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What Linked Data Can Tell Us About the Increasing Numbers of Children Entering Public Care

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ABSTRACT

The number of children in public care in Wales, UK, rose from the mid-1990s to 2021. It is unclear if this change was related to increases in risk factors in parents, changes in the impact of risk factors, or changing policies and practices. Administrative data from children's social care were linked to administrative health care data to create three cohorts of households with children, covering 4-year periods between 2008 and 2020. Households that had at least one child aged 3–17 enter care in each cohort were identified, as were health-related risk factors in adults in households: mental health, substance misuse and neurodivergence. Across each of the cohorts, the prevalence, attributable fractions and excess cases were calculated for each health-related risk factor. Logistic regression models explored the impact of health-related risk factors on the likelihood of care. Depression and anxiety showed the greatest increase in prevalence, and these account for some of the increase in later cohorts. The impact of depression on the odds of care also increased. For several other health-related risk factors, for example, parental drug use and severe mental health issues, there was no increase over time in either prevalence or impact on care entry.

1 | Introduction

The number of children in public care in England and Wales has risen substantially since the mid-1990s. In England, there have been increases every year since 2008, while in Wales, every year from 1997 to 2021 saw more children in public care. In Wales, from 2003 to 2023, the number of children in care increased by 79%, from 4035 to 7210 (Stats Wales 2024). Over the same period in England, numbers increased by 38% from 60 810 to 83 760 (UK Government 2024).

These increases have led politicians, policymakers and the judiciary to express concern. The President of the Family Division in England and Wales stated, 'We are facing a crisis and, truth be told, we have no very clear strategy for meeting the crisis' (Thomas 2018). From a service perspective, a key element of this crisis is that public care is an expensive option, and therefore the marked increase has put substantial pressure on the public purse. As a result, care services are struggling to meet demand, with insufficient foster carers, not enough residential placements and a rapid expansion of expensive provision in the for-profit sector, in part in response to these systemic pressures.

The heavy outlay on expensive state care during a period of cutbacks and 'austerity' in public services means that children's social care has seen substantial cuts in support services, particularly in England (Webb and Bywaters 2018). There is therefore a potential paradox that more children in care means less funding available for preventative services, and that this in turn reinforces the increased need for care.

Further concerns relate to whether such a large increase is a good thing. There is a question of social justice, as care entry too often risks reinforcing existing inequalities and injustices in society, for example, in terms of neighbourhood deprivation, 'race' and gender (Bywaters et al. 2020; Cénat et al. 2021; Warner et al. 2025).

Research also raises complicated questions about whether care is a positive option for children. The literature is complex, and drawing conclusions is difficult because it is impossible to disentangle the reasons for children being in care and the impact of care itself; nonetheless, there is little room for complacency about outcomes for children in care, with relatively poor outcomes relating to education (Jay and Mc Grath-Lone 2019), increased risk of involvement in violent crime, substance misuse (Sariaslan et al. 2022), worse self-rated health (Murray et al. 2020a) and increased mortality (Murray et al. 2020b). Care is certainly no panacea for the difficult problems it engages with, though it is a positive experience for some and absolutely essential for those at risk of serious harm (Taussig and Munson 2024). Whatever the uncertainties in relation to outcomes and experiences for children, the evidence is clear about the impact on families and communities. Removal of children is almost universally found to be a traumatic experience for parents and others (Sankaran et al. 2019).

In these circumstances, a significant increase in the rate of children in care raises important questions about whether this is appropriate. A particularly pressing question is as follows: What may be causing the increase? The numbers of children in care can rise both as a result of more children entering care and because children stay in care for longer. To fully understand the increases, both of these issues need to be explored. This study focuses on the first, namely children entering care.

Explanations for the increase in care entry have tended to focus on either increases in need among children and families or changes in practice, although some acknowledge both (Thomas 2018). In relation to levels of need, a substantial body of evidence has established strong correlations between family deprivation and the likelihood of a child entering care (Bebbington and Miles 1989; Barth et al. 2006; Franzén et al. 2008). The relationship between *changes* in rates of deprivation and the increase in numbers of children in care is less clear. Bennett et al. (2020) found that increases in unemployment rates were linked to more children coming into care, with each percentage point increase in unemployment in a local authority being related to an estimated additional nine children entering care. However, this does not fully explain the trend, and these authors recognized that other factors were also important. Indeed, some of the largest increases happened during a period of comparative prosperity and relatively low levels of child poverty during the years 1997–2007, which saw an increase of about a third of children in care.

There is also a body of evidence highlighting parental problems that have been identified as risk factors for children entering care, including mental health problems, substance misuse, domestic abuse, learning disabilities and learning difficulties (Franzén et al. 2008; Simkiss et al. 2012; Warner et al. 2024). The qualitative accounts of practitioners and sector leaders often ascribe an increase in 'complex cases', where many of these factors are present, as contributing to the rising rates in care. Indeed, the Association of Directors of Children's Services (ADCS 2018) identified this increase in demand as a central driver. In a survey of people working in children's social care in Wales (Forrester et al. 2022) both practitioners and leaders suggested that increases in parental issues such as drug or alcohol problems, mental illness or domestic abuse were leading to more children coming into care. However, we do not know whether cases are becoming more complex or whether it is practitioners' perception of them. In fact, Hood et al. (2023) suggest that despite combinations of mental health issues, drug misuse, and domestic violence dominating practice discussion, quite often cases are typified by one or two risks that have been assessed by social workers.

In contrast, others have focused on changes in professional practice as a key driver. For example, Webb (2025) identified that overall, an increase in spending on preventative spending in England of £100 per child was associated with decreased rates of children looked after over 2 years of between 3 and 4 per 10 000.

Changes in practice can also occur because of changes in attitudes. These can take two forms, which may be related to one another. An analysis of demands on child protective systems in England suggested that they were becoming increasingly geared towards protective interventions (Hood et al. 2016). Elliott (2020) argued that a series of reviews into high-profile deaths, with associated media coverage and inspection regime change, have generated a 'risk averse' type of practice. This is supported by research observing contemporary child protection practice, which identifies an authoritarian turn in work with families (Sheehan 2022; Treby 2022).

The second issue relating to changes in attitude is an increase in the recognition of specific harms. This includes identification of harms that are either new or newly recognized, such as child sexual or criminal exploitation, as well as increased intervention with social problems that have been recognized for some time, for example, domestic abuse (Humphreys and Absler 2011) and substance misuse (Endicott 2024).

Our research seeks to contribute to unpicking these complicated arguments about what is driving the increase in care rates by looking at changes in the rates of social problems in adults that live with children who go into care, and in the rest of the population. It also looks at whether there has been any change in the impact over time that these have on the likelihood of out-of-home care.

The increasing availability of large datasets provides us with an opportunity to explore some of these issues. Where data have been collected over a number of years, these provide scope for looking at changes over time. Linkage of data from different sources also provides scope for measuring risk factors such as mental health and substance misuse through the use of other services. This has the benefit of measuring issues that may or may not be known to social care services and does not rely on the social care services' perception of what a family's risks might be (Warner et al. 2024).

1.1 | Research Questions

This paper reports on an analysis carried out with linked data to answer two questions:

1. Has there been an increase in rates of social problems and parental health-related risk factors associated with children entering care?
2. Has there been any change over time in the impact that each of the issues associated with children entering care has on the odds of care?

2 | Method

This study was a retrospective, observational cohort study, using population-level linked administrative data. Data were accessed through the Secure Anonymised Information Linkage (SAIL) Databank (https://saildatabank.com), a privacy-protecting Trusted Research Environment which holds anonymized population-scale data (Ford et al. 2009). It was used to create three cohorts of households with children in Wales covering three time periods:

- Cohort 1—2008-12: 1 April 2008 to 31 March 2012, $n = 304\,712$ households
- Cohort 2—2012-16: 1 April 2012 to 31 March 2016, $n = 300\,960$ households
- Cohort 3—2016-20: 1 April 2016 to 31 March 2020, $n = 293\,373$ households.

Because this was a population-level study, these households were not mutually exclusive, and a given household could appear in more than one cohort.

2.1 | Creation of Datasets

The three cohorts were created by linking administrative data from social services and health. The datasets used are shown in Table 1.

The study population was households that contained children aged 3–17 during each of the time periods, identified using the Welsh Demographic Service Dataset (WDSD). Households were identified using Residential Anonymised Linking Fields (RALFs) (Rodgers et al. 2009). These are anonymous address codes created from GP registrations so that individuals resident at the same address can be linked.

Children aged 3–17 who entered care during each of the time periods were identified from the Looked After Children Wales (LACW) dataset. Children who entered care in more than one cohort were counted as a child that entered care in each cohort in which they entered. Children who entered care for short breaks only (under Part 6 section 76 of the Social Services and Wellbeing (Wales) Act 2014) were not included. Unaccompanied asylum-seeking children were also excluded.

Children from the LACW dataset were linked to households derived from WDSD for each cohort using Anonymised Linking Fields (ALFs) (Ford et al. 2009). The number of children in LACW with ALFs was enhanced by relinkage to additional datasets in the SAIL databank (Warner et al. 2024). Following this procedure, some of the children in the LACW dataset still did not have ALFs. This was particularly common in children aged under 3, and because of this, the study only considered care entry for those aged 3–17. Some children who entered care from the LACW dataset could still not be linked due to either the absence of an ALF or because they did not have a RALF on the day before they entered care (see Table 2).

The percentage match rate increased with successive cohorts so we applied a weighting to ensure regression models were representative of the true numbers of children in care. This was done using a reverse probability weighting (Seaman and White 2013) which was calculated using a regression model investigating the likelihood of a child in each local authority and in each cohort having an ALF.

Households were categorized as either care households (in which one or more children entered care) or comparison households (no child entered care). The dates the children entered care were required to identify health-related risk factors. To ensure the comparison population was both representative of the overall number of comparison households present on a specific date within the cohort time periods and also mirrored the care entry population in terms of the dates on which children

TABLE 1 | Datasets used.

Dataset	Description	Used to identify
Looked After Children Wales (LACW)	Local authority information about looked after children submitted annually to Welsh Government.	Children aged 3–17 years, who entered care, local authorities from which they entered
Welsh Demographic Service Dataset (WDSD)	Register of all individuals registered with a Welsh General Practice (GP) and individual's anonymized address.	Household members living with children prior to care entry, local authorities, and deprivation level
Welsh Longitudinal General Practice Dataset (WLGP)	Attendance and clinical information about all interactions with general practices registered to share their data with the SAIL Databank.	Risk factors in adults aged 18 years and over
Patient Episode Database for Wales (PEDW)	Inpatient and day case activity for NHS Wales and data on Welsh residents treated in English Trusts.	Risk factors in adults aged 18 years and over

TABLE 2 | ALF and RALF match rate across three cohorts of LACW dataset.

	Number of children who entered care	Number of children who entered care with an ALF	Number of children with an ALF and a RALF	% matched with ALF and RALF
Cohort 1: 2008–2012	4398	3428	3245	73.8
Cohort 2: 2012–2016	4691	4003	3785	80.7
Cohort 3: 2016–2020	4958	4657	4308	86.9

entered care within the 4-year time period, each household was given an index 'care entry' date. For care households, this was the date on which the first child in the household entered care. To allocate index dates to the comparison households, the frequency of care entry dates over each of the 4-year periods was explored. Comparison households were then randomly assigned index dates so that they fell with the same frequency over each 4-year period as the care entry index dates (see Warner et al. 2024 for more information). Comparison households that did not contain children aged 3–17 on the index dates were removed. Households were also removed if they contained more than 10 individuals. This was necessary to remove households made up of individuals living in institutions, following the example of Evans et al. (2020).

2.2 | Defining Health-Related Risk Factors and Area-Level Deprivation

Indications of substance misuse, mental health issues, learning disabilities, and neurodivergence were identified for all adults in the households. Adults were defined as any individual aged 18 or over and were linked to the Welsh Longitudinal General Practice Dataset (WLGP) and Patient Episode Database for Wales (PEDW), using ALFs. The following issues were identified from these datasets: drug misuse, alcohol misuse, bipolar disorder, schizophrenia, other psychotic disorders, anxiety, depression, eating disorder, self-harm, learning disability, learning difficulty, attention deficit hyperactivity disorder (ADHD) and autism. All issues had been identified from previous studies as risk factors for care entry. Initial bivariate analysis of the 2016–2020 cohort (Warner et al. 2024) found that all, except for autism, were risk factors for children entering care, although three (bipolar disorder, eating disorders and other psychotic disorders) did not have a significant effect in multivariable models. Autism had not been identified as a risk factor; however, it was decided to include it to look for differential impact in different cohorts, because it had been identified as a risk in other studies (Johnson et al. 2021). Learning disability was defined as having an IQ below 70, while 'learning difficulty' was used for those with cognitive learning problems such as dyslexia. These were identified using published code lists (see John et al. 2016). Issues were identified from WLGP using Read Codes and from PEDW using IC10 codes. A complete list of codes used is in the Appendix. Drug misuse, alcohol misuse, other psychotic disorders, anxiety, depression, eating disorder and self-harm were counted as present if they occurred in the 2 years prior to care entry or the index date for comparison children. Bipolar disorder, schizophrenia, learning disability, learning difficulty, ADHD and autism indications occurring at any time in the health data were used. Households were classified as having the risk present if it was found in at least one adult in the household.

Area-level deprivation for areas where the households were based was determined using the Welsh Index of Multiple Deprivation (WIMD). This is the official measure of relative deprivation of small areas, based on Lower Super Output Areas (LSOAs), which each contain about 1600 households (Welsh Government 2019). LSOAs are ranked from most deprived to least deprived on a measure that takes into account a range of factors including income and employment, health, education, access to services, housing community safety and the physical environment. The WIMD was divided into deciles, with one being the most deprived and 10 the least. The WIMD is periodically revised, so different versions were used for different cohorts. Cohort 1, 2008–2012, used WIMD 2011; Cohort 2, 2012–2016, used WIMD 2014; and Cohort 3, 2016–2020, used WIMD 2019.

The number of adults in the household and the age of a reference child were also calculated. Each household was assigned a reference child. In care households, this was the first child to enter care; in comparison households, this was randomly assigned. The age of the reference child was calculated and categorized into four periods of childhood: ages 3–6, 7–10, 11–15 and 16–17. A binary version was also created of aged 11 or over at the time of the index date.

2.3 | Analysis

Descriptive statistics (frequencies and percentages) were used to report the prevalence of health-related risk factors in the households across each of the three cohorts, to explore changes in the prevalence of risks over time. They were also used to consider the prevalence of the health-related risk factors in households with a child in care and comparison households for each cohort. Attributable fractions were calculated to provide a measure of what proportion of households with a given health-related risk factor that have a child in care can be attributed to the presence of the risk factor. They were calculated using the formula set out by Mansournia and Altman (2018):

$$\text{Attributable Fraction} = \frac{\text{Observed number of cases} - \text{Expected number of cases}}{\text{Expected number of cases}}$$

To do this, the expected number of cases for each health-related risk factor was calculated by multiplying the overall care entry rates for each cohort by the number of households with the risk factor. Excess numbers of households with children entering

care were calculated by predicting the number of households that would have been expected to have a child entering care, using the overall rate of care entry per cohort and the overall number of households where the risk was present. The predicted number was subtracted from the actual number to give the excess number.

Multilevel multivariate logistic regression models were used to examine the impact each of the adult issues and WIMD had on the likelihood of a child entering care in each of the three cohorts. All models were fully adjusted, containing all health-related risk factors together with the number of adults in the household and whether or not the reference child was aged over 11. Multilevel models were used to account for the clustered nature of the data, with children entering care through 22 local authorities. Parameter estimates were reported as odds ratios (OR), alongside 95% confidence intervals and p-values. A Forest Plot was used to visualize and compare ORs over the three cohorts.

3 | Results

Figure 1 shows the numbers of looked after children and households used in the analysis, and those excluded during data preparation. The number of households in Wales with children aged between 3 and 17 years reduced over time, leaving final cohorts of 304 712 households for 2008–2012, 300 960 households for 2012–2016 and 293 373 households for 2016–2020. The numbers of households from which children were identified to enter care increased over time, from 2238 in 2008–2012, to 2592 in 2012–2016 and 2763 in 2016–2020.

Table 3 shows the percentages of households in each cohort where the health-related risk factors and other variables are present. Some factors, notably depression and anxiety, appear to have become more prevalent across the three cohorts, while other risks appear to be less common. For example, the prevalence of alcohol misuse and self-harm appeared to go down. All three types of neurodivergence (learning difficulties, ADHD and autism) increased during the period and this may be associated with an increased likelihood of diagnosis.

Table 4 presents bivariate analysis of each health-related risk factor, WIMD and control variables for the care and comparison groups for each cohort. Total figures show that the percentage of households with a child entering care increases with each Cohort, from 0.73% of households in 2008–2012, to 0.86% in 2012–2016 and 0.94% in 2016–2020. This is in line with the increases in the numbers of children entering care over this period. For the most part, the percentage of households with each health-related risk factor that have a child enter care also goes up. This would also be expected, given an increasing rate of care entry. However, there are exceptions, for example, a lower percentage of households where one of the adults had bipolar disorder had a child in care in the later cohort. The same applies to autism, learning difficulties and learning disabilities, perhaps suggesting the impact these factors had on the likelihood of care reduced over time. With respect to the percentage of households in the care population that had a particular factor, in many cases changes appear to mirror changes in prevalence in the wider population. For example, the prevalence of alcohol misuse in households from which a child entered care went down from 10.99% of households in the first cohort to 7.60% of households in the third.

Attributable fractions and excess households relating to each of the health-related risk factors are shown in Table 5. The attributable fractions show the proportion of households from which a child enters care that would not have been expected to have a child entering care if the risk had not been present. For many factors, attributable fractions stay fairly constant over the three cohorts, including drug misuse, alcohol misuse, and schizophrenia. For other factors, there appears to be a change; for example, for bipolar disorder, the attributable fraction decreases with

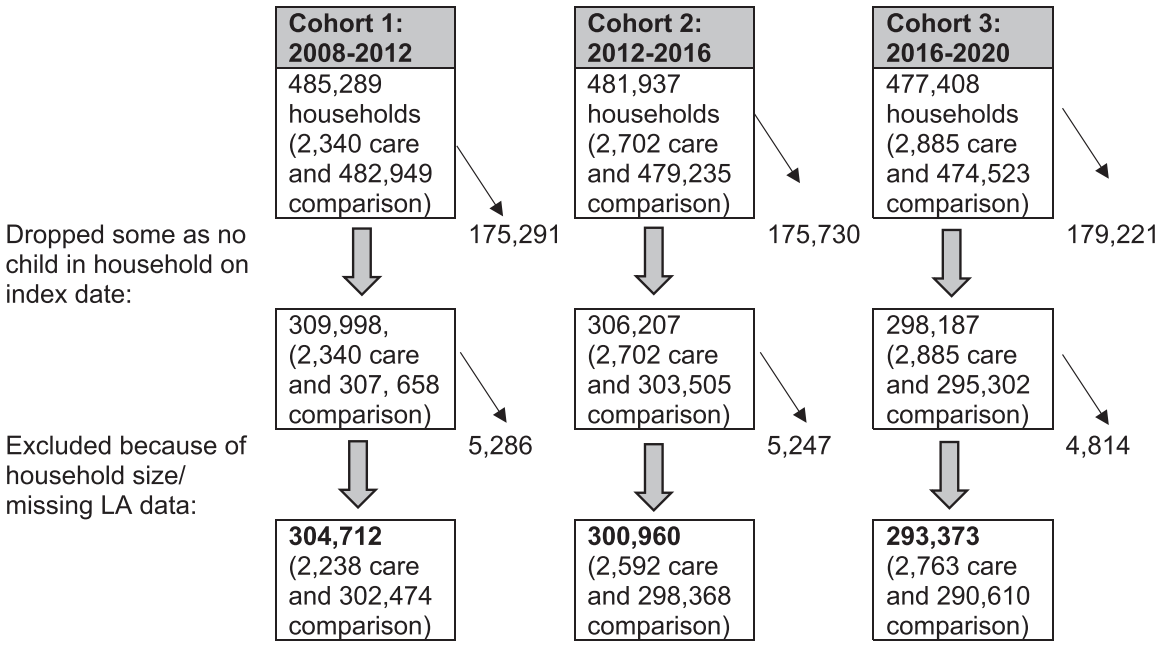

FIGURE 1 | Flow chart of study populations by cohorts.

TABLE 3 | Total numbers and percentage of households with risk factors in three cohorts.

	2008–2012	2012–2016	2016–2020
	n (%)	*n* (%)	*n* (%)
Drug misuse	4916 (1.61)	4992 (1.66)	4847 (1.65)
Alcohol misuse	7687 (2.52)	6499 (2.16)	5332 (1.82)
Bipolar disorder	4217 (1.38)	3839 (1.28)	3384 (1.15)
Schizophrenia	4397 (1.44)	3725 (1.24)	3052 (1.04)
Other psychotic disorder	593 (0.19)	488 (0.16)	551 (0.19)
Anxiety	28 709 (9.42)	33 707 (11.20)	38 920 (13.27)
Depression	56 098 (18.41)	65 315 (21.70)	69 923 (23.83)
Eating disorder	465 (0.15)	407 (0.14)	422 (0.14)
Self-harm	4690 (1.54)	3787 (1.26)	3346 (1.14)
Learning disability	2464 (0.81)	2796 (0.93)	2742 (0.93)
Learning difficulty	2705 (0.89)	3001 (1.00)	3218 (1.10)
ADHD	2652 (0.87)	3651 (1.21)	4325 (1.47)
Autism	1192 (0.39)	1637 (0.54)	2122 (0.72)
WIMD decile			
1	35 546 (11.67)	35 492 (11.79)	34 915 (11.90)
2	32 700 (10.73)	32 365 (10.75)	32 069 (10.93)
3	32 176 (10.56)	31 466 (10.46)	30 083 (10.25)
4	31 058 (10.19)	30 656 (10.19)	30 258 (10.31)
5	29 170 (9.57)	29 115 (9.67)	26 869 (9.16)
6	29 588 (9.71)	29 514 (9.81)	27 640 (9.42)
7	27 874 (9.15)	26 483 (8.80)	28 071 (9.57)
8	27 914 (9.16)	27 453 (9.12)	26 512 (9.04)
9	28 526 (9.36)	28 687 (9.53)	27 640 (9.42)
10	30 160 (9.90)	29 729 (9.88)	29 316 (9.99)
Adult number in household			
1	59 197 (19.43)	61 822 (20.54)	61 770 (21.06)
2	156 077 (51.22)	153 625 (51.04)	148 115 (50.49)
3	57 080 (18.73)	54 381 (18.07)	53 392 (18.20)
4 or more	32 358 (10.62)	31 132 (10.34)	30 096 (10.26)
Reference child age group			
3- to 6-year-olds	81 934 (26.89)	87 246 (28.99)	81 675 (27.84)
7- to 10-year-olds	69 145 (22.69)	70 484 (23.42)	75 536 (25.75)
11- to 15-year-olds	102 653 (33.69)	95 067 (31.59)	92 922 (31.67)
16- and 17-year-olds	50 980 (16.73)	48 163 (16.00)	43 240 (14.74)
Total	304 712 (100.00)	300 960 (100.00)	293 373 (100.00)

TABLE 4 | Numbers and percentage of households with risk factors in three cohorts, by care entry.

	2008–2012			2012–2016			2016–2020		
	Someone entered care	No one entered care		Someone entered care	No one entered care		Someone entered care	No one entered care	
	n (%[a])	*n* (%[b])	%[c]	*n* (%[a])	*n* (%[b])	%[c]	*n* (%[a])	*n* (%[b])	%[c]
Drug misuse	248 (11.08)	4668 (1.54)	5.04	274 (10.57)	4718 (1.58)	5.49	297 (10.75)	4550 (1.57)	6.13
Alcohol misuse	246 (10.99)	7441 (2.46)	3.20	240 (9.26)	6259 (2.1)	3.69	210 (7.6)	5122 (1.76)	3.94
Bipolar disorder	129 (5.76)	4088 (1.35)	3.06	120 (4.63)	3719 (1.25)	3.13	96 (3.47)	3288 (1.13)	2.84
Schizophrenia	151 (6.75)	4246 (1.4)	3.43	142 (5.48)	3583 (1.2)	3.81	126 (4.56)	2926 (1.01)	4.13
Other psychotic disorder	17 (0.76)	576 (0.19)	2.87	18 (0.69)	470 (0.16)	3.69	25 (0.9)	526 (0.18)	4.54
Anxiety	431 (19.26)	28 278 (9.35)	1.50	600 (23.15)	33 107 (11.1)	1.78	690 (24.97)	38 230 (13.16)	1.77
Depression	851 (38.03)	55 247 (18.27)	1.52	1208 (46.6)	64 107 (21.49)	1.85	1348 (48.79)	68 575 (23.6)	1.93
Eating Disorder	13 (0.58)	452 (0.15)	2.80	10 (0.39)	397 (0.13)	2.46	13 (0.47)	409 (0.14)	3.08
Self-Harm	202 (9.03)	4488 (1.48)	4.31	186 (7.18)	3601 (1.21)	4.91	164 (5.94)	3182 (1.09)	4.9
Learning Disability	92 (4.11)	2372 (0.78)	3.73	93 (3.59)	2703 (0.91)	3.33	91 (3.29)	2651 (0.91)	3.32
Learning Difficulty	81 (3.62)	2624 (0.87)	2.99	90 (3.47)	2911 (0.98)	3.00	89 (3.22)	3129 (1.08)	2.77
ADHD	57 (2.55)	2595 (0.86)	2.15	98 (3.78)	3553 (1.19)	2.68	116 (4.2)	4209 (1.45)	2.68
Autism	23 (1.03)	1169 (0.39)	1.93	29 (1.12)	1608 (0.54)	1.77	23 (0.83)	2099 (0.72)	1.08
WIMD decile									
1	629 (28.11)	34 917 (11.54)	1.77	689 (26.58)	34 803 (11.66)	1.94	709 (25.66)	34 206 (11.77)	2.03
2	360 (16.09)	32 340 (10.69)	1.10	454 (17.52)	31 911 (10.7)	1.4	513 (18.57)	31 556 (10.86)	1.6
3	296 (13.23)	31 880 (10.54)	0.92	345 (13.31)	31 121 (10.43)	1.1	374 (13.54)	29 709 (10.22)	1.24
4	278 (12.42)	30 780 (10.18)	0.90	285 (11)	30 371 (10.18)	0.93	292 (10.57)	29 966 (10.31)	0.97
5	189 (8.45)	28 981 (9.58)	0.65	240 (9.26)	28 875 (9.68)	0.82	213 (7.71)	26 656 (9.17)	0.79
6	150 (6.7)	29 438 (9.73)	0.51	184 (7.1)	29 330 (9.83)	0.62	187 (6.77)	27 453 (9.45)	0.68
7	100 (4.47)	27 774 (9.18)	0.36	121 (4.67)	26 362 (8.84)	0.46	165 (5.97)	27 906 (9.6)	0.59
8	103 (4.6)	27 811 (9.19)	0.37	116 (4.48)	27 337 (9.16)	0.42	146 (5.28)	26 366 (9.07)	0.55
9	76 (3.4)	28 450 (9.41)	0.27	83 (3.2)	28 604 (9.59)	0.29	103 (3.73)	27 537 (9.48)	0.37
10	57 (2.55)	30 103 (9.95)	0.19	75 (2.89)	29 654 (9.94)	0.25	61 (2.21)	29 255 (10.07)	0.21
Adult number									

(Continues)

TABLE 4 | (Continued)

	2008–2012			2012–2016			2016–2020		
	Someone entered care	No one entered care		Someone entered care	No one entered care		Someone entered care	No one entered care	
	n (%[a])	*n* (%[b])	%[c]	*n* (%[a])	*n* (%[b])	%[c]	*n* (%[a])	*n* (%[b])	%[c]
1	841 (37.58)	58 356 (19.29)	1.42	966 (37.27)	60 856 (20.4)	1.56	1103 (39.92)	60 667 (20.88)	1.79
2	878 (39.23)	155 199 (51.31)	0.56	1003 (38.7)	152 622 (51.15)	0.65	1032 (37.35)	147 083 (50.61)	0.7
3	333 (14.88)	56 747 (18.76)	0.58	401 (15.47)	53 980 (18.09)	0.74	408 (14.77)	52 984 (18.23)	0.76
4 or more	186 (8.31)	32 172 (10.64)	0.57	222 (8.56)	30 910 (10.36)	0.71	220 (7.96)	29 876 (10.28)	0.73
Reference child age group									
3- to 6-year-olds	583 (26.05)	81 351 (26.9)	0.71	612 (23.61)	86 634 (29.04)	0.7	752 (27.22)	80 923 (27.85)	0.92
7- to 10-year-olds	396 (17.69)	68 749 (22.73)	0.57	435 (16.78)	70 049 (23.48)	0.62	593 (21.46)	74 943 (25.79)	0.79
11- to 15-year-olds	1094 (48.88)	101 559 (33.58)	1.07	1147 (44.25)	93 920 (31.48)	1.21	1044 (37.79)	91 878 (31.62)	1.12
16- and 17-year-olds	165 (7.37)	50 815 (16.8)	0.32	398 (15.35)	47 765 (16.01)	0.83	374 (13.54)	43 866 (15.09)	0.85
Total	2238 (100)	302 474 (100)	0.73	2592 (100)	298 368 (100)	0.86	2763 (100)	290 610 (100)	0.94

[a]% of those who enter care with the health-related risk factor recorded in the household.
[b]% of those who do not enter care with the health-related risk factor recorded in the household.
[c]% with risk that enter care.

successive cohorts. The excess households show how many additional households may have had a child entering care where a factor is present than would have been expected if the risk was not present. These results are affected by the prevalence of the factors in the population and give a picture of how much each factor might have contributed towards the increased numbers of children in care. For some factors, excess household numbers go down over the three cohorts; for example, there are fewer excess households with children entering care because of parental alcohol misuse in later cohorts. This will be because of the decreasing prevalence of alcohol misuse in the population. However, there are considerable increases in the excess households entering care where depression or anxiety are a factor.

Multi-level binary logistic regression models were used to determine changes in the impact factors that were having on the likelihood of care in different cohorts. Results from these models are in Table 6, and a Forest Plot showing ORs for each health-related risk factor in each cohort is in Figure 2.

For most health-related risk factors, the confidence intervals for successive cohorts overlap, so there is no reason to suggest that the impact these factors have on the odds of care has changed over time. For some factors, particularly alcohol misuse, anxiety and schizophrenia, the ORs are similar for successive cohorts. There are two factors for which ORs for some cohorts do not fall within the confidence intervals for all cohorts. Depression had a significantly greater impact on the odds of care in the latter two cohorts compared with the 2008–2012 cohort. The OR for ADHD in 2008–2012 was not sufficiently high to fall within the confidence interval of the 2016–2020 cohort; however, confidence intervals still overlap. Of those variables that were not significant predictors of care in the multivariate model, two—autism and other psychotic disorders—remained insignificant for each cohort. However, there were differences for the other variables. Bipolar disorder, which was not significant in the 2016–2020 cohort, was a significant predictor in the two earlier cohorts, and eating disorders were a significant predictor in the 2008–2012 cohort, but not the latter two cohorts. Variance parameters suggest higher variations between local authorities in the first and last cohorts compared with the 2012–2016 cohort.

4 | Discussion

For some of the key health-related risk factors, such as parental drug use and severe mental health issues, our findings suggest that changes in prevalence have not driven the increase in the rate of children in care. There are few indications of increases in the prevalence of certain key health-related risk factors in the general population and little overall change in the relationship between most factors and the likelihood of a child entering care. There was no clear evidence of increases in more severe mental health problems, such as schizophrenia and bipolar

TABLE 5 | Attributable fraction and excess households with children entering care.

	2008–2012		2012–2016		2016–2020		Difference in excess between 1st and 3rd cohort
	Attributable fraction	Excess with child entering care	Attributable fraction	Excess with child entering care	Attributable fraction	Excess with child entering care	
Drug misuse	0.85	212	0.84	231	0.85	251	39
Alcohol misuse	0.77	190	0.77	184	0.76	160	−30
Bipolar disorder	0.76	98	0.72	87	0.67	64	−34
Schizophrenia	0.79	119	0.77	110	0.77	97	−21
Other psychotic disorder	0.74	13	0.77	14	0.79	20	7
Anxiety	0.51	220	0.52	310	0.47	323	103
Depression	0.52	439	0.53	645	0.51	689	250
Eating disorder	0.74	10	0.65	6	0.69	9	−1
Self-harm	0.83	168	0.82	153	0.81	132	−35
Learning disability	0.80	74	0.74	69	0.72	65	−9
Learning difficulty	0.75	61	0.71	64	0.66	59	−2
ADHD	0.66	38	0.68	67	0.65	75	38
Autism	0.62	14	0.51	15	0.13	3	−11

disorder, over time. Levels of substance misuse remained fairly constant, though there was a very slight increase in parental drug misuse and a slight decrease in parental alcohol misuse. However, in contrast, common mental health problems such as anxiety and depression became much more prevalent over time, and there were also increases in the proportion of children living with a parent with a diagnosis of autism or ADHD. This is in line with findings for the general population (Russell et al. 2022; Dykxhoorn et al. 2023; McKechnie et al. 2023), which may reflect some combination of an actual increase in mental health conditions and neurodivergence and also elevated public awareness and seeking of diagnoses.

We also found that for the majority of the health-related risk factors examined, the impact on the likelihood of care was fairly constant over the three cohorts. This suggests some consistency in practice over the time period, with, for example, schizophrenia and alcohol misuse having a consistent impact on the likelihood of care over time. However, there were exceptions. The impacts of depression increased over time. We do not know why, and this would benefit from further investigation.

The increase in depression in the population, coupled with its increasing impact on the likelihood of care, suggests it is related to an increase in 250 households with a child entering care between the first and last cohort, accounting for nearly half of the increase in the number of households with a child entering care between the two time periods. This is a large difference and an important finding, but unpicking what is driving it remains a challenge. It is plausible that the increases in depression and anxiety are indicative of something else that we were unable to measure in the data we have. Numerous things could be responsible, including increasing public awareness of mental illness. In our introduction, we highlighted the complexity of factors associated with children entering care, including the lack of support services, family poverty, risk-averse practice, and emerging concerns such as criminal exploitation. Any interpretation of what might be causing findings in relation to depression and anxiety needs to be considered within this context. These factors are also interrelated to each other, with depression being potentially related to many issues. It could be that the impact of depression and anxiety relates to some of the factors we know are associated with children entering care but which we were unable to identify within our data, such as increases in family poverty, domestic violence and child exploitation. There may also be additional problems because of increasing difficulties in parents accessing services and support that could be adding to this issue. Recent work by Hood et al. (2023) identified distinct categories

TABLE 6 | Multilevel logistic regression models.

	2008–2012				2012–2016				2016–2020			
	OR	95% CI		$p>\|z\|$	OR	95% CI		$p>\|z\|$	OR	95% CI		$p>\|z\|$
Drug misuse	2.86	2.18	3.74	0.000	2.83	2.37	3.38	0.000	3.12	2.70	3.59	0.000
Alcohol misuse	1.99	1.48	2.66	0.000	1.86	1.58	2.18	0.000	1.91	1.66	2.19	0.000
Bipolar disorder	1.85	1.46	2.34	0.000	1.47	1.13	1.92	0.004	1.31	0.95	1.80	0.099
Schizophrenia	2.08	1.59	2.72	0.000	2.12	1.81	2.48	0.000	2.20	1.81	2.68	0.000
Other psychotic disorder	0.93	0.54	1.60	0.792	0.98	0.65	1.47	0.905	1.37	0.90	2.09	0.141
Anxiety	1.29	1.17	1.43	0.000	1.39	1.23	1.57	0.000	1.30	1.16	1.46	0.000
Depression	1.80	1.62	2.00	0.000	2.14	2.03	2.26	0.000	2.20	2.02	2.40	0.000
Eating disorder	1.89	1.25	2.87	0.003	1.43	0.69	2.97	0.342	1.54	0.70	3.40	0.284
Self-harm	1.83	1.49	2.24	0.000	1.60	1.27	2.00	0.000	1.54	1.30	1.83	0.000
Learning disability	2.78	2.07	3.72	0.000	2.21	1.64	2.97	0.000	2.23	1.57	3.16	0.000
Learning difficulty	2.45	1.55	3.87	0.000	2.10	1.57	2.81	0.000	1.92	1.49	2.48	0.000
ADHD	1.32	1.01	1.72	0.044	1.68	1.31	2.17	0.000	1.63	1.33	2.00	0.000
Autism	1.23	0.78	1.95	0.374	1.06	0.68	1.64	0.804	0.69	0.40	1.17	0.170
Adult number	0.65	0.61	0.70	0.000	0.68	0.64	0.72	0.000	0.66	0.62	0.69	0.000
WIMD	0.83	0.80	0.85	0.000	0.83	0.81	0.85	0.000	0.83	0.82	0.84	0.000
Reference child over 11 years	1.37	1.16	1.62	0.000	1.83	1.46	2.30	0.000	1.37	1.17	1.59	0.000
Constant	0.03	0.02	0.05	0.000	0.03	0.02	0.03	0.000	0.03	0.03	0.04	0.000
LA variance[a]	0.08	0.04	0.15		0.03	0.02	0.06		0.09	0.05	0.16	

[a]Variance components are on the log odds scale.
Abbreviations: CI = confidence interval; OR = adjusted odds ratio.

of demand for children's social care services, and a useful future approach could be to explore how these categories are related to changes in parental depression.

The jump in the impact of depression on the likelihood of care occurs between the first and second cohort, coinciding with the time period that others have argued child protection services were becoming more risk averse, in the context of policy responses to media coverage of child deaths (see for example Hood et al. 2016; Elliott 2020). It is important to note that if there is an effect of increased risk aversion, this is not happening in relation to the households where there are possibly more severe health-related risk factors (severe mental health problems or substance misuse problems), but in households where there are parents who are depressed.

What is clear is that a high proportion of the families with children in care have parents who are experiencing anxiety and depression, and these levels have been increasing. This, coupled with the recent research finding that social workers were less likely to demonstrate empathy and skilled direct practice with parents who were anxious (Antonopoulou et al. 2024) gives cause for concern. Social workers need skills for working with such issues, including training and awareness in mental health issues.

4.1 | Limitations

Our study used existing administrative datasets, which can be prone to small errors in recording. However, this is offset by the large numbers of households in our sample. We were only able to consider the households of 3- to 17-year-olds, rather than the households of children of all ages, because of linkage issues among those under 3. This is a limitation given the high numbers of children under 3 who enter care. Our risk factors were derived from health service data, and so involvement with a health professional is necessary. When looking at changes over time, we cannot therefore unpick whether it is higher levels of health service involvement or genuine changes in the existence of issues that drive increased professional identification. We are also aware of the limitations of comparing WIMD over different cohorts, as this is a measure of relative deprivation, and that the overall levels of deprivation denoted by being within a particular decile may have changed over time. However, this variable does provide a useful comparison of relative deprivation. There are also issues that we do not have reliable measures for in this study, including child sexual and criminal exploitation, domestic abuse and household income. We calculated Attributable Fractions, which include the assumption that removing one exposure does not affect other risk factors, and it is understood that there may

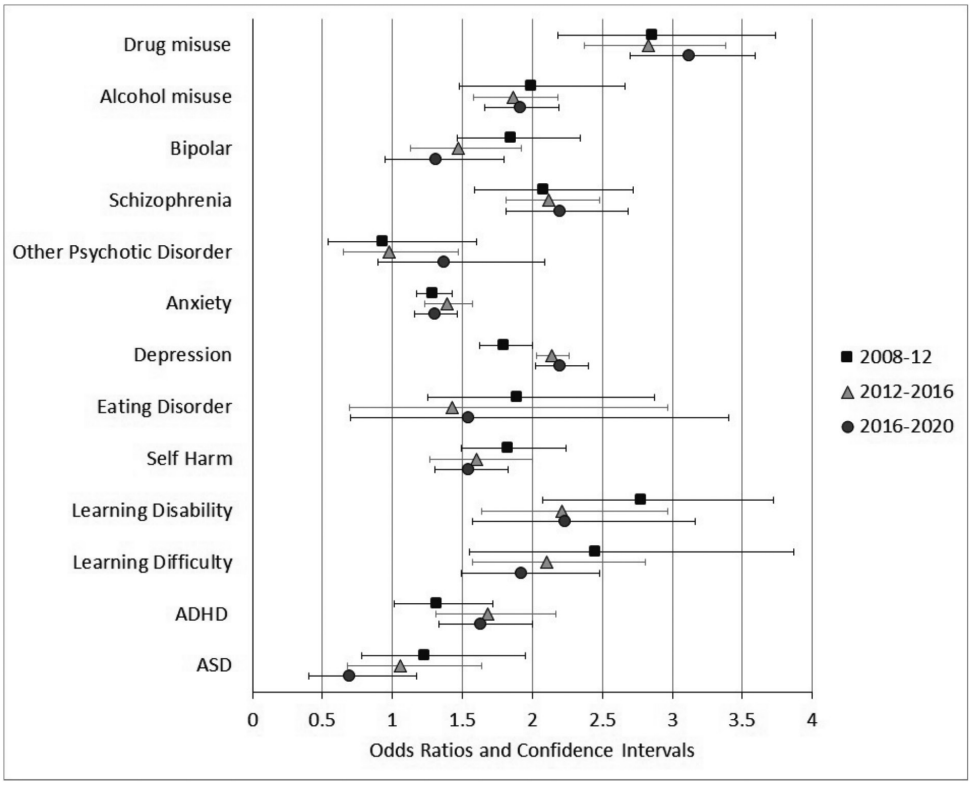

FIGURE 2 | Forest plot of ORs alongside 95% confidence intervals for each health-related risk factor by each cohort. OR > 1 health-related risk factor higher in care households, OR < 1 lower in care group (or higher in noncare households).

be a great deal of interplay between the various health-related risk factors listed. Likewise, our multilevel regression models only include individual health-related risk factors, rather than any interaction terms, which would have provided details of whether health-related risk factors might have been affecting each other. While this was useful for providing an overall picture of the effects of the health-related risk factors on the different cohorts, a more detailed picture might be obtained in future studies by looking at interaction effects.

5 | Conclusion

Our findings do not suggest that the increase in the number of children entering care was driven by the increasing prevalence of certain factors, including parental drug use and severe mental health issues. Although they do suggest that some of the increase is related to increases in common mental health problems and a greater likelihood of those from households where adults are depressed entering care. There are, however, many things about this that are not understood, including whether there are some additional factors that could be related to both the increases in common mental health problems and care entry. What is clear, however, is that many of the parents whose children are entering care are struggling with common mental health problems, and this highlights the need for social care staff to be trained in understanding people who are experiencing common mental health problems.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data were derived from Welsh Government and Welsh health service datasets. They were accessed through the Secure Anonymised Information Linkage (SAIL) Databank (https://saildatabank.com), a privacy-protecting Trusted Research Environment which holds anonymised population-scale data. Applications to use the data have to be made to the SAIL databank.

References

ADCS. 2018. *Safeguarding Pressures Phase 6*. Association of Directors of Children's Services Ltd.

Antonopoulou, V., M. Killian, and D. Forrester. 2024. "Measuring Levels of Family Stress and Engagement in Child Protection Social Work: An Explorative Analysis of Parental Stress and Social Worker Practice Skills." *Journal of Children's Services* 19: 123–134. https://doi.org/10.1108/JCS-10-2022-0030.

Barth, R. P., J. Wildfire, and R. L. Green. 2006. "Placement Into Foster Care and the Interplay of Urbanicity, Child Behavior Problems, and Poverty." *American Journal of Orthopsychiatry* 76, no. 3: 358–366. https://doi.org/10.1037/0002-9432.76.3.358.

Bebbington, A., and J. Miles. 1989. "The Background of Children Who Enter Local Authority Care." *British Journal of Social Work* 19, no. 5: 349–368. https://doi.org/10.1093/bjsw/19.5.349.

Bennett, D. L., K. E. Mason, D. K. Schlüter, et al. 2020. "Trends in Inequalities in Children Looked After in England Between 2004 and 2019: A Local Area Ecological Analysis." *BMJ Open* 10, no. 11: e041774. https://doi.org/10.1136/bmjopen-2020-041774.

Bywaters, P., J. Scourfield, C. Jones, et al. 2020. "Child Welfare Inequalities in the Four Nations of the UK." *Journal of Social Work* 20, no. 2: 193–215.

Cénat, J. M., S.-E. McIntee, J. N. Mukunzi, and P.-G. Noorishad. 2021. "Overrepresentation of Black Children in the Child Welfare System: A Systematic Review to Understand and Better Act." *Children and Youth Services Review* 120: 105714. https://doi.org/10.1016/j.childyouth.2020.105714.

Dykxhoorn, J., D. Osborn, K. Walters, J. B. Kirkbride, S. Gnani, and A. I. Lazzarino. 2023. "Temporal Patterns in the Recorded Annual Incidence of Common Mental Disorders Over Two Decades in the United Kingdom: A Primary Care Cohort Study." *Psychological Medicine* 54, no. 4: 663–674. https://doi.org/10.1017/S0033291723002349.

Elliott, M. 2020. "Child Welfare Inequalities in a Time of Rising Numbers of Children Entering Out-of-Home Care." *British Journal of Social Work* 50, no. 2: 581–597. https://doi.org/10.1093/bjsw/bcz154.

Endicott, A. 2024. *Exploring Child Welfare Practice With Parents Who Use Substances From an Epistemic Injustice Perspective*. PhD Thesis. Cardiff University.

Evans, A., K. Hardcastle, A. Bandyopadhyay, et al. 2020. "Adverse Childhood Experiences During Childhood and Academic Attainment at Age 7 and 11 Years: An Electronic Birth Cohort Study." *Public Health* 189: 37–47. https://doi.org/10.1016/j.puhe.2020.08.027.

Ford, D. V., K. H. Jones, J. P. Verplancke, et al. 2009. "The SAIL Databank: Building a National Architecture for e-Health Research and Evaluation." *BMC Health Services Research* 9, no. 1: 1–12. https://doi.org/10.1186/1472-6947-9-3.

Forrester, D., S. Wood, C. Waits, R. Jones, D. Bristow, and E. Taylor-Collins. 2022. *Children's Social Services and Care Rates in Wales: A Survey of the Sector*. Wales Centre for Public Policy.

Franzén, E., B. Vinnerljung, and A. Hjern. 2008. "The Epidemiology of Out-of-Home Care for Children and Youth: A National Cohort Study." *British Journal of Social Work* 38, no. 6: 1043–1059. https://doi.org/10.1093/bjsw/bcl380.

Hood, R., A. Goldacre, R. Grant, and R. Jones. 2016. "Exploring Demand and Provision in English Child Protection Services." *British Journal of Social Work* 46, no. 4: 923–941. https://doi.org/10.1093/bjsw/bcw044.

Hood, R., A. Goldacre, E. Jones, A. King, K. Clements, and C. Webb. 2023. "Categorising Demand for Child Welfare Services Using Latent Class Analysis: A Study of the National Data-Sets on Children in Need in England." *British Journal of Social Work* 53, no. 8: 3704–3724.

Humphreys, C., and D. Absler. 2011. "History Repeating: Child Protection Responses to Domestic Violence." *Child & Family Social Work* 16: 464–473. https://doi.org/10.1111/j.1365-2206.2011.00761.x.

Jay, M. A., and L. Mc Grath-Lone. 2019. "Educational Outcomes of Children in Contact With Social Care in England: A Systematic Review." *Systematic Reviews* 8: 155. https://doi.org/10.1186/s13643-019-1071-z.

John, A., J. McGregor, D. Fone, et al. 2016. "Case-Finding for Common Mental Disorders of Anxiety and Depression in Primary Care: An External Validation of Routinely Collected Data." *BMC Medical Informatics and Decision Making* 16, no. 1: 1–10. https://doi.org/10.1186/s12911-016-0274-7.

Johnson, R. D., B. Alrouh, K. Broadhurst, et al. 2021. *Health Vulnerabilities of Parents in Care Proceedings in Wales*. Nuffield Family Justice Observatory.

Mansournia, M. A., and D. G. Altman. 2018. "Population Attributable Fraction." *BMJ (Clinical Research ed.)* 360: k757.

McKechnie, D. G., E. O'Nions, S. Dunsmuir, and I. Petersen. 2023. "Attention-Deficit Hyperactivity Disorder Diagnoses and Prescriptions in UK Primary Care, 2000–2018: Population-Based Cohort Study." *BJPsych Open* 9, no. 4: e121. https://doi.org/10.1192/bjo.2023.512.

Murray, E. T., R. Lacey, B. Maughan, and A. Sacker. 2020a. "Non-Parental Care in Childhood and Health Up to 30 Years Later: ONS Longitudinal Study 1971–2011." *European Journal of Public Health* 30, no. 6: 1121–1127. https://doi.org/10.1093/eurpub/ckaa113.

Murray, E. T., R. Lacey, B. Maughan, and A. Sacker. 2020b. "Association of Childhood Out-of-Home Care Status With All-Cause Mortality up to 42-Years Later: Office of National Statistics Longitudinal Study." *BMC Public Health* 20, no. 1: 735. https://doi.org/10.1186/s12889-020-08867-3.

Rodgers, S. E., R. A. Lyons, R. Dsilva, et al. 2009. "Residential Anonymous Linking Fields (RALFs): A Novel Information Infrastructure to Study the Interaction Between the Environment and Individuals' Health." *Journal of Public Health* 31, no. 4: 582–588. https://doi.org/10.1093/pubmed/fdp041.

Russell, G., S. Stapley, T. Newlove-Delgado, et al. 2022. "Time Trends in Autism Diagnosis Over 20 Years: A UK Population-Based Cohort Study." *Journal of Child Psychology and Psychiatry* 63, no. 6: 674–682. https://doi.org/10.1111/jcpp.13505.

Sankaran, V., C. Church, and M. Mitchell. 2019. "Cure Worse Than the Disease: The Impact of Removal on Children and Their Families." *Marquette Law Review* 102, no. 4: 1161–1194.

Sariaslan, A., A. Kääriälä, J. Pitkänen, et al. 2022. "Long-Term Health and Social Outcomes in Children and Adolescents Placed in Out-of-Home Care." *JAMA Pediatrics* 176, no. 1: e214324.

Seaman, S. R., and I. R. White. 2013. "Review of Inverse Probability Weighting for Dealing With Missing Data." *Statistical Methods in Medical Research* 22, no. 3: 278–295. https://doi.org/10.1177/0962280210395740.

Sheehan, L. 2022. *Fixing Change—An Ethnographic Study of Child Protection Practice* (Doctoral dissertation. Cardiff University.

Simkiss, D. E., N. Stallard, and M. Thorogood. 2012. "A Systematic Literature Review of the Risk Factors Associated With Children Entering Public Care." *Child: Care, Health and Development* 39, no. 5: 628–642. https://doi.org/10.1111/cch.12010.

Stats Wales. 2024. Children Looked After at 31 March by Local Authority, Gender and Age. Available at: https://statswales.gov.wales/Catalogue/Health-and-Social-Care/Social-Services/Childrens-Services/Children-Looked-After/childrenlookedafterat31march-by-localauthority-gender-age.

Taussig, H., and M. R. Munson. 2024. "It's Complicated: A Longitudinal Exploration of Young People's Perceptions of Out-of-Home Care and Their Reflections on How to Change the Child Welfare System." *International Journal on Child Maltreatment* 7: 85–104. https://doi.org/10.1007/s42448-022-00137-6.

Thomas, C. 2018. *The Care Crisis Review: Factors Contributing to National Increases in Numbers of Looked After Children and Applications for Care Orders*. Family Rights Group.

Treby, L. 2022. *What Is the Relationship Between Supervision and Practice in Child and Family Social Work? An Analysis of 12 Case Studies* (Doctoral dissertation. Cardiff University.

UK Government. 2024. Children Looked After in England Including Adoptions. Available at: https://explore-education-statistics.service.gov.uk/find-statistics/children-looked-after-in-england-including-adoptions#releaseHeadlines-tables.

Warner, N., Y. Jing, J. Scourfield, R. Cannings-John, S. Y. Cheung, and A. John. 2025. "The Inter-Relationship Between Parental Problems and Ethnic Background: How Do They Impact on Entry Into Local Authority Care?" *British Journal of Social Work* 55, no. 3: 1416–1435.

Warner, N., J. Scourfield, R. Cannings-John, et al. 2024. "Parental Risk Factors and Children Entering Out-of-Home Care: The Effects of Cumulative Risk and Parent's Sex." *Children and Youth Services Review* 160: 107548.

Webb, C. 2025. *Investing in Prevention and Support: Spending on Family Support, Children's Centres, Young Peoples' Services, and Other Forms of Help and Child Welfare Interventions in England, 2009–10 to 2021–22*. Final Report. University of Sheffield.

Webb, C. J. R., and P. Bywaters. 2018. "Austerity, Rationing and Inequity: Trends in Children's and Young Peoples' Services Expenditure in England Between 2010 and 2015." *Local Government Studies* 44, no. 3: 391–415. https://doi.org/10.1080/03003930.2018.1430028.

Welsh Government. 2019. *Welsh Index of Multiple Deprivation (WIMD) 2019 Guidance*. Welsh Government.

Appendix

Concepts and Algorithms Used to Identify Risk Factors in Health Data

	WLGP_GP Read Code Lists	PEDW—IC10 Lists
Drug misuse	Drug Misuse—Primary Care ID: C2945 Version: 8649 https://conceptlibrary.saildatabank.com/concepts/C2945/version/8649/detail/ Rees, S., Watkins, A., Keauffling, J., & John, A. (2022). Incidence, Mortality and Survival in Young People with Co-Occurring Mental Disorders and Substance Use: A Retrospective Linked Routine Data Study in Wales. Clinical Epidemiology, 14, 21–38. https://doi.org/10.2147/CLEP.S325235	Drug Misuse—IC10 ID: C2947 Version: 8644 https://conceptlibrary.saildatabank.com/concepts/C2947/version/8644/detail/ Rees, S., Watkins, A., Keauffling, J., & John, A. (2022). Incidence, Mortality and Survival in Young People with Co-Occurring Mental Disorders and Substance Use: A Retrospective Linked Routine Data Study in Wales. Clinical Epidemiology, 14, 21–38. https://doi.org/10.2147/CLEP.S325235
Alcohol misuse	Alcohol Misuse- Primary Care ID: C2944 https://conceptlibrary.saildatabank.com/concepts/C2944/detail/Rees, S., Watkins, A., Keauffling, J., & John, A. (2022). Incidence, Mortality and Survival in Young People with Co-Occurring Mental Disorders and Substance Use: A Retrospective Linked Routine Data Study in Wales. Clinical Epidemiology, 14, 21–38. https://doi.org/10.2147/CLEP.S325235	Alcohol Misuse- ICD-10 ID: C2946 https://conceptlibrary.saildatabank.com/concepts/C2946/detail/ Rees, S., Watkins, A., Keauffling, J., & John, A. (2022). Incidence, Mortality and Survival in Young People with Co-Occurring Mental Disorders and Substance Use: A Retrospective Linked Routine Data Study in Wales. Clinical Epidemiology, 14, 21–38. https://doi.org/10.2147/CLEP.S325235
Schizophrenia	**Schizophrenia—Primary Care** John, A, McGregor, J., Jones, I., Lee, S. C., Walters, J. T. R., Owen, M. J., O'Donovan, M., DelPozo-Banos, M., Berridge, D., & Lloyd, K. ID: C2716 Version: 8446 https://conceptlibrary.saildatabank.com/concepts/C2716/version/8446/detail/	**Schizophrenia- ICD-10** John, A, McGregor, J., Jones, I., Lee, S. C., Walters, J. T. R., Owen, M. J., O'Donovan, M., DelPozo-Banos, M., Berridge, D., & Lloyd, K. ID: C2939 Version: 8647 https://conceptlibrary.saildatabank.com/concepts/C2939/version/8647/detail/
Anxiety	Includes contacts with a recorded anxiety diagnosis or symptom, and contacts with a recorded anxiolytic or hypnotic prescription following a previous anxiety diagnosis. Therapeutic procedures that unequivocally indicate a diagnosis of anxiety are used as 'anxiety diagnoses' by the algorithm. ID: PH113 https://conceptlibrary.saildatabank.com/phenotypes/PH1113/version/2453/detail/ John, A., McGregor, J., Fone, D., Dunstan, F., Cornish, R., Lyons, R. A., & Lloyd, K. R. (2016). Case-finding for common mental disorders of anxiety and depression in primary care: an external validation of routinely collected data. BMC medical informatics and decision making, 16(1), 1–10 Cornish, R. P., John, A., Boyd, A., Tilling, K., & Macleod, J. (2016). Defining adolescent common mental disorders using electronic primary care data: A comparison with outcomes measured using the CIS-R. BMJ Open, 6(12).	ID: C3297 https://conceptlibrary.saildatabank.com/concepts/C3297/version/10127/detail/ John, A., McGregor, J., Fone, D., Dunstan, F., Cornish, R., Lyons, R. A., & Lloyd, K. R. (2016). Case-finding for common mental disorders of anxiety and depression in primary care: an external validation of routinely collected data. BMC medical informatics and decision making, 16(1), 1–10 Cornish, R. P., John, A., Boyd, A., Tilling, K., & Macleod, J. (2016). Defining adolescent common mental disorders using electronic primary care data: A comparison with outcomes measured using the CIS-R. BMJ Open, 6(12).

	WLGP_GP Read Code Lists	PEDW—IC10 Lists
Depression	Includes contacts with a recorded depression diagnosis, and contacts with a recorded antidepressant treatment or prescription following a previous depression diagnosis. Administrative codes that unequivocally indicate a diagnosis of depression are used as 'depression diagnoses' by the algorithm. ID: C3295 https://conceptlibrary.saildatabank.com/concepts/C3295/detail/ John, A., McGregor, J., Fone, D., Dunstan, F., Cornish, R., Lyons, R. A., & Lloyd, K. R. (2016). Case-finding for common mental disorders of anxiety and depression in primary care: an external validation of routinely collected data. BMC medical informatics and decision making, 16(1), 1–10 Cornish, R. P., John, A., Boyd, A., Tilling, K., & Macleod, J. (2016). Defining adolescent common mental disorders using electronic primary care data: A comparison with outcomes measured using the CIS-R. BMJ Open, 6(12).	ID: C3295 https://conceptlibrary.saildatabank.com/concepts/C3295/detail/ John, A., McGregor, J., Fone, D., Dunstan, F., Cornish, R., Lyons, R. A., & Lloyd, K. R. (2016). Case-finding for common mental disorders of anxiety and depression in primary care: an external validation of routinely collected data. BMC medical informatics and decision making, 16(1), 1–10 Cornish, R. P., John, A., Boyd, A., Tilling, K., & Macleod, J. (2016). Defining adolescent common mental disorders using electronic primary care data: A comparison with outcomes measured using the CIS-R. BMJ Open, 6(12).
Self-Harm	ID: C3292 https://conceptlibrary.saildatabank.com/concepts/C3292/detail/ Marchant, A. Turner, S. Balbuena, L. Peters, W. Williams, D. Lloyd, K. Lyons, R. & John, A. 2020. 'Self-Harm Presentation across Healthcare Settings by Sex in Young People: An e-Cohort Study Using Routinely Collected Linked Healthcare Data in Wales, UK.' Archives of Disease in Childhood 105(4):347–54.	ID: C3292 https://conceptlibrary.saildatabank.com/concepts/C3292/detail/ Marchant, A. Turner, S. Balbuena, L. Peters, W. Williams, D. Lloyd, K. Lyons, R. & John, A. 2020. 'Self-Harm Presentation across Healthcare Settings by Sex in Young People: An e-Cohort Study Using Routinely Collected Linked Healthcare Data in Wales, UK.' Archives of Disease in Childhood 105(4):347–54.
Learning Disability	**Learning Disability—Primary Care** Evangelos Kontopantelis, Ivan Olier, Claire Planner, David Reeves, Darren M Ashcroft, Linda Gask, Tim Doran, Sioban Reilly. Id C1928 Version 4994 https://conceptlibrary.saildatabank.com/concepts/C1928/version/4994/detail/ * four codes were excluded from this concept as they overlap with learning difficulties concept: Eu81. Eu81y Eu81z Eu81z00	
Learning Difficulty	Learning Difficulties—Primary care John, A., Friedmann, Y., DelPozo-Banos, M., Frizzati, A., Ford, T., & Thapar, A. ID: C2711 Version: 8449 https://conceptlibrary.saildatabank.com/concepts/C2711/version/8657/detail/	Learning Difficulties- ICD-10 John, A., Friedmann, Y., DelPozo-Banos, M., Frizzati, A., Ford, T., & Thapar, A. ID: C2940 Version: 7735 https://conceptlibrary.saildatabank.com/concepts/C2940/version/8658/detail/
ADHD	Attention-Deficit hyperactivity disorder (ADHD) Primary care John, A., Friedmann, Y., DelPozo-Banos, M., Frizzati, A., Ford, T., & Thapar, A ID: C2708 Version: 8670 https://conceptlibrary.saildatabank.com/concepts/C2708/version/8447/detail/	Attention-Deficit hyperactivity disorder (ADHD)- ICD-10 John, A., Friedmann, Y., DelPozo-Banos, M., Frizzati, A., Ford, T., & Thapar, A ID: C2931 Version: 8637 https://conceptlibrary.saildatabank.com/concepts/C2931/version/8637/detail/

	WLGP_GP Read Code Lists	PEDW—IC10 Lists
Autism	Autism Spectrum Disorder (ASD) - Primary care Underwood JFG, Del Pozo Baños M, Frizzati A, John A, Hall J ID: C2709 Version: 8442 https://conceptlibrary.saildatabank.com/concepts/C2709/version/8442/detail/	Autism Spectrum Disorder (ASD)- ICD-10 Underwood JFG, Del Pozo Baños M, Frizzati A, John A, Hall J ID: C2930 Version: 7867 https://conceptlibrary.saildatabank.com/concepts/C2930/version/7867/detail/