

BMJ Open Does the trauma associated with out-of-home care transmit across generations? Evidence from the 1970 British Cohort Study during a major health pandemic

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ABSTRACT

Objectives Children with experience of out-of-home care (OHC) are at an increased risk of adverse outcomes in later life, including poorer levels of psycho-social adjustment. Less is known about the intergenerational transmission of the trauma associated with OHC and psychosocial outcomes in mid-adulthood, particularly during a major health pandemic.

Design To examine if there is evidence of intergenerational transmission of trauma associated with OHC in mid-adulthood, we used data from the 1970 British Cohort Study 2020 COVID-19 Survey.

Participants Cases were defined as cohort members (CMs) who had themselves experienced OHC (OHC1) and those whose mother reported to have been in OHC (OHC2). Among the 5320 CMs who participated in the second COVID-19 Survey, we have OHC information for n=4236. Our analytical samples range from n=2472 to 3864 depending on outcome: the largest sample comprised 105 (2.5%) CMs with direct OHC experience (OHC1), 93 (2.2%) CMs with a mother who had OHC experience (OHC2) and 3666 CMs with no OHC experience (OHC0).

Outcome measures Self-reported outcomes at age 50 included indicators of depression, health and psychological well-being. Multivariate logistic regression models control for socioeconomic childhood background and current circumstances.

Results Compared with the majority OHC0, the OHC1 group report higher levels of depression (OR 2.18 (95% CI 1.09 to 4.36) $p<.05$) and are at a greater risk of poor mental (OR 2.23 (95% CI 1.24 to 4.02) $p<0.01$) and general health (OR 3.32 (95% CI 1.65 to 6.67) $p<0.001$) during the pandemic. OHC2 was more than twice as likely to report poor mental health prepandemic (OR 2.52 (95% CI 1.37 to 4.64) $p<0.01$), but not during the pandemic.

Conclusion Children of care leaver mothers (OHC2) appear to be better adjusted than those who were themselves in care (OHC1), although compared with those without care experience (OHC0) both groups had an increased risk of poorer adult outcomes. However, the findings point to both continuity and discontinuity of disadvantage.

INTRODUCTION

Individuals who spend time in out-of-home care (OHC) (which includes foster care

Strengths and limitations of this study

- This study used self-report data from a large national birth cohort and identified the direct experience of out-of-home care (OHC) through parental reports collected during the cohort members (CMs) childhood and self-reports at age 30 (OHC1) and OHC experience among mothers of CMs (OHC2) through retrospective self-report.
- We use the term trauma in a wider sense, referring to adverse childhood experiences that occurred before placement as well as the separation from the mother, which can be traumatic for some, although it might be a positive experience for others.
- The analysis was somewhat restricted by the relatively small number of participants in the age 50 COVID-19 survey, and the small numbers with OHC experience, although we corrected for non-response and were able to control for sex, family background and the CMs own socioeconomic situation.
- We did not include information about the age, timing and type of OHC, as this information was not available for mothers of CMs (OHC2).
- Future studies should examine the quality of care provision in more detail given that our assessment of OHC experience is only a rough proxy for trauma and does not include an assessment of the quality of public care.

and residential care) are at a higher risk of adverse psychosocial outcomes in later life. This includes unstable relationships,^{1–3} poorer mental and physical health.^{4 5} These outcomes often occur in conjunction with low-level qualifications,^{6–10} unemployment and a more disadvantaged socioeconomic position.^{11 12} While there is increasing evidence on outcomes of care leavers in young adulthood up to age 30,^{8 9 13–16} only few studies extend their focus to mid adulthood.^{10 17 18} Less is known about whether disadvantage continues into the second generation, or about the experiences of care leavers during the COVID-19 pandemic.^{19 20}

The onset of the COVID-19 pandemic brought about a rise in mental health problems, feelings of loneliness and isolation.^{21 22} In the UK, the introduction of 'lockdown measures' prohibited individuals to leave their home without a reasonable excuse, banning public gatherings and demanding 'social distancing'.^{23 24} This situation has been hard for everyone, but possibly particularly so for individuals with experience of OHC. The experience of OHC, often characterised by psychosocial deprivation and inconsistent caregiving, can be considered as a distinct type of traumatic experience. While there is diversity of experience of OHC in terms of age of entry to care, type and stability of placement(s) and length of time spent in care,^{8 25} all children with care-experience have been separated from their birth parents and were under institutional guardianship. Moreover, before their placements they generally experienced neglect, violence and abuse and the high prevalence of mental disorders suggests exposure to traumatic events.^{26 27} Although individual exposure to OHC can vary by time, timing and place, the experience is likely to engender feelings of abandonment and difficulties with social relationship.²⁸ These feelings might especially come to the fore during the current COVID-19 crisis.

The ways in which trauma experienced in one generation affects the health and well-being of descendants of future generations is referred to as intergenerational trauma. Previous research has documented the intergenerational effects of traumatic experiences in various populations, including the offspring of Holocaust survivors,^{29 30} armed conflict and genocide,^{31 32} and childhood abuse.³³ Negative effects can include greater vulnerability to stress and a range of psychiatric symptoms.^{28 29 33} Only few studies examine the intergenerational transmission of trauma associated with OHC and more research is needed to inform appropriate supportive policies and programmes for care leavers and their children.

Existing evidence suggests that compared with general population samples, care leavers are more likely to become parents at a young age,^{2 34 35} and their children are at a greater risk of coming to the attention of child protection authorities and being taken into care.^{1 36 37} There is, however, a dearth of studies following the lives of the children of care leavers into the adult years that assess the intergenerational transmission of trauma. We address this evidence gap using data from the nationally representative 1970 British cohort study (BCS70). With 50-year follow-up data, we chart key markers of adult psycho-social functioning, as well as social status, employment and living arrangements. Comparing experiences of those who directly experienced care themselves (OHC1), children of care leaver mothers (OHC2) and the general population with no care experience (OHC0) across a number of adult outcomes, we are able to identify who is most at risk of psychosocial adjustment problems in mid adulthood coinciding with a major health pandemic.

METHODS

The data

We draw on data collected for the BCS70, an ongoing prospective cohort study, following the lives of more than 17 000 people born in England, Scotland and Wales in one week of 1970.³⁸ Since the birth survey in 1970, there have been nine follow-up surveys of the whole cohort at age 5, 10, 16, 26, 30, 34, 38, 42 and 46/48 years. A further interview was due to take place to coincide with the cohort members (CMs) 50th birthday, but fieldwork was necessarily stopped when the pandemic hit the UK. However, during the COVID-19 pandemic, three online surveys have been carried out to assess the impact of the pandemic on individual lives.³⁹ For this study, we used data from birth to age 30 to capture public care experience among CMs and their mothers and possible covariates. Adult outcomes were assessed from the second COVID-19 survey conducted at age 50 (collected between 10 September 2020 and 16 October 2020) when 5320 CMs took part and completed questions regarding their mental health, feelings of isolation and being in control of their lives. In childhood, participant consent was obtained from parents or caregivers, and later from the study members themselves.⁴⁰

Patient and public involvement

CMs were recruited to the study at the time of their birth, via an interview carried out by the midwife/nurse with the CM's mother. Although the study members are not involved with the design of the study or questionnaire content, their feedback is regularly sought, and results are disseminated on the study members website and a summary of latest findings is included when the survey team sends each CM a birthday card every year.

Assessment of OHC, covariates and adult outcomes

In 1975, 1980 and 1986 parents were asked to report on whether their child (the CM) had ever been in OHC. In 2000, at age 30, CMs themselves reported if they had ever been in OHC before their 17th birthday (see online supplemental table A1 for specific question wording at each age). If a positive response was given in any of these inquiries CMs were identified as having directly experienced OHC during their childhood (OHC1). In 1975, the CMs mothers were also asked if they had ever been in OHC. A positive response was used to identify CMs whose mother had OHC experience (OHC2). A small number of CMs had both OHC1 and OHC2 experience. The assessment of childhood covariates included measures of sex (male/female); ethnicity (white/other); birth weight (<2500 g/2500+); maternal education (mother left school at minimum age/extended education) and family status at birth (single parent/two parent household).

All adult outcomes are self-reported during the 2020 COVID-19 wave 2 survey. Highest achieved qualification level as based on the National Vocational Qualifications (NVQ) was collapsed into four groups: no or low qualifications (<NVQ2), General Certificate of Secondary

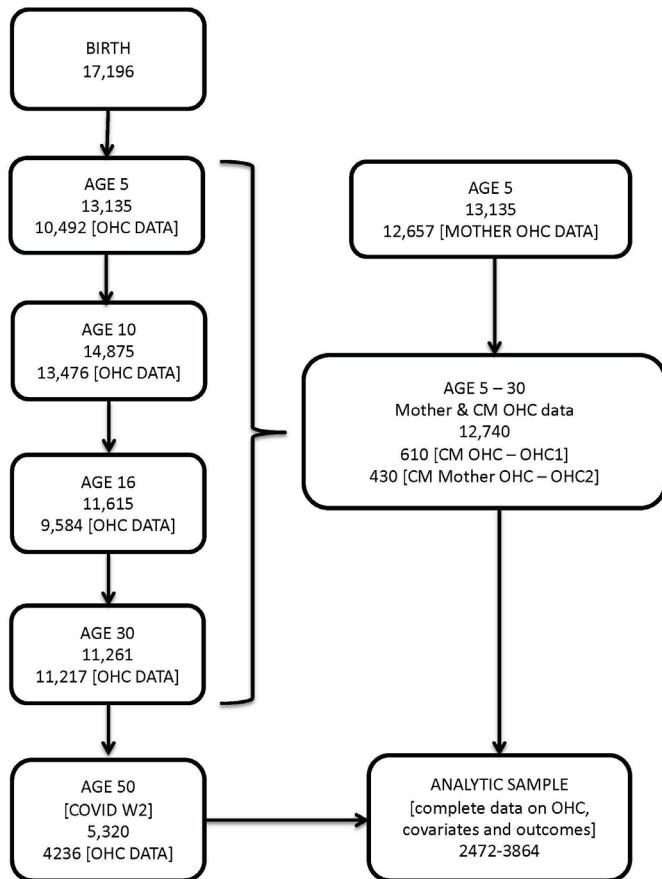


Figure 1 Flow of study members through phases of data collection and the present analytical sample, 1970 British Cohort Study. CM, cohort member; OHC, out-of-home care.

Education (NVQ2 (A*-C), upper secondary education (NVQ3 (eg, Diploma/A-Levels), Degree-level qualification (NVQ4+)). Own social class prepandemic as based on the National Statistics Socio-economic classification (NS-SEC) was collapsed into four categories: professional/managerial, intermediate, routine job, or other (including not in work). Change in employment status during the pandemic was collapsed into five groups: (1) stable employed, (2) furloughed, (3) lost their job, (4) started a job and (5) stable other. Current living arrangements were derived to indicate if the respondent lived alone/with a partner/with partner and children/with children or others. Health and well-being related outcomes comprised the assessment of depression, anxiety, reported mental and general health, social contact, loneliness, life satisfaction and feeling in control. All outcome measures were dichotomised (see detailed description in online supplemental table A2).

Statistical analyses

Our three comparison groups are (1) CMs with direct OHC experience (OHC1); (2) CMs who are children of mothers with OHC experience (OHC2) and (3) CMs with no reported OHC experience in either generation (OHC0). As response in the second COVID-19 survey was generally lower than in usual follow-up surveys (see

figure 1) non-response weights were derived, so that inverse probability weighting (IPW) analysis can be carried out.³⁹

We first show descriptive statistics and then the direct relationship between care experience and all outcomes, reporting proportions and 95% CIs. Next, we employ multivariate logistic regression techniques to estimate the relationship between OHC experience and indicators of adult health and well-being adjusting for control variables. We first report the unadjusted associations (model 1) between the outcome measures and (1) direct OHC experience (OHC1) and (2) indirect OHC experience indicating intergenerational transmission (OHC2). For all outcomes, effect estimates were then adjusted for sex (model 2); other socioeconomic covariates assessed during childhood (model 3); current circumstances (model 4) and a fully adjusted model including all covariates (model 5). All data analyses were carried out on the weighted sample with complete information using STATA SE (V.16.0; StataCorp).

RESULTS

Figure 1 shows the flow of study members into the analytical sample. Overall, OHC data were available for 12,740 CMs and their mothers, including $n=610$ CMs (4.8%) with direct OHC experience (OHC1) and $n=430$ CM (3.4%) whose mother reported OHC experience during her childhood (OHC2). The 2020 COVID-19 wave 2 survey was completed by 5,320 CMs. Of these we have information from 4236 CMs who answered questions on previous OHC experience, including 126 CMs (3.0%) with direct OHC experience (OHC1) and 117 (2.8%) CM whose mother had been in OHC (OHC2). Six CMs experienced both OHC1 and OHC2. They were included in the OHC1 sample. Sensitivity analyses was carried out excluding the 6 CMs with OHC1 and OHC2 experience from the analysis, but as they were so few no discernible difference to the results was observed. The analytical sample (complete data on OHC, covariates and adult outcomes) ranges from 2472 to 3864 depending on outcome. A third of our sample with OHC information completed the survey. Response was slightly lower among OHC2 CMs whose mother had care experience (30.6%) and lower still among OHC1 CMs who had themselves been in care (21.1%).

Table 1 shows the sociodemographic characteristics at birth and own attained status in adulthood by OHC experience. Compared with CMs with no OHC experience (OHC0), a comparison of non-overlapping CIs suggests that CMs who had been in care (OHC1) are more likely born to a single mother. For CMs whose mother had OHC experience (OHC2), the only substantial difference compared with CMs with no OHC experience was that a higher proportion of their mothers only had minimum education. Regarding current adult circumstances, the majority of OHC1 and OHC2 were in stable employment. However, compared with OHC0 proportionately

Table 1 Socio-demographic background and adult characteristics by OHC, 1970 British Birth Cohort

Category		CM OHC (OHC1) (n=93)	CM mother OHC (OHC2) (n=105)	No OHC (OHC0) (n=3666)
		Prop (95% CI)	Prop (95% CI)	Prop (95% CI)
Childhood covariates				
Sex	Male	0.4 (0.23 to 0.61)	0.54 (0.40 to 0.68)	0.5 (0.47 to 0.52)
	Female	0.6 (0.39 to 0.77)	0.46 (0.32 to 0.60)	0.5 (0.48 to 0.53)
Birth weight	Normal birthweight range	0.85 (0.64 to 0.95)	0.96 (0.89 to 0.99)	0.95 (0.93 to 0.96)
	Low birth weight	0.15 (0.05 to 0.36)	0.04 (0.01 to 0.11)	0.05 (0.04 to 0.07)
Ethnicity	White British/European	0.95 (0.89 to 0.98)	0.96 (0.88 to 0.99)	0.97 (0.96 to 0.98)
	Non-white minority ethnic	0.05 (0.02 to 0.11)	0.04 (0.01 to 0.12)	0.03 (0.02 to 0.04)
Marital status	Parents married	0.85 (0.74 to 0.92)	0.96 (0.91 to 0.98)	0.97 (0.95 to 0.98)
	Single mother	0.15 (0.08 to 0.26)	0.04 (0.02 to 0.09)	0.03 (0.02 to 0.05)
Mother education	Mother extended education	0.27 (0.11 to 0.52)	0.18 (0.11 to 0.28)	0.35 (0.33 to 0.38)
	Mother minimum education	0.73 (0.48 to 0.89)	0.82 (0.72 to 0.89)	0.65 (0.62 to 0.67)
Adult outcomes				
Highest qual	Degree+	0.14 (0.07 to 0.24)	0.26 (0.17 to 0.38)	0.35 (0.33 to 0.37)
	A Levels	0.07 (0.03 to 0.14)	0.13 (0.07 to 0.24)	0.13 (0.12 to 0.15)
	GCSE	0.23 (0.11 to 0.42)	0.25 (0.15 to 0.40)	0.24 (0.22 to 0.26)
	<GCSE	0.56 (0.38 to 0.73)	0.36 (0.22 to 0.53)	0.28 (0.25 to 0.31)
Social class	Prof/managerial	0.2 (0.09 to 0.38)	0.47 (0.32 to 0.62)	0.38 (0.36 to 0.40)
	Intermediate	0.13 (0.07 to 0.25)	0.19 (0.11 to 0.31)	0.22 (0.20 to 0.24)
	Routine	0.29 (0.16 to 0.47)	0.19 (0.10 to 0.33)	0.23 (0.21 to 0.25)
	Not in work/unclassified	0.37 (0.19 to 0.59)	0.15 (0.08 to 0.28)	0.17 (0.15 to 0.19)
Employment	Stable employed	0.55 (0.35 to 0.73)	0.67 (0.48 to 0.81)	0.76 (0.73 to 0.78)
	Furloughed	0.08 (0.02 to 0.26)	0.08 (0.02 to 0.25)	0.05 (0.04 to 0.06)
	Lost job	0.01 (0.00 to 0.03)	0.11 (0.02 to 0.39)	0.04 (0.03 to 0.05)
	Became employed	0.01 (0.00 to 0.04)	0.02 (0.00 to 0.07)	0.02 (0.02 to 0.04)
	Stable unemployed	0.17 (0.04 to 0.51)	0.02 (0.00 to 0.12)	0.01 (0.01 to 0.02)
	Other non-working	0.18 (0.09 to 0.35)	0.11 (0.05 to 0.25)	0.12 (0.10 to 0.14)
Living arrangements	Alone	0.44 (0.25 to 0.64)	0.14 (0.06 to 0.27)	0.16 (0.14 to 0.18)
	Partner	0.18 (0.09 to 0.35)	0.28 (0.18 to 0.42)	0.19 (0.17 to 0.21)
	Partner and others	0.3 (0.18 to 0.46)	0.46 (0.31 to 0.61)	0.53 (0.50 to 0.55)
	Others	0.08 (0.04 to 0.15)	0.13 (0.06 to 0.23)	0.12 (0.10 to 0.14)

OHC1 CM direct OHC experience; OHC2 CM whose mother had OHC experience; OHC0 no OHC experience. Weighted N, weighted proportions. Bold indicates CIs for OHC1 or OHC2 do not overlap in comparison with OHC0.

CM, cohort member; GCSE, General Certificate of Secondary Education (Grade A*-C); OHC, out-of-home care.

fewer OHC1 were in stable employment and more were stable unemployed, fewer lived with a partner and others (primarily children) and more lived alone. Among OHC2, proportionately more tended to be in a professional/managerial occupation than OHC0 and OHC1 before the pandemic, yet proportionately more had lost their job during the pandemic.

Table 2 shows the association between OHC experience and adult health and well-being outcomes. We report proportions and 95% CIs. Compared with OHC0, a higher proportion of OHC1 were categorised as having a high number of symptoms of depression and anxiety,

and more reported poorer mental and general health both prepandemic and during the pandemic. Conversely, OHC2 reported higher levels of poor prepandemic mental health, but not during the pandemic. OHC1 were more likely than OHC0 to report that they were lonely, that they had no-one to listen to their problems, and do not feel in control of their lives.

Table 3 shows the results from the multivariate logistic regression models predicting adult mental and general health by care experience. We report ORs and 95% CIs. The negative association between direct OHC experience and mental as well as general health are attenuated by

Table 2 Adult health and well-being by OHC experience

Adult outcomes	CM OHC (OHC1)		CM mother OHC (OHC2)		No OHC (OHC0)	
	Proportion (n)	95% CIs	Proportion (n)	95% CIs	Proportion (n)	95% CIs
High malaise	0.41 (90)	0.24 to 0.60	0.30 (100)	0.16 to 0.48	0.22 (3605)	0.20 to 0.25
High anxiety	0.22 (91)	0.12 to 0.37	0.15 (102)	0.08 to 0.26	0.13 (3604)	0.12 to 0.15
PP poor mental health	0.32 (59)	0.20 to 0.47	0.28 (57)	0.17 to 0.41	0.13 (2371)	0.12 to 0.15
Poor mental health	0.37 (59)	0.25 to 0.50	0.23 (57)	0.14 to 0.35	0.21 (2370)	0.19 to 0.23
PP poor general health	0.48 (93)	0.29 to 0.67	0.19 (105)	0.10 to 0.35	0.15 (3654)	0.13 to 0.17
Poor general health	0.45 (93)	0.27 to 0.65	0.22 (105)	0.12 to 0.38	0.14 (3666)	0.12 to 0.16
Feel have no control	0.23 (59)	0.12 to 0.38	0.10 (56)	0.04 to 0.22	0.07 (2357)	0.06 to 0.08
Feel lonely (some/often)	0.59 (91)	0.38 to 0.77	0.48 (102)	0.33 to 0.64	0.34 (3614)	0.32 to 0.37
Low social contact	0.21 (91)	0.11 to 0.38	0.23 (101)	0.10 to 0.44	0.11 (3613)	0.09 to 0.12
No-one to listen to you	0.37 (91)	0.22 to 0.56	0.23 (102)	0.14 to 0.36	0.21 (3619)	0.19 to 0.23
Low satisfaction score	0.18 (91)	0.09 to 0.33	0.11 (102)	0.06 to 0.19	0.11 (3618)	0.09 to 0.13

OHC1 CM direct OHC experience; OHC2 CM whose mother had OHC experience; OHC0 no OHC experience. Weighted N varies across outcomes. Weighted proportions. Bold indicates CIs for OHC1 and OHC2 do not overlap with CIs for OHC0. CM, cohort member; OHC, out-of-home care; PP, prepandemic.

inclusion of sex, childhood controls and current circumstances but remain significant. The fully adjusted model (model 5) shows that compared with OHC0, OHC1 were more likely to score high on the Malaise scale which assesses symptoms of depression, more than twice as likely to report poor mental health both prepandemic and during the pandemic and three times more likely to self-report poor general health. There were no significant differences regarding self-reported anxiety. OHC2 were more than twice as likely to report poor mental health prepandemic than OHC0. There were, however, no significant differences regarding the other indicators of health, depression or anxiety. More generally, while OHC experience remains significantly associated with several outcome measures, the relatively low R^2 values suggests that OHC experience and the key background and current circumstance variables included in the models do not explain much of the variation in these outcomes in midlife.

Table 4 shows the multivariate logistic regression results regarding experiences of social contact and support, and feelings of control and general life satisfaction. Regarding OHC1, the unadjusted models suggest that compared with OHC0, they were more than twice as likely to report feelings of loneliness, having no-one to listen to their problems, and more than three times as likely to not feel in control over what happens to them. The association of care experience with low levels of social contact was only borderline significant. Interestingly, among OHC1, the association with low level social contact became significant after controlling for childhood family background and current living situations, suggesting a significant role of non-care-related influences. Moreover, the association with having no one to listen to problems was attenuated by childhood characteristics and current circumstances, and the association with feeling lonely was attenuated by

current circumstances. The association with having no control remained significant in the final fully adjusted model. Among OHC2, there were no significant associations for these indicators at the 95% level, although the associations with social contact and feelings of loneliness were significant at the 90% level.

DISCUSSION

In a large population-based sample, we found that the direct experience of OHC (OHC1) was significantly associated with indicators of poor mental and general health both prepandemic and 6 months into the pandemic, as well as with an indicator of a perceived lack of control measured during the pandemic. Importantly, these associations remained significant even when differences in background characteristics and current circumstances were accounted for, suggesting that they reflect the effects of direct OHC experience rather than other aspects of disadvantage. Other outcomes, such as feelings of loneliness and not having someone to listen to one's problems, however, were fully explained by the indicators of childhood or current socio-economic circumstances included in our models. Confirming previous findings,^{4-6 8-11} we show that the experience of OHC is associated with disadvantaged family background, low qualification levels, unemployment and living alone in adult life, as well as poor mental and general health. However, we find little evidence to support the assumption of intergenerational transmission of trauma, except regarding poor adult mental health before the pandemic among children of care leaver mothers (OHC2). While the direct experience of OHC1 is a significant risk factor for adjustment problems in later life, there is less evidence regarding adverse psychosocial adult outcomes in the second generation, that is, the children of care leaver mothers (OHC2).

Table 3 Mental health and general health outcomes (ORs; Ref cat: OHC0)

	High Malaise	High Anxiety	PP Poor Mental Health	Poor Mental Health	PP Poor Gen Health	Poor Gen Health
M1: unadjusted						
CM OHC (OHC1)	2.41* (1.08 to 5.38)	1.81 (0.85 to 3.84)	3.17*** (1.67 to 6.04)	2.18** (1.23 to 3.84)	5.10*** (2.28 to 11.40)	5.23*** (2.29 to 11.95)
CM Mother OHC (OHC2)	1.46 (0.65 to 3.30)	1.14 (0.56 to 2.31)	2.53** (1.38 to 4.63)	1.11 (0.59 to 2.08)	1.36 (0.60 to 3.10)	1.80 (0.82 to 3.97)
<i>R</i> ²	0.01	0.00	0.01	0.00	0.02	0.03
M2: M1 +sex						
CM OHC (OHC1)	2.36* (1.11 to 5.06)	1.75 (0.85 to 3.60)	3.22*** (1.69 to 6.15)	2.23** (1.26 to 3.96)	5.05*** (2.21 to 11.53)	5.25*** (2.30 to 11.98)
CM Mother OHC (OHC2)	1.54 (0.64 to 3.66)	1.19 (0.60 to 2.34)	2.48** (1.35 to 4.56)	1.08 (0.58 to 2.02)	1.37 (0.60 to 3.12)	1.80 (0.82 to 3.96)
<i>R</i> ²	0.02	0.02	0.01	0.01	0.03	0.03
M3: M2 +Childhood Characteristics						
CM OHC (OHC1)	2.19* (1.04 to 4.58)	1.48 (0.68 to 3.21)	3.07*** (1.62 to 5.80)	2.36** (1.31 to 4.27)	4.50** (1.73 to 11.69)	4.65** (1.75 to 12.40)
CM Mother OHC (OHC2)	1.45 (0.61 to 3.42)	1.13 (0.57 to 2.26)	2.40** (1.31 to 4.41)	1.10 (0.58 to 2.07)	1.31 (0.57 to 3.00)	1.67 (0.75 to 3.72)
<i>R</i> ²	0.04	0.03	0.02	0.01	0.04	0.04
M4: M2 +current situation						
CM OHC (OHC1)	1.52 (0.71 to 3.27)	1.14 (0.56 to 2.34)	2.55** (1.40 to 4.64)	1.11 (0.60 to 2.07)	1.41 (0.58 to 3.38)	1.93 (0.86 to 4.34)
CM Mother OHC (OHC2)	2.43* (1.19 to 4.98)	1.50 (0.70 to 3.22)	2.52** (1.41 to 4.49)	1.98* (1.09 to 3.57)	3.58*** (1.85 to 6.92)	3.48*** (1.75 to 6.90)
<i>R</i> ²	0.04	0.07	0.07	0.03	0.13	0.15
M5: fully adjusted						
CM OHC (OHC1)	2.18* (1.09 to 4.36)	1.32 (0.62 to 2.77)	2.62** (1.45 to 4.72)	2.23** (1.24 to 4.02)	3.31*** (1.69 to 6.46)	3.32*** (1.65 to 6.67)
CM Mother OHC (OHC2)	1.50 (0.68 to 3.35)	1.14 (0.58 to 2.27)	2.52** (1.37 to 4.64)	1.11 (0.59 to 2.08)	1.39 (0.57 to 3.36)	1.85 (0.81 to 4.20)
<i>R</i> ²	0.06	0.09	0.07	0.04	0.14	0.16
N	3795	3797	2487	2486	3852	3864

See online supplemental table A2 for details of cut-off points for 'High Malaise' and 'High Anxiety'. There were five stages to the modelling strategy: Model 1: OHC experience; Model 2: model 1+sex; model 3: model 2+birth characteristics (ethnicity, birth weight, mother's education and family status); model 4: model 2+current circumstances (occupation class, highest qualification, employment status, living arrangements); model 5: model 3+4 (sex +birth characteristics+current circumstances).

Exponentiated coefficients; 95% CI in brackets.

P*<0.05, *p*<0.01, ****p*<0.001.

CM, cohort member; OHC, out-of-home care; PP, prepandemic.

In interpreting the findings, it has to be taken into account that this study used self-report data which does not match the quality of administrative data (eg, the UK ONS Longitudinal Study) in terms of sample size and representativeness. However, our findings are in line with studies using administrative data. The great strength of longitudinal birth cohort data is the availability of a greater range and depth of information on family background and individual characteristics, and access to a

nationally representative sample. Due to the relatively small number of participants in the age 50 COVID-19 survey, and the small numbers with OHC experience we were not able to conduct subgroup analysis exploring, for example, potential gender differences in outcomes. Yet, we were able to control for sex, family background and the CMs own socioeconomic situation. We also corrected for non-response in the COVID-19 survey by using non-response weights so that IPW analysis could be carried

Table 4 Social contact, loneliness and general well-being outcomes (ORs; Ref Cat: OHC0)

	No control	Feel lonely sometimes/often	Low level social contact	No one to listen to Problems	Low life satisfaction
M1: unadjusted					
CM OHC (OHC1)	3.77*** (1.75 to 8.12)	2.72* (1.16 to 6.39)	2.29 (0.99 to 5.32)	2.26* (1.06 to 4.79)	1.87 (0.84 to 4.16)
CM Mother OHC (OHC2)	1.41 (0.55 to 3.60)	1.78 (0.94 to 3.38)	2.47 (0.92 to 6.65)	1.15 (0.61 to 2.18)	1.01 (0.50 to 2.03)
<i>R</i> ²	0.01	0.01	0.01	0.01	0.00
M2: M1 +sex					
CM OHC (OHC1)	3.71*** (1.75 to 7.90)	2.67* (1.20 to 5.95)	2.49 (1.00 to 6.24)	2.30* (1.06 to 4.98)	1.87 (0.84 to 4.15)
CM Mother OHC (OHC2)	1.44 (0.56 to 3.68)	1.83 (0.94 to 3.56)	2.41 (0.91 to 6.39)	1.14 (0.59 to 2.19)	1.01 (0.50 to 2.04)
<i>R</i> ²	0.01	0.01	0.04	0.01	0.00
M3: M2 +childhood characteristics					
CM OHC (OHC1)	2.81* (1.26 to 6.25)	2.47* (1.18 to 5.17)	2.65* (1.08 to 6.51)	2.10 (0.98 to 4.53)	1.71 (0.75 to 3.93)
CM Mother OHC (OHC2)	1.30 (0.49 to 3.42)	1.74 (0.89 to 3.37)	2.34 (0.89 to 6.14)	1.07 (0.55 to 2.07)	0.98 (0.48 to 2.01)
<i>R</i> ²	0.02	0.02	0.04	0.02	0.01
M4: M2 +current situation					
CM OHC (OHC1)	2.85** (1.37 to 5.92)	2.12 (0.94 to 4.76)	2.63* (1.16 to 5.95)	1.66 (0.75 to 3.64)	1.31 (0.58 to 2.99)
CM Mother OHC (OHC2)	1.41 (0.56 to 3.56)	1.73 (0.98 to 3.05)	2.22 (0.97 to 5.07)	1.13 (0.57 to 2.26)	1.11 (0.54 to 2.29)
<i>R</i> ²	0.06	0.05	0.03	0.05	0.09
M5: fully adjusted					
CM OHC (OHC1)	2.29* (1.05 to 5.02)	1.91 (0.91 to 4.05)	3.46** (1.55 to 7.71)	1.63 (0.72 to 3.67)	1.32 (0.58 to 3.01)
CM Mother OHC (OHC2)	1.38 (0.54 to 3.54)	1.69 (0.94 to 3.04)	2.15 (0.96 to 4.84)	1.07 (0.53 to 2.18)	1.12 (0.54 to 2.33)
<i>R</i> ²	0.06	0.06	0.08	0.07	0.09
N	2472	3807	3805	3812	3811

There were five stages to the modelling strategy: model 1: OHC experience; model 2: model 1+sex; model 3: model 2+birth characteristics (ethnicity, birth weight, mother's education and family status); model 4: model 2+current circumstances (occupation class, highest qualification, employment status, living arrangements); model 5: model 3+4 (sex +birth characteristics+current circumstances). Exponentiated coefficients; 95% CIs in brackets. **P*<0.05, ***p*<0.01, ****p*<0.001. CM, cohort member; OHC, out-of-home care; PP, prepandemic.

out. However, future studies could use multiple imputation to deal with missing data. Furthermore, the experience of OHC encountered by CM and their mothers from the 1950s to the 1980s is different from today, in particular regarding the reasons and age at first entry to the care system, and the type of care, that is, the use of foster vs residential care today.⁴¹

Accepting these caveats, the findings lend support to the assumption of both continuity and discontinuity of the trauma associated with the experience of OHC. While a relative high proportion of CMs with direct experience of OHC (OHC1) and to a lesser extent, those whose mother experienced OHC (OHC2) report poor mental

and general health in mid adulthood, many of the second generation care leavers seem to be reasonably well adjusted as adults, even during a major pandemic. There is thus a considerable degree of resilience (as suggested in other large population-based studies,¹⁸ in particular among the adult children of care leaver mothers). Moreover, the findings suggest that the pandemic is not associated with a marked increase in health problems among care leavers, and particularly not among children of care leavers, potentially pointing to a ceiling effect. However, the pandemic has brought to the fore feelings of loneliness and not being in control of one's life among those with direct experience of care (OHC1), suggesting that

key mechanisms for social integration and well-being are being affected.²⁴ Future research needs to explore the mechanisms behind effective versus less effective adjustment among care leavers and the children of care leavers during mid adulthood in more detail.

Public health implications

This study suggests that the direct experience of OHC is associated with long-term negative outcomes across a range of domains, including mental and general health, and feelings of having no control over one's life. The findings confirm previous evidence showing that inequalities associated with OHC are also present in midlife,^{10 18} and spill over across multiple domains. The findings underline the case of extending the support to care leavers into the adult years, enabling them to integrate into society through employment and by establishing committed social and emotional relationships. While there is evidence of developmental continuity of childhood disadvantage into middle age, children of care leavers (OHC2) appear to be less affected than those with direct OHC experience (OHC1). Moreover, while care experience is associated with relative disadvantaged life outcomes, some of the care leavers and in particular the children of care leavers appear relatively well adjusted by age 50. More research is needed to examine the factors and processes enabling those with OHC experience and their children to escape the vicious cycle and to lead a satisfactory and rewarding life after a problematic childhood.

CONCLUSION

This study is one of the first to examine the intergenerational transmission of trauma associated with OHC into mature adulthood in a large population sample. The findings add to the growing body of evidence on the long shadow of direct OHC experience during childhood, which continues into the fifth decade of life. Adverse health effects were evident before the onset of the COVID-19 pandemic, yet CMs did not report a marked increase in mental or general health problems 6 months into the pandemic. While the direct experience of OHC is a strong marker for disadvantaged outcomes in mid adulthood, there is also evidence to suggest discontinuity of disadvantage, particularly among the children of care leavers.

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