Long-term trends in child maltreatment in England and Wales, 1858–2016: an observational, time-series analysis

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Summary

Background It is unclear whether child maltreatment is increasing or decreasing in England and Wales. More evidence is needed, from multiple sources and over longer periods of time, to explore trends in child maltreatment. We investigated whether the annual incidence of child maltreatment has changed over time, using official record data and time-series methods to establish long-term trends.

Methods In this observational time-series analysis, we used six data sources (Government records for child mortality, police-recorded child homicides, crimes against children, child protection, and children in care; and NSPCC data) to estimate the incidence of child maltreatment in England and Wales and examine long-term trends. We included nationally representative data that could estimate the incidence of child maltreatment for more than 25 years. Our primary outcomes were the number of victims (age <20 years) or perpetrators (age >16 years) of child maltreatment per 12-month period in England, including or excluding Wales. We fitted Poisson regression models with year as the exposure and the number of victims or perpetrators of child maltreatment as the outcome (adjusted for population age-structure and size). When a linear trend was not appropriate, we fitted generalised additive models with penalised splines to visualise trends.

Findings The incidence of child mortality by homicide or assault decreased by 90% (2·7 per 100 000 children) between 1858 and 2016 and the incidence of people guilty of child cruelty or neglect decreased by 83% (6·7 per 100 000 adults) between 1893 and 2016, whereas child protection registrations increased by 182% (328·7 per 100 000 children) between 1988 and 2016. Crimes against children and children entering care increased between 2000 and 2016. In 2016, 40 children died by homicide, with twice as many adolescent (15–19 years) deaths than infant (age <1 year) deaths. In 2016, 67 700 children were placed on the child protection register and neglect and emotional abuse were the most common reasons.

Interpretation Although long-term trends have decreased, child maltreatment remains a major public health problem in England and Wales. Further research is needed to establish whether adolescents are a particularly vulnerable age group and whether neglect and emotional abuse are increasing. Future child protection policies and practices should respond to these areas of growing need.

Introduction

Each year about 0·5% of children are officially identified as being at risk of child maltreatment in England and Wales.[1,2] The consequences of child maltreatment are serious and can have long-lasting effects for the child, their family, and society as a whole.[3] Protecting vulnerable children is a public health priority, and since the 1970s, Government spending and initiatives to improve child protection have increased. However, whether these child protection efforts have translated to sustained decreases in child maltreatment is unclear, and in 2009 child health and welfare professionals asked researchers to answer the question "Are trends in child maltreatment decreasing?"[4]

Scarce evidence exists on whether child maltreatment is increasing or decreasing in England and Wales. However, several serious case reviews and a number of high-profile public inquiries have led the media and

public to criticise child protection services and speculate that child maltreatment might be increasing.[5–7] The number of children identified at risk has also increased in the past few years. For example, between 2015 and 2016, the number of children placed on child protection plans increased by 1·6%,[1,2] and in 2017, the National Society for Prevention of Cruelty to Children (NSPCC) responded to their highest ever number of contacts.[8] These increases might not reflect an increasing problem but might instead result from improvements in responding to child maltreatment or natural short-term fluctuations over time. When looking at sustained changes over time by examining long-term trends, studies have found that the number of violent child deaths have decreased since the 1970s, which might suggest a real reduction in child maltreatment.[9–11]

Because only a small proportion of unrepresentative cases result in child death, other sources of information

Research in context

Evidence before this study
Scarce, mixed evidence exists on whether child maltreatment is increasing or decreasing in England and Wales. We looked for quantitative evidence on trends in child maltreatment at the national level. We searched Embase, MEDLINE, and PsycINFO up to Dec 31, 2017 (with no specified earliest date), with the terms "child" AND ("maltreat*" OR "abuse" OR "violen*" OR "death" or "homicide") AND ("trends" OR "incidence over time" OR "incidence across time") AND ("England" OR "Wales" OR "United Kingdom" OR "UK"). This search returned 131 articles of which only 11 were relevant. A previous study mapped out trends in child maltreatment from 1979 to 2008 but found no consistent evidence for increasing or decreasing trends in England and Wales during this period. No study has examined trends in maltreatment going further back than 1979 and using multiple sources of official record data.

Added value of this study
This study is, to our knowledge, the first analysis of long-term trends in child maltreatment in England and Wales.

Using multiple sources of previously unused official record data, we examined trends in child mortality, crimes against children, and child protection activity. Long-term trends mostly decreased from 1858 to 2016, except child protection registrations, which increased from 1988 to 2016. Some trends have begun to increase since 2000. In 2016, 40 children died by homicide, with twice as many adolescent than infant deaths; 67 700 children were placed on the child protection register, with neglect and emotional abuse being the most common reasons.

Implications of all the available evidence
Although there have been sustained decreases in the incidence of child maltreatment over the past 150 years, more recent increases suggest that child maltreatment remains a pressing issue in England and Wales. It is important for future child protection work to establish whether adolescents represent a particularly vulnerable age group and whether neglect and emotional abuse are increasing in England and Wales.

are also needed to paint an accurate picture of child maltreatment. To the best of our knowledge, only a series of NSPCC reports and one study have used multiple sources to measure the incidence of child maltreatment over time.[4,8,12,13] The NSPCC reports used six sources to estimate how safe children are today but did not examine trends in child maltreatment.[8,12,13] Gilbert and colleagues[4] used three sources on child protection statistics, maltreatment-related hospital admissions, and violent child deaths to examine trends in child maltreatment since the 1980s. Although they found no consistent evidence for increasing or decreasing trends, they showed that multiple sources can be used to more comprehensively estimate trends in child maltreatment. However, other relevant sources do exist, such as data on maltreatment-related crimes, which can be used to investigate trends in child maltreatment.[14] Additional sources can begin to identify which aspects of child maltreatment (if any) are changing. For example, trends in child mortality and maltreatment-related crimes might reflect changes in severe cases of child maltreatment, whereas trends in child protection activity might reflect changes in policy and public responses to child maltreatment. Together, multiple sources can provide a richer and more detailed understanding of trends in child maltreatment.

We aimed to investigate whether child maltreatment has increased or decreased in England and Wales by examining long-term trends across multiple sources. We use previously unused official record data to estimate the annual incidence of child maltreatment from the earliest available year of data (1858) up to 2016. We then use time-series methods to examine long-term trends in child maltreatment.

Methods

Study design
This observational time-series analysis used routinely collected data on child maltreatment in England and Wales. The study was registered in the Research Registry, number 3146. Ethical approval was not required because all data were fully anonymised and publicly available.

Data sources
The iCoverT is a newly developed data source on the incidence of child maltreatment over time in England and Wales. The iCoverT was developed by the first author, MDE, to bring together existing data on child maltreatment and create a useable online data source for research.[14] It was developed by adapting systematic review methods for identifying, extracting, and preparing relevant data.[15] Data were relevant if they met the following criteria: (1) they could be used to estimate the incidence of child maltreatment; (2) they were nationally representative of England and Wales; (3) they were collected prospectively; (4) they were collected annually; and (5) they were collected and available for a period of at least 25 years. Relevant data were identified from five Government sources (child mortality, police-recorded child homicides, crimes against children, child protection, and children in care) and the NSPCC, a UK-wide charity. All available data were manually extracted from their primary sources (mostly printed annual reports), digitalised, and linked over time. The quality of the data was assessed against pre-specified criteria on the representativeness, missingness, accuracy, temporal consistency, validity, definitions, timeliness, and interpretability of the data. We identified temporal consistency as the main problem with the data. This was due

to various changes over time, including changes to data collection methods, definitions, and the organisations collecting the data. We investigated all changes over time and implemented appropriate strategies to harmonise the data. We excluded poor-quality data that could not be harmonised.

For this study, we drew data from the iCoverT that could be used to estimate the incidence of child maltreatment. Incidence was defined as the number of new cases per 100 000 of the population during a 12-month period. Child maltreatment was defined as a child experiencing neglect, physical, sexual, or emotional abuse. We used data for all available years from all six sources.

Outcomes

We identified eight indicators that could be used to estimate the incidence of child maltreatment (table 1; appendix pp 2–7). Our primary outcomes were the number of victims (age <20 years) or perpetrators (age >16 years) of child maltreatment per 12-month period in England, including or excluding Wales. When additional information was available, we also analysed the child's age and gender and the type of maltreatment.

Our primary exposure was a 12-month period (typically financial year, April 1 to March 31, adjusted for inconsistencies) for all years with available data. Differences in data availability meant that indicators of child maltreatment covered different time periods. The longest available time period was 1858–2016 for child mortality and the shortest was 1988–2016 for child protection statistics (table 1).

Adjusting for changes over time

When looking at trends over a long period of time it is important to consider other time-sensitive factors. We adjusted for three main changes over time. First, we controlled for population size by using population estimates for geographical areas to calculate incidences. Second, we controlled for changes in population age structure by age-standardising these incidences (appendix pp 2–7). Third, we investigated and identified changes that might have affected the consistency of the data over time. These ranged from organisational changes to changes in recording practices (appendix pp 2–7). We followed iCoverT recommendations by coding these changes as dummy variables (0 for the years before the change; 1 for the year of, and years after, the change), and including them in adjusted analyses if they significantly improved model fit (p<0·01).[14]

Statistical analysis

We summarised maltreatment indicators in the following 25-year intervals: 1850–74, 1875–99, 1900–24, 1925–49, 1950–74, 1975–99, and 2000–16 (appendix pp 8–9). We used these intervals because they provided a useful long-term overview and made it easier to compare indicators.

To model long-term trends, we used Poisson regression with year as the exposure and the number of victims or perpetrators of maltreatment as the outcome. Age-specific population estimates (log-transformed) were included as an offset variable to adjust for changing population size and age structure. If dispersion tests indicated overdispersion of data (p<0·05), quasi-Poisson was used instead of Poisson regression.[16] We modelled long-term trends by fitting generalised linear models (GLMs) and then adjusting for changes over time.

GLMs assume a linear relationship between exposure and outcome variables. They therefore constrain trends to changes at a constant rate and in one direction (ie, a linear increase or decrease). We assessed GLM fit to test whether changes in incidence of maltreatment were appropriately modelled by linear trends. We plotted residuals against year, quantile–quantile plots, and autocorrelation functions. When specific patterns in the residuals clearly indicated that trends were not linear, we fitted generalised additive models (GAMs) with penalised natural cubic regression splines.[17] We fitted GAMs because they relax the linear relationship between exposure and outcome variables, allowing trends to change at different rates and change direction. We guarded against overfitting by using a restricted maximum likelihood smoothing selection approach, checking our use of the basis size rule, and reinspecting residual plots for the GAMs.[18]

Residual plots and replication code are available on request. Before any analyses, one outlier was identified and removed (people guilty of sex with children younger than 13 years in 2004; appendix p 4). Analyses were of complete cases because there was little missing data.[14]

To interpret long-term trends, we examined annual percentage and overall changes. We calculated annual percentage change and p values from our fitted GLMs. Annual percentage change describes whether trends linearly increase or decrease, as well as the average rate of change for each year. p values indicate whether these increases or decreases are significant. Because trends were mostly non-linear and showed poor GLM fit, we also calculated absolute and relative change (ie, overall change). Absolute change is the raw overall difference between incidences for the earliest (1858) and most recent (2016) available year, whereas relative change is the absolute change as a percentage of the incidence for the earliest available year (eg, 1858).

We plotted age-standardised incidences and fitted models to visualise long-term trends. We plotted the model (GLM or GAM) that best fitted the data and thus most accurately visualised trends. Graphs plotting GLMs, irrespective of model fit, are in the appendix (pp 11–15). We used R, version 3.4.1, for all analyses.

Role of the funding source

The funder had no role in study design, data collection, data analysis, data interpretation, or writing of the report. The corresponding author had full access to all the data in the study and had final responsibility for the decision to submit for publication.

	Time period	Geographical area	Type of maltreatment	Age of children affected, years	Number* of victims or perpetrators	Additional available information	Limitations
Mortality statistics: child deaths by homicide or assault							
Child deaths caused by homicide, assault, and injury purposely inflicted by other people	1858–2016	England and Wales	Severe neglect or physical abuse	<20	100	Child's gender and age	Only severe cases of child maltreatment result in death; does not differentiate between different perpetrators—ie, adult or peer victimisation
Homicide index: police-recorded child homicides							
Police-recorded child homicides, including murder, manslaughter, and infanticide	1977–2016	England and Wales	Severe neglect or physical abuse	<16	70	Child's gender and age	Only severe cases of child maltreatment result in death; does not differentiate between different perpetrators—ie, adult or peer victimisation
Criminal statistics: people guilty† of child cruelty or neglect							
People found guilty of wilful assault, ill treatment, neglect, abandonment, or exposure, in a manner likely to cause unnecessary suffering or injury	1893–2016	England and Wales	Neglect or physical abuse	<16	1040	..	Measures the number of perpetrators but one perpetrator might have more than one victim
Criminal statistics: people guilty† of sex with children younger than 13 years							
People found guilty of unlawful sexual intercourse with a child younger than 13 years	1893–2016	England and Wales	Sexual abuse	<13	70	..	Measures the number of perpetrators but one perpetrator might have more than one victim
Criminal statistics: people guilty† of sex with adolescents aged 13–16 years							
People found guilty of unlawful sexual intercourse with an adolescent aged 13–16 years	1893–2016	England and Wales	Sexual abuse	13–16	300	..	Measures the number of perpetrators but one perpetrator might have more than one victim; the proportion of cases that involved underage sex with a romantic partner is unknown
Child protection statistics: registrations to child protection register							
Registrations to the child protection register or children with a child protection plan; reasons for registration were grave concern, neglect, physical abuse, sexual abuse, or emotional abuse	1988–2016	England‡	Neglect or physical, sexual, or emotional abuse	<18	35 200	Child's gender and age; type of maltreatment	The number of registrations to the child protection register also relies on the effectiveness of child protection services
Children in care statistics: children entering care							
Children entering the care of local authorities or becoming looked after by local authorities; children enter care via three main routes: care orders (about 60%), voluntarily (about 30%), and police involvement (protection or youth justice involvement; about 10%); care orders are made if the court has sufficient evidence to indicate that the child is either suffering from, or at risk of, significant harm, or the child is beyond parental control (Children Act 1989)	1952–2016	England and Wales	Neglect or physical, sexual, or emotional abuse	<18	36 450	..	Not all children entering care will have been maltreated—eg, some enter care because of behavioural issues
NSPCC statistics: children helped by NSPCC							
Children involved in referrals to the NSPCC, which were opened as new cases	1910–85§	England, Wales, and Northern Ireland	Neglect or physical, sexual, or emotional abuse	<18	97 050	Child's gender and age	The number of children helped by the NSPCC depends on the presence of other agencies and on the charity's capacity

Full details for each maltreatment indicator are in the appendix (pp 2–7). NSPCC=National Society for Prevention of Cruelty to Children. *Average per year, rounded to the nearest ten. †People guilty is the total number of perpetrators involved in criminal cases and found guilty at the magistrates' and higher courts (Courts of Assizes, Quarter Sessions, and Crown Court); the number of people found guilty is a subset of those proceeded against, it does not include cases that were dropped (discontinued, withdrawn or dismissed, or acquitted) but it does include guilty verdicts without convictions. ‡Child protection statistics for Wales were excluded in analysis of long-term trends because of missing data. §NSPCC statistics from 1986 onwards were excluded because of problems with the comparability of data over time.

Table 1: Summary of indicators of child maltreatment

Results

In 2016, our data sources estimate that in England and Wales, 40 children died from homicide or assault, 1300 people were guilty of crimes against children, 67 700 children were placed on the child protection register, and 34 100 children entered care.

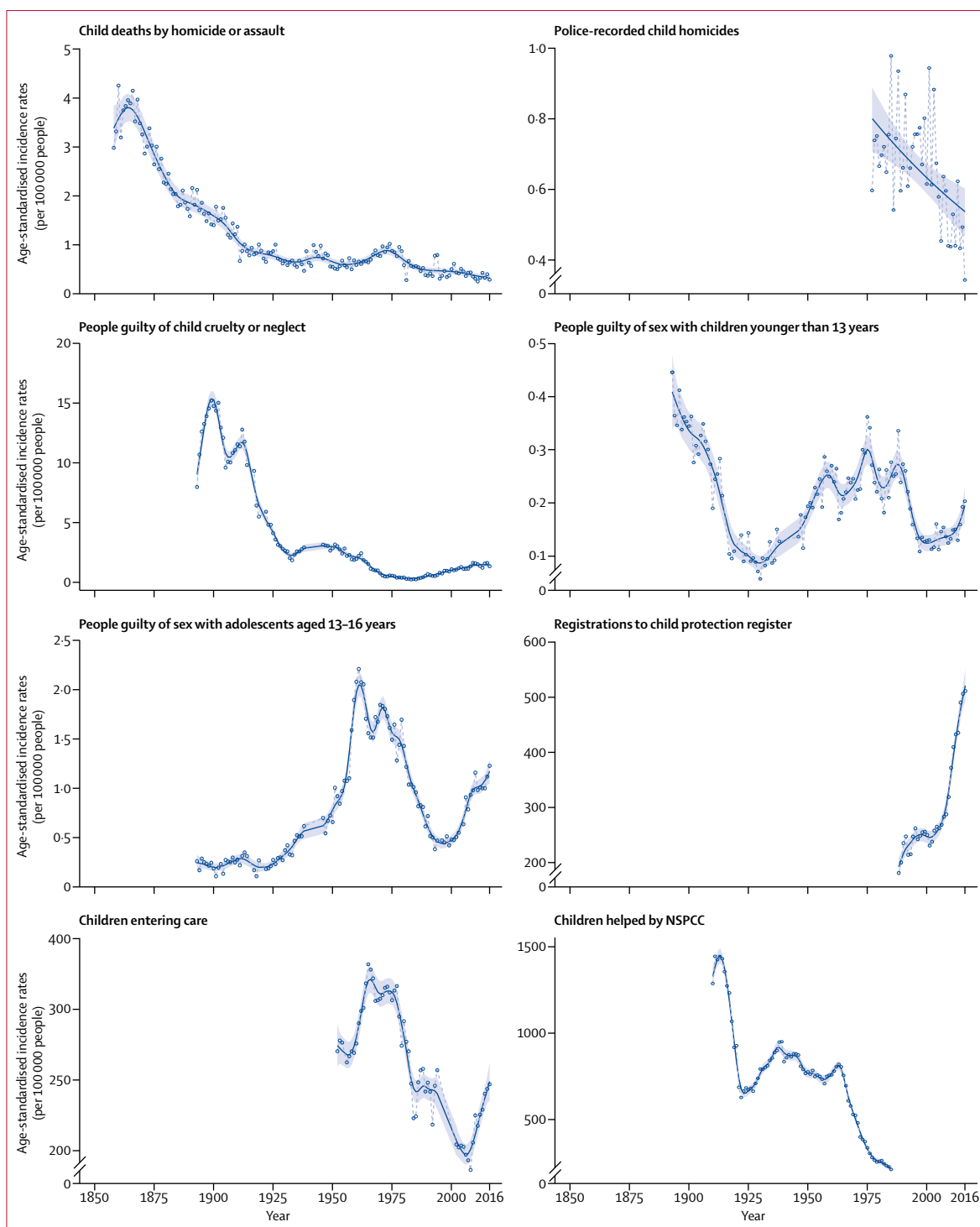Of the eight indicators of child maltreatment, two measured child mortality (deaths by homicide or

Figure 1: **Annual incidence of child maltreatment indicators**
Age-standardised incidence (per 100 000 people) for all available years and for each child maltreatment indicator. Dotted lines show raw incidence whereas solid lines show the best fitting model with shaded 95% CIs. NSPCC=National Society for Prevention of Cruelty to Children.

assault and police-recorded homicides), three measured crimes against children (child cruelty or neglect, sex with children younger than 13 years, and sex with adolescents aged 13–16 years), and three measured child protection activity (registrations to the child protection register, children entering care, and children helped by NSPCC).

	Time period	Linear trends based on GLMs		Age-standardised incidence (per 100 000 people)		Overall change	
		Annual percentage change (95% CI)	p value	Earliest available year	Most recent available year	Absolute change (per 100 000 people)	Relative change
Child deaths by homicide or assault	1858–2016	–1·5% (–1·6 to –1·4)	<0·0001	3·0	0·3	–2·7	–90·2%
Gender							
Males	1858–2016	–1·4% (–1·6 to –1·3)	<0·0001	1·6	0·2	–1·5	–89·0%
Females	1858–2016	–1·5% (–1·7 to –1·4)	<0·0001	1·3	0·1	–1·2	–91·8%
Age, years							
<1	1858–2016	–2·2% (–2·3 to –2·1)	<0·0001	30·4	0·3	–29·1	–95·8%
1–14	1858–2016	–0·4% (–0·5 to –0·3)	<0·0001	0·5	0·1	–0·4	–75·2%
15–19	1858–2016	0·5% (0·3 to 0·6)	<0·0001	0·6	0·6	0·0	1·1%
Police-recorded child homicides	1977–2016	–1·0% (–1·6 to –0·5)	0·00049	0·6	0·3	–0·3	–42·5%
Gender							
Males	1977–2016	–0·9% (–1·5 to –0·2)	0·013	0·3	0·2	–0·1	–47·1%
Females	1977–2016	–1·2% (–1·9 to –0·5)	0·0010	0·3	0·2	–0·1	–37·7%
Age, years							
0–4	1977–2016	–1·6% (–2·2 to –1·1)	<0·0001	1·6	0·7	–0·9	–58·5%
5–15	1977–2016	–0·5% (–1·3 to 0·4)	0·31	0·2	0·2	–0·1	–22·6%
People guilty of child cruelty or neglect	1893–2016	–2·9% (–3·1 to –2·6)	<0·0001	8·0	1·3	–6·7	–83·3%
People guilty of sex with children younger than 13 years	1893–2016	–0·3% (–0·5 to –0·1)	0·0027	0·4	0·2	–0·2	–54·5%
People guilty of sex with adolescents aged 13–16 years	1893–2016	0·8% (0·4 to 1·1)	<0·0001	0·3	1·3	1·0	318·9%
Registrations to child protection register	1988–2016	3·4% (2·8 to 4·0)	<0·0001	180·4	509·1	328·7	182·2%
Gender							
Males	1988–2016	3·5% (2·9 to 4·1)	<0·0001	86·3	253·3	167·0	193·5%
Females	1988–2016	3·1% (2·4 to 3·8)	<0·0001	94·1	246·1	152·0	161·6%
Age, years							
<1	1988–2012	3·3% (2·8 to 3·7)	<0·0001	433·2	1177·4	744·2	171·8%
1–15	1988–2012	2·2% (1·5 to 3·0)	<0·0001	198·1	437·8	239·7	121·0%
16–18	1988–2012	1·0% (–1·4 to 3·4)	0·42	28·5	71·3	42·8	150·0%
Type of maltreatment							
Neglect	1988–2016	6·5% (5·7 to 7·3)	<0·0001	25·9	228·4	202·5	782·1%
Physical abuse	1988–2016	–1·8% (–2·9 to –0·7)	0·0030	50·9	49·9	–1·1	–2·1%
Sexual abuse	1988–2016	–3·4% (–4·7 to –2·1)	<0·0001	35·4	24·1	–11·3	–31·8%
Emotional abuse	1988–2016	10·3% (9·5 to 11·2)	<0·0001	6·0	180·1	174·1	2881·6%
Children entering care	1952–2016	–0·6% (–0·8 to –0·5)	<0·0001	270·3	246·9	–23·4	–8·7%
Children helped by NSPCC	1910–85	–1·5% (–1·8 to –1·3)	<0·0001	1284·6	210·6	–1074·0	–83·6%
Gender							
Males	1940–69	–0·9% (–1·2 to –0·6)	<0·0001	421·3	271·8	–149·5	–35·5%
Females	1940–69	–1·0% (–1·4 to –0·7)	<0·0001	411·7	256·1	–155·7	–37·8%
Age, years							
0–4	1951–85	–3·6% (–4·2 to –3·0)	<0·0001	1113·6	385·2	–728·4	–65·4%
5–18	1951–85	–3·9% (–4·5 to –3·3)	<0·0001	611·2	157·1	–454·1	–74·3%

Age-standardised incidences are per 100 000 children or adults depending on the child maltreatment indicator. Annual percentage change (%) and p values were calculated from unadjusted GLMs. The best-fitting model was GAM for all indicators except police-recorded child homicides, which was GLM. Absolute change does not always equal the difference between incidence rates for the earliest vs most recent available year because of rounding. GAM=generalised additive model. GLM=generalised linear model. NSPCC=National Society for Prevention of Cruelty to Children.

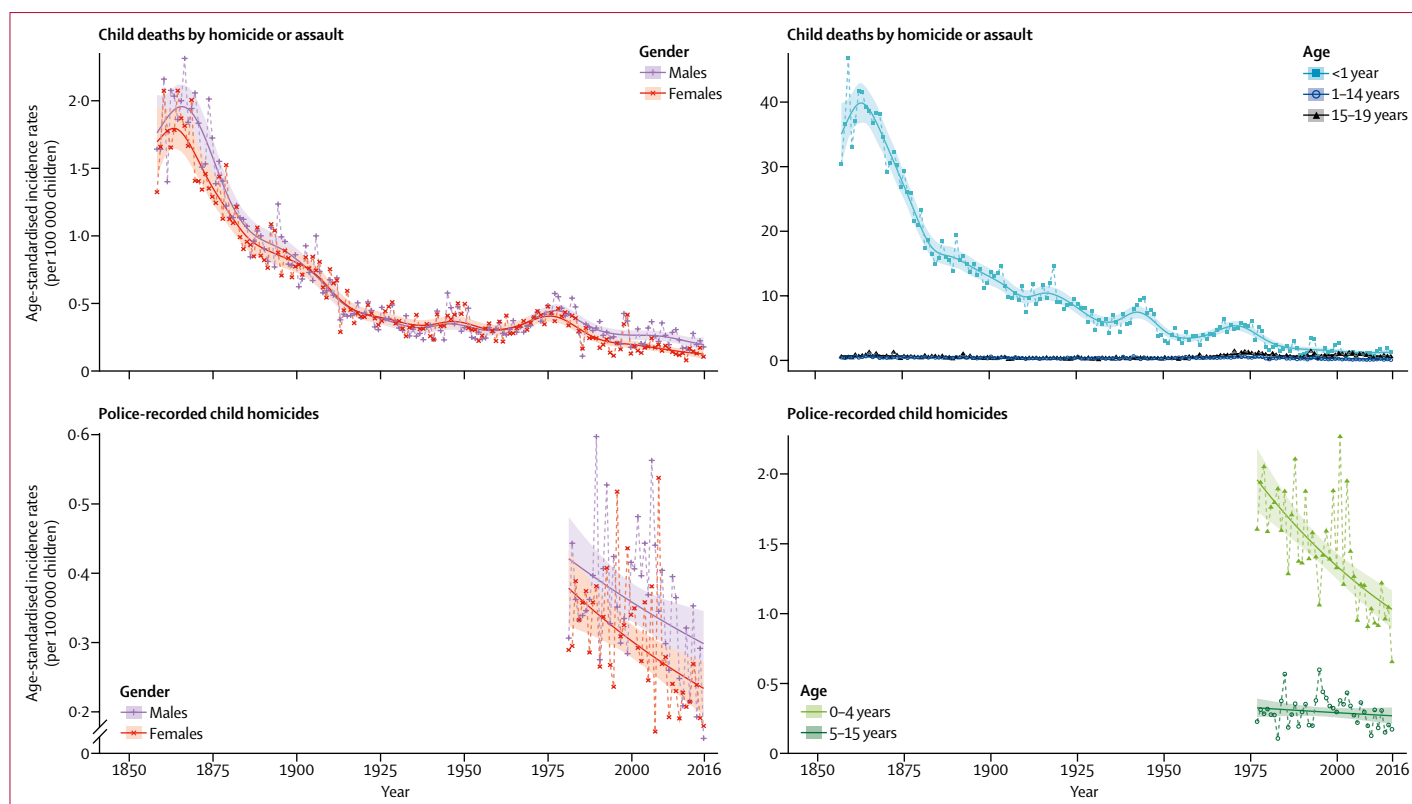*Table 2:* Long-term trends in annual incidence rates of child maltreatment indicators

Figure 2: Annual incidence of child mortality indicators by gender and age
Age-standardised incidence (per 100 000 children) of child mortality by gender and age for all available years. Dotted lines show raw incidence whereas solid lines show best-fitting models with shaded 95% CIs.

Most indicators covered England and Wales, except for registrations to the child protection register which covered England only, and children helped by NSPCC, which covered England, Wales, and Northern Ireland (table 1). Indicators covered different time periods. For example, data for child mortality and crimes against children dated back to the late 1800s whereas data for child protection activity were collected from the second half of the 1900s. Indicators for child mortality and child protection activity had additional information on the child's age and gender, and child protection activity also had information on the type of child maltreatment.

Deaths by homicide or assault and police-recorded homicides measured child mortality over time (figure 1; table 2). Between 1858 and 2016, there was a 90% overall decrease in child deaths by homicide or assault (2·7 fewer deaths per 100 000 children in 2016 vs 1858). However, this decrease was non-linear and small increases occurred during 1858–70 and 1960–75. Annual incidence for police-recorded child homicides decreased in a linear fashion, although data were only available for 1977–2016. Police-recorded child homicides significantly decreased by 1% (95% CI 0·5–1·6) each year (table 2).

Between 1858 and 2016, changes in incidence of child deaths by homicide or assault were similar between males (89% decrease; 1·5 fewer deaths per 100 000 children)

and females (92% decrease; 1·2 fewer deaths per 100 000 children) but were different across age groups (figure 2; table 2). For example, infant deaths (<1 year) decreased by 96% (29·1 fewer deaths per 100 000 infants) whereas adolescent deaths (15–19 years) remained relatively stable over time, increasing by 1% (absolute increase 0·0 per 100 000 adolescents) during 1858–2016. The patterns of change over time of police-recorded homicides also differed between younger (0–4 years) and older children (5–15 years) during 1977–2016 (figure 2; table 2).

Three crimes against children were included in the indicators: child cruelty or neglect, sex with children younger than 13 years, and sex with adolescents aged 13–16 years. Incidence of people guilty of child cruelty or neglect decreased by 83% (absolute decrease 6·7 fewer per 100 000 adults) and incidence of people guilty of sex with children younger than 13 years decreased by 55% (absolute decrease 0·2 fewer per 100 000 adults; table 2). Incidence of people guilty of sex with adolescents aged 13–16 years increased by 319% (absolute increase 1·0 per 100 000 adults). Despite these overall changes, all three crimes showed non-linear trends with sustained periods of increasing and decreasing rates (figure 1).

Two of the Government sources and the NSPCC data measured child protection activity. Even though these
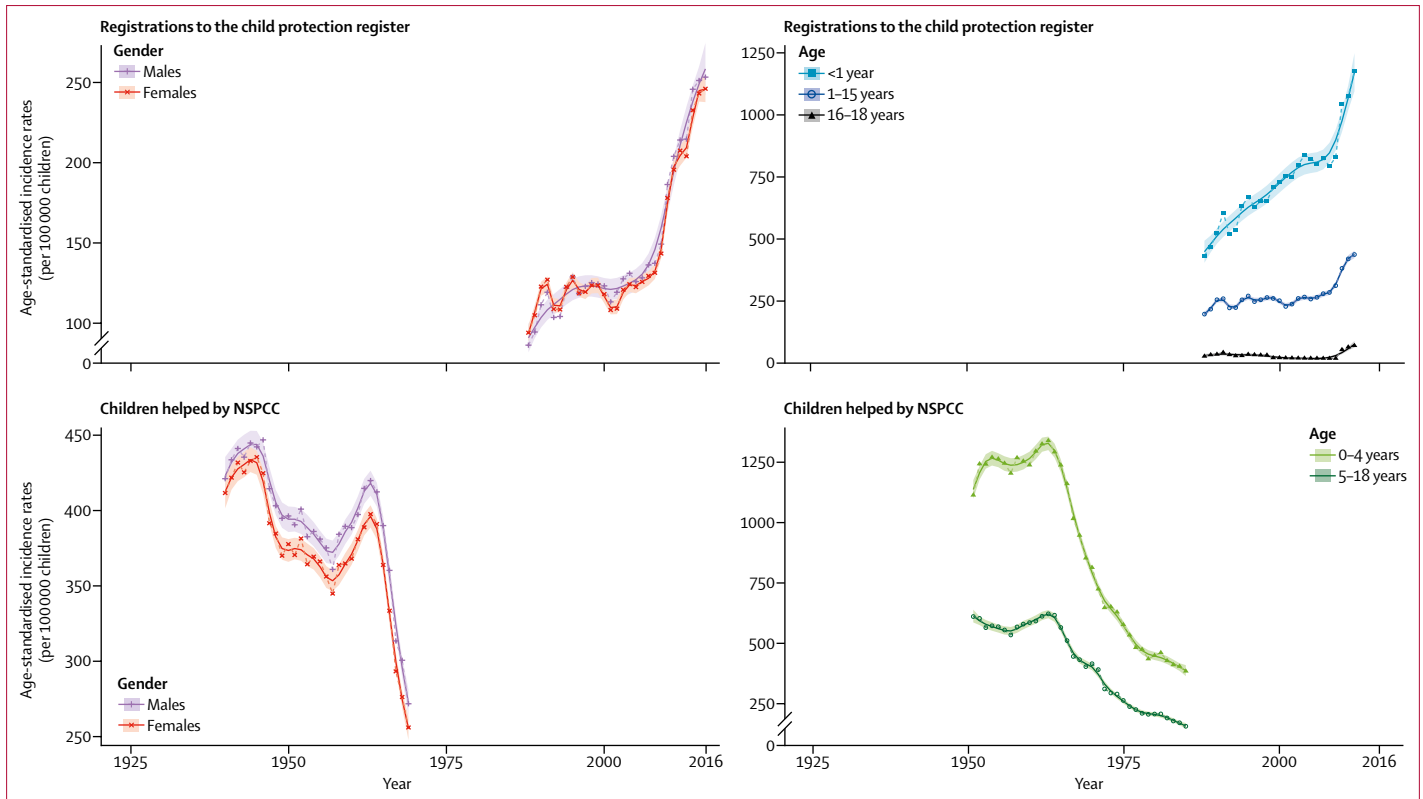
Figure 3: **Annual incidence of child protection indicators by gender and age**
Age-standardised incidence (per 100 000 children) of child protection activity by gender and age for all available years. Dotted lines show raw incidence whereas solid lines show best-fitting models with shaded 95% CIs. NSPCC=National Society for Prevention of Cruelty to Children.

measures covered shorter time periods than child mortality and crime, incidences significantly changed over time. Child protection registrations increased by 182% (absolute increase 328·7 per 100 000 children) between 1988 and 2016, and the incidence of children entering care decreased by 9% (23·4 fewer per 100 000 children) between 1952 and 2016. Incidence of children helped by the NSPCC decreased in a non-linear fashion by 84% (1074·0 fewer per 100 000 children) between 1910 and 1985.

The proportions of males versus females placed on the child protection register or helped by the NSPCC were similar and did not change over time (figure 3). However, there were differences between the age groups. Between 1988 and 2012, there was a larger increase in infants younger than 1 year placed on the child protection register (172% increase; 744·2 per 100 000 infants) than children aged 1–15 years (121% increase; 239·7 per 100 000 children). The incidence of adolescents (16–18 years) placed on the child protection register increased by 150% (absolute increase 42·8 per 100 000 adolescents).

Physical abuse was the primary reason (8900 [33%] of 27 100 registrations) for a child being placed on a child protection register in 1988–99, then the primary reason became neglect in 2000–16 (17 500 [43%] of 40 900; appendix pp 8–9; figure 4). This change was mostly driven by large overall increases in registrations for neglect and

emotional abuse during 1988–2016. Rates of registrations increased by 782% for neglect (absolute increase 202·5 per 100 000 children) and by 2282% for emotional abuse (absolute increase 174·1 per 100 000 children), whereas they decreased by 2% for physical abuse (1·1 fewer per 100 000 children) and by 32% for sexual abuse (11·3 fewer per 100 000 children).

During 2000–16, child mortality continued to decrease but crimes against children and child protection activity increased (figure 1). Both indicators estimated that there were 20 fewer child deaths per year in 2000–16 than in 1975–99. However, these decreases were driven by large decreases in infant and younger child deaths and not by decreases for older children and adolescents (appendix pp 8–9). Incidence for the three crimes and children entering care changed from decreasing to increasing trends from 2000 onwards (figure 1). Additionally, increases in the rate of registrations to the child protection register were particularly steep from 2000–16. This pronounced increase was driven by large increases in registrations for neglect and emotional abuse (figure 4).

Although a handful of changes affected the consistency of the data, long-term trends were not significantly affected. Data were mostly affected by changes to definitions or recording practices. For example, child deaths by homicide or assault were affected by
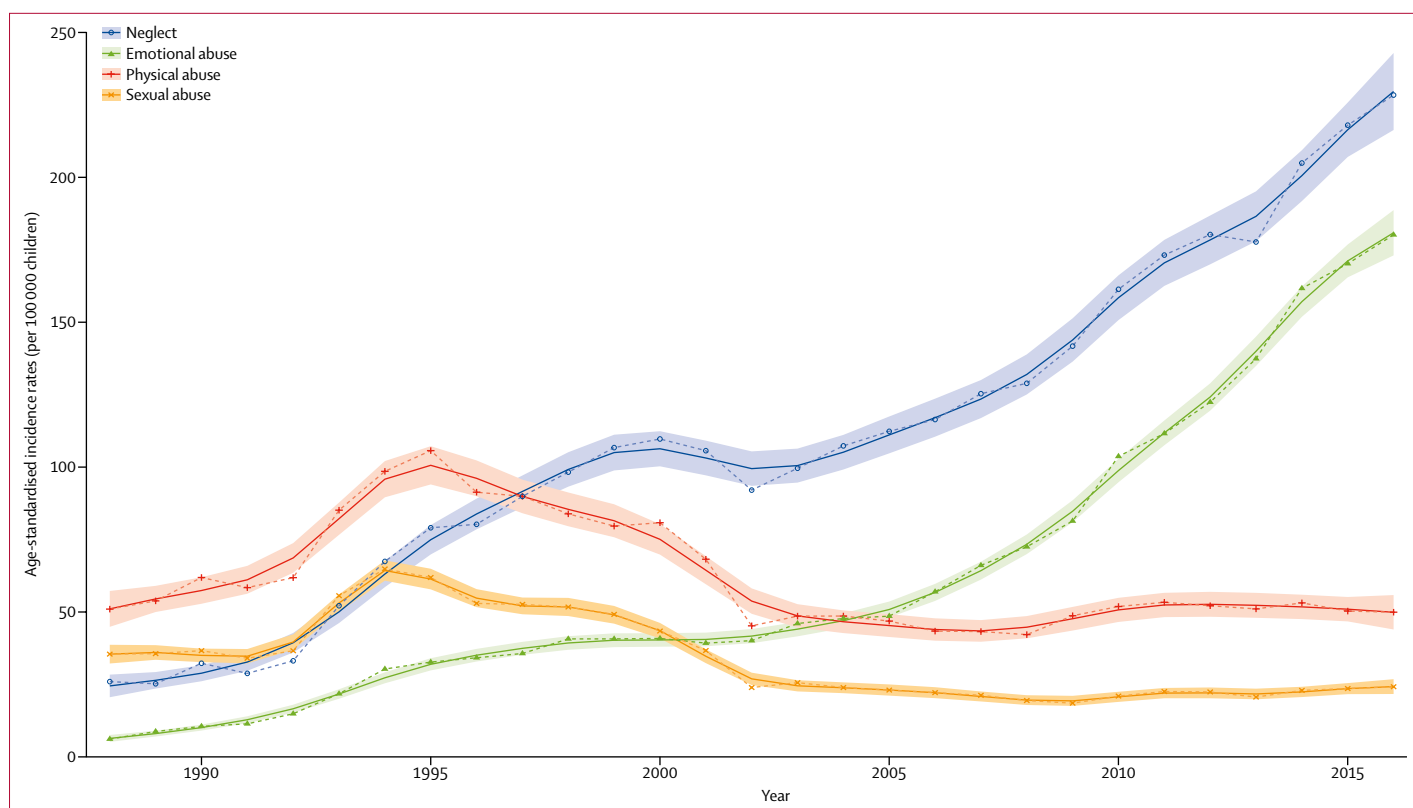
Figure 4: **Annual incidence of child protection registrations by type of maltreatment**
Age-standardised incidence (per 100 000 children) of child protection registrations by type of maltreatment for all available years. Dotted lines show raw incidence whereas solid lines show best-fitting models with shaded 95% CIs.

different versions of the International Classification of Definitions,[14] crimes against children were affected by new legalisation (eg, Sex Offences Act 1956), and child protection registrations were affected by the introduction of the children in need census in 2010. Adjusting for these changes did not significantly affect overall findings (appendix pp 10–15).

Estimates for 2016 varied for different indicators of child maltreatment (table 2). Child mortality was estimated to be 0·3 deaths per 100 000 children by deaths by homicide or assault and police-recorded homicides. Males and females had similar incidences for both indicators of child mortality whereas adolescents (15–19 years) were at a higher risk of death by homicide or assault (0·6 deaths per 100 000 adolescents) than the other age groups. The incidences of people found guilty of child cruelty or neglect and sex with adolescents aged 13–16 years were both 1·3 per 100 000 adults. The incidence of people found guilty of sex with children younger than 13 years was lower (0·2 per 100 000 adults). Child protection indicators showed the highest incidences with 246·9 per 100 000 children entering care and 509·1 per 100 000 children being placed on the child protection register. Neglect (228·4 per 100 000 children) and emotional abuse (180·1 per 100 000 children) were the

most common reasons for being placed on the child protection register in 2016.

Discussion

To our knowledge, this study is the first analysis of long-term trends in child maltreatment in England and Wales. Our overall findings are that there was a 90% decrease in child mortality from 1858 to 2016, an 83% decrease in people guilty of child cruelty or neglect from 1893 to 2016, but a 182% increase in child protection registrations from 1988 to 2016. Specifically, during 2000–16, the incidence of crimes against children, child protection registrations, and children entering care increased steeply. The child's age and type of maltreatment emerged as important factors for both long-term trends and 2016 estimates. In 2016, adolescents (15–19 years) were twice as likely to die from homicide or assaults than infants (<1 year) and six times more likely than children (1–14 years). In 2016, the most common reason for a child to be placed on the child protection register was neglect, followed by emotional abuse.

We used eight indicators of child maltreatment from six sources to estimate trends in child maltreatment. Across indicators and sources, long-term trends mostly decreased. There were sustained decreases in child mortality, people guilty of crimes against children, children entering care,

and children helped by the NSPCC. Our measures of child maltreatment have limitations (table 1). However, these limitations are different for each indicator and source. Therefore, consistently finding sustained decreases across indicators provides strong evidence that long-term trends in child maltreatment have decreased.

We also found evidence for increases in child maltreatment since 2000, because although child mortality continued to decrease, all three crimes against children and children entering care increased between 2000 and 2016. Additionally, child protection registrations increased particularly steeply during this period. These findings echo concerns that child maltreatment might be increasing.[8] Further research is needed to establish whether child maltreatment has become more common or whether child protection services have become better at responding to child maltreatment. Either way, child maltreatment continues to be a major public health problem and official records show that 40 children died by homicide or assault and 67700 children were at serious risk of child maltreatment in 2016.

Consistent with previous observations, violent deaths have decreased more for younger children than for older children or adolescents.[9–11] Between 1858 and 2016, there was a large 96% reduction in infant deaths but a 1% increase in adolescent deaths. The same pattern was seen for sexual crimes against children, with a 55% decrease in people guilty of sex with children younger than 13 years but a 319% increase in people guilty of sex with adolescents aged 13–16 years. In 2016, more adolescents died by homicide or assault than any other age group. However, fewer adolescents were placed on the child protection register than any other age group. These findings are in line with the suggestion that specific developmental ages are more vulnerable to maltreatment, with adolescents at increased risk compared with younger age groups.[19,20] Future research should further examine whether adolescents are an increasingly vulnerable age group, and child protection should respond to this potential need.

In 1988, physical abuse was the most common reason for placing a child on the child protection register. By 2016, neglect was the most common reason and was around five times more common than physical abuse. This change was due to large increases in registrations for neglect (782%) and emotional abuse (2882%), as well as decreases in registrations for physical abuse (2%) and sexual abuse (32%). These observations are in line with recent UK self-report estimates for neglect.[21] US studies have also found that physical and sexual abuse (but not neglect) have significantly decreased since the 1990s.[22,23] Again, it is unclear whether these recent increases are because of an increasing problem or whether they reflect real improvements in recognising and responding to neglect and emotional abuse.[24,25]

Our study has several limitations. First, official records underestimate the incidence of child maltreatment because many maltreated children are not identified by authorities.[26] Second, each indicator has its own limitations (table 1). Limitations for child mortality are that it captures only severe cases of child maltreatment, does not differentiate between adult and peer victimisation, and it might be measuring improvements in medical interventions rather than violence against children. Limitations for the indicators of people found guilty of crimes, children entering care, and child protection registrations, are that they might reflect changes in thresholds determined by changing policies and practices. Limitations for children helped by NSPCC statistics are that it heavily depends on whether other agencies are responsible for protecting children, and the charity's capacity. Because of limited capacity, we excluded NSPCC data from before 1910 because this was a period of rapid NSPCC centre expansion (from 52 to 1774), which then stabilised.[27] Third, we did not investigate the effects of wider secular changes or examine causes that might explain trends in child maltreatment (eg, reductions in child labour and poverty, introduction of the National Health Service, and economic recessions). Fourth, official record data are generally not as well suited for primary research as data specifically and prospectively collected for research. However, to ensure the quality of the data, we used systematic and transparent methods to extract, prepare, and link the data over time.[14] We also investigated and adjusted for changes that might have affected the consistency of the data (eg, changes to recording practices).[14]

Our findings show that national estimates for child mortality and crimes against children have decreased since the 1900s, whereas child protection activity has increased since the 1990s. We also found evidence across different sources that child maltreatment has increased since 2000. In 2016, adolescents were the most vulnerable age group to die by homicide, and neglect and emotional abuse were the most common types of registrations to the child protection register. Overall these findings lead us to conclude that child maltreatment continues to be a pressing issue in England and Wales and should remain a public health priority. Future research should seek to understand whether trends have further increased, whether adolescents are particularly vulnerable, and whether neglect and emotional abuse are becoming more common. Future child protection policies and practices should aim to respond to these areas of growing need.

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