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Investigating the association between adult substance misuse and health and criminal justice outcomes of children in the household

Data Report

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Background

To date, research into the impact of parental substance on children has encompassed a variety of health, social and economic aspects. Children who live in households with parental substance misuse are more likely to experience exposure to poverty, domestic violence, hospitalisation, learning difficulties, and mental health conditions such as depression and anxiety.[1] Children affected by parent/carer substance misuse often have additional well-being and mental health requirements[2] including sociodemographic and antenatal exposures that predispose infants to developmental challenges as well as adverse childhood experiences. [3] Problem alcohol use within the family has been shown to be a significant risk factor for early alcohol use in adolescence.[4]

Substance misuse is widely acknowledged as a significant public health problem[5] and may be defined as 'recurrent use that is causing actual harms (negative consequences) to the person (including dependence, but also other health, psychological or social problems), or is placing the person at a high probability/risk of suffering such harms'.[6]

There are a number of policies and services in place to provide targeted support for vulnerable families aimed to mitigate adverse impacts and enable families to remain together where appropriate, including Families First.[7]

This Data Insight presents the findings of a study conducted as part of the BOLD Substance Misuse Demonstrator Pilot (Phase 1) in Wales, which focuses on early intervention and prevention of escalation of substance misuse. Further information on the BOLD programme can be found here: Better Outcomes Through Linked Data (BOLD)

This research compares the health and criminal justice outcomes of children living in households with or without adult substance misuse. The study aims to inform evidence-based strategies for prevention, intervention, and additional support, thereby fostering healthier trajectories for children and their parents and carers affected by substance misuse in Wales.

What we did

A population-scale retrospective electronic cohort (e-cohort) study was conducted to produce a linked dataset containing households of children and adults in Wales between 01 January 2011 and 31 December 2019. The study used the Secure Anonymised Information Linkage (SAIL) Databank, a secure repository of anonymised

health, justice, and administrative data, with rich linked person-level and address-level data for the Welsh population.

The Welsh Longitudinal General Practice dataset (WLGP, a dataset containing primary care GP records), which contained records for 86% of the Welsh population (as of the data extract date, 01 October 2022), was used to establish the population of children age < 18 years at start of GP registration, and adults (age ≥ 18 years). Linkage was then made to the Welsh Demographic Service Dataset (WDSD). The WDSD provides demographic information for people registered with a general practice in Wales, including the Welsh Index of Multiple Deprivation (WIMD) 2019.[8]

To identify the study population, a set of rules were applied. The individuals had to have an ALF (anonymised linkage field) for linkage, derived using deterministic and probabilistic record linkage, with a matching probability of ≥ 90% [15]. They also had to have a valid week of birth (the Monday preceding the date of birth, to aid in protecting anonymity) and sex.

The study inclusion and exclusion criteria with the corresponding counts are shown in Figure 1.

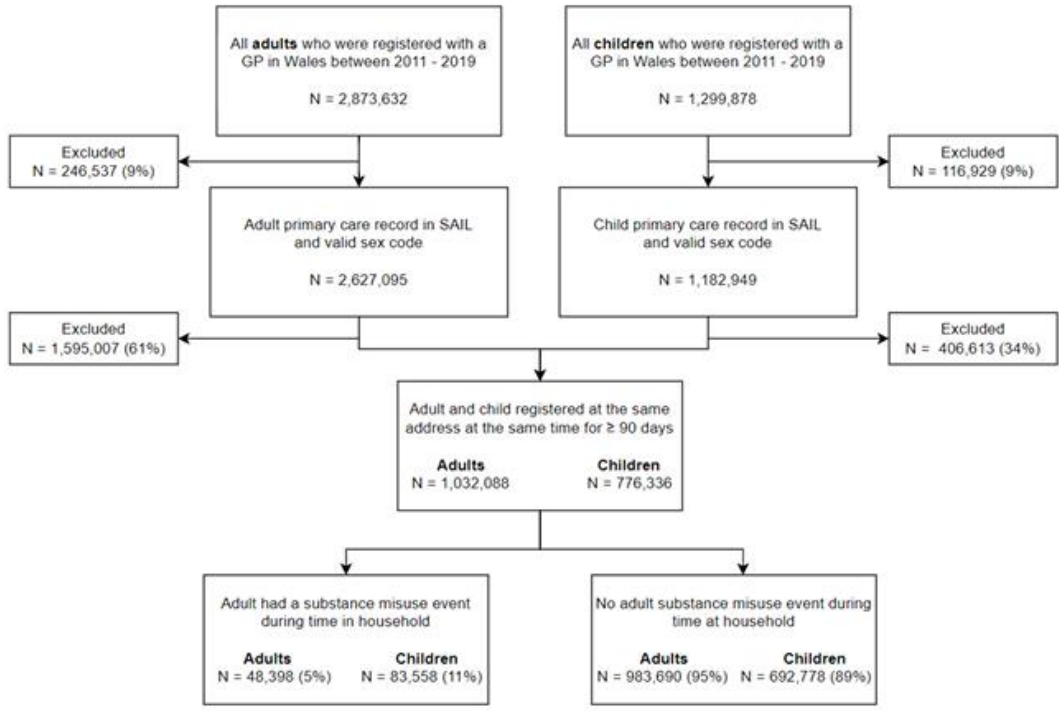

Figure 1: Inclusion criteria and counts for adults and children registered with a General Practice (GP) in Wales, and resident at the same address for ≥ 90 days between 1st January 2011 to 31st December 2019 in Wales

Data linkage with e-cohort

A flag was created for adults who had a substance misuse event during the time

registered at the same address as a child. Substance misuse (SM) events were identified from seven sources as shown in Table 1.

Table 1: Datasets linked to the e-cohort and accessed through SAIL databank

Dataset acronym	Dataset description	Purpose in study
WDSD	Welsh Demographics Survey Dataset – a register of all individuals registered with a GP in Wales, includes individuals anonymised address, and practice history.	Defined study population, households, and time in study
WLGP	Welsh Longitudinal General Practice Dataset – attendance and clinical information for all general practice interactions in Wales.	Source of substance misuse related events
SMDS	Substance Misuse Data Set (also known as the Welsh National Database for Substance Misuse – WNDSM) – captures data relating to all individuals presenting for substance misuse treatment in Wales.	Source of substance misuse related events
PEDW	Patient Episode Dataset for Wales – contains all inpatient and day case activity undertaken in NHS Wales, plus data on Welsh residents treated in English Trusts.	Source of substance misuse related events
EDDS	Emergency Department Data Set – attendance and clinical information for all NHS Wales accident and emergency attendances.	Source of substance misuse related events
OPDW	Outpatient Database for Wales – attendance information for all hospital outpatient appointments.	Source of substance misuse related events
ADDE	Annual District Death Extract – a register of all deaths relating to Welsh residents derived from the ONS Deaths register.	Source of substance misuse related events and date of death
MACO	Magistrates' Court defendant case level dataset – individuals appearing as defendants in criminal cases dealt with by magistrates' court in England and Wales. All criminal cases start with a first hearing in magistrates' court.	Source of substance misuse related events
NCCH	National Community Child Health database – the child health system in Wales.	Source of child birth information
CINW	Children In Need census Wales. From April 2016, CINW was discontinued and replaced by CRCS.	Source of child information
CRCS	Children Receiving Care and Support census – children with a care and support plan. Captures children with a care and support plan, whilst CINW had a broader coverage.	Source of child information
LACW	Children Looked After Wales – an annual census that includes information of care by a local authority that a child has received that year.	Source of child information

Analysis focussed on comparison between children where there was evidence of SM event(s) in adults living in the same household, and children in households with no evidence of adult substance misuse.

The adult SM events included:

- Referral to specialist SM treatment services within study period
- SM-related health events such as presentation at Emergency Department, outpatient or hospital admission
- SM-related magistrates court case where date of offence or court hearing date prior to study end
- Official record of drug or alcohol related death

The location of the household was used to identify index of multiple deprivation using WIMD 2019 quintile, a geographical area-based measure of deprivation.

The child populations were stratified by demographics including age, sex, birthweight, gestational age and a range of additional variables including:

- Record of 'Child in Need or Child Receiving Care and Support' at any time prior to study end, with first category of need – the main reason they started receiving care and support. These include: abuse or neglect, child disability or illness, parental disability or illness, family in acute stress, family dysfunction, child socially unacceptable behaviour, absent parenting, adoption disruption, and if a child or adult SM issue was noted
- Record on the Child Protection Register prior to study end
- Record on the Children Looked After Wales census [24] prior to study end
- Record of SM-related magistrates' court case, where date of offence or court hearing date prior to study end
- Record of referral to SM treatment services prior to study end

Analysis for both adult and child populations were also undertaken using ICD-10 clinical codes for diagnoses of:

- Anxiety
- Depression
- Self-harm
- Learning difficulties
- Neurodevelopmental issues (attention deficit hyperactivity disorder, and autism spectrum disorder)
- Suicide

Statistical analyses included summary descriptive statistics of children with (SM households) and without adult SM within the household (reference), and the period

prevalence[1] for each variable. Prevalence ratios[2] (PR) were calculated to allow for a statistical measure of comparison between the two groups.

What we found

The e-cohort included a total of 776,366 children and 1,032,088 adults. There were 207,596 adults with an SM event. 11.8% (n = 83,558) of children lived in a household with an adult who had an SM event. 5% (n = 48,398) of adults who had an SM event lived with a child in the same household. Of the adults with an SM event, 138,532 (66.7%) were not engaged with substance misuse low threshold or specialist treatment services.

Demographic profile of the child cohorts

The median age of children at entry to the study in the households with adult SM event (hereafter referred to as SMHH) was 5 (Interquartile range (IQR) = 9) years, whilst for those in no SM adult event households (No SM) was 6 (IQR = 12) years. 32% of the children (251,061) were registered with a GP in Wales from before their 1st birthday.

Additional summary demographic profile comparing Children in SMHH or without adult SM within the household (no SM) is provided in Table 2 and Appendix A.

[1] Period prevalence is the proportion of a population that has a specific characteristic at any point during a given time period. In this case, the period is where adult and child were resident in the same household within the study timeframe.

[2] Prevalence ratio refers to the prevalence of an event/outcome in one group relative to another group.

Table 2: Summary of the demographic characteristics of children in households with adult SM (SMHH) and no household adult substance misuse event (no SM)

		SMHH (count)	Proportion %	No SM (count)	Proportion %
Sex of child	Male	42,874	**51.3%**	354,769	**51.2%**
	Female	40,684	**48.7%**	338,009	**48.8%**
Gestational age	Term (37 - 41 weeks)	64,119	**86.5%**	523,778	**87.4%**
	Very or extremely preterm (<31 weeks)	1,007	**1.4%**	6,413	**1.1%**
	Pre-term (32-36 weeks)	5,525	**7.5%**	36,519	**6.1%**
	Late term (42-22 weeks)	3,449	**4.7%**	32,850	**5.5%**
	Missing data	9,458	**11.3%**	93,218	**13.5%**
Child birthweight	Normal birthweight (2.5 - 4 kg)	61,559	**81.2%**	498,673	**80.8%**
	Very or extremely low birthweight (< 1.5 kg)	1,332	**1.8%**	12,549	**2.0%**
	Low birthweight (1.5 - 2.5 kg)	6,336	**8.4%**	35,564	**5.8%**
	High birthweight (4 - 4.5 kg)	5,574	**7.4%**	59,378	**9.6%**
	Very or extremely high birthweight (> 4.5 kg)	1,016	**1.3%**	10,840	**1.8%**
	Missing data	7,741	**9.3%**	75,774	**10.9%**
WIMD	5 - Least deprived quintile	9,052	**10.8%**	138,718	**20.0%**
	4	10,946	**13.1%**	124,389	**18.0%**
	3	13,874	**16.6%**	129,314	**18.7%**
	2	20,313	**24.3%**	141,742	**20.5%**
	1 - Most deprived quintile	29,373	**35.2%**	158,615	**22.9%**

The range of additional risks were also analysed comparing outcomes for children with or without evidence of adult substance misuse within the household (see Appendices A and B). The following section identifies the additional frequency or prevalence of risk factors identified within children living in SMHH:

Deprivation and health at birth

For children living in the most deprived quintile, there was a 53.5% higher prevalence of having adult SM in the household.

Children in SMHH had a 27.1% higher prevalence of being born very or extremely pre-term, and a 22.4% higher prevalence of being pre-term.

Comparing birthweight, SMHH children had a 45.0% higher prevalence of 'low' birthweight, although the prevalence of 'very or extremely low' birthweight was 13.6% lower than the comparison group.

Complex and multiple needs – child and adult profiles

Contact with substance misuse services:

a. Of the children in SMHH, 41.5% (n = 34,682) lived with an adult who had a SM event but was not known to SM treatment services by the study end date

b. Children in SMHH had a 133% higher prevalence of contact with substance misuse treatment services themselves, than children in households with no adult SM events

Diagnosed learning difficulties and neurodevelopmental disorders:

c. A diagnosis of adult with learning difficulties was 367% higher for children in SMHH than those in no SM households

d. A diagnosis of learning difficulties was 38.7% higher in children in SMHH

e. Adult neurodevelopmental disorders were 367% more prevalent in SMHH

f. A diagnosis of neurodevelopmental disorder was 71.7% higher in children in SMHH

Diagnosed anxiety and depression:

g. Comparing mental health measures, higher frequencies were observed in children in SMHH living with an adult who had a diagnosis of anxiety (57.0%) and/or a diagnosis of depression (39.4%)

h. The SMHH children themselves had higher rates of diagnosis of anxiety (9.5%) and diagnosis of depression (5.3%)

Self-harm and suicide:

i. The frequency of a child living with an adult with clinically recorded self-harm was 522% higher in SMHH

j. Children in SMHH had 78.1% higher rates of clinically recorded self-harm

k. The prevalence of adult who died by suicide was 866% higher in SMHH, with the relatively small number of child suicides showing no statistically significant difference between SMHH and no SM households

Criminal justice

There were 24,136 children in SMHH living with an adult who had a SM-related magistrates' court case (28.9% of children in SMHH, 3.1% of all children).

Children in SMHH had 42% higher rates of SM-related magistrates' court cases than children in no SM households.

Of children in SMHH, 12.4% (n = 4,222) lived with adults whose first SM event in the household was recorded in criminal court data.

Children receiving care and support

Compared to children living in no adult SM households, rates of receipt of care and support from local authorities was three times higher in children in SMHH.

Amongst all children receiving care and support (n = 13,623), a 424% higher rate of an SM-related issue was recorded in those within SMHH.

Parental SM on the child record of care and support was nearly eight times higher in the SMHH children.

The rate of a Child Protection Register record was 6 times greater in children in SMHH than in other children receiving care and support.

Figure 1 shows the frequency by category of need for the Children receiving care and support, by SM households or no SM households.

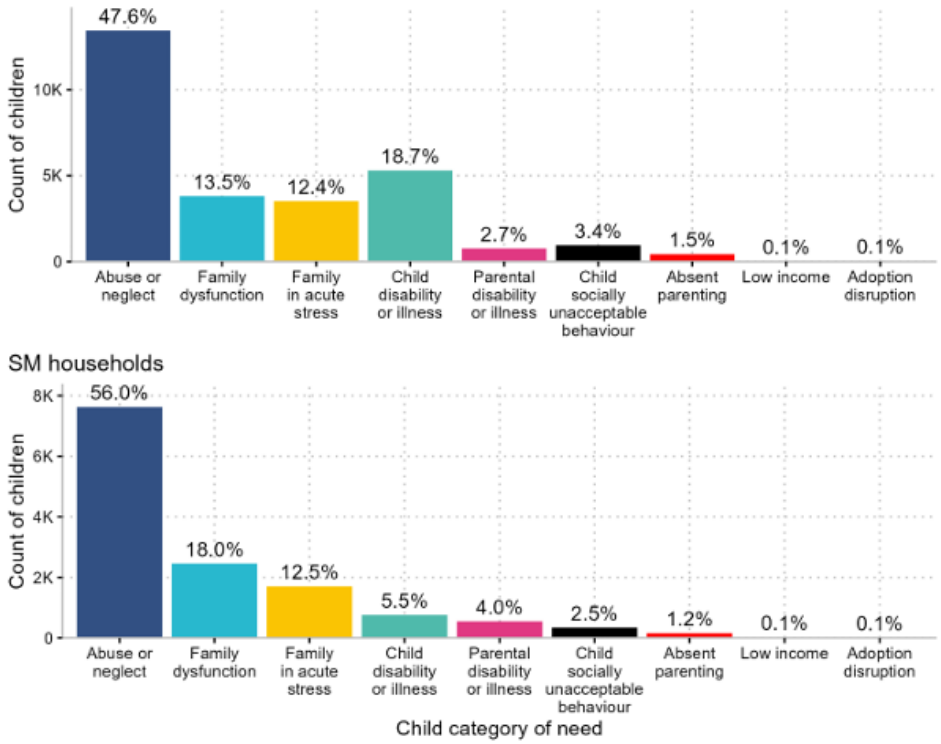

Figure 2: Child category of need for children who had a record in the Children in Need Wales (CINW) or Children Receiving of Care and Support (CRCS) datasets, stratified by no SM household (top graph) or SM households (bottom graph)

Why it matters

This study, comprising linked population-level cohorts, reveals significant disparities between children living in a household either with or without adults who have evidence of substance misuse, as measured by the presence of a substance misuse-related health or criminal justice event. These differences are evident in a range of indicators including deprivation levels, adverse birth outcomes, involvement with children's social care, mental health issues, and substance-related criminal justice cases.

There was a significant trend observed between deprivation and children within adult SM event households, with 35.3% of children in SM households in the most deprived quintile, compared to 22.8% of children in no SM households. Previous studies have shown that children living in greater deprivation in Wales are at higher risk of early alcohol use,[9] and are more likely to experience mental health problems[10] and co-occurring mental health disorders and substance misuse.[11]

Amongst adults with an SM event, there was clear evidence of a lack of engagement with low threshold or specialist substance misuse treatment services, representing substantial unmet need and missed opportunities to refer or promote access and uptake of SM-related care and support.

In terms of child health, children in SMHH were more likely to be preterm and have low birth weight. These adverse birth outcomes align with existing research associating maternal substance misuse with poor maternal and infant health,[1,2] although our study considered all adults in a household. Low birth weight can affect cognitive development and can lead to worse academic outcomes.[12,13] In addition, both diagnosed learning difficulties and neurodevelopmental issues were more prevalent in children in SMHH, with potentially life-long implications in terms of support, employment and opportunity.

Finally, the increased rates of contact with criminal justice and substance misuse treatment service engagement in those children within SMHH lends weight to the potential intergenerational impact of adult SM within the household. The study findings highlight the need for targeted interventions that address not only the immediate health concerns of affected individuals but also the systemic factors perpetuating cycles of substance misuse across generations, demonstrating the broader societal impact of substance misuse on intergenerational well-being.

What next?

Expansion of linked data

In future, it should be possible to link this cohort with other health, economic and social care data, to investigate further longer-term impacts and associations between adult SM-related events and children within the households, including evaluation of interventions aimed at improving outcomes.

Address study limitations and potential bias

This study identifies associations between SMHH and child determinants, **it is important to note that these associations do not imply causation.** The observational nature of the data limits the ability to infer direct causal relationships, and other unmeasured factors may contribute to the observed outcomes.

Studies using routinely collected administrative data are restricted by coding accuracy, this may introduce bias and inaccuracies, but a large representative population-level sample of the Welsh population was used. SAIL Databank had GP data coverage for 86% of individuals registered with a GP in Wales, so some primary care SM events could not be captured, and any SM events occurring outside of Wales were not in scope. It is also likely that alcohol use disorders and illegal drug use are under-recorded by GPs, particularly for men and young people.[11]

Another known limitation is that most children under three years old in children's social care data do not have an anonymised linkage field, so the youngest children receiving care could not be included.[14] CINW and CRCS also only contain cases open during the entire first three months of a year, which therefore also undercounts cases.

The requirement for at least a 90-day period at an address reduced erroneous grouping of new residents with the previous household but excluded people in temporary accommodation (who updated their address with the GP before and after moves), and people who only updated their address within the last 90 days at an address. It has been shown that household instability is a factor associated with children with the poorest social care outcomes.[2] People with lived experience of homelessness have social and health inequities[15] with increased school absences for children in the family,[16] but this was outside the scope of this study.

The Ministry of Justice MACO dataset in SAIL only contained the most serious offence, so information on any multiple less serious offence(s) was not known, and MACO contained only individuals meeting the threshold for criminal prosecution with an SM-related offence.

References

1. Taylor MF, Marquis R, Coall D, Wilkinson C. Substance Misuse–Related Parental Child Maltreatment. J Drug Issues [Internet]. 2017 Apr 27;47(2):241–60. Available from: http://journals.sagepub.com/doi/10.1177/0022042616683670

2. Roy J. Children living with parental substance misuse: A cross-sectional profile of children and families referred to children's social care. Child Fam Soc Work [Internet]. 2021 Feb 26;26(1):122–31. Available from: https://onlinelibrary.wiley.com/doi/10.1111/cfs.12795

3. Lowthian E, Anthony R, Evans A, Daniel R, Long S, Bandyopadhyay A, et al. Adverse childhood experiences and child mental health: an electronic birth cohort study. BMC Med. 2021 Dec 1;19(1).

4. Bandyopadhyay A, Brophy S, Akbari A, Demmler J, Kennedy J, Paranjothy S, et al. Health and household environment factors linked with early alcohol use in adolescence: a record-linked, data-driven, longitudinal cohort study. Int J Popul Data Sci [Internet]. 2022 Jul 7;7(1). Available from: https://ijpds.org/article/view/1717

5. Degenhardt, L. *et al.* The global burden of disease attributable to alcohol and drug use in 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet Psychiatry* **5**, 987–1012 (2018).

6. European Union Drugs Agency. Statistical Bulletin 2022 — methods and definitions for problem drug use. Avaialble at: https://www.euda.europa.eu/data/stats2022/methods/pdu_en

7. Welsh Government. Families first: programme guidance [Internet]. 2011. Available from: Families First Programme Guidance

8. National Council for Behavioural Health. The business case for effective substance use disorder treatment. 2014. [June 27, 2016]. Retrieved from http://www.thenationalcouncil.org/wp-content/uploads/2015/01/14_Business-Case_Substance-Use.pdf.

9. Bandyopadhyay A, Brophy S, Akbari A, Demmler J, Kennedy J, Paranjothy S, et al. Health and household environment factors linked with early alcohol use in adolescence: a record-linked, data-driven, longitudinal cohort study. Int J Popul Data Sci [Internet]. 2022 Jul 7;7(1). Available from: https://ijpds.org/article/view/1717

10. Bandyopadhyay A, Whiffen T, Fry R, Brophy S. How does the local area deprivation influence life chances for children in poverty in Wales: A record

linkage cohort study. SSM - Popul Heal[Internet]. 2023;22:101370. Available from: https://doi.org/10.1016/j.ssmph.2023.101370

11. Rees S, Watkins A, Keauffling J, John A. Incidence, Mortality and Survival in Young People with Co-Occurring Mental Disorders and Substance Use: A Retrospective Linked Routine Data Study in Wales. Clin Epidemiol [Internet]. 2022 Jan; Volume 14:21–38. Available from: https://www.dovepress.com/incidence-mortality-and-survival-in-young-people-with-co-occurring-men-peer-reviewed-fulltext-article-CLEP

12. Oudgenoeg-Paz O, Mulder H, Jongmans MJ, van der Ham IJM, Van der Stigchel S. The link between motor and cognitive development in children born preterm and/or with low birth weight: A review of current evidence. Neurosci Biobehav Rev [Internet]. 2017 Sep;80(January):382–93. Available from: https://doi.org/10.1016/j.neubiorev.2017.06.009

13. Bandyopadhyay A, Jones H, Parker M, Marchant E, Evans J, Todd C, et al. Weighting of risk factors for low birth weight: A linked routine data cohort study in Wales, UK. BMJ Open. 2023;13(2):1–8.

14. Lee A, Elliott M, Scourfield J, Bedston S, Broadhurst K, Ford D, et al. Data Resource: Children Receiving Care and Support and Children in Need, administrative records in Wales. Int J Popul Data Sci [Internet]. 2022 May 9;7(1). Available from: https://ijpds.org/article/view/1694

15. Song J, Grey CNB, Davies AR. Creating an e-cohort of individuals with lived experience of homelessness and subsequent mortality in Wales, UK. J Public Health (Bangkok) [Internet]. 2022 Dec 1;44(4):805–9. Available from: https://academic.oup.com/jpubhealth/article/44/4/805/6297493

16. Thomas I. Quantifying the Association Between Family Homelessness and School Absence in Wales, UK. Int J Homelessness [Internet]. 2024 Jan 26;4(1):39–55. Available from: https://ojs.lib.uwo.ca/index.php/ijoh/article/view/15382

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Appendices

Appendix A

Table of descriptive counts, prevalence and prevalence ratios (with 95% confidence intervals) stratified by children living in households with adult SM event (SMHH) or households with no adult SM event (no SM).

		No adult SM event (rest of population)		Adult SM event (SMHH cohort)		Prevalence ratio	
Variable	**Level**	**N children**	**Prevalence (%)**	**N children**	**Prevalence (%)**	**SMHH : no SM**	**95% CI**
Total number (N)		692,778	100.0	83,558	100.0		
Adult alcohol event	Yes	0	0.0	49,142	58.8		
Adult drug event	Yes	0	0.0	43,908	52.5		
Adult unspecified SM event	Yes	0	0.0	15,793	18.9		
Child sex	Male	354,769	51.2	42,874	51.3	1.002	0.992 - 1.012
	Female	338,009	48.8	40,684	48.7	0.998	0.988 - 1.008
Welsh IMD quintile	5 - Least deprived	138,718	20.0	9,052	10.8	0.541	0.530 - 0.553
	4	124,389	18.0	10,946	13.1	0.730	0.715 - 0.744
	3	129,314	18.7	13,874	16.6	0.890	0.874 - 0.905
	2	141,742	20.5	20,313	24.3	1.188	1.171 - 1.206
	1 - Most deprived	158,615	22.9	29,373	35.2	1.535	1.516 - 1.555
Child birthweight	Normal birthweight (2.5 - 4 kg)	498,673	80.8	61,559	81.2	1.005	0.996 - 1.013
	Very or extremely low birthweight (< 1.5 kg)	12,549	2.0	1,332	1.8	0.864	0.816 - 0.914
	Low birthweight (1.5 - 2.5 kg)	35,564	5.8	6,336	8.4	1.450	1.412 - 1.489
	High birthweight (4 - 4.5 kg)	59,378	9.6	5,574	7.4	0.764	0.743 - 0.785
	Very or extremely high birthweight (> 4.5 kg)	10,840	1.8	1,016	1.3	0.763	0.715 - 0.813
	Missing birthweight	75,774	10.9	7,741	9.3	0.847	0.827 - 0.867
Child gestational age	Term (37 - 41 weeks)	523,778	87.4	64,119	86.5	0.990	0.982 - 0.999
	Very or extremely preterm (< 31 weeks)	6,413	1.1	1,007	1.4	1.271	1.189 - 1.358
	Pre-term (32 - 36 weeks)	36,519	6.1	5,525	7.5	1.224	1.190 - 1.259
	Late term (42 - 44 weeks)	32,850	5.5	3,449	4.7	0.850	0.820 - 0.880
	Missing gestational age	93,218	13.5	9,458	11.3	0.841	0.824 - 0.859
Adult-specific variables							
Adult on SM treatment database	Yes	0	0.0	48,876	58.5		
Adult SM-related criminal court case	Yes	0	0.0	24,136	28.9		

Adult anxiety	Yes	362,064	52.3	68,565	82.1	1.570	1.557 - 1.583
Adult depression	Yes	457,258	66.0	76,881	92.0	1.394	1.383 - 1.405
Adult self-harm	Yes	32,499	4.7	24,380	29.2	6.220	6.117 - 6.324
Adult learning difficulties	Yes	1,300	0.2	732	0.9	4.668	4.264 - 5.111
Adult neurodevelopmental	Yes	6,793	1.0	3,828	4.6	4.672	4.491 - 4.861
Adult suicide	Yes	1,244	0.2	1,449	1.7	9.657	8.953 - 10.417
Child-specific variables							
Child anxiety	Yes	55,054	7.9	7,271	8.7	1.095	1.069 - 1.122
Child depression	Yes	67,304	9.7	8,544	10.2	1.053	1.029 - 1.076
Child self-harm	Yes	12,323	1.8	2,647	3.2	1.781	1.708 - 1.857
Child learning difficulties	Yes	1,853	0.3	310	0.4	1.387	1.230 - 1.564
Child neurodevelopmental issues	Yes	14,528	2.1	3,008	3.6	1.717	1.651 - 1.785
Child suicide	Yes	170	0.0	20	0.0	0.975	0.614 - 1.550
Child SM-related criminal court case	Yes	3,398	0.5	582	0.7	1.420	1.301 - 1.551
Child on SM treatment database	Yes	10,098	1.5	2,841	3.4	2.333	2.238 - 2.432
Child Receiving Care and Support	Yes	28,248	4.1	13,623	16.3	3.998	3.918 - 4.081
Child CRCS SM-related record	Yes	2,288	0.3	1,445	1.7	5.236	4.902 - 5.593
Parent CRCS SM-related record	Yes	6,960	1.0	7,536	9.0	8.977	8.689 - 9.274
Child CRCS category of need	Abuse or neglect	13,437	47.6	7,625	56.0	1.177	1.144 - 1.210
	Child disability or illness	5,293	18.7	755	5.5	0.296	0.274 - 0.319
	Parental disability or illness	755	2.7	550	4.0	1.511	1.353 - 1.686
	Family in acute stress	3,509	12.4	1,705	12.5	1.008	0.951 - 1.068
	Family dysfunction	3,810	13.5	2,457	18.0	1.337	1.271 - 1.407
	Child socially unacceptable behaviour	947	3.4	343	2.5	0.751	0.664 - 0.850
	Low income	31	0.1	20	0.1	1.338	0.763 - 2.347
	Absent parenting	430	1.5	158	1.2	0.762	0.635 - 0.914
	Adoption disruption	36	0.1	10	0.1	0.576	0.286 - 1.161
Child Protection Register record	Yes	6,708	1.0	5,653	6.8	6.987	6.744 - 7.239
Child Looked After Wales	Yes	11,546	1.7	6,283	7.5	4.512	4.375 - 4.652

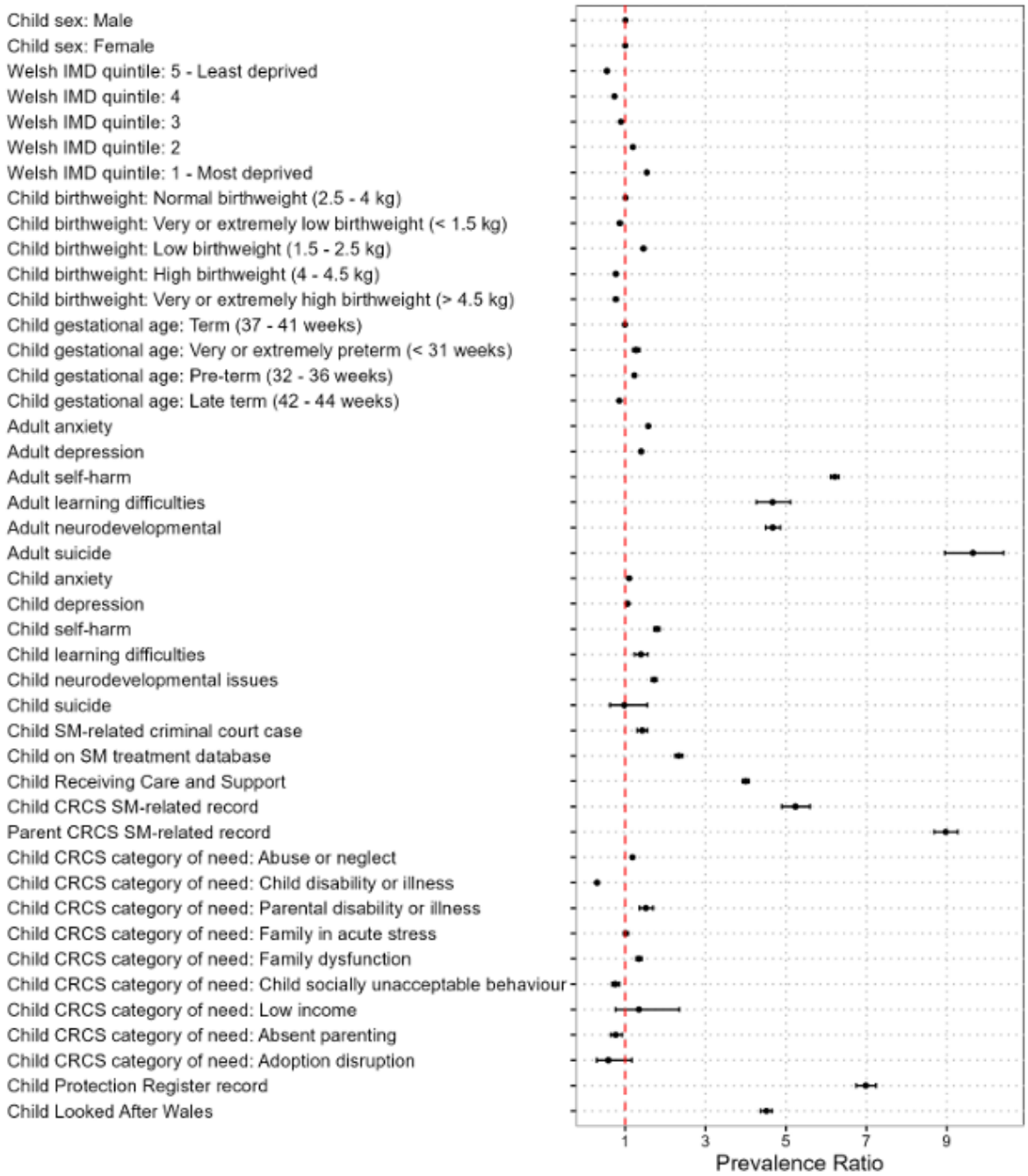
*SM = substance misuse, IMD = index of multiple deprivation, CRCS = Child in Children Receiving Care and Support or Children in Need Wales (CINW)

N.B. The prevalence for variables with missing data were calculated after removing the missing count. Upper and lower 95% confidence intervals > 1 for the prevalence ratio imply the variable is more prevalent in children in SMHH than the rest of the population (with statistical significance).

Appendix B

Graphical representation of prevalence ratios of related to children in substance misuse households (SMHH), compared with no SM households.

The red vertical dashed line denotes a prevalence ratio of 1 (no difference between the two groups), and 95% confidence intervals are shown.



SM = substance misuse
IMD = index of multiple deprivation
CRCS = Child in either Children Receiving Care and Support or Children in Need Wales (CINW) datasets.

Appendix C

Codes used definitions of events

The International Classification of Diseases 10th Revision (ICD-10) was used to classify substance misuse deaths and hospital admissions as follows:

Drug misuse deaths

Condition	ICD-10 Code
All deaths in which the following conditions are noted as the underlying cause	
Mental and behavioural disorders due to opioids, cocaine, sedatives or hypnotics, cocaine, other stimulants including caffeine, hallucinogens, multiple drug use	F11-F16, F19
All deaths in which the following conditions are noted as the underlying cause AND where codes F11-F16, F19, T40, T424, T436 are also recorded on the death certificate	
Mental and behavioural disorders due to volatile solvents	F18
Accidental poisoning by drugs, medicaments and biological substances	X40-X44
Intentional self-poisoning by drugs, medicaments and biological substances	X60-X64
Assault by drugs, medicaments and biological substances	X85
Poisoning by drugs, medicaments and biological substances, undetermined intent	Y10–Y14

Alcohol specific death

Condition	ICD-10 Code
Mental and behavioural disorders due to use of alcohol	F10
Alcoholic liver disease	K70
Accidental poisoning by and exposure to alcohol	X45
Intentional self-poisoning by and exposure to alcohol	X46
Poisoning by and exposure to alcohol, undetermined intent	Y15
Alcohol-induced pseudo-Cushing's syndrome	E244
Degeneration of nervous system due to alcohol	G312
Alcoholic polyneuropathy	G621
Alcoholic myopathy	G721
Alcoholic cardiomyopathy	I426
Alcoholic gastritis	K292
Alcohol-induced acute pancreatitis	K852
Alcohol-induced chronic pancreatitis	K860
Foetal alcohol syndrome (dysmorphic)	Q860
Excess alcohol blood levels	R780

Hospital admissions

Condition	ICD-10 Code
Any mental/behavioural condition (NHS Digital definition)	F11-16, F18, F19
Any poisoning by illicit drugs (NHS Digital definition)	T400-T403, T405-T409, T436
Alcoholic liver disease	K70
Accidental poisoning by and exposure to alcohol	X45
Intentional self-poisoning by and exposure to alcohol	X65
Poisoning by and exposure to alcohol, undetermined event	Y15
Evidence of alcohol involvement determined by blood alcohol	Y90
Evidence of alcohol involvement determined by level of intoxication	Y91
Alcohol-induced pseudo-Cushing's syndrome	E244
Degradation of nervous system due to alcohol	G312
Alcoholic polyneuropathy	G621
Alcoholic myopathy	G721
Alcoholic cardiomyopathy	I426
Alcoholic gastritis	K292
Alcoholic induced acute pancreatitis	K852
Alcohol-induced chronic pancreatitis	K860
Foetal alcohol syndrome (dysmorphic)	Q860
Excess blood alcohol levels	R780
Ethanol poisoning	T510
Methanol poisoning	T511
Toxic effect of alcohol, unspecified	T519

Emergency Department Admissions

Condition	Code
Poisoning or overdose - alcohol	10A
Poisoning or overdose – prescribed drug	10B
Poisoning or overdose – non-prescribed/purchased drug	10C
Poisoning or overdose – illicit drug	10D
Poisoning or overdose – other or unspecified	10Z
Chronic Alcohol Abuse	31A
Chronic Drug Abuse	31B

BOLD

Better Outcomes through Linked Data

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