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Effect of covid-19 lockdown on child protection medical assessments: a retrospective observational study in Birmingham, UK

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Effect of covid-19 lockdown on child protection medical assessments: a retrospective observational study in Birmingham, UK.

Title page

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Effect of covid-19 lockdown on child protection medical assessments: a retrospective observational study in Birmingham, UK.

Abstract

Objectives

To determine any change in referral patterns and outcomes in children (0-18) referred for child protection medical examination (CPME) during the covid-19 pandemic compared to previous years.

Design

Retrospective observational study, analysing routinely collected clinical data from CPME reports in a rapid response to the pandemic lockdown.

Setting

Birmingham Community Healthcare NHS Trust, which provides all routine CPME for Birmingham, England, population 1.1 million including 288,000 children.

Participants

Children aged under 18 years attending CPME during an 18 week period from late February to late June during the years 2018, 2019, and 2020.

Main Outcome Measures

Numbers of referrals, source of disclosure and outcomes from CPME

Results

There were 78 CPME referrals in 2018, 75 in 2019 and 47 in 2020, this was a 39.7% (95%CI 12.4-59.0) reduction in referrals from 2018 to 2020, and a 37.3% (95%CI 8.6-57.4) reduction from 2019 to 2020.

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3 There were fewer CPME referrals initiated by school staff in 2020, 12(26%) compared to 36 (47%)
4 and 38 (52%) in 2018 and 2019 respectively. In all years 75.9% of children were known to social care
5 prior to CPME, and 94% of CPME concluded that there were significant safeguarding concerns.
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9 Conclusions

10 School closure due to covid-19 may have harmed children as child abuse has remained hidden.
11 There needs to be either mandatory attendance at schools in future or viable alternatives found.
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13 There may be a significant increase in safeguarding referrals when schools fully re-open as children
14 disclose the abuse they have experienced at home.
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19 Article summary: Strengths and Limitations of the Study

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- 23 • This is a highly robust study: we obtained CPME reports for 97% of CPME referrals during the
24 study period.
 - 25 • We ensured consistency of data extraction by double reviewing every report, with further
26 consensus discussions for the few cases that raised uncertainties.
 - 27 • The team extracting the data comprised highly experienced paediatricians with expertise in
28 child abuse.
 - 29 • One weakness is that we only considered minor injuries from outpatient CPME, excluding
30 those admitted to hospital, so our findings do not include those with more serious NAI,
31 however they would be taken to hospital for treatment due to the severity of their injuries.
32
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34 **Keywords:** child abuse; non-accidental injury; paediatrics; child protection medical examination.

35
36
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Introduction

Nearly 400,000 children in England each year are defined as 'children in need'; these are children who require additional services, including safeguarding, to maintain a satisfactory level of health or development(1). Since the lockdown began, there are burgeoning concerns that child protection referrals have decreased, with professionals reporting limited opportunities to make accurate assessments of children's needs(2). Statutory guidance sets out the specific roles and responsibilities of agencies for undertaking child protection enquiries when a child or young person is referred for suspected maltreatment(3), including formal child protection medical examinations (CPME). The purpose of CPME is to provide a holistic assessment of the child's health, document any injuries and determine possible causes including the reasonable likelihood of injuries being inflicted or non-inflicted. A report is provided to inform any child protection investigations. CPMEs are performed or supervised by an experienced consultant paediatrician (4), adhering to rigorous standards in respect of consent; conduct of the examination; documentation of history; findings and formulation; photo-documentation; and report writing(5), with reports subject to regular peer review(6).

Birmingham is the second largest city in the UK, with a diverse population and is the largest local authority in Europe. It is also a relatively young city, with 23% of its population being children under the age of 16 years(7). The proportion of children subject to a child protection plan is higher than for the UK as a whole(8) and thirty-five percent of children live in poverty(8). In Birmingham CPMEs are generally undertaken within a community setting during working hours, often for children who have disclosed maltreatment to school or nursery staff, who then refer them to Birmingham Children's Trust (social care). Children with suspected sexual abuse are assessed separately, within specialised, regional child sexual assault referral centres. Hospital-based paediatricians perform CPMEs for those children with more significant injuries requiring treatment and for out-of-hours referrals. During the covid-19 lockdown the community based CPME service provided extended hours (6 April to 23 May 2020) that covered evenings and weekends to minimise hospital attendance so an increase in referrals for CPME was expected.

Schools are at the frontline of child safeguarding; educational staff are often the first to report potential child abuse. This raises concerns that vulnerable children are now invisible to professionals and potentially 'at risk' in homes where families face even greater hardships(8). Such 'collateral damage'(9) has been borne out by evidence that only 10% of children on a child protection plan or 'in-need' were attending schools that were remaining open specifically for their benefit and even where schools are open for selected year groups, attendance remains very low (10).

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3 Although there has been much professional concern about the potential risk children have faced at
4 home there have been limited data, with one report of an increase in abusive head trauma noted in
5 London (11) and a short report from the North-East of England noting a dramatic decrease in CPME
6 referrals (12). This current study was designed as a rapid response to fill gaps in knowledge about
7 child protection referrals during the covid-19 pandemic.
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12 The aim was to determine differences in the number and outcomes of child protection referrals for
13 CPME in Birmingham during the covid-19 pandemic lockdown (March to June 2020) compared with
14 the same periods in 2018 and 2019. Our research questions were:
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18 What is the difference in child protection referrals during the covid-19 pandemic compared to
19 previous years?
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22 Are there differences in demographic details, referral source and outcomes for children presenting
23 for child protection medical examination during the covid-19 pandemic compared to previous years?
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26 27 Methods

28 29 30 Study design

31
32 Retrospective observational study of referrals for CPME. It adhered to STROBE guidance (13).
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35 36 Setting and sample

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38 All children aged 0-18 attending for CPME at Birmingham Community Healthcare Trust (BCHT),
39 England. BCHT provides specialist CPME for the population of Birmingham, total population 1.1
40 million of which 288,000 are children aged <18 (7). Data were collected for all CPME for 18-week
41 periods in 2018, 2019 and 2020, from the last week in February, when schools returned following
42 the half-term holiday, to the end of June.
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46 47 Procedure

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49 We obtained a list of all children referred for CPME from the booking service and accessed the
50 electronic patient records (EPR) for these children, obtaining copies of reports from CPME. We read
51 the reports, and completed an anonymised data extraction form for each CPME (on-line
52 supplementary file 1). The data collection form was in three parts: i) child demographic data,
53 including age, gender, school age group (pre-school, primary, secondary, post-16), in a special school
54 or not, ii) referral details including whether an index case or referred as a sibling group, source of
55 initial disclosure, who the allegation was against, whether the child had previous referral to social
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3 care and if so, the current social care status, and whether the child had ever been on a child
4 protection plan, and iii) outcomes of the CPME including whether there were physical findings to
5 support non-accidental injury (NAI) or neglect, and, if so, what were the physical findings; likelihood
6 of NAI; whether NAIs were present on more than one body part; were their injuries consistent with
7 previous NAI; whether the report indicated significant safeguarding concerns; if the concerns were
8 related to factors other than NAI; and, if so, what?
9

10 Outcomes were taken either directly from the conclusion of the CPME report, or if the conclusion
11 was unclear, were determined based on the description of injuries and events within the report. If
12 the CPME was not available, we used the EPR for demographics, referral source and safeguarding
13 history, omitting data on outcomes of CPME.
14

15 Prior to commencing data extraction, all the clinicians reviewed 10 anonymised CPME reports which
16 were then reviewed and discussed by the whole group. This enabled any differences in
17 interpretation of CPME to be resolved and ensured quality and consistency of data extraction.
18

19 Clinicians worked in pairs, consisting of a specialist consultant in child protection (either Named or
20 Designated Doctors for Safeguarding) and a specialist trainee in paediatrics, all of whom have a
21 minimum of four years postgraduate medical training in child health. Each case had data extracted
22 independently by the consultant and trainee, to ensure consistency. In the event of disagreement
23 the case was reviewed by another consultant.
24

25 Study size

26 As this was an observational study, no sample size calculation was undertaken. The time period
27 included the last week in February which was before there was significant concern in schools about
28 covid-19. Data collection continued for the month of June to enable any change in referral CPME
29 patterns with the partial reopening of some primary schools.
30

31 Statistical analysis

32 Anonymised data were entered into SPSS. Cases were analysed by the year of referral. If children
33 had more than one CPME during the study period, each CPME was considered as a separate case.
34 Referral rates between years for the whole 18-week period were compared using incidence rate
35 ratios (IRR). IRRs for two weekly time-periods comparing 2018/19 with 2020 were also calculated
36 and plotted on a graph with 95% confidence intervals. To compare differences in variables between
37 the years, Kruskal-Wallis tests were run for continuous variables (age, number of types of injuries)
38 and chi-square tests were run for categorical variables.
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Ethics

This study involved clinicians analysing routinely collected patient data, from patients within their own clinical service, it therefore does not require HRA ethical approval. The study was approved by the Research and Innovation Department in Birmingham Community Healthcare Trust.

Patient and public involvement

As a rapid observational study using retrospective records we were unable to include children who had been through a CPME or their parents in the study. However we have a Children and Young People's Advisory Group whom we intend to involve in the dissemination and guidelines for practitioners.

Results

There were 200 CPMEs during the study period; 193 had CPME reports available with complete information from 191.

Referral numbers

There were fewer CPME referrals in 2020 compared to previous years, as shown in figure 1. There was a 39.7% (95%CI 12.4-59.0) reduction in referrals from 2018 to 2020, and a 37.3% (95%CI 8.6-57.4) reduction from 2019 to 2020. The IRR for 2020 compared to 2018/19 was 0.61 (95%CI 0.43-0.86) showing an overall reduction of 39% (95% CI 14%-57%).

< Figure 1 (Cumulative number of referral) about here >

The two weekly data shows that there was a significant drop in referrals for a 6-week period from weeks 3/4 to weeks 7/8, see figure 2. There was some evidence of an increase in referrals during weeks 9/10 in 2020 after which referral rates were broadly similar, with all confidence intervals crossing 1, apart from weeks 15/16 when there were no referrals in 2020.

< Figure 2 (IRR and totals of weekly referrals) about here >

Secondary Outcomes

A summary of referrals, demographics, social care history and outcomes of CPME is shown in table 1.

<Table 1 (summary of key findings) about here>

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3 There were significantly fewer referrals made by school or early years staff in 2020 compared to
4 other years, with only two school referrals received after lockdown. There was no increase in
5 referrals or disclosures from other sources. In each year, several referrals were initiated when
6 children disclosed abuse to grandparents and non-resident parents or by relatives who witnessed
7 abuse.
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12 There were significantly fewer girls referred in 2020. In total across all years, 67% of children were
13 index cases who disclosed potential abuse, or had concerning injuries noted by others leading to
14 referral; the remaining 33% were siblings of these index cases. Across all years 75.9% of children
15 were known to social care at any time prior to CPME, 53% were open cases in receipt of support
16 from social care immediately prior to CPME and 39% were currently or had previously been subject
17 to a child protection plan (where maltreatment has been substantiated).
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23 The findings in 51% of all CPME were that there was evidence of non-accidental injury (NAI) or
24 neglect, with 55% of these children having injuries, typically bruising, on more than one area of their
25 body implying more significant NAI. In 90% of all CPME it was concluded that there were significant
26 safeguarding concerns: even if there was not evidence to substantiate NAI, there were significantly
27 fewer children in this category in 2018, but the reasons for this are unclear. There was no other
28 statistical evidence of differences in demographics, social care histories, referral sources and
29 outcomes; further details are shown in on-line supplementary table 2.
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36 Discussion

37 Statement of principal findings

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40 This study found a significant drop of 39% (95%CI 14-57%) in CPME referrals during 2020 compared
41 to previous years. This drop coincides with the near total absence of referrals made by schools after
42 school closure in March, with no recovery in school referrals after schools partially re-opened in
43 June. Referrals from other sources did not increase in 2020, showing that other agencies did not fully
44 compensate for school closure. The children referred for CPME in 2020 had similar social care
45 histories to other years with the majority being previously known to social care and approximately
46 half being open cases at the time of referral. In all years, the vast majority of CPME reports
47 concluded that there were significant safeguarding concerns relating to physical abuse, domestic
48 violence, emotional abuse or neglect.
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3 Our trust is the largest provider of community paediatric services in England, managing all requests
4 for outpatient CPME for Birmingham residents. The extended hours offered during lockdown meant
5 that we could include children with minor injuries needing CPME who ordinarily would be managed
6 by acute hospital trusts, so our findings may actually be an under-estimation of the decreased
7 referral rate. Our findings should be generalisable outside of Birmingham, as this is a large multi-
8 cultural city with above average levels of social deprivation and is the largest Local Authority in
9 Europe.

10 Strengths and weaknesses in relation to other studies, discussing important differences in results

11 Although the drop in CPME referrals has been noted elsewhere in the UK (12), the longer duration of
12 our study enabled us to examine any effects of the partial re-opening of schools. Our detailed
13 analysis of referral details and outcomes identified the change in referral patterns this year, which is
14 a novel finding. As our CPME service covers a fixed population, we can be certain that changes in
15 referral patterns are genuine, unlike tertiary paediatric centres whose referrals are determined by
16 clinical need not home address (11).

17 Meaning of the study: possible explanations and implications for clinicians and policymakers

18 Our findings further evidence the hidden harm to children from covid-19. The significant decrease in
19 CPME referrals is likely largely a result of school closure and the partial re-opening of schools has not
20 altered this trend. Attending school provides children and young people with access to a trusted
21 adult and a safe space outside of the family home. Removing this provision increases the potential
22 risk of abuse going unseen. Many schools have made strenuous efforts to maintain contact through
23 remote methods, but these are not always private and it is not known who else may be in the room.
24 Although UK government guidance was for vulnerable children, identified as those with an allocated
25 social worker, to continue attending school, less than 10% did so (10). Nearly half of those referred
26 for CPME were not in this category so had no protection. Disclosures to school staff by older children
27 also protects younger siblings from abuse. Missed sentinel NAI such as bruising, may lead to children
28 subsequently presenting with serious injuries (14) (15). These sentinel NAI are typical of community
29 CPME referrals and the drop in referral rate therefore represents a much greater risk of harm. While
30 UK government policy is for mandatory school attendance from September, it is vital that this is
31 encouraged and enforced by schools given that currently less than 40% of eligible primary school
32 pupils are attending (10). Low attendance rates may enable abusing parents to keep their children at
33 home with few questions asked: there must be robust face to face welfare checks for those who do

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3 not attend. Once back at school, many children may disclose abuse that occurred during closure,
4 and children's services may struggle to meet demand. As months will have passed since the abuse,
5 there may be little physical evidence to support allegations, in turn reducing the weight of
6 corroborative evidence to support child protection measures and risking children feeling they are
7 not believed. Child abuse carries long-term risks for cumulative physical and mental health
8 problems(16,17), and without intervention a cycle of intergenerational poor parenting and abuse
9 may result(18). There were 30 fewer CPME referrals than expected during 2020: given that
10 Birmingham accounts for 2% of children referred for social care assessment nationally (1) we
11 estimate that there are approximately 1500 (95%CI 538-2192) potentially abused or neglected
12 children in England who remain hidden from services. This number may be considerably greater with
13 the suspected rise in rates of child abuse during lockdown. We face an epidemic of unreported,
14 unrecognised child abuse with long-term implications for society as a whole. Getting all children
15 back into school will reduce the risk, but may not undo the harm that has already occurred. Should
16 there be a further lockdown, safeguards must be put in place to prevent vulnerable children coming
17 to harm.

28 29 Unanswered questions and future research

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31 We need to continue to evaluate CPME referral patterns and outcomes as children return to school,
32 to help understand the hidden harms from covid-19. There should be robust analyses of inpatient
33 NAI cases to determine any increase in severe injuries. Research should include hearing children's
34 lived experiences so that appropriate safeguards can be put in place should schools have to close in
35 future. Longer-term research is needed to ascertain and treat the mental health and behavioural
36 outcomes that may result from abuse during school closures. As 'child safeguarding is everyone's
37 business'(19) learning how to protect children during an event such as covid-19 should be a multi-
38 agency process, and perhaps the National Safeguarding Children's Panel should take this forward.

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41 **Data sharing statement:** Data is drawn from clinical child protection reports of individual children
42 and cannot be shared. The disaggregated and anonymised abstraction files may be shared at
43 reasonable request from the first author.

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46 **Author Contributions:** JG conceived the idea, the protocol was designed by JG, GD, JT, JA, and IA.
47 The data extraction tool was piloted, revised then used for data extraction by JG, GD,HC, JA, IA, ET,
48 EET, CM, and EB. The data analysis was undertaken by JG, NH and MP. Drafts of the paper were
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50 clinical records for each child. JG is guarantor of the article.

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Table 1 Summary of key findings.

	All	2018	2019	2020	p
Sample N	200	78	75	47	
Age in months Median (IQR)	69 (85)	72.5 (76)	70 (109)	55 (77)	.598
Gender N Female (%)	73 (36.5)	32 (41.0)	31 (41.3)	10 (21.3)	.046
School status N (%)					
Pre-school	85 (42.5)	34 (43.6)	30 (40.0)	21 (44.7)	.637
Primary (Reception – Year 6)	78 (39.0)	32 (41.0)	26 (34.7)	20 (42.6)	
Secondary (Year 7-11)	32 (16.0)	11 (14.1)	16 (21.3)	5 (10.6)	
College / 6 th form (Year 12-13)	5 (2.5)	1 (1.3)	3 (4.0)	1 (2.1)	
Is child an index case (vs sibling or household contact) N Yes (%)	134 (67)	46 (59.0)	56 (74.7)	32 (68.1)	.117
Source of referral (who did child disclose abuse to, or who initiated CPME referral) N (%)					
School or Early Years staff	86 (43.9)	36 (47.4)	38 (52.1)	12 (25.5)	.015
Social care staff	22 (11.2)	10 (13.2)	3 (4.1)	9 (19.1)	
Police	22 (11.2)	11 (14.5)	7 (9.6)	4 (8.5)	
Family member	36 (18.4)	9 (11.8)	17 (23.3)	10 (21.3)	
Medical professional	4 (2.0)	2 (2.6)	2 (2.7)	0 (0.0)	
Foster carer	7 (3.6)	1 (1.3)	2 (2.7)	4 (8.5)	
Sibling current inpatient due to NAI	12 (6.1)	6 (7.9)	1 (1.4)	5 (10.6)	
Other	7 (3.6)	1 (1.3)	3 (4.1)	3 (6.4)	
Was child known to social care prior to CPME referral? N Yes (%)	151 (75.9)	58 (74.4)	56 (75.7)	37 (78.7)	
Is child an open case to social care now N Yes (%)	106 (53.3)	39 (50.0)	38 (51.4)	29 (61.7)	.409
Are there physical findings to support NAI or neglect N Yes (%)	98 (51.0)	32 (41.0)	46 (59.0)	27 (57.4)	.071
Does the report indicate significant safeguarding concerns? N Yes %	180 (93.8)	69 (88.5)	64 (95.5)	47 (100)	.014

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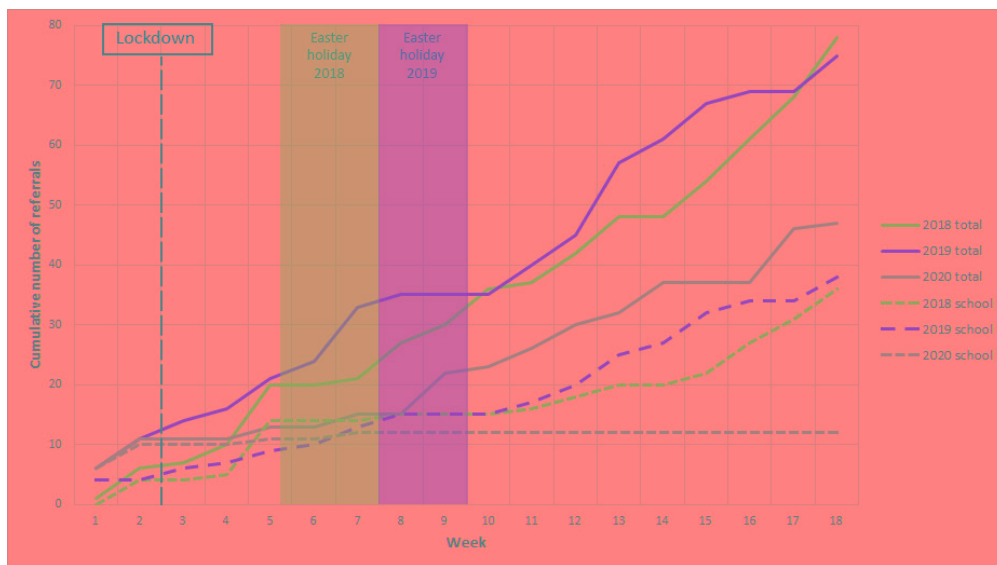


Figure 1 Cumulative number of referrals

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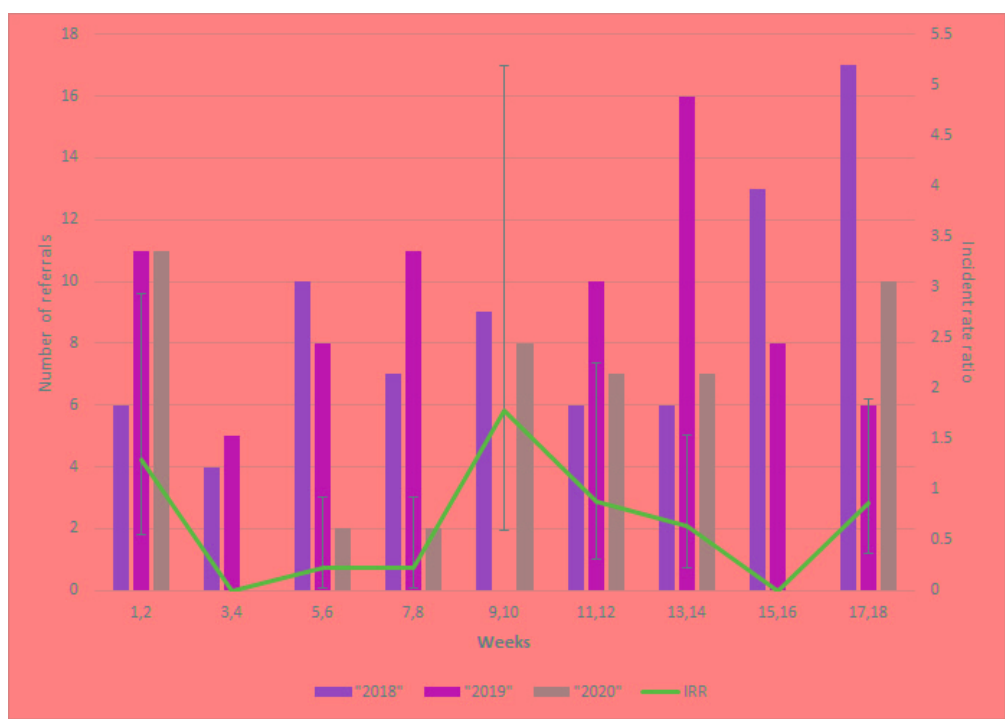


Figure 2 IRR and totals of weekly referral

244x172mm (72 x 72 DPI)

Supplementary Information Table 1 Extraction form

Demo-graphics	1	Unique study number	
	2	year	
	3	Week of medical	
	4	Age in completed months	
	5	School status	Less than mandatory school age/reception – year 6/ year7-11/sixth form - college
	6	Special school	Yes/No
	7	Sex	Male/female
	8	Where does child normally live?	Birth parents/Special Guardian or kinship care/Foster care/Residential home or school/other
Referral details	9	Index case or referred as sibling/household group for CP medicals (including sibling inpatient with NAI)	Index case/sibling or household group
	10	Who is the allegation against?	Family or household contacts/professionals
	11	Source of initial disclosure of potential safeguarding incident (who did child first tell OR who first saw injury)	School or Early Years staff/social care staff /police/family member/ foster carer/medical professional /sibling NAI inpatient/other please state
Social care history	12	Was child referred to social care prior to needing this child protection medical?	Yes/No
	13	If yes: Current social care status at time that concerns were raised which led to this medical.	Investigation in progress/support from Family support worker /Child in Need/Child Protection Plan/ Child disability team/referred but NFA/other – please state
	14	Has child ever been on Child Protection Plan?	Yes/No
Outcomes	15	Are there any physical findings to support NAI or neglect?	Yes/No
	16	If yes: Physical Findings (can choose more than one, exclude accidental injuries)	Bruise/Burn /Abrasion/ Scar /implement mark/ human bite mark/laceration/neglect/Other/
	17	Likelihood of non-accidental injury (NAI)	Injury consistent with NAI/ injury not consistent with NAI or no injury seen
	18	If consistent with NAI: Extent of non-accidental injuries Are there NAI on more than one part of the body?	Yes/No
	19	If consistent with NAI: Are there injuries consistent with previous NAI?	Yes/No
	20	Based on all the evidence in the report does the report indicate significant safeguarding concerns?	Yes/No <i>If No STOP HERE</i>

	21	Are these concerns related to other factors than NAI?	Yes/No
	22	What are the significant safeguarding concerns? (can choose more than one)	Physical abuse/emotional abuse/ domestic violence/neglect/sexual abuse/child exploitation

For peer review only

Supplementary Table 2 Full details of demographics, referrals, social care history and outcomes.

	All	2018	2019	2020	p
Sample N	200	78	75	47	
Age in months Median (IQR)	69 (85)	72.5 (76)	70 (109)	55 (77)	.598
Gender N Female (%)	73 (36.5)	32 (41.0)	31 (41.3)	10 (21.3)	.046
School status N (%)					
Pre-school	85 (42.5)	34 (43.6)	30 (40.0)	21 (44.7)	
Primary (Reception – Year 6)	78 (39.0)	32 (41.0)	26 (34.7)	20 (42.6)	
Secondary (Year 7-11)	32 (16.0)	11 (14.1)	16 (21.3)	5 (10.6)	
College / 6 th form (Year 12-13)	5 (2.5)	1 (1.3)	3 (4.0)	1 (2.1)	.637
Special school N Yes (%)	9 (4.5)	5 (6.4)	3 (4.0)	1 (2.1)	.516
Where child lives N (%)					
Birth parents	176 (88)	69 (88.5)	65 (86.7)	42 (89.4)	
Special Guardianship or kinship care	12 (6.0)	3 (3.8)	6 (8.0)	3 (6.4)	
Foster care	7 (3.5)	5 (6.4)	2 (2.7)	0 (0.0)	
Residential home or school	3 (1.5)	1 (1.3)	2 (2.7)	0 (0.0)	
Other	2 (1.0)	0 (0.0)	0 (0.0)	2 (1.0)	.121
Is child an index case (vs sibling or household contact) N Yes (%)	134 (67)	46 (59.0)	56 (74.7)	32 (68.1)	.117
Allegation against N (%)					
Family or household	189 (94.5)	73 (93.6)	70 (93.3)	46 (97.9)	
Professional	11 (5.5)	5 (6.4)	5 (6.7)	1 (2.1)	.509
Source of referral (who did child disclose abuse to, or who initiated CPME referral) N (%)					
School or Early Years staff	86 (43.9)	36 (47.4)	38 (52.1)	12 (25.5)	
Social care staff	22 (11.2)	10 (13.2)	3 (4.1)	9 (19.1)	
Police	22 (11.2)	11 (14.5)	7 (9.6)	4 (8.5)	
Family member	36 (18.4)	9 (11.8)	17 (23.3)	10 (21.3)	
Medical professional	4 (2.0)	2 (2.6)	2 (2.7)	0 (0.0)	
Foster carer	7 (3.6)	1 (1.3)	2 (2.7)	4 (8.5)	
Sibling current inpatient due to NAI	12 (6.1)	6 (7.9)	1 (1.4)	5 (10.6)	
Other	7 (3.6)	1 (1.3)	3 (4.1)	3 (6.4)	.015
Was child known to social care prior to CPME referral? N Yes (%)	151 (75.9)	58 (74.4)	56 (75.7)	37 (78.7)	.857
Is child an open case to social care now N Yes (%)	106 (53.3)	39 (50.0)	38 (51.4)	29 (61.7)	.409
Has child ever been on CP plan N Yes (%)	77 (38.7)	26 (33.3)	29 (39.2)	22 (46.8)	.323
Are there physical findings to support NAI or neglect N Yes (%)	98 (51.0)	32 (41.0)	46 (59.0)	27 (57.4)	.071
Physical findings					
Bruise	128	21	25	21	
Burn	36	2	2	2	

Abrasion	29	7	10	7	
Scar	11	3	3	3	
Implement mark	9	6	1	2	
Human bite mark	6	2	1	2	
Laceration	5	1	2	2	
Neglect	19	7	6	6	
Other	4	1	0	3	
Number of types of NAI Median (IQR)	1 (1)	1 (1)	1 (1)	1.5 (1)	.277
Likelihood of NAI N Consistent with NAI (%)	89 (46.4)	28 (35.9)	35 (52.2)	26 (55.3)	.053
NAI on more than one part of body N Yes (%)	48 (54.5)	16 (57.1)	18 (52.9)	14 (53.8)	.943
Are there injuries consistent with previous NAI? N Yes (%)	15 (17.2)	4 (14.8)	4 (11.8)	7 (26.9)	.282
Does the report indicate significant safeguarding concerns? N Yes (%)	180 (93.8)	69 (88.5)	64 (95.5)	47 (100)	.014
Are there concerns related to non-NAI safeguarding factors? N Yes (%)	132 (73.3)	52 (75.4)	47 (73.4)	33 (70.2)	.898
Other safeguarding concerns					
Physical abuse	154	59	54	41	
Emotional abuse	34	13	15	6	
Domestic violenc	60	24	25	11	
Neglect	62	25	1	19	
Sexual abuse	4	1	2	1	
Child exploitation	7	3	2	2	.845

STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No	Recommendation	Page No
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	3
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-5
Objectives	3	State specific objectives, including any prespecified hypotheses	5
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5
Participants	6	(a) <i>Cohort study</i> —Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up <i>Case-control study</i> —Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls <i>Cross-sectional study</i> —Give the eligibility criteria, and the sources and methods of selection of participants	5
		(b) <i>Cohort study</i> —For matched studies, give matching criteria and number of exposed and unexposed <i>Case-control study</i> —For matched studies, give matching criteria and the number of controls per case	
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5-6
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	5 <i>Figures 1 & 2, Table 1</i>
Bias	9	Describe any efforts to address potential sources of bias	6
Study size	10	Explain how the study size was arrived at	6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	5-6
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	6
		(b) Describe any methods used to examine subgroups and interactions	6
		(c) Explain how missing data were addressed	n/a
		(d) <i>Cohort study</i> —If applicable, explain how loss to follow-up was addressed <i>Case-control study</i> —If applicable, explain how matching of cases and controls was addressed	n/a

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60**Results**

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed (b) Give reasons for non-participation at each stage (c) Consider use of a flow diagram	7
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	8
		(b) Indicate number of participants with missing data for each variable of interest	8
		(c) <i>Cohort study</i> —Summarise follow-up time (eg, average and total amount)	n/a
Outcome data	15*	<i>Cohort study</i> —Report numbers of outcome events or summary measures over time	n/a
		<i>Case-control study</i> —Report numbers in each exposure category, or summary measures of exposure	n/a
		<i>Cross-sectional study</i> —Report numbers of outcome events or summary measures	7-8 Table 1
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	8-9
		(b) Report category boundaries when continuous variables were categorized	
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	n/a

Discussion

Key results	18	Summarise key results with reference to study objectives	8
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	8-9
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	9-10
Generalisability	21	Discuss the generalisability (external validity) of the study results	9-10

Other information

Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	12
		<i>Cross-sectional study</i> —If applicable, describe analytical methods taking account of sampling strategy	
		(e) Describe any sensitivity analyses	n/a

BMJ Open

Effect of covid-19 lockdown on child protection medical assessments: a retrospective observational study in Birmingham, UK

Journal:	<i>BMJ Open</i>
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Complete List of Authors:	Garstang, Joanna; Birmingham Community Healthcare NHS Trust; University of Birmingham, College of Medical and Dental Sciences, Debelle, Geoff; Birmingham Children's Hospital, Paediatrics; University of Birmingham, College of Medical and Dental Sciences, Anand, Indu; Birmingham Community Healthcare NHS Trust Armstrong, Jane; Birmingham Community Healthcare NHS Trust Botcher, Emily; Birmingham Community Healthcare NHS Trust Chaplin, Helen; Birmingham Community Healthcare NHS Trust Hallett, Nutmeg; University of Birmingham , College of Medicine and Dentistry Morgans, Clare; Birmingham Community Healthcare NHS Trust Price, Malcolm; University of Birmingham , College of Medicine and Dentistry Tan, Ern Ern Henna; Birmingham Community Healthcare NHS Trust Tudor, Emily; Birmingham Community Healthcare NHS Trust Taylor, Julie; University of Birmingham, College of Medical and Dental Sciences, ; Birmingham Women's and Children's Hospital NHS Foundation Trust.,
Primary Subject Heading:	Paediatrics
Secondary Subject Heading:	Public health
Keywords:	Child protection < PAEDIATRICS, Community child health < PAEDIATRICS, Non-accidental injury < PAEDIATRICS

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Effect of covid-19 lockdown on child protection medical assessments: a retrospective observational study in Birmingham, UK.

Title page

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Effect of covid-19 lockdown on child protection medical assessments: a retrospective observational study in Birmingham, UK.

Abstract

Objectives

To determine any change in referral patterns and outcomes in children (0-18) referred for child protection medical examination (CPME) during the covid-19 pandemic compared to previous years.

Design

Retrospective observational study, analysing routinely collected clinical data from CPME reports in a rapid response to the pandemic lockdown.

Setting

Birmingham Community Healthcare NHS Trust, which provides all routine CPME for Birmingham, England, population 1.1 million including 288,000 children.

Participants

Children aged under 18 years attending CPME during an 18 week period from late February to late June during the years 2018, 2019, and 2020.

Main Outcome Measures

Numbers of referrals, source of disclosure and outcomes from CPME

Results

There were 78 CPME referrals in 2018, 75 in 2019 and 47 in 2020, this was a 39.7% (95%CI 12.4-59.0) reduction in referrals from 2018 to 2020, and a 37.3% (95%CI 8.6-57.4) reduction from 2019 to 2020.

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3 There were fewer CPME referrals initiated by school staff in 2020, 12(26%) compared to 36 (47%)
4 and 38 (52%) in 2018 and 2019 respectively. In all years 75.9% of children were known to social care
5 prior to CPME, and 94% of CPME concluded that there were significant safeguarding concerns.
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9 Conclusions

10 School closure due to covid-19 may have harmed children as child abuse has remained hidden.
11 There needs to be either mandatory attendance at schools in future or viable alternatives found.
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13 There may be a significant increase in safeguarding referrals when schools fully re-open as children
14 disclose the abuse they have experienced at home.
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19 Article summary: Strengths and Limitations of the Study

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- 23 • This is a highly robust study: we obtained CPME reports for 97% of CPME referrals during the
24 study period.
 - 25 • We ensured consistency of data extraction by double reviewing every report, with further
26 consensus discussions for the few cases that raised uncertainties.
 - 27 • The team extracting the data comprised highly experienced paediatricians with expertise in
28 child abuse.
 - 29 • One weakness is that we only considered minor injuries from outpatient CPME, excluding
30 those admitted to hospital, so our findings do not include those with more serious NAI,
31 however they would be taken to hospital for treatment due to the severity of their injuries.
32
33

34 **Keywords:** child abuse; non-accidental injury; paediatrics; child protection medical examination.

35
36
37 **Funding statement:** The study was not funded. JG is funded by West Midlands Clinical Research
38 Network (NIHR) as a Clinical Trials Scholar. MP is supported by the NIHR Birmingham Biomedical
39 Research Centre at the University Hospitals Birmingham NHS Foundation Trust and the University of
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Introduction

Nearly 400,000 children in England each year are defined as 'children in need'; these are children who require additional services, including child protection, to maintain a satisfactory level of health or development(1). Since the lockdown began, there are burgeoning concerns that child protection referrals have decreased, with professionals reporting limited opportunities to make accurate assessments of children's needs(2). Legislation sets out the specific roles and responsibilities of agencies for undertaking child protection enquiries when a child or young person is referred for suspected maltreatment(3), including formal child protection medical examinations (CPME). The purpose of CPME is to provide a holistic assessment of the child's health, document any injuries and determine possible causes including the reasonable likelihood of injuries being inflicted or non-inflicted. A report is provided to inform any child protection investigations. CPMEs are performed or supervised by an experienced consultant paediatrician (4), adhering to rigorous standards in respect of consent; conduct of the examination; documentation of history; findings and formulation; photo-documentation; and report writing(5), with reports subject to regular peer review(6).

Birmingham is the second largest city in the UK, with a diverse population and is the largest local authority in Europe. It is also a relatively young city, with 23% of its population being children under the age of 16 years(7). The proportion of children subject to a child protection plan is higher than for the UK as a whole(8) and thirty-five percent of children live in poverty(8). In Birmingham CPMEs are generally undertaken within a community setting during working hours, often for children who have disclosed maltreatment to school or nursery staff, who then refer them to Birmingham Children's Trust (social care). Children with suspected sexual abuse are assessed separately, within specialised, regional child sexual assault referral centres. Hospital-based paediatricians perform CPMEs for those children with more significant injuries requiring treatment and for out-of-hours referrals. During the covid-19 lockdown the community based CPME service provided extended hours (6 April to 23 May 2020) that covered evenings and weekends to minimise hospital attendance so an increase in referrals for CPME was expected.

Schools are at the frontline of child safeguarding; educational staff are often the first to report potential child abuse. This raises concerns that vulnerable children are now invisible to professionals and potentially 'at risk' in homes where families face even greater hardships(8). Such 'collateral damage'(9) has been borne out by evidence that only 10% of children on a child protection plan or 'in-need' were attending schools that were remaining open specifically for their benefit and even where schools are open for selected year groups, attendance remains very low (10).

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3 Although there has been much professional concern about the potential risk children have faced at
4 home there have been limited data, with one report of an increase in abusive head trauma noted in
5 London (11) and a short report from the North-East of England noting a dramatic decrease in CPME
6 referrals (12). This current study was designed as a rapid response to fill gaps in knowledge about
7 child protection referrals during the covid-19 pandemic.
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12 The aim was to determine differences in the number and outcomes of child protection referrals for
13 CPME in Birmingham during the covid-19 pandemic lockdown (March to June 2020) compared with
14 the same periods in 2018 and 2019. Our research questions were:
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18 What is the difference in child protection referrals during the covid-19 pandemic compared to
19 previous years?
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22 Are there differences in demographic details, referral source and outcomes for children presenting
23 for child protection medical examination during the covid-19 pandemic compared to previous years?
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26 27 Methods

28 29 Study design

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31 Retrospective observational study of referrals for CPME. It adhered to STROBE guidance (13).
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34 35 Setting and sample

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37 All children aged 0-18 attending for CPME at Birmingham Community Healthcare Trust (BCHT),
38 England. BCHT provides specialist CPME for the population of Birmingham, total population 1.1
39 million of which 288,000 are children aged <18 (7). Data were collected for all CPME for 18-week
40 periods in 2018, 2019 and 2020, from the last week in February, when schools returned following
41 the half-term holiday, to the end of June and noting the variation mid-2020 when extended hours
42 were running.
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48 49 Procedure

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51 We obtained a list of all children referred for CPME from the booking service, which is the single
52 point of contact for all CPME referrals in BCHT, and accessed the electronic patient records (EPR) for
53 these children, obtaining copies of reports from CPME. We read the reports, and completed an
54 anonymised data extraction form for each CPME (on-line supplementary table 1). The data collection
55 form was in three parts: i) child demographic data, including age, gender, school age group (pre-
56 school, primary, secondary, post-16), in a special school or not, ii) referral details including whether
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3 an index case or referred as a sibling group, source of initial disclosure, who the allegation was
4 against, whether the child had previous referral to social care and if so, the current social care
5 status, and whether the child had ever been on a child protection plan, and iii) outcomes of the
6 CPME including whether there were physical findings to support non-accidental injury (NAI) or
7 neglect, and, if so, what were the physical findings; likelihood of NAI; whether NAIs were present on
8 more than one body part; were their injuries consistent with previous NAI; whether the report
9 indicated significant safeguarding concerns; if the concerns were related to factors other than NAI;
10 and, if so, what?
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17 Outcomes were taken either directly from the conclusion of the CPME report, or if the conclusion
18 was unclear, were determined based on the description of injuries and events within the report. If
19 the CPME was not available, we used the EPR for demographics, referral source and safeguarding
20 history, omitting data on outcomes of CPME.
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25 Prior to commencing data extraction, all the clinicians reviewed 10 anonymised CPME reports which
26 were then reviewed and discussed by the whole group. This enabled any differences in
27 interpretation of CPME to be resolved and ensured quality and consistency of data extraction.
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31 Clinicians worked in pairs, consisting of a specialist consultant in child protection (either Named or
32 Designated Doctors for Safeguarding) and a specialist trainee in paediatrics, all of whom have a
33 minimum of four years postgraduate medical training in child health. Each case had data extracted
34 independently by the consultant and trainee, to ensure consistency. In the event of disagreement
35 the case was reviewed by another consultant.
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40 Study size

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42 All assessments were included. The time period included the last week in February which was before
43 there was significant concern in schools about covid-19. Data collection continued for the month of
44 June to enable any change in referral CPME patterns with the partial reopening of some primary
45 schools.
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50 Statistical analysis

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52 Anonymised data were entered into SPSS. Cases were analysed by the year of referral. If children
53 had more than one CPME during the study period, each CPME was considered as a separate case.
54 Referral rates between years for the whole 18-week period were compared using incidence rate
55 ratios (IRR). IRRs for two weekly time-periods comparing 2018/19 with 2020 were also calculated
56 and plotted on a graph with 95% confidence intervals. To compare differences in variables between
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3 the years, Kruskal-Wallis tests were run for continuous variables (age, number of types of injuries)
4 and chi-square tests were run for categorical variables.
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7 8 Ethics

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10 This study involved clinicians analysing routinely collected patient data, from patients within their
11 own clinical service, it therefore does not require HRA ethical approval. The study was approved by
12 the Research and Innovation Department in Birmingham Community Healthcare Trust.
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16 Patient and public involvement

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18 As a rapid observational study using retrospective records we were unable to include children who
19 had been through a CPME or their parents in the study. However we have a Children and Young
20 People's Advisory Group whom we intend to involve in the dissemination and guidelines for
21 practitioners.
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26 Results

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29 There were 200 CPMEs during the study period; 193 had CPME reports available with complete
30 information from 191.
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34 Referral numbers

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36 There were fewer CPME referrals in 2020 compared to previous years, as shown in figure 1, with 78
37 in 2018, 75 in 2019 and 47 in 2020. There was a 39.7% (95%CI 12.4-59.0) reduction in referrals from
38 2018 to 2020, and a 37.3% (95%CI 8.6-57.4) reduction from 2019 to 2020. The IRR for 2020
39 compared to 2018/19 was 0.61 (95%CI 0.43-0.86) showing an overall reduction of 39% (95% CI 14%-
40 57%).
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45 < Figure 1 (Cumulative number of referral) about here >
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48 The two weekly data shows that there was a significant drop in referrals for a 6-week period from
49 weeks 3/4 to weeks 7/8, see figure 2. There was some evidence of an increase in referrals during
50 weeks 9/10 in 2020 after which referral rates were broadly similar, with all confidence intervals
51 crossing 1, apart from weeks 15/16 when there were no referrals in 2020.
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55 < Figure 2 (IRR and totals of weekly referrals) about here >
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Secondary Outcomes

A summary of referrals, demographics, social care history and outcomes of CPME is shown in table 1.

Table 1. Summary of key findings

Variables n=	All 200	2018 78	2019 75	2020 47	<i>p</i>
Age in months <i>Median (IQR)</i>	69 (85)	72.5 (76)	70 (109)	55 (77)	.598
Gender <i>Female (%)</i>	73 (36.5)	32 (41.0)	31 (41.3)	10 (21.3)	.046
School status (%)					
Pre-school	85 (42.5)	34 (43.6)	30 (40.0)	21 (44.7)	.637
Primary (Reception – Year 6)	78 (39.0)	32 (41.0)	26 (34.7)	20 (42.6)	
Secondary (Year 7-11)	32 (16.0)	11 (14.1)	16 (21.3)	5 (10.6)	
College / 6 th form (Year 12-13)	5 (2.5)	1 (1.3)	3 (4.0)	1 (2.1)	
Is child an index case (vs sibling or household contact) <i>Yes (%)</i>	134 (67)	46 (59.0)	56 (74.7)	32 (68.1)	.117
Source of referral (who did child disclose abuse to, or who initiated CPME referral) (%)					
School or Early Years staff	86 (43.9)	36 (47.4)	38 (52.1)	12 (25.5)	.015
Social care staff	22 (11.2)	10 (13.2)	3 (4.1)	9 (19.1)	
Police	22 (11.2)	11 (14.5)	7 (9.6)	4 (8.5)	
Family member	36 (18.4)	9 (11.8)	17 (23.3)	10 (21.3)	
Medical professional	4 (2.0)	2 (2.6)	2 (2.7)	0 (0.0)	
Foster carer	7 (3.6)	1 (1.3)	2 (2.7)	4 (8.5)	
Sibling current inpatient due to NAI	12 (6.1)	6 (7.9)	1 (1.4)	5 (10.6)	
Other	7 (3.6)	1 (1.3)	3 (4.1)	3 (6.4)	
Was child known to social care prior to CPME referral? <i>Yes (%)</i>	151 (75.9)	58 (74.4)	56 (75.7)	37 (78.7)	.857
Is child an open case to social care now <i>Yes (%)</i>	106 (53.3)	39 (50.0)	38 (51.4)	29 (61.7)	.409
Are there physical findings to support NAI or neglect <i>Yes (%)</i>	98 (51.0)	32 (41.0)	46 (59.0)	27 (57.4)	.071
Does the report indicate significant safeguarding concerns? <i>Yes %</i>	180 (93.8)	69 (88.5)	64 (95.5)	47 (100)	.014

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3 There were significantly fewer referrals made by school or early years staff in 2020 compared to
4 other years, with only two school referrals received after lockdown. There was no increase in
5 referrals or disclosures from other sources. In each year, several referrals were initiated when
6 children disclosed abuse to grandparents and non-resident parents or by relatives who witnessed
7 abuse.
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12 There were significantly fewer girls referred in 2020. In total across all years, 67% of children were
13 index cases who disclosed potential abuse, or had concerning injuries noted by others leading to
14 referral; the remaining 33% were siblings of these index cases. Across all years 75.9% of children
15 were known to social care at any time prior to CPME, 53% were open cases in receipt of support
16 from social care immediately prior to CPME and 39% were currently or had previously been subject
17 to a child protection plan (where maltreatment has been substantiated).
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23 The findings in 51% of all CPME were that there was evidence of non-accidental injury (NAI) or
24 neglect, with 55% of these children having injuries, typically bruising, on more than one area of their
25 body implying more significant NAI. In 90% of all CPME it was concluded that there were significant
26 safeguarding concerns: even if there was not evidence to substantiate NAI, there were significantly
27 fewer children in this category in 2018, but the reasons for this are unclear. There was no other
28 statistical evidence of differences in demographics, social care histories, referral sources and
29 outcomes; further details are shown in on-line supplementary table 2.
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36 Discussion

37 Statement of principal findings

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40 This study found a significant drop of 39% (95%CI 14-57%) in CPME referrals during 2020 compared
41 to previous years with 78 referrals in 2018, 75 in 2019 and 47 in 2020. This drop coincides with the
42 near total absence of referrals made by schools after school closure in March, with no recovery in
43 school referrals after schools partially re-opened in June. Referrals from other sources did not
44 increase in 2020, showing that other agencies did not fully compensate for school closure. The
45 children referred for CPME in 2020 had similar social care histories to other years with the majority
46 being previously known to social care and approximately half being open cases at the time of
47 referral. In all years, the vast majority of CPME reports concluded that there were significant
48 safeguarding concerns relating to physical abuse, domestic violence, emotional abuse or neglect.
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3 Our trust is the largest provider of community paediatric services in England, managing all requests
4 for outpatient CPME for Birmingham residents. The extended hours offered during lockdown meant
5 that we could include children with minor injuries needing CPME who ordinarily would be managed
6 by acute hospital trusts, so our findings may actually be an under-estimation of the decreased
7 referral rate. Our findings should be generalisable outside of Birmingham, as this is a large multi-
8 cultural city with above average levels of social deprivation and is the largest Local Authority in
9 Europe.

10 Strengths and weaknesses in relation to other studies, discussing important differences in results

11 Although the drop in CPME referrals has been noted elsewhere in the UK (12), the longer duration of
12 our study enabled us to examine any effects of the partial re-opening of schools. Our detailed
13 analysis of referral details and outcomes identified the change in referral patterns this year, which is
14 a novel finding. As our CPME service covers a fixed population, we can expect that changes in
15 referral patterns are genuine, unlike tertiary paediatric centres whose referrals are determined by
16 clinical need not home address (11).

17 Meaning of the study: possible explanations and implications for clinicians and policymakers

18 Our findings further evidence the hidden harm to children from covid-19. The significant decrease in
19 CPME referrals is likely largely a result of school closure and the partial re-opening of schools has not
20 altered this trend. Attending school provides children and young people with access to a trusted
21 adult and a safe space outside of the family home. Removing this provision increases the potential
22 risk of abuse going unseen. Many schools have made strenuous efforts to maintain contact through
23 remote methods, but these are not always private and it is not known who else may be in the room.

24 Although UK government guidance was for vulnerable children, identified as those with an allocated
25 social worker, to continue attending school, less than 10% did so (10). Nearly half of those referred
26 for CPME were not in this category so had no protection. Disclosures to school staff by older children
27 also protects younger siblings from abuse and neglect. It is concerning that 39% of children referred
28 for CPME were either currently or previously subject to CPP, this suggests even if there is a lower
29 threshold for subsequent referral that CPPs are not providing adequate safeguards for vulnerable
30 children. Missed sentinel NAI such as bruising, may lead to children subsequently presenting with
31 serious injuries (14) (15). These sentinel NAI are typical of community CPME referrals and the drop

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3 in referral rate therefore represents a much greater risk of harm. While UK government policy is for
4 mandatory school attendance to begin in September 2020, it is unclear at the timing of writing how
5 this will be implemented. It is vital that this is encouraged and enforced by schools given that
6 currently less than 40% of eligible primary school pupils are attending (10). Low attendance rates
7 may enable abusing parents to keep their children at home with few questions asked: there must be
8 robust face to face welfare checks for those who do not attend.
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16 Once back at school, many children may disclose abuse that occurred during closure, and children's
17 services may struggle to meet demand. As months will have passed since the abuse, there may be
18 little physical evidence to support allegations, in turn reducing the weight of corroborative evidence
19 to support child protection measures and risking children feeling they are not believed.
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26 Child abuse and neglect carries long-term risks for cumulative physical and mental health
27 problems(16,17), and without intervention a cycle of intergenerational poor parenting, abuse and
28 neglect may result(18). There were 30 fewer CPME referrals than expected during 2020: given that
29 Birmingham accounts for 2% of children referred for social care assessment nationally (1) we
30 estimate that there are approximately 1500 (95%CI 538-2192) potentially abused or neglected
31 children in England who remain hidden from services. This number may be considerably greater with
32 the suspected rise in rates of child abuse during lockdown. We face an epidemic of unreported,
33 unrecognised child abuse and neglect with long-term implications for society as a whole. Getting all
34 children back into school will reduce the risk, but may not undo the harm that has already occurred.
35 Should there be a further lockdown, safeguards must be put in place to prevent vulnerable children
36 coming to harm.
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45 Unanswered questions and future research

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47 We need to continue to evaluate CPME referral patterns and outcomes as children return to school,
48 to help understand the hidden harms from covid-19. There should be robust analyses of inpatient
49 NAI cases to determine any increase in severe injuries. It is disappointing that these data need to be
50 studied in local areas, some of which have very small numbers. A national data and analytics system
51 would be very helpful. The significant decrease noted in girl referrals may simply be due to small
52 numbers, but warrants further investigation as to whether this trend continues and if so, why.
53 Research should include hearing children's lived experiences so that appropriate safeguards can be
54 put in place should schools have to close in future. Longer-term research is needed to ascertain and
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3 treat the mental health and behavioural outcomes that may result from abuse and neglect during
4 school closures. As 'child safeguarding is everyone's business'(19) learning how to protect children
5 during an event such as covid-19 should be a multi-agency process. If there are further school
6 closures the relative importance of hospital doctors, social workers and family members increases.
7
8 Media communications could be used with effect to highlight this in hospital emergency
9 departments for example. Mandatory regular visits to vulnerable children could be considered.
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11 Perhaps the National Safeguarding Practice Review Panel could take these ideas forward.
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16 **Data sharing statement:** Data is drawn from clinical child protection reports of individual children
17 and cannot be shared. The disaggregated and anonymised abstraction files may be shared at
18 reasonable request from the first author.
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21 **Author Contributions:** JG conceived the idea, the protocol was designed by JG, GD, JT, JA, and IA.
22 The data extraction tool was piloted, revised then used for data extraction by JG, GD,HC, JA, IA, ET,
23 EET, CM, and EB. The data analysis was undertaken by JG, NH and MP. Drafts of the paper were
24 written by JG, GD, NH and JT with all authors contributing. Information for the paper came from the
25 clinical records for each child. JG is guarantor of the article.
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46 Figure legends

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48 Figure 1. Cumulative weekly CPME referrals by year for all referrals and school referrals

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50 Figure 2. Totals of weekly referrals by year and IRR comparing combined incidence for 2018/19
51 against 2020 incidence
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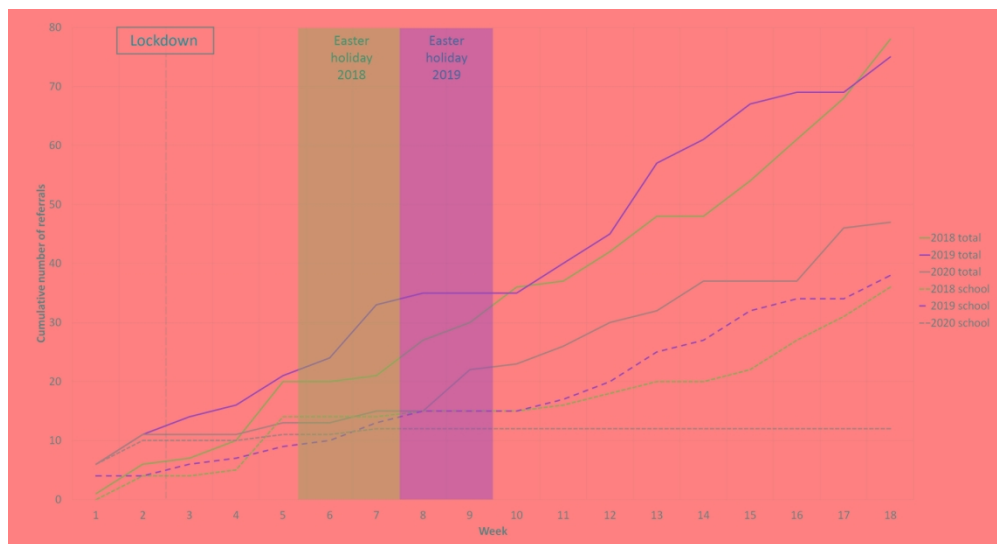


Figure 1. Cumulative weekly CPME referrals by year for all referrals and school referrals

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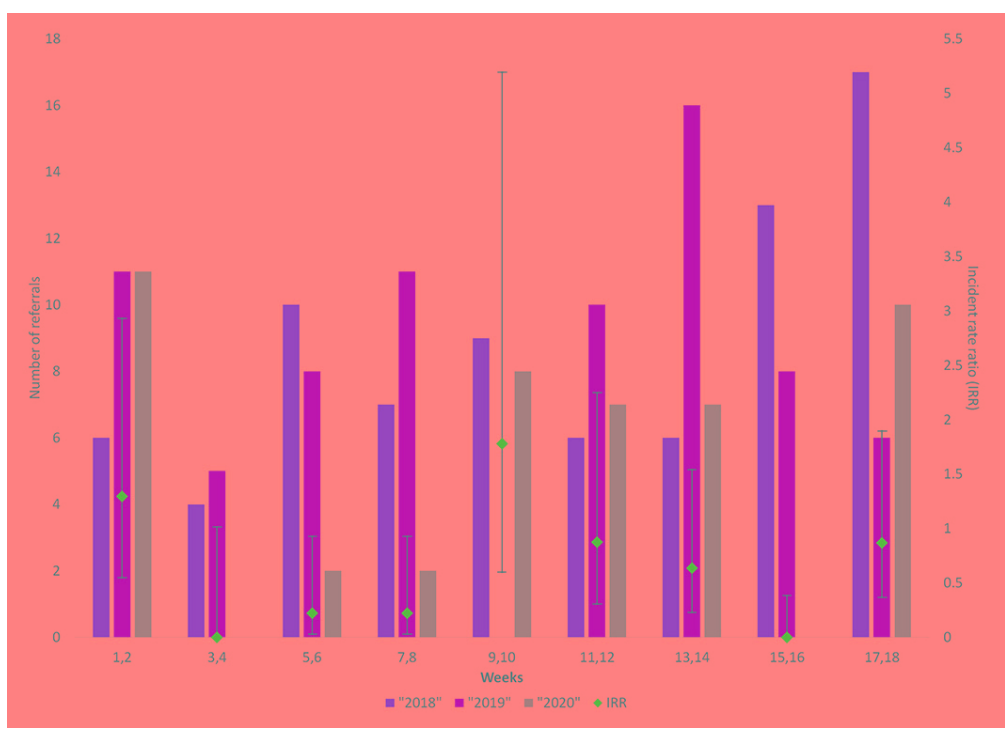


Figure 2. Totals of weekly referrals by year and IRR comparing combined incidence for 2018/19 against 2020 incidence

Supplementary Information Table 1 Extraction form

Demo-graphics	1	Unique study number	
	2	year	
	3	Week of medical	
	4	Age in completed months	
	5	School status	Less than mandatory school age/reception – year 6/ year7-11/sixth form - college
	6	Special school	Yes/No
	7	Sex	Male/female
	8	Where does child normally live?	Birth parents/Special Guardian or kinship care/Foster care/Residential home or school/other
Referral details	9	Index case or referred as sibling/household group for CP medicals (including sibling inpatient with NAI)	Index case/sibling or household group
	10	Who is the allegation against?	Family or household contacts/professionals
	11	Source of initial disclosure of potential safeguarding incident (who did child first tell OR who first saw injury)	School or Early Years staff/social care staff /police/family member/ foster carer/medical professional /sibling NAI inpatient/other please state
Social care history	12	Was child referred to social care prior to needing this child protection medical?	Yes/No
	13	If yes: Current social care status at time that concerns were raised which led to this medical.	Investigation in progress/support from Family support worker /Child in Need/Child Protection Plan/ Child disability team/referred but NFA/other – please state
	14	Has child ever been on Child Protection Plan?	Yes/No
Outcomes	15	Are there any physical findings to support NAI or neglect?	Yes/No
	16	If yes: Physical Findings (can choose more than one, exclude accidental injuries)	Bruise/Burn /Abrasion/ Scar /implement mark/ human bite mark/laceration/neglect/Other/
	17	Likelihood of non-accidental injury (NAI)	Injury consistent with NAI/ injury not consistent with NAI or no injury seen
	18	If consistent with NAI: Extent of non-accidental injuries Are there NAI on more than one part of the body?	Yes/No
	19	If consistent with NAI: Are there injuries consistent with previous NAI?	Yes/No
	20	Based on all the evidence in the report does the report indicate significant safeguarding concerns?	Yes/No <i>If No STOP HERE</i>

	21	Are these concerns related to other factors than NAI?	Yes/No
	22	What are the significant safeguarding concerns? (can choose more than one)	Physical abuse/emotional abuse/ domestic violence/neglect/sexual abuse/child exploitation

For peer review only

Supplementary Table 2 Full details of demographics, referrals, social care history and outcomes.

	All	2018	2019	2020	p
Sample N	200	78	75	47	
Age in months Median (IQR)	69 (85)	72.5 (76)	70 (109)	55 (77)	.598
Gender N Female (%)	73 (36.5)	32 (41.0)	31 (41.3)	10 (21.3)	.046
School status N (%)					
Pre-school	85 (42.5)	34 (43.6)	30 (40.0)	21 (44.7)	
Primary (Reception – Year 6)	78 (39.0)	32 (41.0)	26 (34.7)	20 (42.6)	
Secondary (Year 7-11)	32 (16.0)	11 (14.1)	16 (21.3)	5 (10.6)	
College / 6 th form (Year 12-13)	5 (2.5)	1 (1.3)	3 (4.0)	1 (2.1)	.637
Special school N Yes (%)	9 (4.5)	5 (6.4)	3 (4.0)	1 (2.1)	.516
Where child lives N (%)					
Birth parents	176 (88)	69 (88.5)	65 (86.7)	42 (89.4)	
Special Guardianship or kinship care	12 (6.0)	3 (3.8)	6 (8.0)	3 (6.4)	
Foster care	7 (3.5)	5 (6.4)	2 (2.7)	0 (0.0)	
Residential home or school	3 (1.5)	1 (1.3)	2 (2.7)	0 (0.0)	
Other	2 (1.0)	0 (0.0)	0 (0.0)	2 (1.0)	.121
Is child an index case (vs sibling or household contact) N Yes (%)	134 (67)	46 (59.0)	56 (74.7)	32 (68.1)	.117
Allegation against N (%)					
Family or household	189 (94.5)	73 (93.6)	70 (93.3)	46 (97.9)	
Professional	11 (5.5)	5 (6.4)	5 (6.7)	1 (2.1)	.509
Source of referral (who did child disclose abuse to, or who initiated CPME referral) N (%)					
School or Early Years staff	86 (43.9)	36 (47.4)	38 (52.1)	12 (25.5)	
Social care staff	22 (11.2)	10 (13.2)	3 (4.1)	9 (19.1)	
Police	22 (11.2)	11 (14.5)	7 (9.6)	4 (8.5)	
Family member	36 (18.4)	9 (11.8)	17 (23.3)	10 (21.3)	
Medical professional	4 (2.0)	2 (2.6)	2 (2.7)	0 (0.0)	
Foster carer	7 (3.6)	1 (1.3)	2 (2.7)	4 (8.5)	
Sibling current inpatient due to NAI	12 (6.1)	6 (7.9)	1 (1.4)	5 (10.6)	
Other	7 (3.6)	1 (1.3)	3 (4.1)	3 (6.4)	.015
Was child known to social care prior to CPME referral? N Yes (%)	151 (75.9)	58 (74.4)	56 (75.7)	37 (78.7)	.857
Is child an open case to social care now N Yes (%)	106 (53.3)	39 (50.0)	38 (51.4)	29 (61.7)	.409
Has child ever been on CP plan N Yes (%)	77 (38.7)	26 (33.3)	29 (39.2)	22 (46.8)	.323
Are there physical findings to support NAI or neglect N Yes (%)	98 (51.0)	32 (41.0)	46 (59.0)	27 (57.4)	.071
Physical findings					
Bruise	128	21	25	21	
Burn	36	2	2	2	

Abrasion	29	7	10	7	
Scar	11	3	3	3	
Implement mark	9	6	1	2	
Human bite mark	6	2	1	2	
Laceration	5	1	2	2	
Neglect	19	7	6	6	
Other	4	1	0	3	
Number of types of NAI Median (IQR)	1 (1)	1 (1)	1 (1)	1.5 (1)	.277
Likelihood of NAI N Consistent with NAI (%)	89 (46.4)	28 (35.9)	35 (52.2)	26 (55.3)	.053
NAI on more than one part of body N Yes (%)	48 (54.5)	16 (57.1)	18 (52.9)	14 (53.8)	.943
Are there injuries consistent with previous NAI? N Yes (%)	15 (17.2)	4 (14.8)	4 (11.8)	7 (26.9)	.282
Does the report indicate significant safeguarding concerns? N Yes (%)	180 (93.8)	69 (88.5)	64 (95.5)	47 (100)	.014
Are there concerns related to non-NAI safeguarding factors? N Yes (%)	132 (73.3)	52 (75.4)	47 (73.4)	33 (70.2)	.898
Other safeguarding concerns					
Physical abuse	154	59	54	41	
Emotional abuse	34	13	15	6	
Domestic violenc	60	24	25	11	
Neglect	62	25	1	19	
Sexual abuse	4	1	2	1	
Child exploitation	7	3	2	2	.845

STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No	Recommendation	Page No
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	3
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-5
Objectives	3	State specific objectives, including any prespecified hypotheses	5
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5
Participants	6	(a) <i>Cohort study</i> —Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up <i>Case-control study</i> —Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls <i>Cross-sectional study</i> —Give the eligibility criteria, and the sources and methods of selection of participants	5
		(b) <i>Cohort study</i> —For matched studies, give matching criteria and number of exposed and unexposed <i>Case-control study</i> —For matched studies, give matching criteria and the number of controls per case	n/a
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5-6
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	5 <i>Figures 1 & 2, Table 1</i>
Bias	9	Describe any efforts to address potential sources of bias	6
Study size	10	Explain how the study size was arrived at	6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	5-6
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	6
		(b) Describe any methods used to examine subgroups and interactions	6
		(c) Explain how missing data were addressed	n/a
		(d) <i>Cohort study</i> —If applicable, explain how loss to follow-up was addressed <i>Case-control study</i> —If applicable, explain how matching of cases and controls was addressed	n/a

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60**Results**

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed (b) Give reasons for non-participation at each stage (c) Consider use of a flow diagram	7
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	8
		(b) Indicate number of participants with missing data for each variable of interest	8
		(c) <i>Cohort study</i> —Summarise follow-up time (eg, average and total amount)	n/a
Outcome data	15*	<i>Cohort study</i> —Report numbers of outcome events or summary measures over time	n/a
		<i>Case-control study</i> —Report numbers in each exposure category, or summary measures of exposure	n/a
		<i>Cross-sectional study</i> —Report numbers of outcome events or summary measures	7-8 Table 1
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	8-9
		(b) Report category boundaries when continuous variables were categorized	
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	n/a

Discussion

Key results	18	Summarise key results with reference to study objectives	8
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	8-9
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	9-10
Generalisability	21	Discuss the generalisability (external validity) of the study results	9-10

Other information

Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	12
		<i>Cross-sectional study</i> —If applicable, describe analytical methods taking account of sampling strategy	
		(e) Describe any sensitivity analyses	n/a