

A Demographic Profile of Mothers and their Children who are Victims of Family and Domestic Violence: Using Linked Police and Hospital Admissions Data

Introduction

Violence against women is a violation of human rights and a global public health problem of epidemic proportions (World Health Organisation [WHO], 2013). Within Australia, violence against women perpetrated by a current or former intimate partner is a widespread issue with a lifetime prevalence of almost 25% (Australian Bureau of Statistics [ABS], 2017). In Australia family and domestic violence (FDV) is the term used to describe violence that encompasses not only intimate partner violence, but also the abuse of children, siblings and other family members and, for Aboriginal and Torres Strait Islander people (hereafter referred to as Aboriginal), violence between extended kinship ties; it is the term preferred in Aboriginal communities (Tomison, 2000). Utilisation of the term family and domestic violence should not detract, however, from the fact that women and children are disproportionately affected by violence perpetrated by men (WHO, 2012; WHO, 2019).

FDV can vary in type of abuse including physical violence, sexual violence, psychological and emotional abuse, the threat of any of the former, and coercive control. Coercive control includes isolating victims from friends and family, controlling access to finances, restricting their access to information and assistance, and monitoring their movements (Australian Institute of Health and Welfare [AIHW], 2018). Unlike parts of the United Kingdom, coercive control is not a criminal offence in Australia. FDV occurs in all cultural, religious, and socioeconomic groups (WHO, 2012). However, some demographic factors have been found to increase the risk of FDV including women being of reproductive age (ABS, 2017), and in Australia, mothers who have children in their teenage years (Orr et al, 2019), and women from disadvantaged socio-economic areas (AIHW, 2018; Orr et al, 2019). Previous research has also found Aboriginal women have a higher risk of being a victim of violence than non-Aboriginal women (ABS, 2016a; Meuleners et al, 2011). Aboriginal Australians are more likely to live in the most disadvantaged areas compared to non-Aboriginal Australians (ABS, 2018). Higher levels of both socioeconomic disadvantage and FDV among Aboriginal Australians compared to non-Aboriginal Australians are acknowledged as both a cause and an effect of social

disadvantage and intergenerational trauma (AIHW, 2018), attributed to the legacy of colonization, including racism and forced removal of children (Secretariat of National Aboriginal and Islander Child Care, 2017).

FDV has significant economic and social costs for individuals and communities. Financial modelling (KPMG, 2016) has estimated that the annual cost of FDV to the Australian economy is A\$26 billion, which includes costs associated with productivity loss in the work place, the impact on adult and child victims, and increased demands on health, welfare, housing, crisis, legal and statutory services. Previous research has also reported greater use of health services by women who are victims of FDV (Ansara & Hindin, 2010; Black, 2011; Bonomi et al, 2009). Within Australia, FDV contributes more to the burden of disease of adult women in their reproductive years than any other risk factor (Ayre et al, 2016). There are also policing costs with West Australian (WA) police responding, on average, to an episode of FDV every 10 minutes, equating to over 54,000 incidents annually. The rate of reporting has progressively increased, up 50% from 2009-10 to 2016-17 (Department of Communities, 2018).

A recent Australian personal safety survey highlighted that around half the women (46%) who are victims of FDV do not tell anyone of the abuse (ABS, 2017). Women do not disclose FDV for a multitude of reasons: stigma, shame, fear, lack of a safe place to disclose (Fiolet et al, 2019; Francis, Loxton & James, 2016; Garcia-Moreno et al, 2006; Keeling & Fisher, 2015) feeling they can deal with it themselves, or believing it is not serious enough to seek help (ABS, 2017). Of the Australian women who do seek assistance, 53% reportedly seek help from a health professional (33% General Practitioner, and 20% from another health professional) and 17% from police (ABS, 2017) when the violence is perpetrated by a current partner. Most female victims of FDV (65%) are assaulted in their own home, and 49% of all female victims have children in their care at the time of the assault (ABS, 2017).

Children's exposure to FDV includes witnessing and hearing acts first hand, as well as the effects of living in the aftermath of the incident(s), such as seeing their mother's injuries, broken furniture, and displacement from their homes (Holden, 2003; Richards, 2011). Children exposed to FDV can be adversely affected (Holt, Buckley, & Whelan, 2008), with poorer outcomes in terms of physical health, psychological, emotional, behavioural, social, and academic achievements (Artz et al, 2014; Howell, et al, 2016).

FDV is a largely hidden crime due to several barriers such as sociocultural factors and the women fearing for their lives and their children's lives (Hien & Ruglass, 2009) should it be disclosed. The hidden nature of FDV makes it difficult to understand the true picture of the issue including an understanding of the characteristics of those who are abused. A recent Australian Government report (AIHW, 2018) highlighted the lack of information on the sociodemographic characteristics of FDV victims. The report argued that current demographics are based on general population surveys and not focused on the population of women who are victims of FDV, with the current available data limited by small sample sizes. The report recommended that multiple data sources such as police and longitudinal data would contribute to a more comprehensive picture of victims of FDV. With women of childbearing age at higher risk of FDV, the potential impact on health and social outcomes for both women and their children, and the call from government for more comprehensive evidence, there is a need for improved understanding of the characteristics of mothers and their children who are victims of FDV. Furthermore, due to the over representation of Aboriginal mothers and children who experience and or are exposed to FDV it is essential to look at differences between Aboriginal and non-Aboriginal mothers and children. Our research captures mothers who were victims of FDV that resulted in a criminal charge for the perpetrator or hospitalisation of the mother. It is therefore more likely that our cohort are at the 'severe end' of physical FDV. By using population level data to capture high risk groups and ascertain a greater amount of FDV victims than evenly distributed population surveys could (Banerjee & Chaudhury, 2010), our research is a step in addressing the gap

Objective

To examine the key sociodemographic characteristics of Australian mothers and their children who were victims of FDV utilising linked health and police data from 2004 to 2008.

Rationale

Due to the 'hidden' nature of FDV, accurate statistics are difficult to obtain and, existing literature is mostly comprised of survey-based research of small samples. This study is the first use of Australian police data linked to other datasets to investigate the demographics of mothers who are victims of FDV. While the data do not capture all incidents of FDV it provides the opportunity to investigate a hidden cohort.

Method

This retrospective cohort study used linked administrative police and health data to provide descriptive characteristics of mothers who are victims of FDV and their children.

Initial cohort selection

The cohort included all mothers with at least one FDV event recorded in the WA Police Force Incident Management System, where a male was charged and a domestic relationship flag was present, and had a child born during 1987-2010.

Data linkage

Administrative datasets were linked by the WA Data Linkage Branch (Government of Western Australia Department of Health, 2020) using probabilistic matching and clerical review (Holman et al, 2008). Previous studies have found linkage accuracy to be above 99% (Holman et al, 1999; Tromp et al, 2011). The researchers were provided de-identified information from the linked administrative data sets with unique identifier codes for each member of the cohort and their child(ren). A non-exposed comparison group of women was matched by the children of the mothers on sex, socioeconomic status, Aboriginality and birth month at a rate of 1:3 (exposed:non-exposed). Matching between exposed and non-exposed was initially requested at a rate of 1:5 however, due to the over representation of Aboriginal children in the cohort we were unable to match at a higher ratio than 1:3.

Ethics

To access the administrative data the researchers engaged with Data Custodians and relevant stakeholders during the rigorous application process (Government of Western Australia Department of Health, 2020). To ensure privacy the WA Data Linkage Branch adheres to the 'separation principle' (Kelman, Bass & Holman 2002), that is used globally and accepted as 'best practice protocol' (Government of Western Australia Department of Health, 2020). Ethics approval for this study was obtained from the WA Department of Health Human Research Ethics Committee (#2016/60), the WA Aboriginal Health Ethics Committee (#756), and the University of Western Australia Human Research Ethics Committee.

Initial FDV exposure- police data

FDV exposure was initially defined as a mother who had a record in the WA Police Force Incident Management System indicating she had been a victim of assault where the male was charged. The domestic aspect of the relationship was highlighted in the police data by a flag indicating a domestic relationship between the female victim and male perpetrator. The domestic flag has been recorded in WA Police Force Incident Management System since 2004. The assaults were categorised as: murder and attempted murder; physical assault; sexual assault; threatening behaviour; and misuse of weapons. The categories were derived using the Australian and New Zealand Standard Offence Classification subdivision level (ABS, 2011) as identified in the WA Police data. Mothers were identified by the WA Midwives Notification System. All women who had a WA Police assault from 2004-2008 and a child born in the period 1987-2010 were included in the cohort as 'mothers who were victims of FDV'. We identified 5,736 FDV exposed mothers and 15,598 children born to these women during that period.

Identification of FDV in non-exposed comparison group

Initially non-exposed was defined as a mother who did not have a FDV incident in WA Police Force Incident Management System 2004-2008. Due to the widespread issue of FDV and the low percentage of women who report FDV to police in Australia, we analysed our non-exposed comparison group of mothers (n= 33,071) for FDV using Hospital Morbidity Data Collection.

International Classification of Disease codes validated in previous research to identify mothers who were hospitalised for FDV (Orr et al, 2019) were utilised to identify hospitalisations for FDV. We found during the period 2004-2008 that 571 mothers (1.7%) in the non-exposed group had a hospitalisation for FDV.

FDV exposure- police and hospital data

Following the identification of mothers who had hospitalisations for FDV in the non-exposed comparison group using hospital data we counted both the women identified in police data and hospital data as 'exposed to FDV' prior to our analysis.

Socioeconomic status

Neighbourhood-level socioeconomic status (SES) was determined by the Socio-Economic Indexes for Areas (SEIFA) (2018) using the Midwives data. Five levels of

disadvantage were assigned to census collection districts (~250 households), ranging from 1 (high disadvantage) to 5 (low disadvantage). Aboriginal mothers were identified by the Data Linkage Branch derived Aboriginal status flag. The flag is created by a validated algorithm when an individual is recorded as Aboriginal in WA government administrative data sets (Government of Western Australia Department of Health, 2019; Christensen et al, 2014).

Data Analyses

We analysed the data for demographic factors of the women exposed in the police data, hospital data and those that crossed both services. There were five groups identified in the cohort: original police data, police data only, police and hospital data, hospital data only, any FDV. The analysis was kept separate for each group as the original police data captured all women in WA in 2004-2008 with children born 1987-2010 who were victims of FDV, whereas, the matched group did not contain all hospitalisations of mothers in the same period.

All analyses were conducted using SAS® statistical software (SAS Institute Inc., 2013). We report frequencies and percentages for all demographics. Pearson's chi-square test was used to assess differences between Aboriginal and non-Aboriginal mothers for categorical variables. The prevalence of FDV exposure in children was calculated for each year of the exposure period during 2004-2008 (per 1,000 children). The numerator was the number of children aged 0-17 years exposed in the year and the denominator was the total number of children in the population 0-17 years (ABS, 2015). As Aboriginal Australians have higher levels of socioeconomic disadvantage, and FDV compared with non-Aboriginal Australians we stratified our analysis by Aboriginal status.

Results

Mothers identified as victims of FDV in WA Police Data

Table 1 displays the major characteristics of mothers who were victims of FDV in WA between 2004-2008 identified in the original police data, where a male was charged with a FDV offence. Overall 5,736 mothers were identified, at least once, in the five-year period. Their mean age was 30.13 (SD = 8.25) years at the first recorded FDV in the WA Police Force Incident Management System and 44.33% of mothers were Aboriginal. Compared to non-Aboriginal mothers, Aboriginal mothers were more likely to be under 18-years of age at their first birth in the cohort (52% compared to 22%, $p < 0.0001$) (Table

1). Aboriginal mothers had more children compared to non-Aboriginal mothers with most non-Aboriginal women having between 1-2 children (63%) compared to most Aboriginal women who had 3 or more children (59%, $p < 0.0001$).

Table 1 Characteristics of Mothers of children born in WA 1987-2010 who were victims of FDV 2004-2008 identified in WA Police data

Characteristics	Aboriginal n (%)	Non-Aboriginal n (%)	Combined n (%)
Number	2543 (44.33)	3193 (55.67)	5736 (100)
Number of children per mother *			
1	516 (20.29)	1028 (32.2)	1544 (26.92)
2	534 (21)	994 (31.13)	1528 (26.54)
3	494 (19.43)	639 (20.01)	1133 (19.75)
4	421 (16.56)	321 (10.05)	742 (12.94)
5	268 (10.54)	118 (3.7)	386 (6.73)
6	173 (6.8)	55 (1.72)	228 (3.97)
7+	137 (5.39)	38 (1.19)	175 (3.06)
Age at FDV (first FDV in police data) *			
13-18	183 (7.20)	136 (4.26)	319 (5.56)
19-24	684 (26.90)	665 (20.83)	1349 (23.52)
25-30	650 (25.56)	788 (24.68)	1438 (25.07)
31-36	557 (21.90)	759 (23.77)	1316 (22.94)
37-42	313 (12.31)	531 (16.63)	844 (14.71)
43+	156 (6.13)	314 (9.84)	470 (8.20)
Average age at DFV (years)	28.95 (<i>SD</i> = 7.97)	31.06 (<i>SD</i> = 8.35)	30.13 (<i>SD</i> = 8.25)
FDV Abuse Type *			
Murder and attempted murder	<5 (0.04)	14 (0.33)	16 (0.18)
Physical assault	4251 (92.72)	3668 (86.04)	7919 (89.50)
Sexual assault	89 (1.94)	174 (4.08)	263 (2.97)
Threatening behaviour	230 (5.02)	400 (9.38)	630 (7.12)
Misuse of weapons	13 (0.28)	7 (0.16)	20 (0.23)
Child(ren) (0-17) recorded as present at FDV *			
Yes	1430 (56.23)	2048 (64.14)	3478 (60.63)
No	1113 (43.76)	1145(35.86)	2258 (39.37)
Place of Assault *			
Public Place	964 (22.85)	371 (9.57)	1335 (16.49)
Caravan/Hotel/Hostel	321 (7.61)	173 (4.46)	494 (6.1)
Home/Unit	2933 (69.54)	3334 (85.97)	6267 (77.41)
Number of FDV events *			
1	1550 (60.95)	2672 (83.68)	4222 (73.61)
2	582 (22.89)	405 (12.68)	987 (17.21)
3	237 (9.32)	81 (2.54)	318 (5.54)
4	108 (4.25)	27 (0.85)	135 (2.35)
5-9	66 (2.60)	8 (0.25)	74 (1.28)

Characteristics	Aboriginal n (%)	Non-Aboriginal n (%)	Combined n (%)
Intimate partner violence specified			
Yes	1609 (63.27)	1994 (62.45)	3603 (100)
No	934 (36.73)	1199 (37.55)	2133 (100)
Age of mother at first birth (years) *			
12-18	1313 (51.63)	708 (22.17)	2021 (35.23)
19-24	927 (36.45)	1452 (45.47)	2379 (41.47)
25-30	227 (8.93)	664 (20.80)	891 (15.53)
31-36	63 (2.48)	278 (8.71)	341 (5.94)
37+	13 (0.51)	91 (2.85)	104 (1.81)
Average age of mother at first birth (years)	19.49 (<i>SD</i> = 4.29)	23.02 (<i>SD</i> = 5.60)	21.45 (<i>SD</i> = 5.35)
Socioeconomic level *			
1 - <i>Low</i>	1645 (64.69)	1117 (34.98)	2762 (48.15)
2	416 (16.36)	840 (26.31)	1256 (21.9)
3	285 (11.21)	576 (18.04)	861 (15.01)
4	142 (5.58)	416 (13.03)	558 (9.73)
5 - <i>High</i>	55 (2.16)	244 (7.64)	299 (5.21)

* denotes that $P < 0.0001$ for all characteristics between Aboriginal and non-Aboriginal mothers

Abuse type experienced by the mothers also differed by Aboriginal status (Table 1). Aboriginal mothers were more likely to be a victim of physical assault (93%) compared to non-Aboriginal mothers (86%, $p < 0.0001$). Non-Aboriginal mothers were more likely to be a victim of sexual assault and be a victim of threatening behaviour (4% and 9%, respectively) compared to Aboriginal mothers (2% and 5%, respectively, $p < 0.0001$). Differences were also seen in the location of assault with Aboriginal mothers more likely to be assaulted in their home (86%) compared to non-Aboriginal mothers (70%, $p < 0.0001$) (Table 1). A significant difference was found in the socioeconomic status of mothers who were victims of FDV. Nearly half of all mothers (48%, $p < 0.0001$) who were victims of FDV were from the lowest socioeconomic level. When stratified by Aboriginal status two-thirds of Aboriginal mothers (65%) were from the lowest socioeconomic status compared to one-third of non-Aboriginal mothers (35%, $p < 0.0001$). Children were found to be present at most assaults (61%) (Table 1), with a difference between Aboriginal and non-Aboriginal mothers (56% and 64%, respectively, $p < 0.0001$).

FDV hospitalisations related to FDV event

When hospitalisations of the mothers who were identified as victims of FDV in the original police data were examined, only 4% (Table 2) were hospitalised for FDV a month prior or after their assault. However, when expanded to 12 months before or after the police record, 8% of mothers had a hospitalisation for FDV.

Table 2 Hospitalisations X months before or after a FDV event recorded in police data

Number of months before or after police recorded FDV	All mothers hospitalised n (%)	Aboriginal mothers hospitalised n (%)	Non-Aboriginal mothers hospitalised n (%)
1	204 (3.56)	151 (5.93)	53 (1.66)
6	351 (6.12)	231 (9.08)	120 (3.76)
12	470 (8.19)	300 (11.80)	170 (5.32)

FDV identified in Hospital Morbidity Data

Of the mothers identified as victims of FDV in the original police data 11% (Figure 1) were also identified in the Hospital Morbidity Data Collection as victims of FDV. Searching the Hospital Morbidity Data Collection for FDV events for the 'non-exposed' mothers identified 1.7% (n=571) were victims of FDV in the five-year period 2004-2008 (Figure 1). Of mothers who were victims of FDV in the hospital morbidity data a large proportion (52%) were identified in the police data.

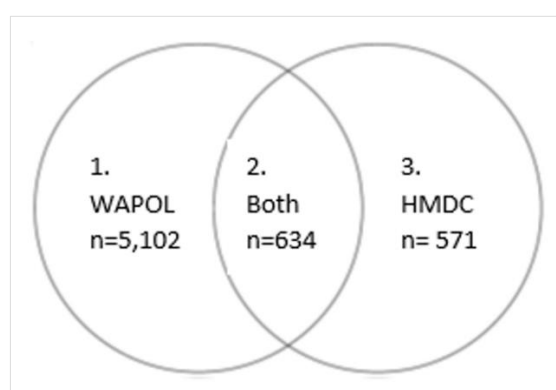


Figure 1 FDV identified in police and their crossover with hospital data

(2004-2008) WAPOL= identified in WA Police, HMDC= identified in Hospital Morbidity Data Collection, Both = identified in both Hospital Morbidity Data Collection and WA police data.

Comparisons between FDV identification groups

Most mothers who were identified as victims of FDV in the hospital data only, were Aboriginal (73%) (Table 3). The majority of non-Aboriginal women identified in hospital data only, had one child (93%), however, most Aboriginal women identified in this group had more than one child (65%) (Table 3). The mothers identified in the police data only were more likely to be teenage mothers (34.7%) compared to mothers identified in hospital data only (26.4%) (Table 3). Differences were also noted between mothers identified in the police data only and those who were identified in both police and hospital data. The largest proportion of Aboriginal mothers identified with FDV were in the hospital data only (74%) followed by those identified in both the police and hospital datasets (64%) with the least in the police data only (42% Aboriginal mothers). The non-Aboriginal mothers identified in both police and hospital datasets were more likely to have physical abuse recorded in police data (95%) compared to their counterparts in the police data only group (86%) (Table 3). Mothers identified in police data only had higher proportions of mothers aged under 25 at their first police recorded FDV event (30.2%) compared to those identified in both police and hospital data (20.8%).

Table 3 Characteristics of mothers of children born in WA 1987-2010 who were victims of FDV 2004-2008 identified in hospital data, police data and those that crossover both police and hospital datasets

Characteristic	Police record only			Both hospital and Police record			Hospital record only			Any violence		
	Aboriginal	Non-Aboriginal	P-value^	Aboriginal	Non-Aboriginal	P-value^	Aboriginal	Non-Aboriginal	P-value^	Aboriginal	Non-Aboriginal	P-value^
Number of mothers (n=)	2140 (41.94)	2962 (58.06)		403 (63.56)	231 (36.44)		419 (73.38)	152 (26.62)		2962 (46.96)	3345 (53.04)	
Number of children per mother			<0.01			<0.01			<0.01			<0.01
1	429 (20.05)	972 (32.82)		87 (21.59)	56 (24.24)		146 (34.84)	141 (92.76)		662 (22.35)	1169 (34.95)	
2	461 (21.54)	928 (31.33)		73 (18.11)	66 (28.57)		110 (26.25)	10 (6.58)		644 (21.74)	1004 (30.01)	
3	421 (19.67)	583 (19.68)		73 (18.11)	56 (24.24)		71 (16.95)	0 (0)		565 (19.07)	639 (19.1)	
4	348 (16.26)	290 (9.79)		73 (18.11)	31 (13.42)		50 (11.93)	<5 (<3)*		471 (15.9)	322 (9.63)	
5	216 (10.09)	106 (3.58)		52 (12.9)	12 (5.19)		26 (6.21)	0 (0)		294 (9.93)	118 (3.53)	
6	145 (6.78)	51 (1.73)		28 (6.95)	4 (1.73)		11 (2.63)	0 (0)		184 (6.21)	55 (1.64)	
7+	120 (5.61)	32 (1.07)		17 (4.22)	6 (2.59)		5 (1.2)	0 (0)		142 (4.78)	38 (1.14)	
Age at FDV (first FDV in police data)			<0.01			0.76						<0.01
13-18	166 (7.76)	131 (4.42)		16 (3.97)	6 (2.6)					183 (7.20)	136 (4.26)	
19-24	612 (28.6)	630 (21.27)		75 (18.61)	35 (15.15)					684 (26.90)	665 (20.83)	
25-30	544 (25.42)	725 (24.48)		105 (26.05)	65 (28.14)					650 (25.56)	788 (24.68)	
31-36	450 (21.03)	698 (23.57)		108 (26.8)	61 (26.41)					557 (21.90)	759 (23.77)	
37-42	247 (11.54)	487 (16.44)		64 (15.88)	41 (17.75)					313 (12.31)	531 (16.63)	
43+	121 (5.65)	291 (9.82)		35 (8.69)	23 (9.96)					156 (6.13)	314 (9.84)	

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Characteristic	Police record only			Both hospital and Police record			Hospital record only			Any violence		
	Aboriginal	Non-Aboriginal	P-value^	Aboriginal	Non-Aboriginal	P-value^	Aboriginal	Non-Aboriginal	P-value^	Aboriginal	Non-Aboriginal	P-value^
1	1372 (64.11)	2493 (84.17)		178 (44.17)	179 (77.49)					1550 (60.95)	2672 (83.68)	
2	464 (21.68)	368 (12.42)		118 (29.28)	37 (16.02)					582 (22.89)	405 (12.68)	
3	181 (8.46)	72 (2.43)		56 (13.9)	9 (3.9)					237 (9.32)	81 (2.54)	
4	79 (3.69)	21 (0.71)		29 (7.2)	6 (2.6)					108 (4.25)	27 (0.85)	
5-9	44 (2.06)	8 (0.27)		22 (5.46)	0 (0)					66 (2.60)	8 (0.25)	
Intimate partner violence specified			<0.01			0.01						<0.01
Yes	1340 (62.62)	1864 (62.93)		269 (66.75)	130 (56.28)					1609 (63.27)	1994 (62.45)	
No	800 (37.38)	1098 (37.07)		134 (33.25)	101 (43.73)					934 (36.73)	1199 (37.55)	
Age of mother at first birth			<0.01			<0.01						<0.01
12-18	1113 (52.01)	659 (22.25)		200 (49.63)	49 (21.21)		140 (33.41)	11 (7.24)		701 (23.67)	378 (11.3)	
19-24	790 (36.92)	1348 (45.51)		137 (34)	104 (45.02)		170 (40.57)	59 (38.82)		1251 (42.23)	1321 (39.49)	
25-30	176 (8.22)	602 (20.32)		51 (12.66)	62 (26.84)		81 (19.33)	43 (28.29)		692 (23.36)	995 (29.75)	
31-36	50 (2.34)	262 (8.85)		13 (3.23)	16 (6.93)		23 (5.49)	35 (23.03)		269 (9.08)	501 (14.98)	
37+	11 (0.52)	91 (3.07)		2 (0.5)	0 (0)		5 (1.19)	4 (2.63)		49 (1.65)	150 (4.79)	
Average age at first child birth			0.58			0.65			0.52			0.75
	19.44 (SD= 4.21)	23.04 (SD= 5.65)		19.77 (SD= 4.68)	22.71 (SD= 4.85)		21.59 (SD= 5.25)	26.04 (SD= 5.43)		22.96 (SD= 5.53)	25.22 (SD=5.85)	
Average age at first Police FDV			0.75			0.93						0.79
	28.54	30.98		31.19	31.96					28.95	31.06	

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Characteristic	Police record only			Both hospital and Police record			Hospital record only			Any violence		
	Aboriginal	Non-Aboriginal	P-value^	Aboriginal	Non-Aboriginal	P-value^	Aboriginal	Non-Aboriginal	P-value^	Aboriginal	Non-Aboriginal	P-value^
Average age at first FDV (2004-2008) in hospital data	(SD=7.96)	(SD= 8.42)		(SD= 7.69)	(SD= 7.44)	0.92			0.95	(SD=7.97)	(SD=8.35)	0.95
				31.02 (SD= 7.46)	31.87 (SD= 7.53)		31.69 (SD = 8.14)	32.16 (SD=7.46)		31.69 (SD = 8.14)	32.16 (SD=7.46)	
SEIFA			<0.01			<0.01			<0.01			<0.01
1 - Low	1373 (64.16)	1043 (35.21)		271 (67.25)	74 (32.03)		263 (62.77)	67 (44.08)		1885 (63.64)	1185 (35.43)	
2	358 (16.73)	779 (26.3)		58 (14.39)	61 (26.41)		71 (16.95)	42 (27.63)		487 (16.44)	904 (27.03)	
3	246 (11.5)	530 (17.89)		40 (9.93)	46 (19.91)		47 (11.22)	30 (19.74)		344 (11.61)	606 (18.12)	
4	118 (5.51)	386 (13.03)		24 (5.96)	30 (12.99)		26 (6.21)	7 (4.61)		178 (6.01)	421 (12.59)	
5 - High	45 (2.1)	224 (7.56)		30 (4.73)	10 (2.48)		12 (2.86)	6 (3.95)		68 (2.3)	229 (6.85)	

*All counts and corresponding percentages <5 have been suppressed.

^ P-value indicates statistical significance of difference between Aboriginal and non-Aboriginal in each characteristic group, statistically significant at p<0.05.

Children exposed to FDV

The majority of mothers who were identified in original police data had a child present at the time of FDV (non-Aboriginal 65%; Aboriginal 58%) (Table 1). Aboriginal mothers who were identified in both hospital and police datasets were less likely to have a child present at the police recorded FDV event (44%) than non-Aboriginal mothers (51%) (Table 3). Results for the analysis of children born to the mothers identified in the original police data are shown in Table 4. The children were more likely to be Aboriginal (54%) and be on average 6.2 (SD = 6.04) years of age at their mother's first recorded exposure to FDV. As our data did not include all children in the population with an exposure identified in hospital data we calculated exposure prevalence in children using the original police data. Prevalence of FDV exposure was significantly different in Aboriginal children than non-Aboriginal children (Figure 2). At the start of the exposure period in 2004 Aboriginal children had a 22-fold greater prevalence of exposure to violence (26.84 per 1,000) than non-Aboriginal children (1.21 per 1,000) ($p < 0.0001$). While the prevalence increased in 2008 for both Aboriginal children (64.57 per 1,000) and non-Aboriginal children (3.35 per 1,000) the difference between the two groups reduced to 19-fold ($p < 0.0001$).

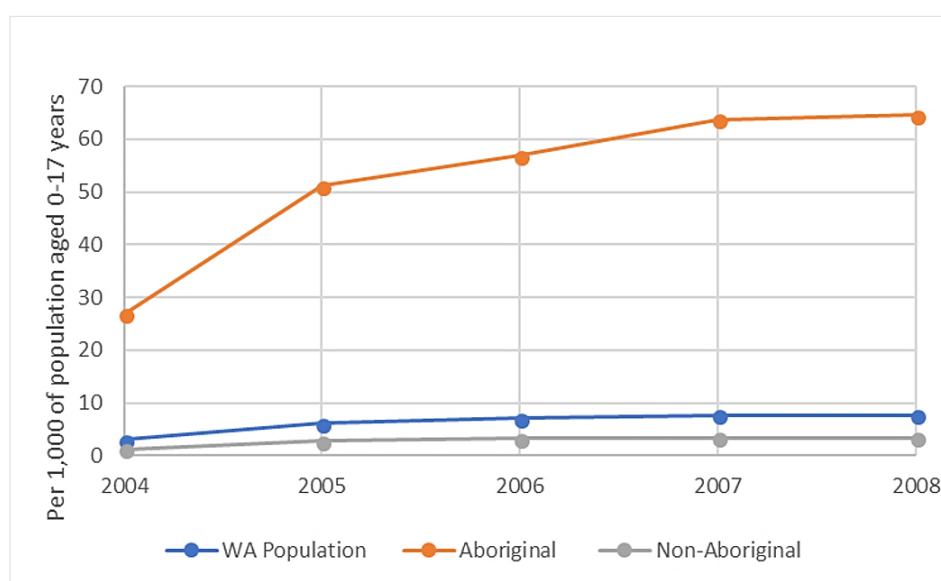


Figure 2 Children born in WA exposed to FDV perpetrated against their mother, identified in WA Police data

Original police data (2004-2008)

Table 4 Characteristics of children born in WA 1987-2010 whose mother was identified in WA Police data (original police data) as a victim of FDV

Characteristics	Aboriginal n (%)	Non-Aboriginal n (%)	P-value [^]	Combined n (%)
Children				
Number	8421 (53.99)	7177 (46.01)	<0.01	15598 (100)
Sex			0.28	
Female	4156 (49.35)	3480 (48.49)		7636 (48.95)
Male	4265 (50.65)	3697 (51.51)		7962 (51.05)
Age at first exposure *			<0.01	
Pre-pregnancy (2-6 years prior)	1015 (12.04)	826 (11.51)		1841 (11.80)
Pregnancy	467 (5.55)	412 (5.74)		879 (5.64)
0-4 years	2365 (28.08)	2206 (30.74)		4571 (29.31)
5-9 years	1919 (22.79)	1697 (23.64)		3616 (23.18)
10-14 years	1499 (17.80)	1191 (16.59)		2690 (17.25)
15-17 years	731 (8.68)	563 (7.84)		1294 (8.30)
18-21 years	425 (5.05)	282 (3.93)		707 (4.53)
Average age at first exposure (years)	6.39 (<i>SD</i> =6.13)	6.00 (<i>SD</i> =5.92)	0.91	6.21 (<i>SD</i> =6.04)

[^]P-value indicates statistical significance of difference between Aboriginal and non-Aboriginal in each characteristic group, statistically significant at $p < 0.05$.

Discussion

This research is the first in Australia to use police linked administrative data to investigate the characteristics of mothers who are victims of FDV. The analysis of the data has given us a more nuanced understanding of mothers and children who are victims of FDV.

Exposed cohort identification

This study reveals the challenges in identifying women who have experienced FDV when relying on a single data source for research. We originally used police data to identify FDV, however, when we searched hospital data for FDV in the non-exposed cohort we found that 1.7% mothers were exposed. It is evident from our findings that identifying women who experience FDV from police and hospital data sources will result in cohorts with different demographics. The police data only, had a greater proportion of non-Aboriginal mothers identified as FDV victims compared to the hospital data which was predominantly Aboriginal mothers. The mothers who were identified in both the police and hospital data were also different demographically from those solely in police or hospital data. The differences in the demographics, depending on identification source of FDV,

highlights the difficulties in identifying accurate demographics of victims of FDV. Due to its hidden nature FDV is a difficult area to investigate. We therefore suggest that researchers should use multiple data sources to gain a more accurate understanding of those experiencing FDV and its impact. Additional datasets that could also be considered for identifying Australian women who have experienced FDV such as the Australian Specialist Homelessness Services Collection (AIHW, 2019a). This data source gathers information on women who seek assistance from specialist homelessness services agencies with recent data finding 43% of clients in WA sought assistance due to FDV (AIHW, 2019a).

Despite physical assault being the cause of most FDV in the police data, we found very few women attended hospital one month before or after their assault period. A possible explanation for this is that the mothers may be using primary care services or attending an emergency department but not being admitted to hospital. Indeed, the most recent Australian Personal Safety Survey (ABS, 2017) highlighted that of the women who sought help for FDV a third contacted their GP (ABS, 2017). Therefore, our mothers identified in hospital data may be those at the 'severe end' of physical violence and, therefore, not representative of the mothers who are physically assaulted and not hospitalised. Again, consideration needs to be given to wider datasets such as General Practice data and Emergency Department data when investigating victims of FDV. However, there is the need to address known limitations with the identification of external causes of injury in emergency department data (O'Donnell et al, 2012).

Aboriginal mothers

Our research demonstrates that Aboriginal mothers are disproportionately affected by FDV. This disparity is consistent with previous work that highlight the high rates of Aboriginal women affected by FDV compared to non-Aboriginal women (ABS, 2016b; Orr et al, 2019). Within Western Australia 3% of the population identify as Aboriginal (ABS, 2019a), however, 44% of mothers identified as victims in police data were Aboriginal. and 73% within the hospital morbidity data. The difference in the Aboriginal proportions in these datasets may be attributed to Aboriginal women being more reluctant to disclose experience of violence to police (Wilson et al, 2017). Systematic issues in police responses to Aboriginal women experiencing FDV have been reported, with some police perceiving that FDV is the norm in Aboriginal communities (Legislative Assembly Parliament of Western Australia, 2015), women are disbelieved, or their trauma trivialised (National Family Violence Prevention Legal Services [NFVPLS], 2017). Furthermore, there is a reluctance in Aboriginal women to report FDV to police as they are fearful of their children being removed by child protection services (Wilson et al 2017). Additionally, there may be pressure in Aboriginal

communities not to report FDV to police to prevent the increased criminalisation of Aboriginal men (NFVPLS, 2017). Therefore, despite Aboriginal mothers being overrepresented in police data it is likely that the true figure of FDV is even higher given the high proportion who were identified in the hospital data.

It is important that the over representation of Aboriginal mothers as shown in our results are not used to stigmatise Aboriginal families. Gender based violence is not part of traditional Aboriginal culture. Rather, traditional culture and laws were respectful of women (Our Watch, 2018). The over representation of Aboriginal mothers should be taken in the context of the long-lasting impact of colonisation. The removal from land, and cultural dispossession over the past two centuries, has resulted in social, economic, physical, emotional and psychological problems for Aboriginal peoples (Australian Institute of Family Studies [AIFS], 2019a; AIHW, 2019b). Our results should be used as evidence for the need for prevention and early intervention strategies which are underpinned by Aboriginal communities' cultural authority.

Place of assault

Most FDV assaults, identified in police data, occurred at home, which is consistent with the findings of the Australian Personal Safety Survey that reported 65% of women were assaulted in their home (ABS, 2017). However, Aboriginal mothers were more likely to experience violence in a public place than non-Aboriginal mothers. This discrepancy could be explained by Aboriginal cultural connection with the land and the cultural relevance of gathering in public places (Kingsley et al, 2018). For Aboriginal peoples, gathering in public spaces acts as a medium where social relations are produced and reproduced from a combination of economic, political, legal and social practices and structures (Fredericks, 2013). Furthermore, it could be postulated that when violence occurs in public places, non-Aboriginal members of the public may be reporting the incident to police as they do not have the same fear of police that many in the Aboriginal communities hold. Given the discrepancy in place of assault between Aboriginal and non-Aboriginal Australians, place of assault is an area that requires further research.

Type of violence

The type of violence identified in the police data was predominately physical assault which can be explained by the fact that, unlike the UK, coercive control is not part of the Australian legal framework. A further explanation may be the police having a limited understanding of what non-physical incidents constitute FDV. A negative police culture has been acknowledged where FDV is considered by some in the police force as 'just a domestic' and that it doesn't constitute police work

(Legislative Assembly Parliament of Western Australia, 2015). Furthermore, women experiencing non-physical abuse may not recognise that they are experiencing FDV, and therefore not report it. Sexual violence, although highly prevalent in Australian society (AIFS, 2019b) is also recognised as an underreported offence. There are many reasons women do not report sexual assaults to the police: some women may not understand what happened to them constitutes a sexual offence, they may be fearful of the perpetrator, stigma, trauma and shame (Australian Law Reform Commission, 2010). Women may also lack confidence in the criminal justice system due to low conviction rates for reported sexual assaults (Crime Statistics Agency, 2017).

Socioeconomic Status

The mothers who were victims of FDV experienced higher levels of socioeconomic disadvantage than the national average (ABS, 2018). For Aboriginal mothers 64% resided in the most disadvantaged socioeconomic group compared to the national average of 48%. In non-Aboriginal mothers 45% resided in the most disadvantaged group compared to the national average of 18%, with 7% in the least disadvantaged quintile compared to the national average of 22%. While it is evident that FDV permeates all socioeconomic groups, there is a marked difference in the lower socioeconomic groups. These results are consistent with previous work that acknowledged a correlation between low socioeconomic status and an increased risk of violence (WHO, 2004). A possible explanation for the discrepancy in over representation in lower socioeconomic groups is that mothers from higher socioeconomic status may have social and cultural capital to address FDV before it escalates to situations where police become involved and/or they require hospitalisation.

Mothers age

We found that Aboriginal mothers who were victims of FDV were more likely than their non-Aboriginal counterparts to be teen mothers in all datasets, however, there were differences between the datasets. In police data only there were two times more Aboriginal teen mothers than non-Aboriginal teen mothers. In the hospital data only there were four times more teen mothers than non-Aboriginal teen mothers. While the differences are marked they are lower than the general population where Aboriginal teen mother rates are five times higher than non-Aboriginal teen mothers (ABS, 2019b). This discrepancy could be explained by our cohort being over represented by Aboriginal mothers and not representative of the general population. We also found mothers in the police only data were more likely than those identified in the police and hospital data to be aged under 25 years at their first recorded assault in police data. The reason for this discrepancy is not clear, further research is required to investigate the variability of age in service use as this information will be useful in targeting services.

Children present

We found that most mothers, identified in police data, had a child present at their assault (Aboriginal mothers: 56%; non-Aboriginal mothers: 64%). This is higher than the Australian Personal Safety Survey (ABS, 2017) which reported that 49% of mothers had children in their care when FDV occurred. Our observed increase in children present could be attributed to the fact that our cohort comprised mothers where the personal safety survey included women who are not mothers. Using police data, we found that 6.46% of Aboriginal children in the WA population and 0.34% of non-Aboriginal children were exposed to FDV in the last year of exposure period (2008). These proportions were a significant increase from the start of the exposure period in 2004. This change can be part explained by the change in the WA Police operational system to the new 'Incident Management System', replacing the Offence Information System. Although the operational system change was introduced in 2002, the two operational systems ran side by side during the implementation period, therefore, we used data from 2004 to allow for a bed-in period. It may, however, have taken longer for the system to be fully operational as all mainframe functions were not incorporated into Incident Management System until 2007, this may have impacted on the year on year climb. This notwithstanding, the differences between Aboriginal and non-Aboriginal children exposure to FDV was stark. Aboriginal children had a 19-fold increased prevalence of exposure to FDV compared to non-Aboriginal children. This can be explained by their mother's higher risk of being victims of FDV and over-representation in the police data. It is widely accepted that children exposed to FDV can be adversely affected (Holt, Buckley, & Whelan,

2008). Children exposed to FDV are at higher risk of poorer outcomes in areas of physical health, psychological, emotional, behavioural, social, and academic achievements (Artz et al., 2014; Howell et al, 2016). Further studies are required to look at the health and social outcomes of children exposed to FDV. Longitudinal linked administrative data from sources such as education and health should be used to investigate the children's outcomes.

Limitations

Although we have addressed them where possible there are some limitations in this study. Our data comprised of mothers and is therefore not representative of women who do not have children. Furthermore, we were only able to capture FDV in hospital data when a mother was hospitalised potentially reflective of physical violence at the 'severe end' of FDV. Similarly, there are limitations with the WA Police data. We were only able to capture data where the male was charged. Only 9% of women seek support from police for FDV (ABS, 2017), and of those that do seek support not all will result in a male being charged. Despite a call out occurring, on average, every 10 minutes in WA for FDV, our exposed cohort was 5,736 mothers over five years. This equates to the number of call outs police receive in 40 days. Therefore, our data are an underestimation of FDV and not generalisable to women who are victims of FDV where a male is not charged with an offence. Additionally, our data are limited in the spectrum of FDV, it is heavily weighted on physical assaults. Furthermore, the women identified in the hospital data are not representative of women who attend health services but are not admitted to hospital. Finally, the prevalence of FDV exposure for children is calculated using only the police data and does not capture children exposed whose mothers accessed different services or indeed no services at all.

Implications and next steps

Despite the limitations, our research has provided insight into a difficult area that could not be achieved through survey data alone. This study has highlighted the demographics of mothers and children who are victims of FDV using population level data. Our research is novel in that it is the first to use linked police data in Australia to investigate the demographics of mothers who are victims of FDV. It highlights the overrepresentation of Aboriginal mothers and their children as victims of FDV. It is evident that when researching FDV multiple datasets are required to identify victims of FDV. Underreporting of FDV needs to be addressed, when women do not report they may not receive the physical, emotional, and mental support needed (Bosick et al, 2012). Importantly, the underreporting of FDV will skew accurate data and may lead to misallocation of funds for FDV management (Bosick et al, 2012).

As the first response to a woman who is disclosing FDV is pivotal to her accessing support and potentially for her safety, it is essential that responding professionals in health, human services and police are educated about the dynamics of FDV and the consequences not only for the women but also their children. Currently FDV is not part of WA healthcare providers suite of mandatory training, therefore, we recommend that it becomes mandatory for health staff. Australia also needs to examine the potential of legislating to make coercive control a criminal offence to ensure the safety of those experiencing non-physical FDV. Learning from the UK experience would be useful in this endeavour.

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