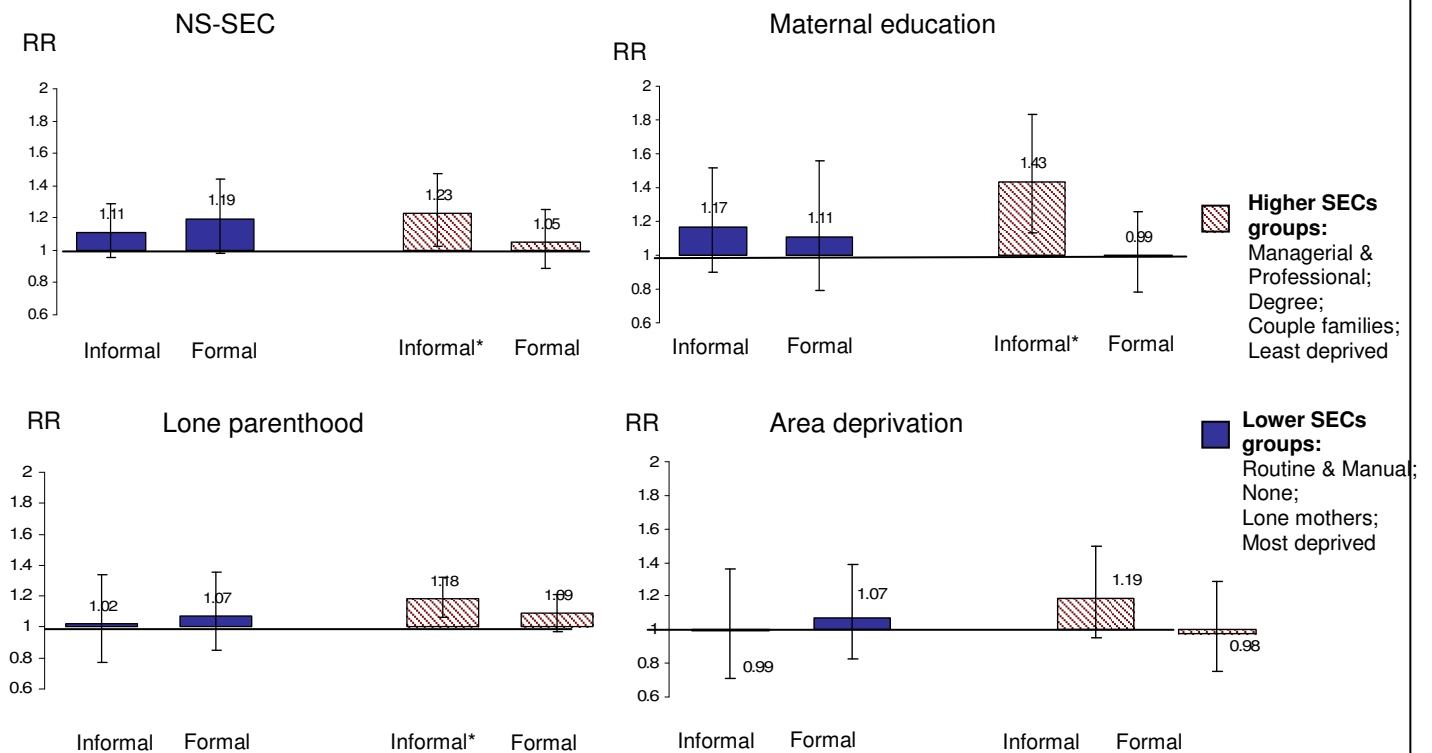
When exploring the association in different social groups, the elevated risk seen in informal childcare was observed only in the more advantaged groups (Figure 35). Children whose mothers who were from managerial and professional backgrounds, were educated to degree level, or living as part of a couple, were more likely to be overweight if they were cared for in informal childcare, compared to children from the same socio-economic strata who were cared for only by a parent. There was no significant difference in overweight between children cared for in formal childcare and those cared for only by a parent in almost all of the strata.

#### Interpretation:

It has been hypothesized that the increased risk of overweight observed in children cared for in informal childcare in the US is explained by a tendency for grandparents (who make up the majority of informal carers) to spoil their grandchildren and give them less healthy foods, and also because grandparents are relatively sedentary(76). It has also been postulated that informal carers are less likely to follow parents feeding advice than formal carers(78). In agreement with other studies we found an increased risk of overweight in children cared for in informal childcare. However when we explored the association in different social groups this elevated risk only held for those from more affluent backgrounds. We were unable to explore the diets and activity levels of the children when in childcare; further research is required into this and the experiences of informal carers to help understand the associations we have observed here.

**Figure 35: Adjusted risk ratios for being overweight by childcare type between 9 month and 3 years, baseline = parental care: for higher and lower social group for the 4 measures of SECs.**

Source: MCS



\* P=<0.05. Adjusting for maternal age, ethnicity, number of children in household at age 3 years, pre-pregnancy maternal overweight, birth weight, smoking during pregnancy. For unadjusted results see Appendix 14.

#### Views from the PEAR group:

The group talked about why children who are cared for by their grandparents are at greater risk of becoming overweight. Possible explanations were:

- Grandparents like to spoil their grandchildren for example by giving them sweets
- They may be less educated and so know less about the importance of young children eating healthily and being active
- They also often feel that it is their role to feed you

When thinking about why this might be the case only for richer children, they thought that:

- Better off grandparents have 'richer' foods which could be more unhealthy, or they might give children more to eat (e.g. a better off grandparent might give the child as much cake as they like, whereas the poorer grandparent would have to ration it)
- Better off grandparents might be more likely to have a car or use taxis whereas less well off grandparents would be more likely to walk and use public transport

Things that they thought the government could do to address this were:

- Provide more education about healthy diets and exercise for the elderly, including shock tactics
- Provide grandparents who are carers with more support- e.g. places or people to take grandchildren to be physically active
- Supply information about different types of exercise they can do with grandchildren
- Health promotion should be directed at grandparents through the media
- More exercise programmes should be offered (school clubs and out of school) which grandparents can take grandchildren to.

A full write up, including photos taken at the session, was produced to feedback to the PEAR group and is provided in Appendix 11b.

Strengths and limitations:

To our knowledge this is the first study to have explored the association between childcare and overweight and obesity in the UK. We investigated the association in different socio-economic groups, and for these differentiated between formal and informal types of childcare, including care by grandparents. It is possible that small sample sizes in some of the sub-groups limited our ability to detect an effect.

We were able to use an objective measure of overweight. Childcare was based on maternal report and this may be subject to recall bias. Furthermore, the measure of childcare we used was based on the main childcare type used for the longest period of time. Mothers were not asked about diet or physical activity in either of the interviews and so we were unable to explore whether these varied by childcare type. We were also unable to investigate the characteristics of informal carers, including grandparents. It is possible that the patterns we have observed are explained by some other factor that we have not been able to control for using the measures available in the MCS. The discussions with the PEAR group raised some additional explanations that had not been considered by the project team (e.g. grandparents feel that it is part of their role to feed their grandchildren and may feed them too much as a result) and also some possible solutions (e.g. offering places of activities specifically for children who are cared for by grandparents).

Potential impact of childcare on inequalities in overweight:

- Children from less affluent backgrounds are more likely to be overweight although inequalities do not appear to be widening in young children
- An increase in informal childcare use could lead to an increase in overweight in more affluent groups
- This would lead to a reduction in inequalities in obesity at the population level, although not through 'levelling up' and so this is not considered a positive contribution to tackling inequalities in obesity.

## 6. Synthesis of findings in light of current and future policy

### *Case study 1: Injury:*

Reducing childhood injury was a priority under the Labour administration, and a PSA goal was set in 2008 to reduce hospital admissions from unintentional and deliberate injuries in children(21). However Hospital Episode Statistics data indicate that approximately 1.6% of 1-3 year olds and 1.5% of infants are admitted to hospital as a result of an injury every year. Whilst the older age group may have experienced a small decrease in admissions from injury over the past decade, rates for infants appear to be rising. In the MCS 8% of infants (aged 9 months) had been taken to an A&E or GP since birth, as the result of an unintentional injury. At age 3 years just over one third had been injured since 9 months. These figures were socially distributed; by age 3 years children whose mothers were from routine and manual classes, less educated, or living in the most deprived fifth of areas in England were significantly more likely to have attended a GP or A&E due to an injury than the children of more advantaged mothers. The differences in injury between social groups in the MCS were small compared to inequalities reported in mortality rates from injury(18), however minor injuries are far more common and small increases in relative risks may translate to significant numbers of children being injured.

A systematic review indicated that legislation is unlikely to make a major contribution to a reduction in childhood injury and there was no evidence pertaining to its impact in different social groups(49). Reviews have also shown that programmes to distribute free or low cost equipment, and interventions to increase safety awareness, lead to increased safety equipment use and other safety related behaviours(28;34), but not necessarily decreased injury rates(28).

Improving the quality of the home environment was an important plank in the Labour government's strategy to reduce inequalities in health and welfare, including childhood injury. For example steps were proposed and underway to improve the quality of social housing(5), and a national home safety equipment scheme was launched to provide free or low cost safety equipment and safety consultations to low income families(21). The majority of these policies came into effect when the MCS children were no longer in their preschool years, however by comparing children who were exposed and unexposed to different components of these policies we have been able to assess their potential association with injury risk. Our findings imply that safety equipment use does not significantly decrease the risk of household injuries at a population level, or alter its social gradient, and that steps to improve the home environment, such as reducing overcrowding and homes without central heating, are unlikely to reduce inequalities in childhood injuries (Figure 36). However this is not to say that, at the individual level, specific pieces of safety equipment (if used correctly) will not have benefits for certain types of injury in certain households. Furthermore, many other aspects of health and welfare are likely to benefit from wider improvements to housing quality, not only in young children but all household members.

The Labour government childcare strategy, “Choice for parents, the best start for children”, launched in 2004 (when the MCS children were aged 3-4 years), aimed to increase the availability, flexibility, quality and affordability of childcare in order to support parents into work(38). Whilst the MCS children would have been largely unaffected by the new childcare strategy in their preschool years, we have been able to explore the potential association between childcare and health by comparing those who were and were not cared for in childcare. A recent UNICEF report highlighted the potential for childcare in OECD countries to widen inequalities if children from more affluent backgrounds are exposed to better quality childcare than those from less affluent backgrounds(40). Our results from the MCS imply that this may be the case for injury in infants, although we were unable to determine whether the injuries occurred when in childcare or elsewhere, or to assess the quality of childcare directly. Steps to improve the education and training of childcare staff(39) could help to raise the standard of regulated childcare attended by children from all social backgrounds, potentially offering safer environments and promoting safety behaviours in children and parents.

Our findings from the MCS imply that informal childcare use may have the potential to increase overall injury rates and also widen inequalities in injuries in young children (Figure 36). Recent changes to the childcare registration system meant that many informal carers had to register and therefore become regulated(80). However in the MCS, and according to other national level data(81;82), the majority of informal carers are grandparents, and relatives are exempt from registration. Therefore a large proportion of children will still be cared for in unregulated childcare. Care by grandparents and other relatives is likely to be the most viable option for many families now and into the future, since it is likely to be affordable and can provide flexible care which wraps-around the weekly free entitlement for 3-4 year olds and also some 2 year olds. Furthermore, it is highly valued and trusted, and often considered to be the best alternative to parental care(83). Our findings suggest that awareness of injury prevention needs to be raised amongst informal carers, and that they should be provided with support and information.

Table 36 summarises the impact that increased childcare use and improvements to the home environment might have on inequalities in childhood injuries, assuming the associations that we have observed are causal.

Figure 36- Potential impact of policies for the early years on inequalities in health, assuming that associations observed are causal

HEALTH MEASURE	POLICY							
	INCREASE CHILDCARE				IMPROVE HOME ENVIRONMENT			
	Informal		Formal		Housing quality		Safety equipment	
	Overall	Inequalities	Overall	Inequalities	Overall	Inequalities	Overall	Inequalities
<b>Injury 9 mths</b>	–	↑	–	↑				
<b>Injury 3 yrs</b>	–	↑	–	–	–	–	–	–
<b>Breastfeeding</b>	↓	–	↓	↓!				
<b>Obesity</b>	↑	↓!	–	–				

\*Assuming causality  Not applicable to the injury case study; – No change to prevalence or inequalities; ↑ Increase in prevalence or inequalities; ↓ Decrease in prevalence or inequalities; ↓! Reduction in inequalities but as a result of worse outcomes in more affluent groups

### Case study 2: Childcare:

Childcare featured highly on the Labour government agenda, as a means to encourage parents to return to paid employment and to level up educational outcomes between the rich and poor. It is likely to remain a priority under the new coalition government(84). Childcare use has increased over the past few decades as a result of increases in maternal employment. This is confirmed by data from the Infant Feeding Survey and figures from this survey and also the MCS indicate that most infants and preschool children are regularly cared for by someone other than a parent. Formal childcare is particularly socially distributed, with families from lower socio-economic groups being significantly less likely to use it.

Evidence from reviews indicates that formal childcare may have a mixed effect on child health. Childcare use can have a beneficial influence on child development(42;44), afford immunity to infectious disease in primary school(42), and lead to long term benefits such as improved social mobility and employment, and reduced teenage pregnancy and crime rates(43;44). However childcare attendance might also put children at increased risk of infection(42;45) and behavioural problems, raised stress levels(41), and childcare commencing very early on in life could lead to attachment insecurity(42). There was a paucity of research exploring these relationships in different social groups(42) and also investigating the impact of informal childcare on child health.

Our analyses included informal and formal childcare, and focused on a limited number of maternal and child outcomes. Improving rates of breastfeeding and reducing childhood overweight and obesity are priorities for the government and feature in the PSA to improve the health and wellbeing of children and young people(67). Data from the IFS, HSE and MCS indicate that breastfeeding rates remain low and early childhood overweight remains high, and that both are socially distributed. In addition to the association between informal childcare and injury reported



above, we also found that, in the MCS, infants were less likely to be breastfed and children were more likely to be overweight if they were cared for in informal childcare (compared to those who were cared for only by a parent). When stratifying by SECs, the reduced rates of breastfeeding in informal childcare were seen for all groups, whereas only children from more affluent groups were more likely to be overweight. As discussed in the context of childcare and injury above, the move to regulate some types of informal childcare may improve the quality of care experienced by some children. However grandparents, who make up the majority of informal carers, are exempt from registration. Research investigating the quality of childcare provided by a number of childcare types in young children in England indicated that grandparents caring for infants aged 10 months had less safe homes than childminders, and that they offered a smaller range of activities and outings to children aged 18 months compared to childminders and nannies. However care provided by grandparents, childminders and nannies was better quality than that provided in nurseries in a number of ways including positive relationships, punitiveness and emotional responsiveness at age 10 and 18 months(85).

As well as the findings for childcare and injury reported in case study 1, we found that, overall, infants who were cared for in formal childcare were less likely to be breastfed for at least 4 months than those who were cared for only by a parent. When exploring time spent in formal childcare, the reduced risk was only observed for full-time care. The reduced likelihood of breastfeeding was only observed in the more affluent groups, whereas lone mothers were more likely to breastfeed if their infants received formal childcare. Children who were cared for in formal childcare did not differ in terms of their risk of being overweight compared to being cared for only by a parent, overall or in any social group (Figure 36). The government's move to improve the education and training of childcare staff could potentially improve diets in childcare, increase opportunities to be active, raise support for breastfeeding (e.g. provision of breast milk storage), provide safer environments and promote safety awareness in children and parents from all backgrounds.

Since the introduction of the 2004 childcare strategy, the free early years education entitlement for 3-4 year olds has been increased from 33 to 38 weeks a year. The strategy also proposed that by 2010 the number of free hours be increased from 12.5 to 15 a week(38) and this proposal is also supported by the new coalition government(84;86). Furthermore, two year olds living in deprived areas in England will also be eligible(39;86). Therefore formal childcare use is likely to continue to increase. As noted previously, grandparents and other relatives are, and are likely to remain, the preferred childcare option for many families. Child health interventions have typically focussed on parents, schools or communities. More recently formal childcare settings are also being acknowledged. Although efforts need to be focussed on ensuring that good quality formal childcare is available to children from all backgrounds, our findings also imply that awareness also needs to be raised amongst informal carers, and that they should be provided with support and information.

Informal carers are often highlighted as a hard to identify group, and this may point towards the value of a population level approach. Alternatively the announcement by the previous Labour administration to provide grandparents with National Insurance credits for caring for grandchildren (87) and the recent launch of the grandparents website [www.BeGrand.net](http://www.BeGrand.net)(88) could provide a potential opportunity for health promotion if they remain in place. Table 36 below summarise the potential impact of childcare on inequalities in health, based on the findings from this project (and assuming that the associations we have observed are causal).

## 7. Strengths and limitations of synthesis

There are a range of strengths and limitations related to the individual analyses and these have been summarised for each link in the results section and reported in detail in the papers in Appendices 10; 12-14, and also in relation to the analyses reported in the reviews(9;45-49). In this section we focus only on strengths and limitations related to synthesising this information to inform policy.

The analyses conducted in Phase 2 were driven by what was reported, or lacking, in the review of reviews carried out in Phase 1. The review of reviews was conducted using scoping review methodology, which is designed to rapidly map the extent, range and nature of research activity in board research areas. The intention was not to illustrate in depth findings, quantify effects, or to assess the quality of studies in detail(11;12). Although scoping reviews are designed to be less time and resource intensive than systematic reviews, it has been noted that they can still take up to 6 months (with 3 staff f/t equivalent) to conduct(11). The resource available within this project was far below this and therefore a scoping review of *reviews* rather than of primary research was conducted; a method used by civil servants known as a quick scoping review(13). This method comes with limitations, for example, many of the reviews identified were of randomised control trials and case control studies rather than observational studies, and therefore it is possible that areas highlighted as requiring further research may have in fact have just been lacking in terms of experimental evidence. Despite this, when conducting literature searches for each of the links in Phase 2, it was clear that these areas were under-researched; with only a handful of studies exploring these areas, typically conducted outside the UK, and rarely looking at differential effects.

The literature databases and websites which were searched tended to have a Western bias, although research outside these settings was not considered to be relevant due to variation in social and policy contexts between UK and non-western countries. Another limitation of using scoping reviews to identify areas requiring further research is that they do not necessarily identify areas in need of *better quality* research(11).

We have used a simple, narrative synthesis as opposed to quantifying net effects of, for example, childcare. This approach was chosen so that it may be easily transferred into areas of policy making and practice; and also to avoid amplifying the shortcomings of the data in each of the individual analyses. For breastfeeding and overweight we were able to explore combined effects, since breastfeeding potentially lay on the causal pathway between childcare and overweight. For the analysis exploring the association between the home environment and injury, we also controlled for childcare use. However for other links which were covered in the reviews, we were limited to what was explored and reported in reviews. We were also limited by the data which were available in the MCS.

We have reported findings from the MCS, a cohort of children born in the UK in 2000-2002. This is the most current UK-wide cohort appropriate for these analyses, although it is likely that the experiences of today's preschool children are different. However the MCS children were preschool age under the 1998 childcare strategy, and so we were able to assess the impact of childcare before the new childcare strategy changes were implemented and to use this information to contemplate the potential effects of these new changes. Our findings may make a useful comparator for future cohorts, such as the proposed 2012 cohort(89). In the majority of cases the MCS data were not directly comparable to the other data sources because they referred to different age groups or different countries, had different sample sizes, or because the questions were asked differently. Whilst the data from the other national datasets was not as wide-ranging as the MCS, they allowed us to look at trends over time, which a cohort cannot provide. The main childcare used between 9 months and 3 years was explored. Due to the way in which the data were collected it was not possible to explore age when the childcare commenced in this project, and so age differentials have not been investigated. The sessions with the PEAR group were not intended to be pieces of qualitative research but a way to engage young people in public health research and hear their views. Participation in research is known to carry many benefits for young people(90;91), and feedback from the group indicated that they found both sessions to be engaging and enjoyable. In particular they liked meeting the researchers working on the project, and also receiving feedback at the second session, about how the first session had contributed to the project. Furthermore, the sessions provided a valuable perspective from the next generation of parents, and encouragingly their ideas tended to concur with the literature and our discussions within the project team.

For the childcare case study we only analysed three aspects of child health, and findings from existing reviews. Whilst the 3 MCS analyses concentrated on areas of health that are of high government priority, there are other areas which still require further research in relation to childcare, such as measures of wellbeing. Furthermore the evidence from the reviews rarely took in to account inequalities. Due to the young age of the cohort, the 3 analyses were also unable to investigate longer-term impacts of childcare on health, and similar limitations are observed for the injury case study. We were only able to explore 2 policy areas in relation to injury because of time limitations.

The associations we demonstrated in the MCS are based on observational data over relatively short periods of time. We were able to explore a range of potential confounding factors; however it remains possible that the associations we have seen are explained by residual confounding, that is some other unknown or unmeasured factor(s). We were unable to explore some characteristics of

childcare, such as aspects of quality, for example diet, and the characteristics of the carers. Injury was based on maternal report of attendance at an A&E or GP.

Finally, this project was completed during the Labour administration of 1997-2010 and so was guided by policies of that time. However in May 2010 a new Conservative-Liberal Democrat coalition came into power. Efforts have been made to briefly take into account policy intentions that had been documented by the new administration as of July 2010(84;86).

## 8. Recommendations for further research

Phase 1 of this project highlighted a number of areas for research which could not be undertaken within the resources available. These include:

- Maternal and child wellbeing in relation to childcare use. (This may require the development of composite measures, for example of child wellbeing).
- The longer-term impacts of childcare on health.
- Community regeneration in relation to childhood injury.
- There is also scope for exploring differential effects in the areas which were covered in the reviews for both the childcare and injury case studies, for example between childcare and child development, or parenting interventions and unintentional injury.

Other types of information that could be used to contribute to the jigsaw of evidence, which we were unable to use, include:

- Qualitative research, for example:
  - exploring how informal care can be supported in ways which are sensitive to children's developmental needs, as well as the needs of those of other family members.
  - gaining insight into the experiences of parents whose young children who have been injured in the home
- International comparisons between countries with different policy contexts

The approach we have used could be developed further for use in other areas of health and policy.

Areas that might benefit from further development include:

- The evidence from the reviews was of limited use because they rarely reported differential effects by SECs. Future projects might contact the review authors or revisit the individual papers within the reviews, to see if information on differential effects is or might be available.
- Currently there is only one nationwide cohort, the MCS, which can be used to explore contemporary health issues for young children. A further cohort is planned in 2012(89). Over-reliance on single cohorts might be mitigated by other methods of acquiring data on large samples, for example through data linkage or the creation of synthetic cohorts sampled from routine datasets.

## 9. Conclusion

Government initiatives are typically set up in ways that make it difficult to estimate overall effects of policies or policy areas on health inequalities using experimental designs. Creative ways to assess government policies combining existing evidence with new analyses of observational data offer a potential solution.

This project has used a multi-component approach to explore the potential impact of government policies for the early years on inequalities in child health, focussing on two case studies (childcare and unintentional injury). We built on evidence derived from policy documents, research papers and reviews to inform additional analyses of national surveys and a cohort of contemporary children.

We used this approach to investigate two case studies. Findings from our first case study illustrate that childhood injury rates have fallen recently, although not necessarily in very young children, and they remain socially distributed. Some policies aimed at improving different areas of government priority, such as childcare, might carry the potential to unintentionally widen inequalities; whilst others which strive to reduce inequalities (for example the national home safety equipment scheme) may not have the desired effect (Figure 36).

Childcare use has increased over the past few decades as a result of increases in lone parenthood and maternal employment, and its use is likely to continue to rise. However childcare has the potential to widen inequalities in unintentional injury in infants and young children, and may have a detrimental impact on breastfeeding rates and levels of overweight and obesity (although sometimes more so in more advantaged families) (Figure 36). Efforts focussed on ensuring that good quality formal childcare is available to children from all backgrounds, for example through improved training and the provision of free places, may help to reduce health inequalities. However our findings also imply that awareness and support needs to be raised amongst informal carers.

This report demonstrates the complexities of considering policy impacts on health inequalities. However we hope that it has also highlighted the potential for a multi-component approach, which might be replicated in other areas of policy making and health. It could also be extended, for example to include a wider range of information sources, such as qualitative data.

## 10. Contribution to Consortium Theme

Health inequalities, translation to policy

## 11. Dissemination/outputs

- “Does childcare influence socio-economic inequalities in unintentional injury? Findings from the UK Millennium Cohort Study” *Journal of Epidemiology and Community Health*, 2009. 26;2:161-166.
- “Is childcare use associated with childhood overweight and obesity in the early years? : Findings from the UK Millennium Cohort Study” *International Journal of Obesity*, Online First Feb 2010.
- “Childcare use and inequalities in breastfeeding: Findings from the UK Millennium Cohort Study” *Archives of Disease in Childhood*. In press.
- “What impact does the home environment have on inequalities in unintentional injury in the early years? Findings from the Millennium Cohort Study”. Under review with *American Journal of Public Health*.
- Conference- International Society for Equity in Health “Social and Societal Influences on Equity in Health”, Crete, June 2009. Abstract title (oral presentation)- “Does childcare influence socio-economic inequalities in unintentional injury? Findings from the UK Millennium Cohort Study”.
- Conference- Society for Social Medicine- Annual Scientific Meeting, Newcastle, Sept 2009. Abstract title (oral presentation)- “Does childcare influence the risk of overweight in the early years? Findings from the UK Millennium Cohort Study”.
- Attended PEAR group meetings in Feb 2008 and 2010
- CL attended policy seminars at DH in 2008 and at DCSF in 2010, where aspects of the project plan and results were presented

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