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Using Primary Care and Emergency Department Datasets for Researching Violence Victimization in the UK: A Methodological Review of Four Sources

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Abstract: Violence is recognised as a cause of health harm, but it is not consistently or adequately captured in healthcare data systems. While administrative health records could be valuable sources of information for measuring violence, they remain underutilised in violence-related research. The present research aims to examine the suitability of violence indicators in emergency care, primary care, and linked healthcare datasets. Descriptive analyses were conducted with the 2015/16 Hospital Episode Statistics Accident and Emergency (HES A&E) and the 2021/22 Emergency Care Data Set (ECDS). The potential of the Clinical Practice Research Datalink (CPRD) and the South Wales Violence Surveillance dataset (a police and emergency department (ED) dataset linked by Public Health Wales) were shown using available evidence. Among the discussed datasets, the South Wales Violence Surveillance dataset has the most detail about violent acts and their contexts, while the CPRD includes a more extensive range of socioeconomic factors about patients and extensive linkage with other datasets. Currently, detailed safeguarding information is routinely removed from the ECDS extracts provided to researchers, limiting its utility for violence research. In the HES A&E, only physical violence was consistently recorded. Addressing these issues has the potential to improve the use of health administrative data in research on violence.

Keywords: violence; abuse; health services; administrative health data; public health



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1. Introduction

Health Services Data in Epidemiological Research on Violence

In 1996, the 49th World Health Assembly adopted a resolution that declared violence as a leading public health problem. There are several reasons for a growing recognition of violence as a problem that could be addressed from a public health perspective. First, violence has considerable impacts on morbidity and mortality across the world, particularly among young people (Krug et al. 2002; Syed et al. 2021). Second, violence is closely related to socioeconomic, gender, and ethnic inequalities and can be driven by unequal divisions of resources (Wilkinson 2004). Furthermore, violence causes and deepens inequalities (World Health Organization 2014). Additionally, treating violence as a public health problem puts an onus on policymakers to implement changes to reduce violence and its impacts (Heath 2002).

Violence, however, differs from many other major public health issues, as it does not fit easily into traditional classification systems designed for the diagnosis and treatment of communicable- and non-communicable diseases. The World Health Organization (WHO) definition of violence highlights two components: the intention to use force or/and cause harm and the actual harm it produces (Krug et al. 2002). While criminal justice systems focus more on the former, healthcare systems prioritise the latter. Medical professionals often lack

training on how to inquire about and respond to violence experienced by their patients, and the medical recording systems do not facilitate the detailed and consistent capture of these experiences (Kirk and Bezzant 2020). The WHO's International Classification of Diseases (ICD) includes codes for violence. These secondary codes are meant to provide contextual information for resulting injuries and health harms, and they are often missed or inconsistently or incorrectly applied (Olive 2018).

An epidemiological approach to health problems and their prevention incorporates an understanding of relationships between a cause, its effect, and the environment. Despite focusing on the health effects of violence, health services are in a good position to also collect information on the cause and the environment, with the potential to further understand the epidemiology of violence. For example, a breakdown of domestic abuse-related assaults from Accident and Emergency data in Wigan (UK) was shared with the local authority and provided additional information to that available from police. It revealed an upward trend in the number of people attending (that is, presenting to) emergency care due to non-nightlife violence and highlighted a need for a referral pathway for domestic violence (DV) cases (Wrightington and Leigh 2014). Healthcare services are often the first or only point of service contact for violence victims and, therefore, may provide unique information on the violence experienced by some populations (Richardson et al. 2002). However, health service datasets are underutilised in epidemiological research on violence, despite their possible advantages. The potential of administrative health data sources needs to be better understood.

Emergency and primary care records jointly cover a large proportion of the population affected by violence (Hofner et al. 2005). Approximately 2.5% of all patients attending an emergency department (ED) in the UK present as victims of violence. The total number of ED patients recorded as victims of violence is 3–10 times higher than the number of victims presenting to and recorded by the police (Sivarajasingam and Shepherd 2001). Patients may consult an ED to receive treatment for injuries caused by violence. Furthermore, individuals experiencing violence and abuse tend to access EDs more frequently than those not exposed to violence, regardless of the reason for attending (Eisenstat and Bancroft 1999; Jewkes 2002).

Primary care is also frequently the first point of contact for violence victims or a common pathway of discharge from other health services. Victims often present to primary care with long-term physical and psychological harm caused by violence (Usta and Taleb 2014). In terms of mental health harm, primary care is often the first point of contact with a healthcare system and is where the majority of these patients are treated (Green et al. 2001). Therefore, for some types of violence, such as domestic violence, in which mental health harm might be more prominent (Howard et al. 2010), primary care records can be a particularly suitable data source. The present research aims to examine the utility of four existing administrative health datasets for measuring violence (Blom et al. 2023), focusing on emergency care and primary care in England and a linked ED–police dataset from Wales.

2. Methods

2.1. Data Sources

The example datasets for emergency department patients were the Hospital Episodes Statistics Accident and Emergency (HES A&E) dataset and the Emergency Care Data Set (ECDS), and for primary care patients, the example dataset is the Clinical Practice Research Datalink (CPRD). Unlike locally held data, these datasets contain less detailed clinical and demographic information but provide large national samples broadly representative of the general population (NHS users) and are available in forms intended to facilitate research. In the present research, ECDS data collected between April 2021 and March 2022 and HES A&E data collected between April 2015 and March 2016 (before the introduction of the ECDS) were analysed to estimate the prevalence of violence by demographic and area-level characteristics. The potential of the CPRD for examining the distribution of violence and abuse was shown using already available evidence (Jewkes 2002; Usta and Taleb 2014; Green et al. 2001).

In this research, there was no access to the CPRD and South Wales Violence Surveillance data, but the datasets were reviewed using data dictionaries and available research evidence (Jewkes 2002; Usta and Taleb 2014; Green et al. 2001). The CPRD was included in the review as an example of a primary care dataset that could provide valuable insights on violence distribution in comparison with emergency care data. In addition, we reviewed the South Wales Violence Surveillance dataset, a linked ED and police dataset from South Wales. Public Health Wales (PHW) has linked ED data from three health boards (out of seven) across South Wales with data from the South Wales Police. The initiative was influenced by the original work on sharing data relevant to violence prevention between emergency departments in Cardiff, the police, and local authorities, referred to as the ‘Cardiff Model’ (Howard et al. 2010). The combined dataset provides an opportunity to explore violence from the perspectives of two settings—health and crime.

2.2. Measures

Tables 1–4 present all the measures of violence, including the indicator of violent acts and harms, sociodemographic characteristics, and other contextual information.

2.2.1. Violence Indicators

The HES A&E classification has a ‘Patient group’ variable, for which one of the categories includes ‘Assault’ (NHS Digital 2021). This category was used to identify cases of violence among patients in the dataset. In the ECDS, violence was identified using the categories ‘Alleged victim of physical assault by lone assailant (situation)’ and ‘Alleged victim of physical assault by multiple assailants’ from the ‘Injury Intention’ variable.

Table 1. Violence and other relevant items in the Hospital Episode Statistics Accident and Emergency (HES A&E).

Information	Hospital Episode Statistics Accident and Emergency (HES A&E)
Violence indicators	‘Patient group’ (includes ‘Assault’ category)
Contextual information associated with violence	<ul style="list-style-type: none"> • Arrival date and time • Incident location type (home, work, public space)
Clinical (including harm)	<ul style="list-style-type: none"> • Diagnoses (up to 12 codes) • Anatomical area and side • Investigations and treatments • Source of referral • Attendance disposal (referral)
Social factors	<ul style="list-style-type: none"> • Age • Gender • Ethnic group (may not be available) • Local authority (LA) district of residence, LA district
Coding system	<ul style="list-style-type: none"> • HES A&E coding system • International Classification of Diseases (ICD) and the Operating Procedure Codes Supplement (OPCS) • Read codes
Geographical scope	England

Location of incident. The HES A&E collected ‘Incident location type’, which characterised the place where the incident that led to the A&E episode occurred. The categories for the location type were ‘Home’, ‘Work’, ‘Educational establishment’, ‘Public place’, ‘Other’, and ‘Not known’. In the ECDS, a ‘Place of injury’ data item was used to identify the type of location at which the injury occurred and included the following categories: ‘Home’, ‘Outdoor’, ‘Entertainment’, ‘Public area’, ‘Public transport’, ‘Private vehicle’, ‘Residential/nursing home’, ‘Student accommodation’, ‘Hotel/B&B’, ‘Custodial services’, and ‘Hostel/homeless’ (NHS Digital 2023).

Table 2. Violence and other relevant items in the Emergency Care Data Set (ECDS).

Information	Emergency Care Data Set (ECDS)
Violence indicators	<ul style="list-style-type: none"> • ‘Injury intention’ (includes ‘Alleged victim of physical assault by lone assailant (situation)’ and ‘Alleged victim of physical assault by multiple assailants’) • Safeguarding concerns including DV, possible grooming target, FGM, etc. (may not be available)
Contextual information associated with violence	<ul style="list-style-type: none"> • Relationship between the victim and the perpetrator • Arrival date and time • Date and time that the injury occurred • Place exact (latitude and longitude) • Description of the exact locality at which the injury occurred • Type of location at which the person was present when the injury occurred (e.g., home, licensed premises) • Type of activity being undertaken by the person at the moment the injury occurred (e.g., working/education, leisure at home) • Mechanism of injury (e.g., blunt injury, poisoning) • Drugs or alcohol used by the patient, which are thought likely to have contributed to the need to attend the emergency department (ED)
Clinical (including harm)	<ul style="list-style-type: none"> • Chief complaint • Diagnoses • Acuity • Investigations and treatments • Source of referral • Referred service
Social factors	<ul style="list-style-type: none"> • Age • Gender • Ethnic group (may not be available) • Preferred language • Interpreter language • Overseas visitor status • Accommodation (residence) status
Coding system	SNOMED CT
Geographical scope	England

Table 3. Violence and other relevant items in the South Wales Violence Surveillance dataset.

Information	South Wales Dataset
Violence indicators	NHS attendance code (includes information on injury intention)
Contextual information associated with violence	<ul style="list-style-type: none"> • Mechanism of injury • Time of assault • Date of assault • Assault site description • Assault site text (specific named location of assault) • Visit date and time • Arrival day • Relationship between the victim and perpetrator <p>From the police data:</p> <ul style="list-style-type: none"> • Type of violence • Motivation for violence • Weapon used • Substance used by offended • Indication of whether act of violence reached the threshold for crime

Table 3. *Cont.*

Information	South Wales Dataset
Clinical (including harm)	<ul style="list-style-type: none"> • Initial complaint • Diagnoses • Attendance outcome • Chronic alcohol abuse • Chronic drug abuse
Social factors	<ul style="list-style-type: none"> • Age • Sex • Gender (from the police data) • Ethnicity (from the police data) • Lower Super Output Area (LSOA) • Homelessness
Coding system	NHS Wales Data Dictionary
Geographical scope	South Wales

Table 4. Violence and other relevant items in the Clinical Practice Research Datalink (CPRD).

Information	Clinical Practice Research Datalink (CPRD)
Violence indicators	Safeguarding codes used for children and adults at risk, e.g., for domestic violence (DV), female genital mutilation (FGM)
Contextual information associated with violence	<ul style="list-style-type: none"> • Event date (date associated with the event, as entered by the GP) • Type of consultation (e.g., surgery consultation, night visit, emergency, etc.)
Clinical (including harm)	<ul style="list-style-type: none"> • Symptoms • Signs • Diagnoses • Tests and prescriptions (for drugs and appliances) • Source of referral • Referral • Lifestyle factors: smoking, alcohol, obesity, substance misuse • Learning disability • Data from other linked datasets, e.g., Mental Health Dataset, Cancer Registration, HES Admitted Patient Care
Social factors	<ul style="list-style-type: none"> • Age • Gender • Ethnicity • First language • Country of birth • Type of residence: including homelessness, care home, prison • Living arrangements (e.g., alone, cohabitation) • Religion • Marital status
Coding system	<ul style="list-style-type: none"> • Read codes; from April 2018, Read codes are prospectively mapped to SNOMED CT codes • Prescriptions are automatically recorded with a product name and British National Formulary code
Geographical scope	England

2.2.2. Sociodemographic Characteristics

Age. Participant age was grouped for analysis (under 18, 18–24, 25–34, 35–44, 45–54, 55–64, and 65 and older) in both the HES A&E and ECDS datasets.

Gender. We use the term ‘gender’ because this was the term mostly used in the dataset documentation. The HES A&E includes the item ‘Current gender of patient’, which has the

following categories: 'Female', 'Male', 'Not specified', and 'Not known' (NHS Digital 2021). The ECDS contains 'Person stated gender', which has 'Male', 'Female', 'Indeterminate', and 'Unknown (not recorded)' categories (NHS England 2015). Gender refers to "socially constructed roles, behaviours, activities and attributes associated with a particular gender" (Meyersfeld 2012) and goes beyond binary classification. However, we used the 'Male' and 'Female' categories, as the count for other categories was insufficient for statistical analysis.

Index of Multiple Deprivation (IMD). The HES A&E includes information on patients' areas of residence (the Lower Super Output Area (LSOA) derived from patients' postcodes). IMD deciles were calculated by ranking LSOAs from the most deprived to the least deprived (Bowie 2019) and used to measure the level of area deprivation in the HES A&E data.

2.3. Data Access

Access was provided to HES A&E and ECDS data via a secondment with the Department of Health and Social Care (DHSC). The data were accessed using the NHS England Secure Data Environment (SDE) Service through the Data Access Request Service (DARS). All extractions were made following the data minimisation principle; therefore, more data may exist beyond the extract. The ethnicity field in the HES A&E and ECDS was not accessible through the DARS at the time of the analysis.

2.4. Statistical Analysis

A descriptive analysis of the prevalence of violence and comparisons by age, gender, and area-level deprivation (where available) among all cases presented to A&E in England between March 2015 and April 2016 and March 2021 and April 2022 was conducted. The analyses were conducted to provide a summary of the violence distribution among patients in the health datasets and to measure the distribution of violence by patients' sociodemographic characteristics, with the aim of identifying meaningful differences in patterns. Analyses were stratified by gender in order to understand differences in exposure to different types of violence, associated contexts, and potential harms (Office for National Statistics 2019). SQL (structured query language) and R software (version 4.2.3) were used in the analysis.

3. Results

3.1. Emergency Datasets

The HES A&E and ECDS hold information on patients presenting for urgent and emergency care in England. The HES A&E dataset was in operation from 2007 until 2019 when it was gradually replaced by the ECDS (NHS Digital 2022). The HES A&E was used to report on hospital activity before 2020–2021.

3.2. Health Episodes Statistics Accident and Emergency (HES A&E)

The HES A&E dataset records attendance at general A&E departments as well as speciality A&E departments, walk-in centres, and minor injury units. The HES A&E contains clinical information, including fields on diagnoses, anatomical areas diagnosed (i.e., affected parts of the body), and anatomical side (i.e., right/left); investigations, received treatments, attendance referral, and source of referral; sociodemographic information (age, gender, ethnicity, local authority district); administrative information, such as arrival date and time, arrival mode, departure time, person, event, spell (admission), and provider identifiers (Table 1) (Boyd et al. 2017).

3.2.1. Violence Characteristics

With regards to violence, HES A&E has data items to flag acts of violence and the harm to physical health that patients present with. Specifically, HES A&E has fields to indicate the reason for A&E attendance and diagnosis. Diagnosis is recorded using the HES A&E coding classification. However, for some parts of the dataset, ICD-10 and Read codes were used (Medicines & Healthcare products Regulatory Agency 2021). ICD includes a

range of codes for violence that can indicate physical, sexual, and psychological abuse; sexual exploitation; forced labour exploitation; neglect and other forms of maltreatment; as well as a history of abuse (Supplementary Table S1) (Olive 2018).

Additionally, the HES A&E dataset records information on the patient's arrival date and time at health services, which can be used as a proxy for the timing of the assault in some cases (Wood et al. 2014). The HES A&E also has a data item for location type (e.g., workplace). This information can be used for developing targeted violence prevention initiatives (Bellis et al. 2012) and as a proxy indication of DV, for example, if the incident took place at home.

3.2.2. Violence Distribution

A major limitation of HES A&E data for violence research is that only a small proportion (e.g., less than 1% in 2015/16) of NHS Trusts used ICD codes. Therefore, the main way to examine the profile of people presenting with violence in HES A&E data was by using the 'Assault' category. However, as the 'Assault' category is mainly related to physical assaults, the conclusions based on the analysis cannot be generalised to other forms of violence. For example, between April 2015 and March 2016, there were 133,395 cases recorded as 'Assault' in the HES A&E. Among those, 28.8% (38,425) were female and 70.7% (94,260) were male (Table 5). Overall, people presenting with experiences of violence were most likely to be young adults aged 18–24. This was the case among men; 29.6% (95% CI 29.4–29.9) of those presenting were 18–24. Among women presenting to A&E with experiences of violence, 25.6% (95% CI 25.4–25.8) were 18–24, and 26.1% (95% CI 25.9–26.3) were 25–34. There were also gender differences observed with regard to the location of the incident. For men, the most common location was 'Public place' (50.6%, 95% CI 50.2–50.9), while for women, 'Home' (33.1%, 95% CI 32.6–33.6) was the most frequent location where the incident took place, indicating that women may be more likely to present with experiences of domestic violence. Additionally, the prevalence of assault varied by the level of deprivation. Those from the most deprived 10% of neighbourhoods accounted for the largest proportion of recorded assaults (20.9%, 95% CI 20.6–21.1 among men and 22.5%, 95% CI 22.0–22.9 among women), while those from the least deprived deciles accounted for a minority of assault cases (4.0%, 95% CI 3.9–4.1 in men and 3.4%, 95% CI 3.2–3.5 in women).

The HES A&E assault code only takes into account physical violence, which could explain why the findings suggested that the most frequent violence victims were young men. Also, the dataset does not contain information on the relationship with the assault assailant, making it more difficult to understand the contexts related to violence and abuse experienced by different groups.

When HES A&E is used for measuring violence, it is important to acknowledge that only physical assaults can be indicated. For other types of violence, the dataset might not be suitable.

3.3. Emergency Care Data Set (ECDS)

The successor to the HES A&E, the ECDS, was launched to provide more detailed and consistently recorded data on all ED activity and to obtain a greater understanding of the complexity of patients and the reasons for attending emergency care services. The ECDS includes Information Sharing to Tackle Violence (ISTV), which is a subset of data informed by the Cardiff Model (Florence et al. 2011). The data in ISTV includes all ED attendances resulting from violent incidents and was designed to enhance the understanding of violence, including its geographical and temporal or seasonal patterns. In terms of sociodemographic characteristics, the ECDS collects information on age, gender, ethnicity, and the postcode of the patient's registered address (Table 2). The ECDS also records accommodation status, which can specify whether a patient lives in a private household, temporary shelter, residential setting (such as an offender institution or in nursing care), or student accommodation or is homeless (Harrison et al. 2020). Additionally, the ECDS contains information on whether the patient is an overseas visitor, their preferred spoken

language, and their interpreter language, which can give some insights into whether the person is a migrant.

Table 5. Age, gender, area-level deprivation and location of incident among patients with a record of assault in Hospital Episode Statistics (HES) Accident and Emergency data 2015/2016.

Variable	Categories	Overall			Male			Female **		
		N *	%	CI 95%	n *	%	CI 95%	n *	%	CI 95%
Age group		133,395			94,260	70.7	70.4–70.9	38,425	28.8	28.6–29.0
	Under 18	16,275	12.2	12.0–12.4	11,540	12.2	12.1–12.4	4735	12.3	12.1–12.5
	18–24	37,750	28.3	28.1–28.5	27,915	29.6	29.4–29.9	9830	25.6	25.4–25.8
	25–34	35,470	26.6	26.4–26.8	25,435	27.0	26.7–27.2	10,030	26.1	25.9–26.3
	35–44	21,155	15.9	15.7–16.1	14,685	15.6	15.4–15.8	6460	16.8	16.6–17.0
	45–54	14,195	10.6	10.5–10.8	9640	10.2	10.1–10.4	4555	11.9	11.7–12.0
	55–64	4945	3.7	3.6–3.8	3400	3.6	3.5–3.7	1545	4.0	3.9–4.1
	65 and older	2915	2.2	2.1–2.3	1645	1.7	1.7–1.8	1265	3.3	3.2–3.4
	Missing	690	0.5	0.5–0.6	-	-	-	-	-	-
Index of Multiple Deprivation (IMD) deciles	Least deprived 10%	5050	3.8	3.7–3.9	3760	4.0	3.9–4.1	1290	3.4	3.2–3.5
	2	6435	4.8	4.7–4.9	4785	5.1	4.9–5.2	1650	4.3	4.1–4.5
	3	7235	5.4	5.3–5.5	5290	5.6	5.5–5.8	1945	5.1	4.8–5.3
	4	8110	6.1	6.0–6.2	5850	6.2	6.1–6.4	2260	5.9	5.6–6.1
	5	9360	7.0	6.9–7.2	6685	7.1	6.9–7.3	2675	7.0	6.7–7.2
	6	22,070	16.5	16.3–16.7	15,305	16.2	16.0–16.5	6760	17.6	17.2–18.0
	7	17,190	12.9	12.7–13.1	11,935	12.7	12.4–12.9	5255	13.7	13.3–14.0
	8	13,690	10.3	10.1–10.4	9615	10.2	10.0–10.4	4070	10.6	10.3–10.9
	9	11,605	8.7	8.5–8.9	8360	8.9	8.7–9.0	3245	8.4	8.2–8.7
	Most deprived 10%	28,305	21.2	21.0–21.4	19,670	20.9	20.6–21.1	8630	22.5	22.0–22.9
	Missing	4345	3.3	3.2–3.4	3005	3.2	3.1–3.3	650	1.7	1.6–1.8
Location of incident	Educational establishment	3420	2.6	2.5–2.6	2550	2.7	2.6–2.8	865	2.3	2.1–2.4
	Home	26,755	20.1	19.8–20.3	14,035	14.9	14.7–15.1	12,720	33.1	32.6–33.6
	Public place	59,110	44.3	44.0–44.6	47,665	50.6	50.2–50.9	11,430	29.7	29.3–30.2
	Work	7225	5.4	5.3–5.5	4150	4.4	4.3–4.5	3070	8.0	7.7–8.3
	Other	29,585	22.2	22.0–22.4	21,150	22.4	22.2–22.7	8435	22.0	21.5–22.4
	Not known	6610	5	4.8–5.1	4705	5.0	4.9–5.1	1905	5.0	4.7–5.2
	Missing	690	0.5	0.5–0.6	-	-	-	-	-	-

* All counts are rounded to the nearest 5 or 10 as per requirements of the Department of Health and Social Care and NHS England. ** Other categories for gender included 'Not known' (15 cases) and 'Not specified' (less than 10) but were excluded from the analysis due to insufficient numbers.

3.3.1. Violence Characteristics

The ECDS contains more detailed information on the context of violence than the HES A&E. The ECDS data items include geographic coordinates, the type of place in which the patient was present when the injury occurred, the activity being undertaken by them (e.g., leisure, paid work), and the free text description of the assault location. This last item allows a patient to indicate precisely where the injury occurred (NHS England 2015). The dataset also includes information on the date and time of injury. This is an important development, as the HES A&E only allowed for recording the date and time of the arrival to the ED, which could be hours or even days after the incident occurred (Sutherland et al. 2021). Additionally, the ECDS collects information on the mechanism of injury, which can be used to better differentiate different forms of violence (e.g., knife crime) and their impacts on

health. The ECDS also has data on illicit substances or alcohol used by a patient that were thought to have likely contributed to the need to attend ED.

To distinguish injuries or poisoning that occurred due to violence from health issues not related to violence, the ECDS has added an item for the most likely human intent. This intentionality distinguishes violence from unintended harms; however, intentionality is often missed or reported ambiguously in existing health records (Olive 2018). The introduction of the intent item might potentially improve the collection of data on violence within healthcare settings, provided that the intent information was recorded accurately by clinicians.

According to the ECDS Data Dictionary (NHS England 2015), the dataset has a safeguarding item. The item can indicate DV; physical, sexual, emotional, psychological, institutional, and financial abuse; honour-based violence; sexual exploitation; human trafficking; sexual grooming; child sexual abuse; child neglect; forced marriage; genital mutilation; bullying; and other directed violence. However, given the sensitivity of the data, this safeguarding information is not routinely made available by NHS England to researchers, and there is a lack of quality reassurance on the reliability of the safeguarded information captured (Healthcare Safety Investigation Branch 2023). This potentially creates a “vicious circle”—because the safeguarding information is of poor quality, it is not used. However, due to the inability to use this information, there is no feedback mechanism to improve the quality of the data. As a result, for the current analysis identification of violence and abuse on the ECDS dataset relied on the ‘Injury Intention’ variable and its two categories related to physical assault. Also, the variable ‘Injury Intention’ had a significant number of missing values (80.6%), which resulted in a much smaller number of assault cases than in the HES A&E data.

3.3.2. Violence Distribution

In the ECDS data collected between April 2021 and March 2022, 41,730 cases were recorded as “assault”. Of these, 31.1% (12,960) were recorded as female and 68.9% (28,750) as male (Table 6). The most likely age group was those aged 25–34 among both males (26.3%, 95% CI 25.8–26.8) and females (25.7%, 95% CI 24.9–26.4). In the ECDS, the gender disaggregation by location of the assault showed that ‘home’ was the most frequent place for women (30.0%, 95% CI 29.2–30.8), followed by the ‘outdoor’ settings (22.3%, 95% CI 21.6–23.0). By contrast, outdoor locations were the most frequent place of assault for men (40.9%, 95% CI 40.3–41.5%) with ‘home’ being a place of injury in 12.9% (95% CI 12.5–13.3) of cases. Similar to the HES A&E, it was impossible to confirm whether the ‘home’ location indicated domestic violence by any other information available (such as the relationship with the assailant) in the provided data extract. Additionally, despite collecting data on ethnicity in the ECDS (NHS Digital 2023), the item was not available in the low-latency version of the ECDS (NHS Digital 2013) used in the present research. Therefore, an analysis of the violence distribution by ethnic group was not conducted.

Overall, the ECDS is more suitable for measuring violence than the HES A&E. The ECDS contains more detailed information on the contexts associated with violent events, including the location and mechanisms. The ECDS also collects information on individual factors, such as accommodation type and immigration status, which can help identify violence in vulnerable groups (Garland et al. 2010; Gutierrez and Kirk 2017). However, due to a high level of incomplete data, conclusions about the number of emergency episodes due to physical assaults in England cannot be made on the basis of the ECDS. Theoretically, the ECDS could provide more opportunities to indicate the presence of violence in general and flag specific types, such as DV, specifically if the quality of collected safeguarding information improves and the item is made accessible in research datasets. Until that happens, the data have limited scope for understanding violence in society. Another limitation is that the ECDS has been recently introduced and might not yet be suitable for examining long-term trends. The HES A&E has been linked with different datasets, including the

CPRD, and more variables can be obtained from the linked databases. The linkage of the ECDS to the CPRD is in progress (National Institute for Health Research 2022).

Table 6. Age, gender, and location of injury among patients with a record of assault in the Emergency Care Data Set, 2021/2022 *.

Variable	Categories	Overall			Male			Female **		
		N *	%	CI 95%	n *	%	CI 95%	n *	%	CI 95%
		41,730	100		28,700	68.9	68.4–69.3	12,955	31.1	30.6–31.5
Age group	Under 18	5710	13.7	13.4–14.0	4010	14.0	13.6–14.4	1700	13.1	12.5–13.7
	18–24	9495	22.8	22.4–23.2	6825	23.8	23.3–24.3	2665	20.6	19.9–21.3
	25–34	10,890	26.1	25.7–26.6	7550	26.3	25.8–26.8	3325	25.7	24.9–26.4
	35–44	7365	17.7	17.3–18.0	4960	17.3	16.9–17.7	2400	18.5	17.9–19.2
	45–54	4665	11.2	10.9–11.5	3085	10.7	10.4–11.1	1575	12.2	11.6–12.7
	55–64	2335	5.6	5.4–5.8	1590	5.5	5.3–5.8	745	5.7	5.3–6.1
	65 and older	1175	2.8	2.7–3.0	655	2.3	2.1–2.5	520	4.0	3.7–4.3
	Missing	40	0.1	0.1–0.1	20	0.1	0.0–1.1	25	0.2	0.1–0.3
Location of incident	Home	7590	18.2	17.8–18.6	3700	12.9	12.5–13.3	3885	30.0	29.2–30.8
	Hotel/bed and breakfast (B&B)	50	0.1	0.1–0.2	25	0.1	0.1–1.1	25	0.2	0.1–0.3
	Outdoor	14,640	35.1	34.7–35.6	11,735	40.9	40.3–41.5	2890	22.3	21.6–23.0
	Entertainment	2225	5.3	5.1–5.5	1685	5.9	5.6–6.1	535	4.1	3.8–4.5
	Public area	5660	13.6	13.3–13.9	3680	12.8	12.4–13.2	1980	15.3	14.7–15.9
	Public transport	135	0.3	0.3–0.4	95	0.3	0.3–0.4	40	0.3	0.2–0.4
	Private vehicle	80	0.2	0.1–0.2	50	0.2	0.1–0.2	30	0.2	0.1–0.3
	Residential/nursing home	290	0.7	0.6–0.8	120	0.4	0.3–0.5	175	1.3	1.1–1.5
	Student accommodation	15	0.0	0.0–0.1	10	0.0	0.0–0.0	10	0.1	0.0–0.1
	Custodial services	220	0.5	0.5–0.6	195	0.7	0.6–0.8	25	0.2	0.1–0.3
	Hostel/homeless	10	0.0	0.0–0.0	*	0.0	NA	*	0.0	0.0–0.1
	Missing	10,760	25.8	25.4–26.2	7405	25.8	25.3–26.3	3360	25.9	25.2–26.7

* All counts are rounded to the nearest 5 or 10 as per requirements of the Department of Health and Social Care and NHS England. ** The other categories for gender, 'Not known (not recorded)' (less than 10) and 'Indeterminate' (15 cases), were excluded from the analysis due to insufficient numbers.

3.4. South Wales Violence Surveillance Dataset

In the South Wales Violence Surveillance dataset, Public Health Wales (PHW) has built on multiple data linkage initiatives to produce a dataset that links ED attendances and police calls that occur within 72 h of each other. Linkage is carried out deterministically at the individual level on the basis of name, sex, age, and residential LSOA. The records are from three of the seven health boards in South Wales and the South Wales Police. The data have been linked since 2017 and cover all of the South Wales Police force area (Gray et al. 2017).

Violence Characteristics

The health part of the dataset contains detailed information on harms associated with violence and some relevant contextual details. The variables include the location, type, and mechanism of injury; a description of the weapon used in the assault (if appropriate); the incident type; a description of the assault, and the initial complaint. The dataset also has information on the date and time of the assault, the assault site description, and the exact location of the assault. There are data items to indicate the intent and the relationship between the patient and the assailant. Additionally, the dataset collects information on

social context, including alcohol and drug abuse and the deprivation quintile of the patient's residential address.

The unique feature of the dataset is the linkage to data from the police. Although the police record some sociodemographic information on the victim (Table 3), the major focus is on the act of violence and the perpetrator. The data on the victim include the name, residential LSOA, age, sex, ethnicity, and relationship with the perpetrator. For the act of violence, there is information on the type of violence, motivation (e.g., hate, honour-based), location, weapon, reported date, substance use by the offender, and whether the violent act reached the crime threshold. Offender characteristics include date of birth, age, gender, ethnicity, local authority, and postcode.

In the data collected between April 2014 and March 2016, the majority of assault attendees were not known to the police (Gray et al. 2017). The comparison between health and police records showed the difference between age groups by gender, with police records missing the highest proportions of data on young males aged 18–34 and females aged 18–44 among the ED assault attendees. Importantly, the South Wales dataset indicated that males were most often victims of assaults requiring medical treatment that occurred in outdoor settings with the assailant recorded as a stranger, while women were most often victims of assaults in their homes with the assailant reported as a current or former intimate partner.

As such, among the discussed emergency care data sources, the South Wales Violence Surveillance dataset contains the most comprehensive and detailed information on violence. Given the inclusion of police data, this dataset can have an important and unique contribution to a better understanding of violence and different health outcomes by the types of violence. The coverage of two different populations (i.e., those approaching healthcare services and those in contact with police) can help in assessing the completeness of reported crime data and of data from healthcare settings (Sutherland et al. 2021).

4. Primary Care Data

4.1. Clinical Practice Research Datalink (CPRD)

The CPRD is a large anonymised primary care database comprising data on 60 million patients, including 18 million currently registered patients. It is broadly representative of the UK population with regard to age, sex, and ethnicity (Herrett et al. 2015). The CPRD contains patient-level longitudinal records, and there is a median prospective follow-up of 9.4 years for active patients. The CPRD data are recorded by NHS general practice clinicians using version 2 Read codes. From 2018 onwards, the Read codes were prospectively mapped to CT SNOMED codes (National Institute for Health Research 2022). The CPRD is linked to several other datasets, including data from secondary care, disease-specific cohorts, and mortality records, which enhance the information available for research purposes (Herrett et al. 2015).

4.1.1. Violence Characteristics

When violence is recorded, the CPRD holds information on the type of violence, the relationship between the patient and the assailant, the motive for violence, history, risk of, and concerns about abuse, and referred interventions (e.g., abuse counselling). The information on DV is the most detailed compared with the described emergency datasets. DV is recorded in the CPRD using recommended Read codes for safeguarding children and adults at risk, including codes for the history, cases, risk factors (e.g., alcohol misuse in the household and by the patient, learning disability), and consultations on DV. There are also codes for history and incidents of female genital mutilation (Far et al. 2020). The greater attention to DV may be explained by the nature of the health conditions for which patients may attend GP practices. DV may be more likely to manifest in chronic conditions needing primary care (Rakovec-Felser 2014) rather than acute injuries needing treatment in A&E. For this reason, and because the relationship between the patient and the clinician in primary care tends to be more established and trusting (Damra et al. 2015), the number of

people disclosing experiences of DV in primary care settings is likely to be higher than the number presenting for this to the ED.

4.1.2. Sociodemographic Characteristics

The CPRD includes information on a range of patient characteristics (Table 4). In addition to age, gender, and ethnicity, there are items on immigration status, first language, religion, marital status, and living arrangements (e.g., living alone or not). However, the level of completeness in recording differs between demographic groups, variables, and time periods due to changes in policies and practices (Jain et al. 2017). For example, overall completeness of data is better among females and older age groups, as they access GP services more regularly. Also, immigration status, religion, and living arrangements, including homelessness, can be poorly recorded (Hippisley-Cox and Vinogradova 2016). Furthermore, the CPRD still does not have any records on several social factors associated with health inequalities and exposure to violence, including education, social class, and income. Certain patient groups, such as private patients, some residential homes, prisoners, and homeless people, are also missing from the records.

There have been examples of research using the CPRD to examine the prevalence of DV among included patients and how it predicted health outcomes and behaviours, such as the use of emergency contraception among women who experienced domestic abuse (Jackson et al. 2019). Another study estimated a prevalence of 2.1% of intimate partner violence (IPV) in families using CPRD data linked to the HES, the Index of Multiple Deprivation 2019, and the Office for National Statistics mortality register and found significant associations between IPV, family adversities, and the development of health problems among survivors of IPV (Syed et al. 2023).

Overall, among the reviewed datasets, the CPRD provides the most information on patients' sociodemographic characteristics. Also, the advantage of the CPRD is that it is already linked to a number of other datasets (Herrett et al. 2015). The CPRD seems to be a suitable dataset for researching violence, and among the discussed datasets, it is most suitable for examining DV (Jackson et al. 2019). However, the CPRD does not record many social factors relevant to profiling those who have experienced violence. Furthermore, the included social factors and information on DV are under-recorded.

5. Discussion

The UK health administrative data sources discussed in this paper have the potential to be used to address gaps in knowledge related to violence, its health and social impacts, and gaps that are not fully addressed by other data sources in isolation, such as surveys or crime and justice records. Although the nature and extent of coverage differ between databases, all the examples examined here have data items that flag violence, which can be analysed to generate insight into the contexts of violent acts, associated risk factors, including sociodemographic characteristics, evidence on inequalities, and associated health outcomes. All the data contain individual, identifiable numbers, which can be used for individual-level analyses to produce longitudinal trajectories. The linked South Wales Violence Surveillance dataset is ahead of its English counterparts in terms of the amount of relevant information on violence.

There are limitations to using health records for research on violence that warrant consideration. Evidence suggests that there are discrepancies between the words written by health professionals in the narrative records and the coded information in electronic databases (Olive 2018). This can be explained by the limitations and ambiguity of the coding systems used in the electronic data but also misinterpretations and inconsistency in applying the codes (Jackson et al. 2019; Olive 2018). Another reason can be attributed to the lack of time experienced by ED reception staff to complete all the data fields and the lack of automated reporting systems for that (Baird et al. 2016). Furthermore, the discussed datasets contain less detailed information than local medical records. For example, natural language processing has been used to codify narrative records in the Clinical Records Interactive

Search (CRIS) database from the South London and Maudsley NHS Foundation Trust to provide information on a range of violence characteristics (perpetration, victimisation, and witnessing), forms of harms, and the nature of the relationship between the patient and the assailant (Botelle et al. 2022). The lack of detailed information is being addressed to some extent in the ECDS and the South Wales Violence Surveillance dataset. Nevertheless, the limited information on violence and the lack of data completeness (specifically in ECDS on the data item that indicates violence) might explain the lower use of the national datasets in violence research. Additionally, financial and time constraints associated with obtaining access to national health datasets can be a barrier.

A major limitation identified in the HES A&E and ECDS is that neither dataset has reliable indicators for the patient–assailant relationship or different types of violence and abuse other than physical assaults. From general population survey sources, such as the Crime Survey for England and Wales, it is known that different types of violence are more prevalent in different population groups; for example, women are more likely to experience violence from an intimate partner, while men are more likely to experience violence from an acquaintance (Office for National Statistics 2021). Also, women are much more likely to be victims of sexual assaults than men. Additionally, older people (Rosen et al. 2019) and children (Devries et al. 2018) more often experience violence from household members in comparison with younger men. Therefore, the absence of safeguarded information that could indicate different types of violence (e.g., sexual) and the relationship to the perpetrator can be harmful, as it potentially hides violence that affects certain population groups, including women, older people, and children. This also makes it more challenging to correctly assess the health effects and costs associated with violence and abuse. For example, sexual violence is strongly associated with mental health impacts that often require long-term support (Hughes et al. 2019). Furthermore, experiences of repeated violence, such as in the context of childhood abuse (Hughes et al. 2017) or IPV, can have more prolonged and considerable health impacts than one-time exposure (Bacchus et al. 2018). The lack of information on these types of violence might lead to the underestimation of its impacts. For this reason, CPRD data are more suitable for understanding gender-based violence, as they use safeguarding codes that allow for identifying DV and IPV. Furthermore, as a primary care database, the CPRD has information on patients with health harms that are more likely to be associated with gender-based violence, such as mental health issues and chronic conditions (Usta and Taleb 2014).

Because the safeguarding item in the ECDS may be missing due to concerns about the quality of the collected information, data collection and recording need to be improved. One suggestion is to improve health professionals' awareness of the importance of collecting information on violence in healthcare settings, develop guidance on how to inquire about it, and incorporate the recommendations in healthcare training. For example, interviewing a patient who has experienced violence could be a part of professional training and assessment. This could give healthcare professionals an opportunity to practice talking with such patients about their experiences and record this information. Healthcare training could also include more content on the importance of recording information on violence by highlighting the utility of this information for research and violence prevention. There have been examples of integrating violence prevention teams with emergency services, such as the Violence Prevention Unit (VPU) in Wales, which is based within the two main hospitals and trauma centres in South Wales—Cardiff and Swansea (Hofner et al. 2005). These teams consist of nurses and social workers/case workers who support those attending EDs with assault-related injuries. Their role is to identify any risk factors and potential areas of intervention related to unmet needs that may contribute to their involvement in violence. The prevention teams also train hospital staff to ask questions to patients about experiences of violence, with a clear referral system into the VPU. Such initiatives need to become more widespread across the health sector.

Additionally, the exclusion of ethnicity information in the provided extracts did not allow the estimation of the distribution of violence (and other social determinants) by

an important intersectional characteristic. It is known that crime victimisation rates vary among different ethnic groups (Office for National Statistics 2021). Health impacts associated with violence (Stockman et al. 2015) and the provided support (Lipscombe et al. 2023) also differ between ethnic groups. There is often a lack of evidence on violence in ethnic minority groups due to small sample sizes for subgroups in surveys, and large national administrative data sources could potentially address this limitation.

A public health approach to violence also needs to be underpinned with more comprehensive and complete coding of violence in administrative health databases. Within the medical classifications and coding systems, we recommend developing flags for violence that are clear and consistent and reduce reliance on individual interpretation. Another suggestion would be to develop data recording system technology to enable a uniform approach to data collection. All the discussed datasets lack information on broader social determinants, such as education and income. Linkage to other datasets where this information is recorded would, therefore, be beneficial.

Academics, public health professionals, and policymakers often rely on data dictionaries when choosing appropriate data sources for their research. Therefore, it is recommended that data holders make it clearer what information is available within specific datasets and why some data items might not be accessible despite being present in data dictionaries.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/socsci13030147/s1>, Table S1: International Classification of Disease (ICD-10) flags for violence.

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