



Emergency department utilisation by homeless children in Dublin, Ireland: a retrospective review

Niamh O' Brien ,¹ Nuala Quinn,¹ Birgitta Joyce,¹ Helen Bedford ,² Ellen Crushell^{3,4}

To cite: O' Brien N, Quinn N, Joyce B, *et al.* Emergency department utilisation by homeless children in Dublin, Ireland: a retrospective review. *BMJ Paediatrics Open* 2022;**6**:e001368. doi:10.1136/bmjpo-2021-001368

► Additional supplemental material is published online only. To view, please visit the journal online (<http://dx.doi.org/10.1136/bmjpo-2021-001368>).

Received 10 December 2021
Accepted 8 February 2022



© Author(s) (or their employer(s)) 2022. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

¹Paediatric Emergency Medicine, Children's Health Ireland at Temple Street, Dublin, Ireland
²Great Ormond Street Institute of Child Health, University College London, London, UK

³Metabolic Medicine, Children's Health Ireland at Temple Street, Dublin, Ireland

⁴School of Medicine, University College Dublin, Dublin, Ireland

Correspondence to

Dr Niamh O' Brien;
niamhobrien36@gmail.com

ABSTRACT

Introduction Despite increasing prevalence, European family homelessness remains under-researched.

Methods A retrospective review was performed of homeless children attending a paediatric emergency department in Dublin, Ireland, from 1 January 2017 to 31 December 2020. Comparison was made with a random cohort of 1500 non-homeless paediatric attendances in 2019. Homelessness was defined using the European Typology of Homelessness and Housing Exclusion, including those with addresses of no fixed abode, government homeless accommodation and certain residential settings. The objectives were to compare presentations between homeless and non-homeless children. We were interested in determining differences regarding demographics, healthcare utilisation, clinical presentation and outcomes.

Results Of 197 437 attendances 3138 (1.59%) were homeless. Compared with the non homeless, homeless children were less likely to be ethnically Irish (37.4% vs 74.6%, $p<0.001$) or have been born in Ireland (82.3% vs 96.2%, $p<0.001$). Irish Travellers (3% vs 0.8%), Roma (22.5% vs 2.4%) and black (21.1% vs 4.2%) ethnicities were over-represented ($p<0.001$) in the homeless cohort. Homeless children were younger (age <12 months: 26% vs 16%; $p<0.001$), less likely to be fully vaccinated (73.6% vs 81.9%, $p<0.001$) and have registered general practitioners (89.7% vs 95.8%, $p<0.001$). They were more likely to represent within 2 weeks (15.9% vs 10.5%, $p<0.001$), and use ambulance transportation (13.2% vs 6.7%, $p<0.001$). Homeless children had lower acuity presentations (triage category 4–5: 47.2% vs 40.7%, $p<0.001$) and fewer admissions (5.9% vs 8.4%, $p<0.001$) than non-homeless children.

Discussion Infants, Irish Travellers, Roma and black ethnicities were over-represented in homeless presentations. Homeless children had increased reliance on emergency services for primary healthcare needs.

INTRODUCTION

In the absence of an official definition, the European Typology of Homelessness and Housing Exclusion (ETHOS) is increasingly being used. This encompasses all living situations amounting to homelessness, including rooflessness, houselessness, insecure and inadequate housing.¹ Ireland only considers

What is known about the subject?

- Homeless adults are mostly males with chronic physical and psychiatric disease, complex social issues, high rates of emergency department attendance and poor primary healthcare engagement.
- Family homelessness is a growing problem across Europe. It is characterised by female lone-parent families, and often related to failure of the private rental sector.
- Homelessness in childhood is associated with developmental delay, behavioural issues, poor nutrition, respiratory illnesses, infections, underimmunisation, dental decay and poor adult mental and physical health.

What this study adds?

- Similar to lone adult homeless populations, we found homeless children had reduced engagement with primary and preventive healthcare, relying on emergency healthcare for minor illnesses.
- Our data demonstrates over-representation of Irish Travellers, Roma and black ethnicities among homeless children, indicating the evolving trend of progression from migrant to homelessness.
- Homeless children had lower acuity, less complex presentations than non-homeless children. Increased infants in the homeless group indicates the need to improve community maternal support.

those in government emergency accommodation as homeless, excluding many who would be considered homeless using the ETHOS typology, such as asylum seekers, couch-surfers and some residential care settings.^{1–3}

Family homelessness refers to homeless adults living with dependent children.² Family homelessness is linked to poverty, and not typically characterised by prior experience of complex physical, medical or psychosocial needs, unlike lone adult homelessness. Most homeless families are led by single mothers. Women rarely sleep rough, tending



to exhaust informal supports before soliciting official services, rendering family homelessness less visible than lone adult homelessness.^{2,4}

Although Irish homelessness traditionally comprised young single white Irish males,^{5,6} certain groups, including Roma, Irish Traveller and migrant populations, are over-represented.^{3,7,8} Irish Travellers are an ethnic group representing under 1% of the Irish population. They experience widespread discrimination, and have shorter life expectancies (8-year discrepancy) and higher infant mortality (3.6-fold) than the general population.⁸⁻¹⁰ A recent report found 86% of Irish Traveller accommodation (n=396) would be considered homeless using the ETHOS typology.⁹

Irish family homelessness is characterised by lone-parent (58%–60%) female-headed (70%–82%) families.^{3,11} Most (87%) live in government emergency accommodation, comprising hotels, guesthouses or family hubs. Family hubs are designated emergency accommodation for homeless families.³ Mean duration of stay in emergency accommodation is seventeen months, with 39%–67% staying more than 1 year.^{3,12}

Reasons for Irish family homelessness include private rental issues (50%–58%) and family circumstance (30%–42%), including domestic violence (6%), relationship breakdown (15%–24%) and overcrowding (8%–9%). Most families (68%) report their last stable home to have been in the private rental sector.^{3,11}

From 2014 to 2021, the number of children living in emergency homeless accommodation increased by 215%, compared with a 145% increase for adults.¹³ From 2017 to 2018, a 29% increase in homeless children emergency department (ED) attendances was noted.¹⁴ In December 2021, there were 1077 registered homeless families in Ireland. Parents living with dependent children accounted for 27% of homeless adults, and children represented 27% of homeless people.¹⁵ Non-Irish family homelessness is increasing. In 2018, 39%–56% of homeless families were non-Irish (European Union (EU)=15%–20%; non-EU=19%–41%),^{3,11} contrasting with population demographics (Irish=88%; EU=9%; non-EU=3%).¹⁶

Homeless adults under-utilise primary and outpatient healthcare.^{5,17} They have increased ED attendances, emergency admissions, morbidity and mortality compared with the non-homeless population.^{5,18,19}

Deprivation is associated with increased paediatric ED attendances, self-referrals and emergency admissions.²⁰⁻²⁴ Inadequate childhood housing, including homelessness, increases the risk of severe physical and mental ill health by 25%.²⁵ Childhood homelessness is associated with prematurity, low birth weight, poor nutrition, anaemia, dental issues, respiratory illness, under-immunisation, infectious disease, developmental delay and behavioural issues.²⁶⁻³⁰

Direct Provision, the Irish international protection system, provides centrally allocated accommodation and living expenses to asylum seekers.³¹ Paediatricians have

expressed concerns regarding the health, well-being and safeguarding of children living in Direct Provision for prolonged periods of time.^{32,33}

Adverse childhood events are associated with long term consequences on health and well-being, including increased risk taking behaviours, poor mental health, teenage pregnancies and adult homelessness.⁶

Family homelessness is increasing, with children representing a third of homeless populations in many European countries.^{2,13,28} Migration and housing supply are key factors.^{3,11}

Our objectives were to compare ED presentations between homeless and non-homeless children. We were interested in determining differences regarding demographics, healthcare utilisation, clinical presentation and outcomes.

METHODS

Setting

We retrospectively reviewed attendances to a tertiary paediatric (<16 years) ED in Dublin, Ireland. This ED serves a deprived area of north inner-city Dublin, with 54 000 annual attendances.

Homelessness definition

Using the ETHOS typology, homelessness was defined as those who resided in government homeless accommodation, women's refuges, drug rehabilitation centres, direct provision or had no fixed abode.¹ We defined emergency homeless accommodation as hotels or guesthouses. Family hubs were recorded separately. In Ireland an infant may live in prison with its mother until 1 year of age; these children were considered homeless.³⁴ Families who had informal living arrangements were considered homeless if they self-identified as such. Irish Travellers and Roma were considered homeless if they self-identified as homeless, or were living in emergency homeless accommodation.

Addresses were recorded by administrative staff on ED registration. Addresses of children who had informal non-permanent living arrangements and self-identified as homeless were recorded as 'care of (address)'. Commercial addresses were investigated as to whether they were homeless accommodation. We likely underestimated homeless attendances due to parents not declaring themselves as homeless.

Ethnicity

Ethnicity was self-reported and recorded by administrative staff on ED registration. Options included white Irish, Irish Traveller, European, Roma, Asian, black / African and other non-Irish.

Vaccination

Vaccination was recorded with respect to the age-appropriate schedule. Options included unvaccinated, incomplete, complete or not applicable (referring to

Table 1 Emergency department utilisation by children under 16 years

Attendances	Year									
	2017		2018		2019		2020		2017–2020	
	n	%	n	%	n	%	n	%	n	%
Total	54222		53115		54822		35278		197437	
Homeless	650	1.2	840	1.58	1129	2.06	519	1.47	3138	1.59

infants under 8 weeks who were too young to be vaccinated).

Data extraction

ED attendances from 1 January 2017 to 31 December 2020 were screened. Healthcare records of those with homeless and ‘care of’ addresses were reviewed.

Comparison was made with 1500 non-homeless attendances. The first 750 non-homeless attendances in January and July were selected, accounting for seasonal variation. Given the changes in ED attendances during the COVID-19 pandemic, 2019, rather than 2020, was selected as a comparison year.

Analysis

Data were analysed using SPSS version 27. Numerical data were summarised using medians, IQR and Mann-Whitney tests as there were many outliers and the assumptions of the t-test were not met. Categorical variables were

analysed using χ^2 or Fisher’s exact tests. Significant differences for non-binary categorical variables were assessed by comparing adjusted residuals. Proportions were presented as valid percentages, accounting for missing data. CIs were calculated using the exact method.³⁵

Patient and public involvement

Neither patients nor the public were involved in the design, conduct or reporting of this research.

RESULTS

Homeless attendances from 2017 to 2020 (n=3138, 1.59% attendances) were compared with 1500 non-homeless attendances from 2019 (table 1).

Demographics

Homeless children were younger than non-homeless children (median Mdn=29 vs 60 months, $p<0.001$), with

Table 2 Comparison of sociodemographic characteristics between non-homeless and homeless children under 16 years attending ED

Variable	Non-homeless n=1500			Homeless n=3138			P value
	n	%	95% CI	n	%	95% CI	
Female	703	46.9	44.3 to 49.4	1442	46	44.2 to 47.8	0.559
Age							
Months Mdn (IQR)	60		(21–120)	29		(12–60)	<0.001
≤12 months	245	16.3	14.6 to 18.3	808	25.7	24.3 to 27.3	<0.001
Irish ethnicity	652	74.5	71.5 to 77.3	740	37.4	35.3 to 39.6	<0.001
Born in Ireland	457	96.2	94.1 to 97.6	1297	82.3	80.3 to 84.1	<0.001
Ethnicity							χ^2 (6)=501 N=2851 $p<0.001^*$
White Irish	645	73.7	70.7 to 76.5	681	34.5	32.4 to 36.6	
Irish Traveller	7	0.8	0.4 to 1.6	59	3	2.3 to 3.8	
Roma	21	2.4	1.6 to 3.6	445	22.5	20.7 to 24.4	
White European	79	9	7.3 to 11.1	117	5.9	5 to 7.1	
Black	37	4.2	3.1 to 5.8	416	21.1	19.3 to 22.9	
Asian	77	8.8	7.1 to 10.9	170	8.6	7.5 to 9.9	
Other	9	1	0.5 to 1.9	88	4.5	3.6 to 5.5	

*Analysis of adjusted residuals revealed significant differences were due to differences in white Irish, Irish traveller, Roma and black ethnicities.

ED, emergency department.



Table 3 Homelessness duration and accommodation for children under 16 years attending ED

Variable	Homeless n=3138		95% CI
	n	%	
Homelessness duration if age ≥1 year			
Documented	560	23.5	21.8 to 25.2
≥1 year*	439	78.4	74.8 to 81.6
Accommodation			
Emergency†	2273	72.4	70.8 to 74
Care of relative	271	8.6	7.7 to 9.7
Family hub‡	264	8.4	7.5 to 9.4
Direct Provision§	179	5.7	4.9 to 6.6
Drug rehabilitation	63	2	1.6 to 2.6
Child residential home¶	30	1	0.7 to 1.4
Women's refuge	25	0.8	0.5 to 1.2
No fixed abode	16	0.5	0.3 to 0.8
Prison with mother**	16	0.5	0.3 to 0.8
Child detention centre	1	0.03	0.01 to 0.2

*Homelessness duration for ≥1 year was presumed if a patient attended ED on more than one occasion with a homeless address over the period of at least a year.

†Emergency homeless accommodation provided by local authorities in commercial properties.

‡Family hubs are designated congregate emergency homeless accommodation for families.

§Direct Provision provides accommodation and living expenses to asylum seekers in Ireland.

¶Children in one residential home were not allowed to stay onsite during the day and thus effectively homeless.

**In Ireland an infant may live in prison with its mother until 12 months of age.

ED, emergency department.

over-representation of infants under 1 year (25.7% vs 16.3%, $p<0.001$) (table 2).

Although homeless children were less likely to be of Irish ethnicity (37.4% vs 74.6%, $p<0.001$), 82.3% were born in Ireland. Irish Traveller (3% vs 0.8%), Roma (22.5% vs 2.4%) and black (21.1% vs 4.2%) ethnicities were over-represented in homelessness, $p<0.001$ (table 2).

Most homeless children (72.4%) lived in emergency accommodation; 8.6% with relatives, 8.4% in family hubs, and 5.7% were in Direct Provision. Excluding infants under 1 year, 78.4% had been homeless for over 1 year (table 3).

Primary healthcare

Compared with the non-homeless, homeless children were less likely to have registered general practitioners (GPs) (89.7% vs 95.8%, $p<0.001$). They were less likely to be fully vaccinated (73.6% vs 81.9%) and more likely to be incompletely vaccinated (18.5% vs 13.7%) or unvaccinated (3% vs 0.9%, $p<0.001$) when compared with their age-appropriate vaccination schedule. They were

also more likely to have medical cards (47% vs 29.7%, $p<0.001$) (table 4).

The Irish government provides a medical card system which grants free primary healthcare, medications and ED attendances, which would otherwise incur a fee. Medical cards are means tested, with certain medical conditions and criteria, including homelessness, asylum seekers in direct provision and children in foster care, automatically qualifying. The medical card supplements the GP visit card, which entitles those aged under six or over seventy years to free primary healthcare.³⁶

Emergency healthcare

We observed that homeless children had more attendances per patient (total attendances=3138; patients=1567; primary attendances=49.9%) when compared with non-homeless children (total attendances=1500; patients=1420; primary attendances=94.7%) (table 4).

Compared with the non-homeless, homeless children had increased ED attendances (≥4 visits within 6 months: 9.7% vs 5.4%, $p<0.001$), representations within 2 weeks (15.9% vs 10.5%, $p<0.001$) and ambulance transportation (13.2% vs 6.7%, $p<0.001$). They were under-represented in urgent^{1 2} triage categories (15.1% vs 19.2%), and over-represented in non-urgent^{4 5} categories (47.2% vs 40.7%), $p<0.001$. There were no differences regarding pre-existing medical conditions (table 4).

Homeless children were less likely than non-homeless children to attend with injuries (19% vs 29.9%), and more likely to attend with viral respiratory illness (15.2% vs 9.3%) and wheezing (8.6% vs 4.7%), $p<0.001$ (table 5). Homeless children were more likely to leave ED prior to assessment (5.1% vs 3.7%, $p=0.027$), and less likely to require hospital ward admission (5.9% vs 8.4%, $p<0.001$) (table 4). There were no differences regarding psychiatric or toxicology presentations.

A logistic regression model revealed non-Irish ethnicity, younger age, medical card possession, not having a GP, and ambulance transportation were significantly associated with homelessness. Non-Irish ethnicity was the strongest predictor. Vaccination was not found to be independently associated with homelessness. Vaccination has many confounders, including some of the significant predictors, which may have impacted this result (online supplemental table 1).

DISCUSSION

When comparing ED presentations between homeless and non-homeless children we found important differences in socio-demographic characteristics, healthcare utilisation, clinical presentation and discharge outcomes.

From 2017 to 2019, homeless attendances increased by 74%, contrasting with a 1% increase in ED attendances, and an 11% increase in Irish child homelessness during this period.¹³ This likely reflects increased child homelessness, which could be compounded by increased health issues or reduced primary healthcare access in homeless

Table 4 Comparison of clinical details of ED presentation between non-homeless and homeless children under 16 years attending ED

Variable	Non-homeless n=1500			Homeless n=3138			P value
	n	%	95% CI	n	%	95% CI	
GP	1431	95.8	94.6 to 96.7	2816	89.7	88.6 to 90.8	<0.001
Medical card	443	29.7	27.4 to 32	1469	47	45.3 to 48.8	<0.001
No pre-existing medical condition	1084	72.3	69.9 to 74.5	2314	73.7	72.2 to 75.3	0.289
Vaccination							χ^2 (3)=46 n=4539 p<0.001
Unvaccinated	13	0.9	0.5 to 1.5	91	3	2.4 to 3.6	
Incomplete	203	13.7	12 to 15.5	565	18.5	17.2 to 19.9	
Complete	1215	81.9	79.8 to 83.8	2249	73.6	72 to 75.2	
NA*	53	3.6	2.7 to 4.6	150	4.9	4.2 to 5.7	
Primary attendance†	1420	94.7	93.4 to 95.7	1567	49.9	48.2 to 51.7	
Ambulance	100	6.7	5.5 to 8.1	414	13.2	12.1 to 14.4	<0.001
Representation‡	158	10.5	9.1 to 12.2	500	15.9	14.7 to 17.3	<0.001
Attendances last 6 months							
Mdn (IQR)	1	(0–1)		1	(0–2)		<0.001
≥4	81	5.4	4.4 to 6.7	304	9.7	8.7 to 10.8	<0.001
Triage category							χ^2 (5)=47 N=4610 p<0.001
None/DNW	58	3.9	3 to 5	209	6.7	5.9 to 7.6	
1	10	0.7	0.4 to 1.2	14	0.4	0.3 to 0.8	
2	275	18.5	16.6 to 20.5	458	14.7	13.5 to 16	
3	541	36.3	33.9 to 38.8	968	31	29.4 to 32.7	
4	594	39.9	37.4 to 42.4	1413	45.3	43.6 to 47	
5	12	0.8	0.5 to 1.4	58	1.9	1.4 to 2.4	
DNW	55	3.7	2.8 to 4.7	161	5.1	4.4 to 6	0.027
Outcome							χ^2 (6)=36 N=4638 p<0.001
DNW triage	9	0.6	0.3 to 1.1	20	0.6	0.4 to 1	
DNW medical	46	3.1	2.3 to 4.1	141	4.5	3.8 to 5.3	
Discharge	1073	71.5	60.2 to 73.8	2384	76	74.5 to 77.4	
ED review clinic	98	6.5	5.4 to 7.9	214	6.8	6 to 7.8	
OPD	145	9.7	8.3 to 11.3	189	6	5.2 to 6.9	
Admission ward	126	8.4	7.1 to 9.9	186	5.9	5.2 to 6.8	
Admission PICU	3	0.2	0.1 to 0.6	4	0.1	0.1 to 0.3	
Death	0	0	0 to 0.3	0	0	0 to 0.1	
LOS Mdn (IQR)	2	(1–3)		3	(1–6)		0.001

*Too young (age <8 weeks) for vaccination.

†Primary attendances address patient numbers rather than attendances. The percentage represents what proportion of attendances were primary attendances.

‡Representation with same issue within 2 weeks.

DNW, did not wait.; ED, emergency department; GP, general practitioner; LOS, length of stay; Mdn, median; NA, not available; OPD, outpatient department; PICU, paediatric intensive care unit.

**Table 5** Comparison of top 10 diagnoses between non-homeless and homeless children under 16 years attending ED*

Rank	Non-homeless n=1500			Homeless n=3138			P value		
	n	%	95% CI	n	%	95% CI			
1	Injury	448	29.9	27.6 to 32.3	Injury	594	19	17.6 to 20.4	χ^2 (17)=175 N=4632 p<0.001
2	Resp viral	139	9.3	7.9 to 10.8	Resp viral	475	15.2	14 to 16.5	
3	Other viral	135	9	7.7 to 10.6	Other viral	279	8.9	8 to 10	
4	Infection	88	5.9	4.8 to 7.2	Wheezing	268	8.6	7.6 to 9.6	
5	Well child	84	5.6	4.6 to 6.9	Gastro	263	8.4	7.5 to 9.4	
6	Gastro	78	5.2	4.2 to 6.4	Infection	194	6.2	5.4 to 7.1	
7	RTI	73	4.9	3.9 to 6.1	Injury review	190	6.1	5.3 to 7	
8	Wheezing	71	4.7	3.8 to 5.9	RTI	186	5.9	5.2 to 6.8	
9	Injury review	53	3.5	2.7 to 4.6	Well child	134	4.3	3.6 to 5	
10	Seizure	32	2.1	1.5 to 3	Constipation	55	1.8	1.1 to 1.9	
	None—DNW	50	3.3	2.5 to 4.4	None—DNW	143	4.6	3.9 to 5.4	

Resp viral=viral respiratory tract infection, including upper respiratory tract infection and croup, excluding wheezing. Well child=no identifiable illness or injury. Gastro=viral gastroenteritis. Wheezing=bronchiolitis/viral wheeze/asthma. Bacterial infection=non-respiratory bacterial infection.

*Diagnoses were derived from reviewing clinical notes, not a hospital coding system. DNW, did not wait; RTI, bacterial respiratory tract infection.

children. It may also reflect improved identification of homeless children attending our ED.

Homeless children were younger than non-homeless children. A baby is a known trigger for family homelessness.^{3 4 11} Over-representation of infants in the homeless cohort may reflect a lack of community support for young homeless parents.

Correlating with previous literature, we demonstrated homeless over-representation of Irish Travellers,^{3 6 8 26} the Roma⁷ and non-natives.^{2 3 11} Irish Traveller child homeless representation was lower (3%) than previously reported for homeless adults (4%–15%).^{3 6 8 9 26}

Despite most of the homeless cohort being born in Ireland, only 37% had Irish ethnicity. We report lower Irish ethnicity (37.5%) than previously described in adult (84%),⁶ or family (44%–61%),^{3 11} homeless populations in Ireland. This correlates with European literature reporting over-representation of migrants in family versus lone adult homelessness.^{2 4 28} This could affect health literacy and explain why only 47% of homeless children had medical cards, compared with 77% of homeless adults, despite all being entitled to one.^{6 7} Maximising social prescribing schemes, which link healthcare and non-clinical community services, could enable these families to access the services to which they are entitled.^{3 7}

Over-representation of homeless children with lower acuity presentations not needing admission likely indicates increased use of ED for issues more appropriate to primary care, when compared with non-homeless children. This is supported by increased injuries and patient number to attendance ratios in the non-homeless cohort. Emergency homeless accommodation usually moves

families away from their communities, compromising GP accessibility. The chaotic nature and frequent change of emergency accommodation makes keeping appointments difficult. Many families, especially in the inner city, are closer to a paediatric ED than their own GP. Most GPs do not provide interpreters. Anecdotally this is a factor in preferential ED attendance for some of our non-native patients.

Increased viral respiratory illnesses in homeless children could reflect suboptimal living conditions and overcrowding, which have been reported by parents in emergency homeless accommodation.^{3 8}

Increased ambulance transportation among homeless families could be associated with reduced car ownership, and the cost of public transport or taxis.

Lone adult homelessness is associated with increased emergency healthcare utilisation, morbidity and mortality compared with non-homeless populations.^{6 19} Although our data demonstrates increased emergency healthcare utilisation, homeless children had lower morbidity, with no difference in mortality, pre-existing medical conditions, psychiatric or toxicology presentations. This is likely because family homelessness is not typically characterised by the prior medical or psychosocial complexities that predominate lone adult homelessness.^{2 6}

Our findings, and large cohort, make an important contribution to an improved understanding of this population. As this study was conducted at a single centre in Dublin, results are not generalisable to wider Irish or European settings. However, the large sample size and the fact that most homeless families (74%) live in Dublin make these findings useful to inform practice locally, and

it is likely that many of the issues are relevant in other settings.¹⁵

It was not possible to distinguish deprivation from homelessness. This may have impacted differentiation between homeless and non-homeless populations, given our deprived catchment area. Despite this, our non-homeless medical card rate (30%) correlated with national medical card coverage in 0–15 year olds.³⁹

Information on ethnicity and ‘born in Ireland’ was missing for 38.5% and 55.8% respectively of the cohort. Ethnicity was recorded by administrative staff on registration. Place of birth was sometimes recorded in the clinical notes. Despite this, we still had information on these characteristics for large numbers (ethnicity n=2851; born in Ireland n=2051).

Although we aimed to include all homeless attendances from 2017 to 2020, homeless parents may have provided residential addresses, not declaring themselves as homeless. This was not a case–control study. Our non-homeless comparison group only represented 0.8% of total attendances during the study period.

From 2019 to 2020, attendances reduced by 36%, likely due to the COVID-19 pandemic (table 1). Reduced injury and respiratory presentations were observed during this period. This prompted us to select 2019 as a more valid comparison year for the non-homeless cohort. Despite COVID-19, the proportion of homeless children represented remained relatively constant. Although it is possible that the pandemic had a greater impact on homeless children, we were unable to assess this.

In response to the increasing ED attendances by homeless children over recent years, initiatives have been established by the hospital Children’s Health Ireland, the training body (The Faculty of Paediatrics at the Royal College of Physicians of Ireland), and the Health Service Executive towards developing an integrated inclusion paediatric service. These include the development and funding of a paediatric fellowship programme in inclusion health, and a community outreach clinic for marginalised children.

More research needs to be undertaken on the clinical needs of homeless children. A greater understanding of how this cohort interacts with healthcare services would enable improved tailored service provision.

CONCLUSION

Homeless children, particularly infants, are high users of paediatric ED. The relative lack of acuity of their presentations compared with non-homeless children suggests a need to better structure community, primary care and social services to care for these families in a more inclusive way.

Acknowledgements We would like to thank all the staff and patients in our emergency department who made this study possible. We hope their efforts will enable us give a voice to the homeless children of Dublin.

Contributors NO’B, the lead author and guarantor, was responsible for study design, data collection, cleaning, analysis and interpretation, and drafting the initial

manuscripts and reviewer responses, which were subsequently reviewed by the other authors. BJ developed a system to identify homeless addresses and designed search functions for these homeless addresses on the electronic healthcare record. BJ compiled the initial list of homeless children, which was subsequently enhanced and cleaned by NO’B. BJ also contributed to data interpretation, critically revising the manuscript for important intellectual content, approving the final manuscript, and responding to the reviewer’s comments. HB, EC and NQ all contributed to the study design, data interpretation, critically revising the manuscript for important intellectual content, approving the final manuscript, and responding to the reviewer’s comments. EC was the senior author who oversaw all of the above. All authors agreed to be accountable for all aspects of the work, and will cooperate with any issues regarding accuracy or integrity.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests No, there are no competing interests.

Patient consent for publication Not applicable.

Ethics approval This study was approved by the Research and Ethics Committee of Children’s Health Ireland at Temple Street.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as online supplemental information. Not applicable.

Supplemental material This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iDs

Niamh O’ Brien <http://orcid.org/0000-0002-5034-1757>

Helen Bedford <http://orcid.org/0000-0003-0908-1380>

REFERENCES

- 1 Fédération Européenne d’Associations Nationales Travaillant avec les Sans-Abri (FEANTSA). Ethos typology on homelessness and housing exclusion, 2005. Available: <https://www.feantsa.org/en/toolkit/2005/04/01/ethos-typology-on-homelessness-and-housing-exclusion> [Accessed 24 Nov 2021].
- 2 European Observatory on Homelessness. *Family homelessness in Europe: EOH comparative studies on homelessness*, 2017.
- 3 Long AE, Sheridan S, Gambi L. *Family homelessness in Dublin: causes, housing histories, and finding a home*. Focus Ireland, 2019.
- 4 Lambert S, O’Callaghan D, Jump O. *Young families in the homeless crisis: challenges and solutions*. Focus Ireland, 2018.
- 5 Ní Cheallaigh C, Cullivan S, Sears J, et al. Usage of unscheduled hospital care by homeless individuals in Dublin, Ireland: a cross-sectional study. *BMJ Open* 2017;7:e016420.
- 6 O’Reilly F, Barror S, Hannigan A. *Homelessness: an unhealthy state. health status, risk behaviours and service utilisation among homeless people in two Irish cities*. Dublin: Partnership for Health Equity, 2015.
- 7 Department of Justice and Equality. *Pavee point: traveller and Roma centre*. Roma in Ireland: A National Needs Assessment, 2018.
- 8 Pavee Point: Traveller and Roma Centre. *Racial discrimination against Irish travellers and Roma. alternative report: a response to Ireland’s combined fifth to ninth periodic reports to the UN Committee on the elimination of all forms of racial discrimination*, 2019.
- 9 Harvey B. *The traveller community and homelessness*. Pavee Point Traveller and Roma Centre, 2021.
- 10 European Union Agency for Fundamental Rights. *Travellers in Ireland: key results from the Roma and travellers survey 2019, 2020*.



- 11 Dublin Region Homeless Executive. *A profile of families experiencing homelessness in the Dublin region: 2016-2018 families*, 2019.
- 12 Department of Housing Planning and Local Government. *Homeless Quarterly progress report quarter 4 2021*, 2022.
- 13 Focus Ireland. Latest figures on homelessness in Ireland, 2022. Available: <https://www.focusireland.ie/resource-hub/latest-figures-homelessness-ireland/> [Accessed 28 Jan 2022].
- 14 Hayes A-M, Joyce B, McNamara R. P264 Impact of homelessness on children presenting to a tertiary emergency department. *Archives of Disease in Childhood* 2019;104:A262-3.
- 15 Department of Housing Local Government and Heritage. Monthly homelessness report: December 2021; 2022.
- 16 Central Statistics Office. Population and migration estimates 2018. Available: <https://www.cso.ie/en/releasesandpublications/er/pme/populationandmigrationestimatesapril2018/> [Accessed 17 Mar 2021].
- 17 O'Carroll A, Wainwright D. Making sense of street chaos: an ethnographic exploration of homeless people's health service utilization. *Int J Equity Health* 2019;18:113.
- 18 Stenius-Ayoade A, Eriksson JG, Kautiainen H, et al. Duration of homelessness and its relationship to use of hospital and emergency department services in Helsinki, Finland. *Scand J Public Health* 2020;48:259-66.
- 19 Nielsen SF, Hjorthøj CR, Erlangsen A, et al. Psychiatric disorders and mortality among people in homeless shelters in Denmark: a nationwide register-based cohort study. *Lancet* 2011;377:2205-14.
- 20 Rudge GM, Mohammed MA, Fillingham SC, et al. The combined influence of distance and neighbourhood deprivation on emergency department attendance in a large English population: a retrospective database study. *PLoS One* 2013;8:e67943.
- 21 Lind J, Schollin Ask L, Juarez S, et al. Hospital care for viral gastroenteritis in socio-economic and geographical context in Sweden 2006-2013. *Acta Paediatr* 2018;107:2011-8.
- 22 Kyle RG, Kukanova M, Campbell M, et al. Childhood disadvantage and emergency admission rates for common presentations in London: an exploratory analysis. *Arch Dis Child* 2011;96:221-6.
- 23 Ellbrant JA, Åkeson SJ, Karlisland Åkeson PM. Influence of awareness and availability of medical alternatives on parents seeking paediatric emergency care. *Scand J Public Health* 2018;46:456-62.
- 24 Kassarova L, Cheung R, Hargreaves D, Keeble E. Admissions of inequality: emergency Hospital use for children and young people; 2017.
- 25 Harker L. *Chance of a lifetime: The impact of bad housing on children's lives*, 2006.
- 26 Heslin J. The Impact of Homelessness and Inadequate Housing on Children's Health: Royal College of Physicians of Ireland, 2019. Available: <https://www.rcpi.ie/news/publication/the-impact-of-homelessness-and-inadequate-housing-on-childrens-health/> [Accessed 28 Jan 2022].
- 27 Roze M, Vandentorren S, Vuillermoz C, et al. Emotional and behavioral difficulties in children growing up homeless in Paris. Results of the ENFAMS survey. *Eur Psychiatry* 2016;38:51-60.
- 28 Vandentorren S, Le Méner E, Oppenheim N, et al. Characteristics and health of homeless families: the ENFAMS survey in the Paris region, France 2013. *Eur J Public Health* 2016;26:71-6.
- 29 Sakai-Bizmark R, Chang R-KR, Mena LA, et al. Asthma hospitalizations among homeless children in New York state. *Pediatrics* 2019;144. doi:10.1542/peds.2018-2769. [Epub ahead of print: 01 07 2019].
- 30 Strashun S, D'Sa S, Foley D, et al. Physical illnesses associated with childhood homelessness: a literature review. *Ir J Med Sci* 2020;189:1331-6.
- 31 Asylum Information Database, Irish Refugee Council. Country report: Ireland. 2019; 2020.
- 32 O' Brien N, Crushell E. Children in direct provision: Royal College of physicians of Ireland, 2019. Available: <https://www.rcpi.ie/news/publication/children-in-direct-provision-a-position-paper-by-the-faculty-of-paediatrics/> [Accessed 28 Jan 2022].
- 33 O' Brien N, Crushell E. Children growing up in direct provision. *Ir Med J* 2020;113:3.
- 34 Citizens Information. Prisoner's rights, 2021. Available: https://www.citizensinformation.ie/en/justice/prison_system/prisoners_rights.html#
- 35 Altman D, Machin D, Bryant T. *Statistics with confidence: confidence intervals and statistical guidelines*. 2nd ed, 2000.
- 36 Citizens Information. Medical cards and GP visit cards, 2021. Available: https://www.citizensinformation.ie/en/health/medical_cards_and_gp_visit_cards/ [Accessed 18 Mar 2021].
- 37 Health Service Executive. Hse social prescribing framework; 2021.
- 38 Ombudsman for Children's Office. *No Place Like Home: Children's views and experiences of living in Family Hubs*, 2019.
- 39 Department of Health. Health in Ireland: key trends in 2019; 2019.

Supplementary Table 1*Logistic regression model with homelessness as dependent variable^a*

Predictor	β	OR	95% CI OR	<i>p</i> value
Irish Ethnicity	-1.66	.19	[.16, .23]	<.001
Vaccination	-.18	.84	[.69, 1.01]	.06
≥ 4 attendances in 6 months	.5	1.65	[1.2, 2.28]	.002
Age months	-.011	.99	[.987, .991]	<.001
Medical card	.644	1.91	[1.57, 2.31]	<.001
GP	-.629	.53	[.36, .78]	<.001
Recurrent presentation	.366	1.44	[1.11, 1.88]	.007
Ambulance	.801	2.22	[1.6, 3.11]	<.001
DNW	.463	1.59	[.97, 2.62]	.069

Note. β = constant. OR = Odds ratio. DNW = Did not wait

^a $R^2 = 0.28$