



FINAL REPORT

**A study of indicators of Red Flags for fatal
child assault and neglect in Queensland**

Queensland
Family & Child
Commission





Acknowledgements

The Queensland Family and Child Commission (QFCC) acknowledges Aboriginal and Torres Strait Islander peoples as the Traditional Custodians across the lands, seas and skies on which we walk, live and work. We recognise Aboriginal and Torres Strait Islander people as two unique peoples, with their own rich and distinct cultures, strengths and knowledge. We celebrate the diversity of Aboriginal and Torres Strait Islander cultures across Queensland and pay our respects to their Elders past, present and emerging.

This report contains information about the deaths of children in Queensland. The QFCC acknowledges this may cause distress for some people. If you need help or support, please contact any of these services:

Lifeline: Phone: 13 11 14

Beyond Blue: Phone: 1300 22 4636

Kids Helpline (for 5–25 year olds): Phone: 1800 55 1800

The QFCC wishes to thank the University of Queensland, notably Professor Karen Healy, Dr Sue Scull and Associate Professor Philip Gillingham, for the research which has formed the basis of this report.

About this report

This report was commissioned by the QFCC and authored by **Professor Karen Healy** and **Associate Professor Philip Gillingham** of the School of Nursing, Midwifery and Social Work, University of Queensland.

The information in this report was current at the time of undertaking the research in 2020. For current data on child deaths, refer to the Queensland family and Child Commission's Annual Reports on the Deaths of Children and Young People, Queensland [Preventing child injury & death | Queensland Family & Child Commission \(qfcc.qld.gov.au\)](#). This report does not comment on any individual children.



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Executive summary

This report describes a study into the possibility of raising a Red Flag for children at risk of fatal child assault or neglect within their family context. It should be noted, the fatal assault or neglect of children is a rare and tragic event.

The study was based on the analysis of case record data of 109 children who died in Queensland as a result of fatal child assault or neglect between October 2004 and February 2020. The de-identified case record data was from the Child Death Register held by the Queensland Family and Child Commission. This data was supplemented by de-identified case record-linked information collected from child protection and health service agencies who were involved with the children prior to their deaths.

A review of the data revealed that 109 children died in 90 filicide incidents, including ten events where two or more children died on one occasion. The majority of filicides occurred in the context of domestic homicide (47) or child abuse or neglect (52 cases), while there were five cases of neonaticide. A small number were classified as other intra-familial assault (3) or homicide of a young child by a family acquaintance (2). The majority of multiple child deaths in a single incident were associated with domestic homicide.

Parents were responsible for the majority of deaths, with fathers responsible for 34 filicide events and mothers responsible for 28 of these events. In three events, both parents were responsible. Step-fathers, or new partners of mothers, were responsible for 12 filicide events involving 13 children. Almost all of these involved children aged 0-4 years. Consistent with prior research (Brown, Lyneham, et al., 2019) step-fathers, or new partners of the mother, appeared to be over-represented as perpetrators, given that they were identified as present in 15 of the families in this data set but were responsible for 12 of the filicide events.

Consistent with prior research, our study found that children aged 0-4 years were most at risk of fatal assault and neglect, with infants aged 0-1 years being most vulnerable. Aboriginal and Torres Strait Islander children were over-represented. In Queensland, Aboriginal and Torres Strait Islander children constitute approximately 8.2% of the population aged 0-17 years and these children comprise 25.7% (28 children) of our sample. The data set was affected by a single event in which a large number of Aboriginal and Torres Strait Islander children died. If we remove that case from our data set we find that 20 children (18.3%) in the data set are of Aboriginal or Torres Strait Islander background. This proportion still reflects a substantial over-representation of Aboriginal or Torres Strait Islander children as victims of filicide. Similarly, O'Donnell et al.'s (2010) study of filicide in Western Australia found that 19% of their sample identified as Aboriginal. In our study, we found that more Aboriginal and Torres Strait Islander children deaths were attributed to child abuse or neglect than to domestic and family violence compared to the non-Aboriginal or Torres Strait Islander children. However, these differences were not statistically significant.

Consistent with prior research, this analysis showed an over-representation of children from disadvantaged areas, with 67 (61.5%) of the 109 children resident in low socio-economic status (SES) areas at the time of their death. However, the proportion of children in our data set in low SES areas is comparable to that found among children engaged with child protection services (Australian Institute of Health and Welfare, 2020). The qualitative data indicated that financial problems such as bankruptcy or other significant financial stresses impacted on at least two child death events involving four children *not* residing in a low SES area. We conclude that low SES is such a common feature of the at-risk population that it does not help to discriminate between risk factors for filicide compared to the broader at-risk population. The fact that financial stress is associated with both fatal and non-fatal child abuse and neglect should be taken into account in prevention strategies for filicide, even if it is not a useful discriminator for a Red Flag.



Case record data related to filicide in Queensland between 2004 and 2020 was reviewed to extract any important and unusual features which might indicate risk factors for fatal child assault or neglect. This data was also compared to international evidence of risk factors for filicide (Healy, Scull, & Gillingham, 2020).

In addition to the risk feature of a child's age, with children aged 0-4 years being most at risk, the key risk features for fatal child assault and neglect identified in this study are:

1. A threat to kill a child;
2. Domestic and family violence;
3. Repeated contact with the child protection authorities;
4. Presence of a new male partner (or step-father), especially for children aged 0-4 years;
5. Illicit drug or alcohol misuse by parents or caregivers;
6. Parent or caregiver with a severe mental health disorder;
7. Recent separation (within the last 12 months);
8. Extended hospitalisation of the child.

This analysis showed the frequency of particular features, and pairwise combinations of features, seen in significant numbers prior to the child's death. Our analysis suggests a threat to kill a child should raise a Red Flag, especially if this is in conjunction with a recent separation, domestic and family violence, or drug and alcohol misuse. We also found that extended hospital stays, defined as five or more days following birth or more than three days in hospital at any other time in the child's life, is suggestive of a Red Flag for elevated risk of fatal assault and neglect, again especially if in association with other risk features. The presence of a step-father or new partner of a mother in a household with young children (aged 0-4 years) appears to confer elevated risk, especially in circumstances where other risk features are present.

These findings are cautioned by the fact that the study was conducted on a small set of data. Also, we had no statistics on the prevalence of these same features, or combinations of features, which may be present in the large numbers of at-risk children who survived. Round-table discussions with senior leaders in health and human services and with Aboriginal and Torres Strait Islander leaders emphasised the need to recognise the potential burdens imposed on families and on health and human services arising from false positive identifications of Red Flags. These insights point to the importance of collaboration with health and human service professionals in developing Red Flag protocols, and for a further study involving matched population data for the at-risk population.



Based on the outcomes of this research, the Queensland Family and Child Commission (QFCC) considered a 'Red Flags' protocol for filicide was not warranted.

The QFCC acknowledges that a threat to kill a child by a parent (found by this study to be a significant standalone risk factor for filicide) is already embedded in risk assessment frameworks used by child protection and police professionals.

The QFCC instead produced the paper *Taking Lives: A Queensland study on parents who kill their children*.

The paper summarises the main findings of this study to raise awareness on filicide risk factors across the broad range of professionals working with children and families.



A study of indicators of Red Flags for fatal child assault and neglect in Queensland

Background

The Queensland Family and Child Commission (hereafter QFCC) maintains a Child Death Register. This Register holds records of all child deaths in Queensland, including those arising from fatal child assault and neglect, together with the associated circumstances.

These records, collected since 2004, provide the opportunity to examine if there are any common features associated with fatal child assault and neglect. Such features could then be used by agencies working with children to raise a Red Flag, to indicate the need for appropriate action. Accordingly the QFCC has commissioned a team from the University of Queensland (hereafter UQ) to undertake this study, and this is a report of the findings.

Aim

The aim of this study is to identify features which would justify raising a Red Flag to indicate a high likelihood of fatal child assault and neglect within an intra-familial context.

Method

The study was undertaken between April and August 2020. The UQ research team obtained Human Ethics Clearance for the study. The stages of the study are outlined below.

Stage 1: Literature review

An extensive international literature exists on identifying risk factors for fatal child assault and neglect in intra-familial contexts. The first step taken in this research was to undertake a scoping review of the literature (Healy et al., 2020). This review identified indicative features of elevated risk for fatal child assault and neglect which have been considered in our study of the Queensland data.

The literature review confirmed the concept of Red Flag is an acknowledged concept of value to professionals and community members in a range of health and human services. To date however, the term has rarely been used in child protection services.

A Red Flag refers to a combination of characteristics and/or events associated with an elevated risk of an adverse outcome, or to signify indicators of a particular condition such as a developmental delay or health concern. The main purpose of Red Flags is to enable people, such as health and welfare professionals and family or community members, to promptly recognise situations of substantially-elevated risk for adverse outcomes and to take immediate action to assess and address these risks.



For a Red Flag protocol to be utilised by professionals, and potentially community members, to promptly recognise and act to address Red Flags for fatal child assault and neglect, four features are required:

- Clearly identifiable indicators of risk;
- Readily accessible information about these indicators;
- A limited number of factors or combination of indicators; and
- A clear protocol for managing Red Flags once raised.

In undertaking this study, the team was mindful of these requirements of a Red Flag protocol. In so doing we focused our study, including data linking activities, on accessing and incorporating factors that could be readily used in a Red Flag protocol.

See Attachment 1 for a copy of the literature review.

Stage 2: Data consolidation

The next step was to assemble the data provided by the QFCC into a comprehensive form suited to both quantitative and qualitative analyses. The QFCC provided the team with de-identified case record data for all child deaths that occurred between October 2004 and February 2020. The UQ team then limited the data set to only cases recorded as fatal child assault and neglect. This included 109 individual case records, of which 107 were recorded as involving intra-familial assault. Two further cases involved children aged 1-4 years who died as a result of extra-familial assault, in both cases as a result of homicide by a known acquaintance. There were 90 incidents involving fatal child assault or neglect, ten of these involving multiple child deaths.

Stage 3: Data coding

The QFCC case record data included information about:

- The circumstances of the fatal assault or neglect of the child;
- The child's demographic features;
- Socio-economic status for the area of residence;
- Information about features of the parents' or carers' circumstances that may be considered as risks for child abuse and fatal abuse or neglect such as the presence of a mental health disorder, drug or alcohol misuse or domestic and family violence; and
- Information about the child and families' service systems contact, such as with child protection services.

The information was held in a variety of formats including numerical information (such as dates of birth and of death), text-based codes (such as Aboriginal and Torres Strait Islander identity), numerical codes (such as the presence or absence of a mental health disorder), and open text data (such as information drawn from police and human service agencies reports about the circumstances of individual fatal child assaults).

To facilitate data analysis, it was necessary to code the data into a standard format for each variable. In doing this, the team was mindful of the need to limit the number of codes for any variable given the small size of the overall data set (pertaining to 90 events). As far as possible, we coded each variable into binary form to indicate the presence or absence of each identified risk feature for each child and each case. This required careful judgement of each case, taking into account all the available evidence from the open text data in the QFCC database and, later, from Child Safety's Systems and Practice Review reports.



The absence of any specific risk feature in our data set means that risk feature was not evident in the data available to us. It cannot be taken to indicate with certainty that the feature was not actually present in the child's circumstance. For example, the absence of a risk factor such as domestic and family violence means that in the data available to us, there was no evidence of this feature in relation to the specific case. This conservative approach to data coding enhances our confidence that the risk features identified in this analysis would be likely strengthened by access to other data sets, such as Coroners' reviews and sentencing reports, should these become available in a further study.

Stage 4: Data linking

The next step of developing our data set was to link relevant human service data for each case. The QFCC also provided access to interagency data, including the following de-identified data:

- 16 Systems and Practice Review reports relating to individual child deaths of children known to Child Safety between 2006 and 2018;
- 22 case records of individual children's contact with Queensland Ambulance Service for all children in the fatal child assault and neglect data base between October 2007 and February 2020. Twenty of these 22 cases records related to the death incident;
- 117 records of patient contacts for 65 children on the QFCC Child Death Register and who had contact with Queensland Health facilities between October 2007 and February 2020. We did not have Queensland Health records for the 18 children who died of fatal assault between 2004 and August 2007. Ninety-one children were recorded by the QFCC as having died between 2007 and 2020, and the Queensland Health records identified Queensland Health contacts for 65 of these children during their lifetime. The 117 records of patient contact included repeated contact for some children in the data set.

Information from 16 Systems and Practice Review reports from the Department of Child Safety, Youth and Women was reviewed and coded into the existing variables provided in the QFCC data set. This data provided further information relevant to developing and validating coded data about the children's demographic features, level and nature of child safety context, family circumstances, and exposure to risk factors such as parent mental illness and parent drug and alcohol misuse.

The Queensland Ambulance Service data pertaining to 22 children was not incorporated into the data sets for this study. Upon review, we identified that the Queensland Ambulance Service data primarily related to paramedic interventions at the death incidents and as such provided little information relevant to identifying Red Flags to prevent fatal child assault and neglect.

The Queensland Health data was also reviewed. The data set was limited to the period 2007-2020 and did not include information about patient contact for children who died in the period October 2004-July 2007. In reviewing the data for the period July 2007 and February 2020, we identified that much of the patient contact information related either to contact at time of birth or time of death. The data set did not include data related to the child's birth, except where it was associated with an extended hospital stay longer than five days at the time of birth, and we excluded all patient data related to the child's death due to its lack of utility in analysing prospects for raising a Red Flag to *prevent* child death.

Our review of the Queensland Health data did however reveal evidence of extended hospital stays among children who later died of fatal child assault or neglect. We defined the variable "extended hospital stay" as children being in hospital for more than five days following their birth or for more than three days on at least



one occasion during their lifetime. We excluded extended hospital stays where the child died during the stay as our goal is to identify prospects for raising a Red Flag to prior to the fatal assault and neglect of a child.

We excluded hospitalisation data for two children who had experienced extended hospitalisations for injuries that had led to their *removal* from their parents' care. In these two cases, the children's extended hospital stays were not linked to a potential risk factor for future fatal assault of a child.

The variable "extended hospital stay" was included as a risk feature in our data set as length of stay seems indicative of a serious condition or circumstance that should at least be reviewed for its child safety and well-being implications (Uebel et al., 2015; Wu, Lu, Lin, & Feng, 2015). Further, we regard this variable as potentially useful for a Red Flag as it is a clearly identifiable and readily available indicator.

We did not include specific diagnoses in our data set. This was because a review of the data codes for primary diagnosis were widely variable, indicating there was no single diagnosis or cluster of diagnoses that might help in raising a Red Flag.

Of the 89 children who died during the period 2007-2020, we found that 18 children (or 20.2%) of the data set had extended hospital stays during their life-time.

Stage 5: Data set features

A final data set for the study was assembled comprising information about:

- The circumstances of fatal child assault or neglect cases
- The deceased children's demographic information
- Socio-economic status for the area of residence; and
- Risk features in the child's environment.

The risk features were those that were identified as salient in the international literature review and for which adequate data was available.

We did not include parents' or caregivers' criminal history, particularly history of violent offences, as data for this variable was not available for the majority of cases in our data set. We do not regard this exclusion as having a material impact on this analysis, as this variable is a controversial item with some evidence that it can confer protection where there is continued involvement of probation and other support services are available (see Healy et al., 2020). Further, in terms of our goal of developing a Red Flag protocol, it is important to rely on items for which accurate information is easily accessible to frontline workers. Our experience in this study suggests that accurate data for this variable is not readily accessible.

All of the risk features included in our data set had been previously identified in the international literature review except for one new variable, "extended hospital stay" which we added to our data set. The variable of "extended hospital stay" among infants and children is associated with a host of risk factors for child abuse and neglect including pregnancy and birth complications (J. Brown, Cohen, Johnson, & Salzinger, 1998; Mejdoubi et al., 2011), serious early childhood injury requiring hospitalisation (Wu et al., 2015), and neonatal abstinence syndrome (Uebel et al., 2015). The features, data codes and definitions of these codes in the final data set is presented in Table 1.



Table 1: Data features and definitions of codes

Feature set	Data codes	Definition of codes
Circumstances of fatal assault and neglect		
	Context of death	Coded data from the QFCC with six categories (domestic homicide; child abuse; child neglect; neonaticide; other intra-familial assault; extra-familial assault - by acquaintance of family).
	Multiple deaths	Binary code: Defined as there being more than one child death at one incident; or one death at one incident.
	Perpetrator	Six codes: Defined as the person identified as responsible for child's death (mother; father; both mother and father; step-father including mother's partner; other known person; unknown or unidentified)
Child		
	Child's age	Coded data from the QFCC four age categories (0-1; 1-4; 5-9; 10+).
	Child's gender	Binary code: (male or female)
	Child's Aboriginal or Torres Strait Islander status	Binary code: (Aboriginal or Torres Strait Islander or non-Aboriginal or Torres Strait Islander)
Family socio-economic circumstance		
	Socio-economic status (SES)	Binary code: (low SES or not low SES, defined by child's residence at time of death)
Risk features		
	Threats to kill	Binary code: Evidence of the perpetrator issuing threat to kill to children prior to the death
	Domestic and family violence	Binary code: Coded by the QFCC as present or data included evidence of domestic and family violence
	Repeat child protection involvement	Binary code: Defined as two or more contacts with the Queensland Child Protection authority due to concerns about the child's safety and well-being.
	Step-father	Binary code: This refers to the presence of a step-father or male person referred to as the mother's partner in the child's home. In all but one case, these were recent partners being defined as being in the role of step-father or mother's partner for less than a year.
	Drug and alcohol misuse	Binary code: Coded by the QFCC or data included evidence of presence of illicit drug or alcohol use by parent or carer that impacted on child's safety.
	Mental health disorder	Binary code: Coded by the QFCC as present or data included evidence of medically-diagnosed severe mental illness involving psychosis, severe depression or personality disorder.
	Recent separation	Binary code: Defined as evidence of relationship breakdown between the child's biological parents in the past 12 months.
	Extended hospital stay	Binary code: Defined as child remained in hospital for 5 days or more following birth or on 3 days on one occasion during their life-time (other than at the time of their death).

Stage 6: Data analysis

The final consolidated data set was entered into the Statistical Package for the Social Sciences (SPSS). Great care was taken in consolidating the data because a few errors would distort the findings given the small number of cases available. Two data tables were developed, one for the 109 children in the study and the other for the 90 case reports where one or more of these deaths occurred.

Frequencies for each variable were reviewed and descriptive reports relating to the following are presented in this report:

- Circumstances of the child's death;
- Children's demographics;
- Family socio-economic circumstances;
- Risk features in the child's environment.

As the data is in categorical form, we also conducted chi-square and Cramer's V statistical tests to analyse the data. These statistical tests measure associations between categorical variables with the chi-square examining whether combinations of variables observed in the data are significantly different from that which is expected if the data were randomly distributed. While the chi-square assesses the statistical likelihood of observed combinations of the variables, Cramer's V assesses the strength of the association within each of the observed combinations of categorical variables.

During the data analysis process, the team conducted three focused discussions involving 20 experts in a range of human service fields including paediatricians, family support workers, child protection agency leaders, police, lawyers, domestic and family violence practice leaders, and Aboriginal and Torres Strait Islander community leaders. The purpose of these discussions was to assist the team in understanding human services professionals' views on the prospects and challenges of a Red Flag protocol, and to provide insights into the frequency of the risk indicators emerging in our study compared with the at-risk populations with whom they practice.

Findings

Feature Set 1: Circumstances of fatal assault and neglect

Context of death

Overall, there were 109 deaths due to fatal child assault and neglect in the study period. The QFCC Child Death Register had categorised the context of death according to six categories. Of the 109 cases, all were categorised as fatal child assault and neglect, with 107 being intra-familial and two being extra-familial. In both cases of extra-familial fatal assault the event pertained to young children aged 1-4 years, and was defined as homicide by an acquaintance.



Table 2: Context of death by individual cases and by number of incidents

Context of death	Number of children	Number of death incidents
Domestic homicide	47	31
Fatal child abuse	44	44
Fatal child neglect	8	6
Neonaticide	5	5
Other intra-familial assault	3	2
Homicide by acquaintance	2	2
Total	109	90

Multiple death incidents

There were 90 incidents of deaths. Ten of these, classified as multiple death incidents (more than one death occurred), involved 28 children. Domestic homicide was the primary context in which multiple deaths occurred and accounted for 21 of the 28 child deaths in this context.

Perpetrators' relationship to the child

The perpetrators' relationships to the children was compared with the context of the 90 incidents of child death involving 109 children.

Table 3: Perpetrators' relationship to child by context of child's death (90 cases)

Event/perpetrator	Mother	Father	Both mother and father	Step-father	Other (known)	Unknown	Total
Domestic homicide	12	12	0	1	6	0	31
Child abuse	8	19	2	11	1	3	44
Child neglect	3	2	1	0	0	0	6
Neonaticide	5	0	0	0	0	0	5
Other intra-familial assault	0	1	0	0	0	1	2
Other extra-familial	0	0	0	0	2	0	2
Total	28	34	3	12	9	4	90

We can see that in 65 of the 90 incidents of fatal child assault or neglect (68.4%), one or both of the parents were identified as the perpetrator. A chi-square test found the association between the perpetrator's relationship to the child and the context of the child's death to be statistically significant χ^2 , (df, 25, N = 90) = 63.9, $p < 0.001$, Cramer's V = 0.377). This means that within this data set, children were more likely to be killed by their biological parents than by any other person. However, we also note that step-fathers were the perpetrators of 12 of the 90 death events. This reflects an over-representation of step-father involvement in child death events relative to their representation as parents or caregivers in the data set. In this data set, 15

step-fathers were identified in 90 of the families where children died. Step-fathers or mother’s new male partner, were identified as the perpetrator responsible for 12 of the filicide events involving 13 children. As we did not have access to household composition data for this study, we cannot identify whether the actual number of step-fathers or new male partners was higher than the 15 referred to in the data set.

Feature Set 2: Children’s characteristics

Age at death

Consistent with prior research, the majority of children subject to fatal assault and neglect were aged between 0-4 years. The age structure is outlined in Figure 1.

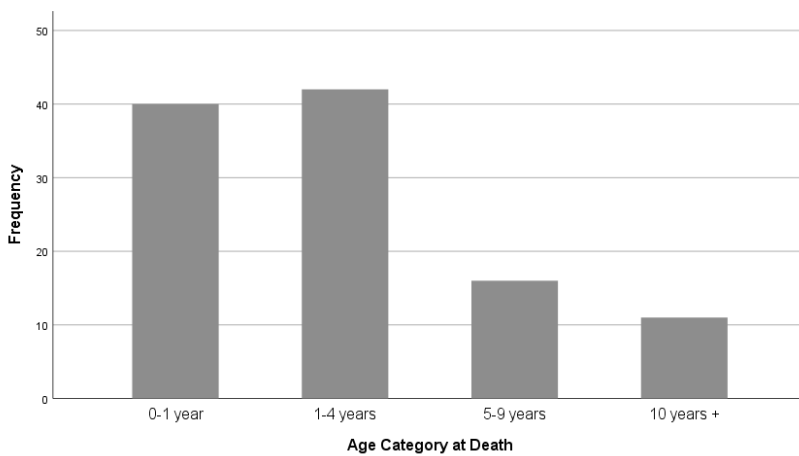


Figure 1: Age at death by age category

Within the sample, 40 children were infants aged 0-1 years, 42 children were 1-4 years, 16 were children 5-9 years and the remaining 11 were children aged 10 years or older. This is consistent with prior research, which reports the greatest risk of death from fatal assault is for infants aged 0-1 year (see Brown, Lyneham, et al., 2019). Although in Figure 1 we see that the highest number of children in the age group 1-4 years, this accounts for four years of the children’s lives whereas the age group 0-1 year accounted for almost the same number of deaths despite only referring to a single year of the children’s lives.

Child’s gender

Overall, 56 male and 53 female children were victims of fatal assault and neglect during the study period. However, the age distribution of fatal assault and neglect differs markedly by gender. As Table 4 shows, 47 of the 56 boys (83%) who died were aged between 0-4 years, while for girls only 35 of the 53 (66%) who died were aged 0-4 years. The comparison of gender by age distribution is outlined in Table 4.

Table 4: Cross-tabulation age at death (by category) by gender

Age	Male	Female	Total
0-1 year	23	17	40
1-4 year	24	18	42
5-9 year	8	8	16
10 years	1	10	11
Total	56	53	109



A chi-square test found the relationship between age at death and gender to be statistically significant χ^2 (df 3, N 109) = 9.1, $p < 0.05$, Cramer's $V = 0.288$. This result shows that within the study sample, male children who died of fatal assault and neglect were more likely to die in the 0-4 age range while deaths among female children, while still concentrated in the 0-4 age range, are more distributed across the four age categories. This finding is consistent with prior research (see Brown, Lyneham, et al., 2019). Even so this does not imply that gender should be a consideration in the assessment of risk, as the data also shows that overall both male and female children in the 0-4 age group are at greatest risk of fatal child assault and neglect, relative to children in other age groups. Age is a more important factor than gender in assessing risk, with infants and young children being at greatest risk of fatal assault and neglect.

Aboriginal and Torres Strait Islander children

Aboriginal and Torres Strait Islander children were over-represented in the data set relative to their representation in the population. In Queensland, Aboriginal and Torres Strait Islander children constitute approximately 8.2% of the population aged 0-17 years. When our data was analysed by individual child deaths, the proportion of Aboriginal and Torres Strait Islander children in the data set was 25.7% (28 children). When data was analysed by the 90 death events, the proportion of events involving Aboriginal or Torres Strait Islander children was 22.2% (20). The data set was affected by a single event in which multiple children died. If we remove that case from our data set we find that 20 children (18.3%) in the data set were of Aboriginal or Torres Strait Islander background. This proportion still remains a substantial over-representation of children in this sample. This level of over-representation is similar to the rate of 19% found by O'Donnell et al (2010) in their study of filicide in Western Australia.

Feature Set 3: Family socio-economic circumstances

The families' SES was coded according to the children's location of residence at the time of their death. No other income or residential data was available so it is possible that this measure does not fully capture those low income families residing in moderate to higher SES areas. It is possible then the SES scores may under-rate the level of low SES of children and their families in this study.

The SES status of the children in the QFCC Child Death Register was recorded in accordance with the Socio-Economic Indexes for Areas (SEIFA) which is a quintile ranking system of SES which ranks residential areas from very low to very high SES. The data set was then split between low SES (with all cases ranked at very low or low SES) and not low SES (with all cases ranked at moderate, high or very high) in this category.

When the data was analysed by individual cases (109) we found that 67 (61.5%) of the 109 children were resident in low SES areas at the time of their death. The rate of cases resident in low SES was somewhat higher than the expected number based on general population statistics, where 40% of people reside in low SES areas (defined as the bottom two quintiles of the SEIFA). However, the proportion of children in our data set in low SES areas is comparable to that found among children engaged with child protection services. According to the AIHW, approximately 66% of children who are engaged with child protection services are from the two lowest quintiles for SES (Australian Institute of Health and Welfare, 2020). This means that low SES is associated with increased risk for child abuse and neglect more generally.

Among Aboriginal and Torres Strait Islander children in this data set 92.1% lived in low SES areas at the time of their death. If this is considered by death incident a similarly high proportion, 90%, were living in low SES areas. It is well established that Aboriginal and Torres Strait Islander people experience higher levels of socio-economic disadvantage. However, the rate of disadvantage among the data set of 109 children who

died is substantially higher than that found within the Aboriginal and Torres Strait Islander population more broadly, or among Aboriginal and Torres Strait Islander children who are subject to child protection intervention. For example, Australian child protection statistics identify that 75% of children found by child protection services who experienced child abuse and neglect are from the two lowest quintiles for SES (Australian Institute of Health and Welfare, 2020, p.26).

The issue of financial stress emerged also in the qualitative data. The qualitative data indicated that financial problems such as bankruptcy or other significant financial stresses impacted on at least two child death events involving four children not residing in a low SES area.

Low SES was such a common feature of this high-risk population that it does not help to discriminate between risk factors for filicide compared to the broad populations of children who are at risk and yet survive. Even so low SES is a factor for risk of harm and death and as such, should be a weighting factor in a Red Flag algorithm and also in strategies for preventing both child abuse and neglect and filicide.

Feature Set 4: Risk features for fatal child assault and neglect

All the available data has been coded into a set of features suited to support a search for statistically significant features, or combinations of features, strong enough to raise a Red Flag. A consideration in forming this data base was to keep the number of key features as low as possible whilst retaining those identified as important. We have included only the eight strongest features as seen in the data and as supported by our literature review. These eight single features are listed at Table 5, together with the number of instances each feature was seen in the data. This has been presented in binary form to indicate the presence or absence of each of these factors in the available data for each child and each case.

Great care was taken in consolidating the data because a few errors would distort the findings given the small number of cases available. In Table 5 we outline the frequency of identified risk factors by both individual children counts and by events of fatal child assault or neglect (ten of which involved two or more child fatalities). As noted in the methods section, the data set available for “extended hospital stay” was limited to the years 2007-2020 during which time 89 children died in 76 filicide events.

Table 5: Frequency of the identified risk features counted by individual case and by event

Risk features	By individual case (109)	By event (90)
Threats to kill	19 (17.4%)	11 (12.2%)
Domestic and family violence	57 (52.3%)	44 (48.9%)
Drug or alcohol	57 (52.3%)	44 (48.9%)
Recent separation	33 (30.3%)	23 (25.6%)
Mental illness	53 (48.6%)	41 (45.6%)
Step-father	16 (14.7%)	15 (16.7%)
Repeated child protection	51 (46.8%)	45 (50%)
Extended hospital stay (total data set is 89 individuals & 76 events)	18/89 (21.3%)	16 /76 (21.1%)

On their own, most of the risk features presented in Table 5 would present problems if used to signify a Red Flag case. For instance, consider a hypothetical situation where drastic action was taken to minimise the risk for all the cases in this data set where domestic and family violence was found, indicating perhaps 57 of the



109 cases might have been saved. But, the problem would be to manage the enormous workload in taking the same drastic action for all the thousands of at-risk cases which might have presented with domestic and family violence over this same time period and where no deaths occurred. Clearly, we need better discrimination by identifying features which are less common in the cohort of at-risk clients known to human services agencies.

The threat to kill a child is perhaps one such feature, assuming this is fairly rare in the at-risk cohort. If a Red Flag had been raised by this factor it could have perhaps saved 19 children. This would have required both that information about those threats had come to the attention of human services agencies over the period covered by this data set and that the risk for these children was recognised and addressed through intervention.

Likewise, extended hospital stay is another single feature which seems to be excessive in our data and is otherwise relatively rare. Given the broad range of reasons an infant or child may be hospitalised for an extended period at birth or at some point in their life-time, it is obviously important that this possible Red Flag is then used to point to the need for further assessment of the child's circumstance.

Selecting combinations of important factors

With only two possible features acting in isolation of the others, this leads us to search for combinations of two or more features where each might be fairly common, but where the particular combination occurs only rarely. Our data set with eight features raises the combinatorial problem, namely that there are a large number of combinations which can be arranged from these 8 features.

There are 28 combinations of any two out of eight to search through and there are 56 combinations of three of eight risk features and 238 possible combinations of all eight features. Rather than manually search the pairwise combinations, we used a statistical technique (the chi-square test in combination with Cramer's V) to highlight statistically significant combinations. The result of this analysis on the data set of the 90 filicide events in this study is shown at Table 6.



Table 6: A cross-tab analysis showing the proportion where two factors occurred at the same event

Risk	Kill threats	Domestic/family violence	Repeat child protection	Step-father	Drug/alcohol	Mental health disorder	Separation	Extended hospitalisation
Kill threats	11	9/44**	4/45	1/15	8/44*	7/41	6/23**	2/16
Domestic and family violence	9/11**	44	27/45*	8/15	41/44***	19/41	17/23**	9/16
Repeat child protection	4/11	27/44**	45	13/15**	26/44(t)	19/41	12/23	8/16
Step-father	1/11	8/44	13/45	15	6/44	7/41	4/23	4/16
Drug/alcohol	8/11 (t)	41/44***	26/45(t)	6/15	44	20/41	16/23*	7/16
Mental health disorder	7/11	19/44	19/45	7/15	20/44	41	11/23	9/16
Separation	6/11**	17/44**	12/45	5/15	16/44**	11/41	23	1/16
Extended hospitalisation	2/11	9/35	8/35	4/14	7/35	9/33	1/19**	16

(90 cases, $p < 0.05 = *$, $p < 0.01 = **$, $p < 0.001 = ***$. A (t) indicates a result is trending towards significance, that is that $p < 0.09$).

To understand the ratios shown in Table 6 consider the first four entries in the top left. The analysis showed there were nine cases where both threat to kill and domestic and family violence and abuse were present in the 90 cases, with these nine in the 11 threats to kill and nine in the 44 cases of domestic and family violence. The stars in these two boxes indicate the pairwise combination of these two factors differ strongly from a random occurrence of the events.

This pairwise analysis shows very significant results for combinations of domestic and family violence and drug or alcohol misuse, where both are present in 41 of the 90 cases (46%). We also find a substantial number of these are also associated with repeated child protection contact, giving a total of 26 cases in 90 (29%) with all three features present.

From one point of view this is a very significant finding. If all features contributed uniformly to the outcomes there would be just one or two cases in each of the 56 possible three-way combinations, so the 26 cases identified for the particular three features is highly significant from a statistical point of view. This is the point of view offered by what is termed a single class analysis, because it is reliant on information from a single data set.

However, from another point of view (our point of view) this finding would not be significant for raising a Red Flag if a similar proportion of these features were to be found in the rest of the at-risk cohort where no filicide occurred. A more informative and robust approach would be to statistically compare the frequencies of features, or combinations of features, in data collected from the whole at-risk cohort to compare with data collected from cases of fatal child assault and neglect. This two-class analysis would allow analysis of the likelihood (probability) of fatal child assault and neglect occurring for particular features, or



combinations of features in the broader at-risk population, compared to children who die as a result of fatal child assault and neglect.

At this time we do not have the data to support such a rigorous two-class study, however the statistics we have collected from the single class statistical study, and where we have some knowledge of the features seen in the whole at-risk cohort, allows some findings to guide interventions.

Summary of findings in the 90-event data set

At this stage we have no measure to show if the presence of any one single feature on its own is statistically significant compared to the broader at-risk population. To produce such a measure we would need the data for the whole at-risk cohort. However we do have an understanding that some of these features are quite unusual in whole cohort, even if we are unable to quantify the number at this stage. On this basis we tentatively identify the following single features as worthy of raising a Red Flag, noting these could be substantiated if the data for the whole at-risk cohort become available.

Single features justifying a Red Flag

For concision in the text we term these as singletons:

1. We propose a threat to kill children, on its own, is one such singleton and sufficient to raise a Red Flag. This was seen in only 11 of the 90 events but nonetheless is likely to be significantly rare in the at-risk population to warrant a Red Flag;
2. The extended hospitalisation of 18 children (who later died in 16 events) was also thought to be highly unusual, so we propose this as another singleton to justify raising a Red Flag.

Repeated contacts with child protection services appeared to be an indicator of increased risk but on its own may be too common in the at-risk population to be considered as a singleton. In our data base we found 45 of the 90 cases had two or more contacts – with most in this category having had more than two contacts. Similar numbers might be found in the whole at-risk cohort but by increasing this threshold to perhaps five or more contacts would perhaps be a better indicator of increased risk. Raising the threshold in this way may also reduce the risk of false positives related to this factor.

Domestic and family violence was found in 44 of the 90 total filicide events (49%). If this is somewhat higher than seen in the typical workload of the human service agencies engaged with children at risk then this becomes an indicator of higher risk, but perhaps insufficient on its own to warrant a Red Flag.

Drug and alcohol misuse was also found in 44 of the 90 cases. Many of these (31) were included with domestic and family violence cases. Our knowledge of these two features suggests they are indicative of one underlying problem in the family circumstances, so the presence of both may only add a little to the risk. Evidence of mental health problems was present in 41 of the 90 cases. Again this is somewhat higher than expected in the typical workload and so this is an indication of higher risk, but perhaps insufficient on its own to justify strong intervention.

Whilst we are unable to propose these frequently occurring single features as Red Flag events, our cross-tab analysis in Table 6 shows some are statistically significant in combination with the Red Flag events identified above.



Compounding features indicating risk

We turn now to combinations of risk factors for fatal child assault and neglect.

1. The threats to kill seen in the data set are significantly associated with:
 - (a) A recent separation;
 - (b) Domestic and family violence;
 - (c) Drug/alcohol abuse.

The presence of any of these with a threat to kill would add to the overall risk to give a stronger Red Flag indication. It is possible that three-way combinations may show even higher statistical significance.

2. Step-fathers (or mother's male partner unrelated to the child) are seen to be significantly associated with repeated child protection contacts in the cross-tab data. Consistent with Brown, Lyneham, et al.'s (2019) research, our study found that step-fathers in the study were almost exclusively associated with the death of infants and young children aged 0-4 years. Indeed, 12/ 13 deaths associated with step-fathers in the study were of infants and children aged 0-4 years. Seemingly this combination of the presence of a step-father, repeated child protection concerns, and young children (aged 0-4 years) would be a sufficiently unusual combination in the at-risk cohort and so it could be a contender for a Red Flag. The risk is further heightened when combined with other features such as drug and alcohol misuse and/or domestic and family violence. It should also be noted that the terms "step-father" or "mother's partner" were used in the open-text data from the QFCC register and lacked information about the length of the relationship. In the focus group discussions with human service leaders, we were advised that the term "step-father" was problematic due to the often brief and unstable nature of the relationships between mothers with young children and new male partners in the at-risk population.
3. Domestic and family violence is shown to be significantly associated with
 - (a) Repeated child protection contacts;
 - (b) Drug/alcohol misuse;
 - (c) Recent separation.

We believe each of these pairwise factors, on their own, may be too frequent in the at-risk cohort to raise a Red Flag. However the frequency of these, or combinations of these, in the at-risk cohort might be revealing of potential indicators for Red Flags.

4. Almost half the cases in our data set were families experiencing domestic and family violence combined with drug or alcohol abuse. However, we suspect the proportions seen in the whole caseload may also be quite high. These would produce a large number of false positives that would overload the system. However it does seem worthy of further investigation if data collection with the at-risk cohort can be undertaken for comparison.
5. Another combination shown as significant in the cross-tab data is that between hospitalisation and recent separation. But this is significantly unusual, so should be disregarded as a Red Flag.



Conclusions

This study has identified a number of factors which could justify raising a Red Flag if observed by any human service agency dealing with children. Some of these Red Flags arise from a combination of risk factors. So formal processes would be required for any such observed factors to be shared and consolidated between the agencies who interact with children. This, with an appropriate formal process to decide the best action, would minimise the risk of fatal child assault and neglect.

The appropriate action will depend on the level of risk and the appropriate actions available for particular cases. Due to the absence of a matched population sample, the perceived risk levels as identified by this study have not been strongly quantified, making it difficult for such formal processes to recommend intrusive action such as the removal of a child.

However, at this stage we suggest a Red Flag should be raised where threats to kill the child have either been made or strongly implied, especially where these threats have been made in the presence of compounding factors such as domestic and family violence and drug/alcohol use.

We also suggest a Red Flag should be raised where a very young child has been hospitalised for an extended period, especially where this has occurred with other compounding risk factors such as repeated contact with child protection authorities.

A third possibility is the presence of a step-father (or mother's partner unrelated to the child), especially where the child is very young (aged 0-4 years) and where there is repeated child protection contact. Where these features are combined with other risk factors such as extended hospitalisation or domestic and family violence, the risk is strong within our data set but needs further comparison with a matched at-risk cohort. We suggest that this factor be examined in relation to the child protection service data set of at-risk children.

We believe there could be other Red Flags arising from factors identified in our study, but we would need to collect data to support a matched population study – involving a sample of the at-risk population and the sample where filicide has occurred. Such data would allow more accurate risk assessments, together with reducing the false positive rates which is important to inform interventions, promoting professionals' confidence and reducing unwarranted impact on children.

A final point is that even with the most robust protocol, not all fatalities due to child assault and neglect can be prevented. The features associated with increased risk may be hidden or appear too late for action. Examples of this include situations present within this data set including a parent who issues a threat to kill only very shortly before the act, or in circumstances where only one of the risk features identified was present. Nonetheless, we consider that there is scope to reduce the number of child fatalities through evidence-informed action.

Study limitations

A limitation of this study was its reliance on a single class data set. While we are confident that the findings of our study align with international research on factors associated with increased risk of fatal child assault and neglect, we did not have the data relating to the broader at-risk population to draw conclusions about the frequency of risk features we have identified with those in the at-risk population.



The data sources for this study may present some limitations. As we detailed in the methodology section of this report, we have drawn data from multiple sources to reach our findings. As is often the case in human services research, we have managed substantial amounts of missing data through accessing linked data sources, such as available Systems and Practice Review reports and coding substantial amounts open text data in the QFCC database related to professionals' accounts of the circumstances of individual fatal child assault and neglect events.

We have been cautious in our coding of features, only coding these as present where there is definitive evidence of this. This means that we did not code a feature as present where there were possible but not definitive indicators of the feature. For instance, we did not record a threat to kill as present where the available data indicated that threats had been made but did not specify the content of these threats. This cautious approach means we can be confident that we have not overstated the evidence for each feature.

Another limitation was that due to the ethical and legal requirements of the study, the team was limited to the use of de-identified data. We were prevented from linking identifiable data, such as Coroners' reports and sentencing reports, even though such material could assist in identifying evidence of features within the sample. This means that our data set may have under-represented the actual presence of some risk factors. We consider that it is likely that these publicly available information sources, if they could be linked to the de-identified data sets, would strengthen the evidence regarding the presence of the risk factors we have identified.

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Appendix 1

Table 7: A cross-tab analysis showing the proportion where two factors occurred for individual children

Risk	Threats	Domestic & family violence	Repeat child protection	Step-father	Drug/alcohol	Mental health disorder	Separation	Low SES	Extended hospitalisation
Threats	19	17/57***	4/51**	1/16	16/57* **	14/53 *	7/33	14/67	2/18
Domestic & family violence	17/19* *	57	31/51	8/16	54/57* *	26/53	23/33*	38/67	10/18
Repeat child protection	4/19	31/57	51	14/16* **	30/57	20/53	17/33	33/67	8/18
Step-father	1/19	8/57	14/51	16	6/57	7/53	4/33	12/67	4/18
Drug/alcohol	16/19* *	4/57***	30/51	6/16	57	27/53	22/33*	21/67	8/18
Mental health disorder	14/19* *	26/57	20/51	7/16	27/57	53	15/33	33/67	10/18
Separation	7/19	23/57*	17/51	4/16	22/57	15/53	33	18/67	2/18
Low SES	14/19	38/57	33/51	12/16	21/57	33/53	33/53	67	12/18
Hospitalisation (89 cases only)	2/17	10/46	8/37	4/15	8/46	10/43	2/25	12/54	18

(109 cases, $p < 0.05 = *$, $p < 0.01 = **$, $p < 0.001 = ***$. A (t) indicates a result is trending towards significance, that is that $p < 0.09$).



Attachment 1

Defining Red Flags for fatal child assault and neglect: A review of the literature

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Executive summary

Filicide, defined as “the murder or manslaughter of a child by a parent or parent equivalent” (Brown, Bricknell, et al., 2019, p. 1), is a rare and devastating event. Research literature on the phenomenon of filicide provides an important resource for understanding risk factors for filicide and for understanding the prospects for prevention strategies.

This literature review prepared for the Queensland Family and Child Commission considered the concept of Red Flags. It found that the term Red Flags is used in a range of health and human services to refer to a combination of characteristics and/or events associated with elevated risk of an adverse outcome, or to signify indicators of a particular condition such as a developmental delay or health concern. It was noted that this term is rarely used in child protection services or in relation to the identification of elevated risk for filicide.

A scoping review was conducted to assess the academic literature in relation to fatal child assault and neglect. Specifically the review aimed to identify key predictors of fatal child assault and neglect; a secondary focus sought to determine the strength of understanding of these predictors, and the challenges in predicting these occurrences. The research questions driving the review are:

- 1) What are the risk factors for fatal child assault or neglect within a familial context? and
- 2) What debates exist about the strength of the identified risk factors for fatal child assault and neglect?

The review focused on English language articles that addressed the research questions. A number of criteria were used to ensure a systematic approach was adopted. Articles were included if they were published between 2000 and 2020 and if they 1) were original empirical studies, that 2) used quantitative, qualitative or mixed methods, and 3) identified risk factors or predictors of fatal child assault and neglect. Studies that discussed risk factors and predictors based on existing literature rather than empirical research were excluded from the review.

The international literature review highlighted risk factors in seven domains. These domains were:

- Socio-economic context with strong evidence that low socio-economic status and financial stress conferred increased risk;
- Child’s characteristics, particularly that children aged 0-4 years were at greatest risk;
- Parents’ and caregivers’ characteristics and situation with strong evidence for presence of severe mental illness and domestic and family violence as risks for filicide. There was moderate evidence that parental illicit drug or excessive alcohol use and criminal history, particularly for violent offences, increased the risk of filicide;
- The family circumstances, with strong evidence that recent separation was a risk factor for filicide and evidence that the presence of a recent step-father or mother’s recent partner as risk factors for filicide;
- The child’s contact with statutory child protection systems, particularly repeated contact, was identified as an indicator of increased risk for filicide;
- Threats to kill were identified as a risk for filicide, as it has been for lethality in domestic and family violence.

The research literature suggests that combinations of these factors confer increased risk for filicide.



It was found that Aboriginal and Torres Strait Islander children are at higher risk of filicide compared to non-Aboriginal and Torres Strait Islander children (Brown, Bricknell et al., 2019; O'Donnell et al., 2010). Even so, it is important to note that fatal child assault and neglect is still a rare event among both populations.

Challenges associated with the use of a Red Flag protocol for identifying and responding to situations of increased risk of fatal child assault and neglect were considered. A key concern is that of false positive identifications of Red Flags. While the phenomenon of fatal child assault and neglect is rare, many of the factors conveying increased risk are common in the at-risk population. False positives are a concern because of the potential burden for vulnerable families and children who might be subject to a false positive Red Flag notification, and also because of the potential for increased burden on health and human service systems should a Red Flag be raised for all children in the at-risk population.

In recognition of these concerns, it is important that a Red Flag protocol builds upon, rather than replaces, existing risk assessment systems. We recommend that the definition of Red Flag identified by the QFCC be refined to recognise the conditions needed to raise a Red Flag for elevated risk of filicide. We propose that the definition of Red Flag is refined as follows:

A Red Flag refers to the identification of an act or intention that is likely to adversely affect a child's immediate safety, such as injury, threats of harm or death; or an accumulation of risk factors that, when considered together, may adversely affect a child's immediate safety. The factors leading to a Red Flag response should be linked to a limited number of clearly identifiable indicator(s) of elevated risk; and information about these risk indicators should be readily accessible to those responsible for raising a Red Flag for elevated risk of fatal child assault and neglect.

Our review finds that the concept of Red Flag could be useful for increasing professionals' and other stakeholders' awareness of the risk factors of filicide. The refined definition of Red Flags draws attention to the need for professionals and stakeholders to recognise the risk factors, and combination of risk factors, that can distinguish children at elevated risk of filicide compared to the at-risk population. This definition is also important for raising awareness of risk factors for filicide across a broad range of human service professions including child protection, health, law and policing, and the potential for a Red Flag response to reduce the incidence of this rare and tragic event.

This review supports the need for improved responses to at-risk children and families so as to reduce the risks associated with heightened risk of filicide (see Eriksson, Mazerolle, Wortley, & Johnson, 2016; Jaffe, Campbell, Olszowy, & Hamilton, 2014). The responses to risk of filicide should include strategies for reducing the financial and housing stresses on vulnerable families that contribute to a heightened risk for fatal child assault and neglect. Such strategies should form part of a broader policy approach that provides increased investment in adult-focused services to ensure they can better support parents caring for their children.



Introduction

Filicide, defined as “the murder or manslaughter of a child by a parent or parent equivalent” (Brown, Bricknell, et al., 2019, p. 1), is a rare and devastating event. Brown, Lyneham et al. (2019) note that while fatal child assault and neglect within a family context is infrequent, rates of this tragic event remain consistent in Australia over time. For example, in their 12 year retrospective study of filicide, Brown, Lyneham et al. (2019) report that an average of 24 filicide incidents occurred each year in Australia between 2002-2003 and 2011-2012. Brown, Tyson and Arias (2018, p. 148) also suggest that filicides, particularly neonaticides, may be under-reported because “these children’s births may not be registered and their deaths may go unrecognised.” In addition, some fatal child assaults may be mis-categorised as, for example, accidents or Sudden Infant Death Syndrome. While avoiding preventable child deaths is a matter of international concern, considerable debate exists about how to identify and respond to children at increased risk of fatal child assault or neglect.

This literature review has been prepared for the Queensland Family and Child Commission (hereafter QFCC) in a project aimed at increasing understanding of Red Flags for fatal child assault or harm. The QFCC defines Red Flags as:

“an act or intention that is likely to adversely affect a child’s immediate safety, such as injury, threats of harm or death; or an accumulation of risk factors that, when considered together, may adversely affect a child’s immediate safety.”

The QFCC’s aspiration is to build knowledge for identifying Red Flags for heightened risk of fatal child assault or neglect. The ultimate goal is for this knowledge to be operationalised across the child and family support system to promote action to protect children at elevated risk of fatal assault and neglect. This additional knowledge is intended to complement existing frameworks for child protection.

In this literature review we outline how the concept of Red Flags is deployed in the health and human services sectors. We then discuss debates about the identification of risk factors for elevated risk of fatal child assault or neglect by parents or carers. Our literature review then focuses on the question of: What are the factors associated with increased risk of fatal child assault and neglect? We will outline the methodology of our literature review and present our key findings. The review concludes with the implications for building knowledge about and response to Red Flags.

Red Flags in health and human services

The term Red Flags is widely used in a range of health and human service settings to refer to a combination of characteristics and/or events associated with elevated risk of an adverse outcome, or to signify indicators of a particular condition such as a developmental delay or health concern. Across a range of fields the term Red Flags is usually intended to indicate the need for further assessment and/or intervention in a situation. The main purpose of Red Flags is to enable people, such as health and welfare professionals and family members, to recognise the need for action. The term Red Flag does not determine the nature of that action and may invoke the need for further assessment through to interventions, depending on the nature of the concern.

The term Red Flags is often used to highlight the need for action. For example, Queensland Health (2016) published a Red Flags Early Identification guide for parents and professionals to identify possible signs of developmental delay among children. The intention is to help parents and



professionals understand children's behaviours or characteristics that may require further assessment.

Internationally, health and human service professionals sometimes use flags of different colours to differentiate among levels of severity of health conditions, or to differentiate varying levels of risk of adverse outcomes. The term Red Flag seems to universally signify a condition of severity requiring further action while other flags such as yellow or orange flags may be used to indicate concerns of lesser severity. For example, in physical health services, a system of coloured flags has been used in screening for level of severity of a condition in order to match severity to treatments (see Ladeira, 2018). In the field of domestic and family violence, Hayduk (2017) refers to yellow and red flags with the latter indicating the highest level of risk for lethality.

The term Red Flag is sometimes used to refer to a single characteristic or event that practitioners should be attuned to as an indicator of increased risk of harm or lethality (see Petersson, Strand, & Selenius, 2019). A key example is the act of non-lethal strangulation in the context of domestic and family violence (Special Taskforce on Domestic and Family Violence in Queensland, 2015). This single act is such a significant risk factor for domestic homicide that it is recognised as a standalone criminal offence in Queensland law.

A single or standalone risk factor for adverse outcomes is uncommon in health and human services. More often the term Red Flags is used to refer to a combination of characteristics, circumstances and/or events associated with an increased likelihood of adverse outcomes. For example, the Australian Financial Complaints Council (nd) has published a guide to preventing elder abuse that includes a guide to a range of Red Flags indicating possible financial abuse.

Debates about risk assessment

An extensive international literature exists on identifying and preventing child harm and child death due to assault or neglect. Although the term Red Flag is often used in health and some human services, it is not commonly used in the child protection literature (for exception see Douglas, 2017). The term risk factor is commonly used to refer to any factor that increases the likelihood of a child being subject to harm or death due to assault or neglect (see for example Amon et al., 2012; Dixon, 2011; Hamilton, Anne, Jaffe, & Campbell, 2013; Kajese et al., 2011; 2017; Sillito & Salari, 2011). In the literature focused on assessing children for risk of harm or death due to fatal assault or neglect, children are variously described as being at increased or reduced risk, or in high risk, low risk (Graham, Stepura, Baumann, & Kern, 2010) or fatal risk groups (Whitt-Woosley, Sprang, & Gustman, 2014) due to the presence or absence of identified risk factors. Other terms used occasionally include stress factors (Barone, Bramante, Lionetti, & Pastore, 2014; Brown, Tyson, & Fernandez Arias, 2014) or critical indicators or conditions (Sim, 2015).

The term predictor is less widely used in the literature concerning risk of fatal child assault or neglect, although it is still present in numerous studies (see for example Barone et al., 2014; Damashek, Drass, & Bonner, 2014; Douglas, 2015; Hornstein, 2010; Rangel, Burd, & Falcone, 2010; Yampolskaya, Greenbaum, & Berson, 2009). Where the term predictor is used, it may refer to a combination of risk factors that indicate an increased likelihood of an adverse outcome. The term predictor is problematic given that it implies a level of certainty that is unwarranted and may be unhelpful given that fatal child assault and neglect is a rare event about which the key risk factors remain contested (Munro, 2008).



Human service professionals in a range of fields are required to assess the risk for child harm including child death among the families to whom they provide services. The process of risk identification of situations for elevated risk of child death due to fatal assault or neglect is extremely challenging for at least three reasons.

First, there is the problem of identifying the risks associated with a heightened likelihood of fatal child assault and neglect compared to other forms of harm. Child protection data both in Australia and internationally indicates that a significant proportion of children live in contexts where risk factors for harm, including factors associated with fatal child assault, are present.

Drawing on international research, Child Safety identifies five family context factors associated with substantially elevated risk of harm for children. These family risk factors are domestic and family violence, substance misuse, intergenerational experience of abuse or neglect, mental illness and criminal history (Department of Child Safety Youth and Women, 2019). These risks of harm also coincide with risk factors for fatal child assault or neglect (Brown, Lyneham, et al., 2019). The Department's data shows that 6,570 children were subjects of substantiated investigations and of these children 32% (approximately 2,102 children) live in family environments where four or more of the family risk factors for harm were present (Department of Child Safety Youth and Women, 2019).

Ironically, raising a Red Flag for fatal child assault and neglect for all children with elevated risk according to their characteristics and family circumstances may reduce the visibility of the children most at risk of significant harm. This is because referring a large number of children to a Red Flag response risks creating or intensifying a "needle in a haystack" phenomenon whereby a relatively large number of children are responded to in a way that assumes they are at risk of a rare and tragic outcome (Munro, 2008). This approach also risks the potential for trauma, should the child and family be subjected to intrusive interventions. There is also the threat of government over-reach, particularly to vulnerable communities where risk factors for significant harm are more likely to be present than in other communities.

Second, data quality issues are frequently encountered in human services databases on which predictions of elevated risk rely. This is a significant concern given that human service professionals and the community need to be confident in the data quality on which the identification of risks of fatal child assault or neglect rely. One data quality issue is incomplete data sets (Gillingham & Graham, 2017), as missing data is commonly encountered in many administrative data systems (Gillingham, 2020). While these datasets may still yield useful information, it is very likely that practitioners will need to seek further information before making a decision about whether heightened risks of fatal child assault and neglect exist in specific situations. A related data quality concern is that data categories used in many information systems may over-simplify information (Gillingham, 2020). For example, structured decision-making tools often require the practitioner to identify whether a parent or carer has a mental health disorder, but this is not sufficient to inform the decision maker about the nature and impact of the parent's condition on children's safety. These issues of data quality do not render datasets obsolete, but rather point to the importance of caution in reliance on these sets in assessing risk.

Third, there are concerns about frontline workers' capacity to identify situations of heightened risk for fatal child assault or neglect (Douglas, 2015). Frontline workers may lack the specialist knowledge required to assess specific risk factors in the child or family's circumstances. For example, frontline workers who are skilled in some aspects of working with vulnerable families may not have the



knowledge or skills required to assess the nature and impact of matters such as parents' mental illness or drug issue. For this reason, the assessment of heightened risk of fatal child assault or neglect may require a multi-stage and inter-disciplinary process requiring specialist assessments of the family members' circumstances.

Notwithstanding these challenges, it is important that human service professionals who work with children across a range of contexts are able to recognise indicators of heightened risk of fatal child assault or neglect (Jaffe et al., 2014). This is important in preventing child deaths and other serious harm to vulnerable children. It is also important to differentiating responses among children at different levels of risk (see Carmody, 2013). We now turn to the research on risk factors for fatal child assault and neglect to inform the QFCC's work in furthering its mission to prevent fatal child assault and neglect.

Methodology

The purpose of this scoping review was to assess the academic literature in relation to fatal child assault and neglect. Specifically the review aimed to identify key risk factors of fatal child assault and neglect; a secondary focus sought to determine the strength of understanding of these risk factors, and the challenges in predicting these occurrences. The research questions driving the review are:

- 1) What are the risk factors for fatal child assault or neglect within a familial context? and
- 2) What debates exist about the strength of the identified risk factors for fatal child assault and neglect?

The review, conducted between May and July 2020, focused on English language articles published between 2000 and 2020 that addressed the research questions. While the search was relatively rapid, a number of criteria were used to ensure a systematic approach was adopted, as outlined below.

Search strategy

The research team sought the advice of a specialist health and social work librarian at the University of Queensland in devising a search strategy. The following electronic databases were systematically searched using search strategies developed in consultation with an information specialist; Family; Social Services Abstracts; PsycInfo; PubMed, CINAHL, Scopus and Web of Science.

The searches used a combination of some or all of the following search terms: ("child assault" OR "child abuse" OR "domestic homicide" OR filicide*) AND (fatal* OR death* OR homicid*) AND (predict* OR forecast* OR anticipat*). Where necessary, the search was restricted to abstract only, peer reviewed or journal. Additional follow up searches were conducted in relation to specific issues such as filicide and children with a disability, and Aboriginal and Torres Strait Islander children.

Inclusion criteria

Articles were included if they were published between 2000 and 2020 and if they 1) were original empirical studies, that 2) used quantitative, qualitative or mixed methods, and 3) identified risk factors or predictors of fatal child assault and neglect. Studies that discussed risk factors and predictors based on existing literature rather than empirical research were excluded from the review.



Study selection

The searches were conducted by members of the research team. The electronic database searches identified 2,539 articles of potential relevance, which were screened by title online. After this initial screening 271 articles were imported to Covidence, a web-based software platform that helps to streamline the process of systematic reviews. Upon import 137 duplicate articles were removed, leaving 134 articles to be screened by title and abstract by at least two independent reviewers. After title and abstract screening, 94 relevant articles were assessed for eligibility, of which 52 were excluded due to their failure to meet one or more of the inclusion criteria.

The most common reason for exclusion was that the article lacked an empirical focus on risk factors or predictors of fatal child assault and neglect (n=32) or was published outside the required date range (n=14). The remaining 42 articles form the empirical base for this literature review. These results are summarised in the Prisma diagram on the following page (p. 10). In addition to this empirical base, an additional eight publications were used in this review to provide relevant context and supporting evidence.

Data extraction and synthesis

Key information was extracted from each included article (n = 42) to capture study aims, methodology and key findings. These details are included in Appendix A. The majority of studies were undertaken in the USA (n = 20), with a smaller number based in Australia (n = 8), Europe (n = 5) the UK (n = 5), Canada (n = 2) and New Zealand (n = 1). One reviewed cases in both Australia and the UK. Key findings were scanned to identify key themes in the literature and a narrative synthesis was used to describe the key risk factors and predictors of fatal child assault and neglect identified in the literature. A small number of studies were also drawn from the grey literature to supplement the review.

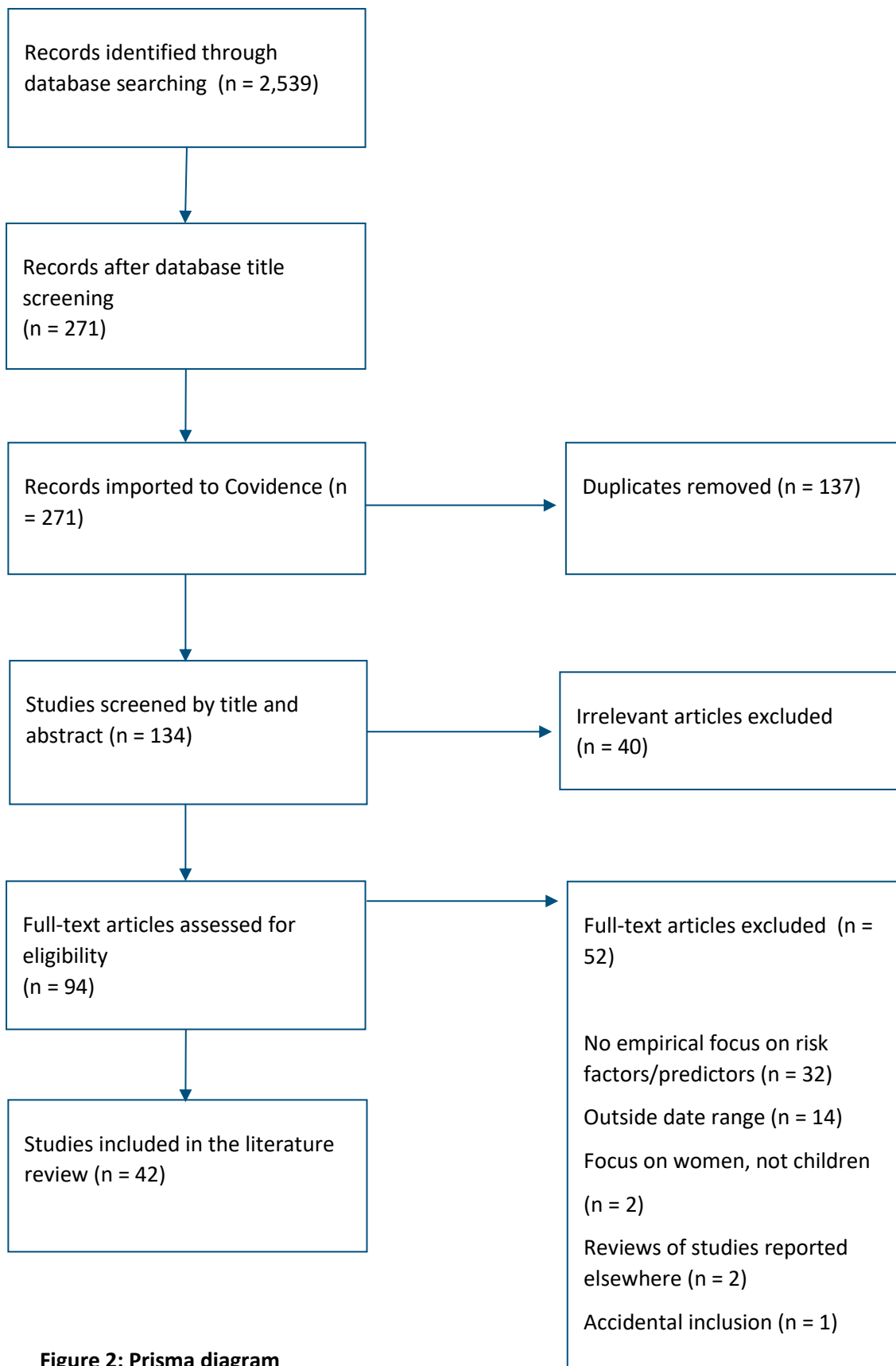


Figure 2: Prisma diagram



Social and cultural contexts of fatal child assault and neglect

Socio-economic disadvantage

Socio-economic disadvantage and severe financial stress are linked to increased risk of filicide, particularly by mothers. An Australian study identified extreme financial stress as being more common among women who committed filicide compared to women who had been convicted of murder or manslaughter of someone other than their children, as well as compared to men who had committed filicide (Eriksson et al., 2016). A similar study in the USA also identified that women who commit filicide have experienced higher levels of disadvantage in terms “limited education, unemployment, poverty, and housing insecurity” compared to their counterparts (Poteyeva & Leigey, 2018, p. 3). The authors concluded that compared to those who had murdered someone other than their children and male perpetrators of filicide, women who had killed their children were

“Twice as likely as their counterparts to report receiving public assistance (e.g., welfare) in the month prior to arrest, and especially compared to the men, they reported a much lower mean monthly income. Both of these measures were statistically significant when compared to the reference groups. Additionally, filicidal women were also the least likely of all three groups to report being employed in the month prior to their arrest” (Poteyeva & Leigey, 2018, p. 10).

The significance of socio-economic disadvantage as a risk factor for fatal child assault and neglect has been highlighted in several population level studies in the USA. In a study to determine the impact of socio-economic status and race on fatal child abuse outcomes in the USA, Rangel et al. (2010) found that among infants admitted to hospital with abuse injuries, those in the lower three quartiles of income were at greater risk of dying, even after controlling for race and injury severity. Douglas & McCarthy (2011) also showed the poverty level to be a reliable predictor of child maltreatment fatalities in the USA, with states with higher levels of poverty having a higher mortality rate from fatal child assault and abuse. Similarly, a study to examine the effects of social structure on family homicide reported that economic deprivation had a stronger effect on filicide and intimate partner homicide than other types of family homicide (Diem & Pizarro, 2010).

Despite the evidence of the association between socio-economic disadvantage and fatal child assault and neglect, its importance as a risk factor has been questioned. In a study of child homicides in the UK for example Pritchard, Davey, & Williams (2013) argue that when determining risk of abuse-related mortality among children, psycho-criminological factors are more relevant than socio-economic factors. This highlights the importance of considering the full range of potential risk factors in cases of fatal child assault and neglect.

There is still however sufficient evidence in the literature to indicate that socio-economic disadvantage and, in particular, current financial pressures should be considered as risk factors for filicide. However, this factor is also elevated among children and families who come to the attention of child protection services. For example Bywaters et al. (2020, p. 210) note that “children in the most deprived 10% of neighbourhoods in the UK are over 10 times more likely to be subject to an intervention than children in the least deprived 10%.” In Australia, approximately 66% of children who are found by child protection services to have experienced child abuse or neglect are from the two lowest quintiles for socio-economic status (Australian Institute of Health and Welfare, 2020). This trend is even more exacerbated for Aboriginal and Torres Strait Islander children among whom



approximately 75% of those found to have experienced child abuse and neglect are from the two lowest quintiles for socio-economic status (Australian Institute of Health and Welfare, 2020, p. 26).

There are at least two implications of these findings. First, it would appear that socio-economic disadvantage has limited utility for differentiating children at elevated risk for filicide compared to the sub-population of children who come to the attention of child protection services. Hence, while it is a risk factor, the development of a Red Flag notification would need to take additional factors into account so as to limit the risk of false positives for heightened risk of filicide. Second, that responses to vulnerable families need to take account of and seek to address the role of socio-economic disadvantage and financial stress on families as a strategy for reducing the risk of harm and death due to child neglect or assault (see Eriksson et al., 2016).

Aboriginal and Torres Strait Islander children

The research literature indicates that Aboriginal and Torres Strait Islander children are at higher risk of filicide compared to non-Aboriginal and Torres Strait Islander children. The research, which includes both national data sets and a data set from Western Australia, has primarily focused on Aboriginal, rather than Torres Strait Islander, children. In their national study of filicide between 2001-2002 to 2011-2012, Brown, Lyneham et al. (2019) identified an over-representation of Aboriginal and Torres Strait Islander children.

The study found that 29 children (or just over 10% of the sample) were from an Aboriginal or Torres Strait Islander background. This study also identified Aboriginal and Torres Strait Islander children who died were younger on average than for non-Aboriginal and Torres Strait Islander children. Brown, Lyneham et al. (2019, p. 36) found that between 2001 and 2012, “over three-quarters (n=23; 79%) of Indigenous filicide victims were under five years of age, compared with two-thirds (n=167; 65%) of non-Indigenous filicide victims”. They also identified a difference in the gender ratio, noting that of the 29 Indigenous children who died “18 were male (62%) and 10 were female (34%; gender was unknown for one victim)” (Brown, Lyneham, et al., 2019, p. 34).

A similar pattern of over-representation was also found in O’Donnell et al.’s (2010) study using Western Australian pediatric health data between 1981 and 2005. O’Donnell et al. (2010, p. 826) report that “Aboriginal children were over-represented in both assault and maltreatment-coded admissions compared to non-Aboriginal children. After adjusting for confounders, Aboriginal children were 1.4 times more likely to have an assault and four times more likely to have a maltreatment-related admission compared with non-Aboriginal children.” This study also identified that of the 109 deaths coded as being due to assault, 19% of the children who died were Aboriginal (O’Donnell et al., 2010, p. 827). This indicates a significant over-representation of Aboriginal children among children subject to fatal assault and neglect (O’Donnell et al., 2010). Even so, it is important to note that fatal child assault and neglect is still a rare event among Aboriginal and Torres Strait Islander children as it is for non-Aboriginal and Torres Strait Islander children.

Compared to the non-Aboriginal and Torres Strait Islander population, a higher proportion of Aboriginal and Torres Strait Islander filicide offenders were male (62%) (Brown, Bricknell, et al., 2019). In their study comparing male and female filicide perpetrators, Eriksson et al. (2016, p. 27) noted that “males who perpetrated filicide more commonly reported an Aboriginal and Torres Strait Islander background, unemployment, experiencing violence in childhood, alcohol problems and perpetrating intimate partner violence and child abuse.” Brown, Lyneham et al. (2019, p. 62) also point to the high levels of social disadvantage and “high rates of family violence, intimate partner homicide, and high number of indigenous homicides as a result of domestic altercations in



Indigenous communities” as contributing to the elevated risk of fatal child assault and neglect among Aboriginal and Torres Strait Islander families. Overall, the elevated risk for filicide among Aboriginal and Torres Strait Islander children is not due to their cultural identity but rather appears to be strongly linked to the high levels of socio-economic disadvantage and related stresses, including financial and housing stress, disproportionately experienced by Aboriginal and Torres Strait Islander people.

Risk factors

Along with the social and cultural context of fatal child assault and neglect the review identified a broad range of risk factors and predictors classified below as child-related, family-related and perpetrator-related factors. It is important to note that while some factors have been consistently linked to child fatalities, for example the young age of a child, findings relating to other risk factors are mixed (Yampolskaya et al., 2009).

Child-related risk factors

A child’s age is one of the most consistent risk factors for fatal child assault and neglect. The majority of fatalities occur in children under four years of age, with the highest risk of fatality among infants under one year (Brandon, 2009; Dixon, 2011; Kajese et al., 2011; Whitt-Woosley et al., 2014). In her study of fatal child maltreatment in the USA, Douglas (2015) found that infants are up to 20 times more likely to die than children of other ages (p. 228) and concludes that a child’s age, particularly when they are very young, is the most significant predictor of fatal child assault and neglect. Similarly in the national study of 238 filicides in Australia, Brown, Lyneham et al. (2019, p. 34) found that “two-thirds of victims were aged less than five years of age (n=189; 67%). Only 10 victims were 18 years of age or older (4%).”

Several studies including a national Australian study and a study in Victoria have found male children to be more likely to experience fatal assault and neglect than females, although this is less of a risk factor than the age of a child (Brown et al., 2014; Dixon, 2011). Some international studies however have found gender to be non-significant (for discussion see Brown, Bricknell, et al., 2019).

Children with a disability have also been found to be at increased risk for fatal child assault and neglect (Coorg & Tournay, 2013; Douglas, 2016; Palermo, 2003). While a range of theories has been posited to explain the higher incidence among this group of children, those related to the stress of caring for a child with higher needs or explanations attributing altruistic intent to the filicide are most commonly invoked (Frederick, Devaney, & Alisic, 2019).

Specific risk factors associated with the homicide or maltreatment-related deaths of disabled children include parental failure to provide an adequate standard of care, parental lack of access to services, and parental mental illness (Frederick et al., 2019). Additionally, children with specific types of disability such as autism may be at particular risk. In a study of filicide-suicides involving disabled children in the USA, over half of victims (55%) were diagnosed with autism spectrum disorder, with a slightly higher rate among male children (Coorg & Tournay, 2013, p. 746).

Family-related risk factors

Perpetrator’s relationship to the child - the relationship between the perpetrator of fatal child assault and neglect has been explored to determine whether children are at increased risk from non-biological parents and caregivers when compared with biological ones. An examination of



perpetrator profiles in Florida, USA found that a biologically unrelated caregiver is the strongest predictor of fatal child assault (Yampolskaya et al., 2009).

In Australian and international research, step-fathers are less common than biological parents as perpetrators of filicide, but are disproportionately over-represented, particularly in filicides of children under the age of four (Brown et al., 2018; Nobes, Panagiotaki, & Russell Jonsson, 2019), with risks increasing in the presence of additional risk factors. For example step-fathers were reported to be at increased risk of filicide when combined with parenting very young children, domestic violence and substance abuse (Brown et al., 2014), as well as those with a history of violence (Pritchard et al., 2013).

Brown, Lyneham et al.'s (2019) study of filicide between 2000-2009 found that step-fathers were over-represented as perpetrators and further that they exhibited distinctive characteristics. It was noted that "step-fathers had a very high incidence of mental health issues, drug use, child abuse, and domestic violence. They did not however, give warning to anyone about possible harm to children, nor did they commit or attempt to commit suicide after the event. Step-fathers almost exclusively killed children aged less than four years" (Brown, Lyneham, et al., 2019, p. 19).

While children have been shown to be at increased risk of fatal child assault and neglect from step-fathers, some authors have contested these findings. Replicating an earlier study of child homicides in Britain that identified this increased risk, Nobes et al. (2019) reported that while children under four were at increased risk of being killed by a stepfather, this risk was not as great as has previously been reported. The study found that overall step-fathers were younger than biological fathers, and that once age is controlled for there is a much lower level of increased death leading the authors to conclude that child age and father age have a much greater impact on risk of death from child assault or neglect, than the fact of being a stepfather.

Domestic and family violence - domestic and family violence represents a strong and recurrent theme in the literature on risk factors for fatal child assault and neglect (Brandon, 2009; Douglas, 2015; Johnson, 2006; Kirkwood & McKenzie, 2013; Pierce et al., 2017; Sachmann & Johnson, 2014). The presence of partner violence in the home has been linked to increased risk of child fatality (Hamilton et al., 2013), particularly due to physical assault (Douglas, 2015). This is also confirmed by Brown, Lyneham et al. (2019) who, in their review of 238 filicides across Australia from 2001-2002 and 2011-2012, found that "twenty-eight percent of children (n=64) were killed by a parent with a history of domestic violence. Offender history of domestic violence was more prevalent for children killed by a step-parent (n=15; 45%) followed by a non-custodial parent (n=9; 41%)" (Brown, Lyneham, et al., 2019, p. 53).

Researchers have raised concerns that the risk of filicide in the context of domestic violence is not sufficiently understood by the different professional groups in law, human service and child protection agencies (Brandon, 2009; Brown, Lyneham, et al., 2019; Hamilton et al., 2013). Further, Jaffe et al. (2014) note that risk assessment tools regarding risk of lethality in domestic violence situations and in child protection services do not adequately account for the risk of filicide in domestic violence situations. Jaffe et al. (2014, p. 150) point to the need "for legal and mental health professionals who are involved in assessing parents and children in the context of domestic violence, the implication of this study is the importance of screening and looking for Red Flags for the possibility of an extreme outcome or 'worst case scenario'".

Parental separation – children of parents who have separated are identified in the literature of being at increased risk for fatal child assault and neglect, with studies reporting as many as 20 to



40% of child fatalities taking place in the context of parental separation (Kirkwood & McKenzie, 2013). A study of Australian fathers who killed their children in the context of separation noted that motivations included feelings of anger towards a partner and a desire for revenge, or the use of children to hurt ex-partners (Kirkwood & McKenzie, 2013). Family court disputes were not found to be a factor given that most fathers had access to their children, a finding consistent with Johnson's (2006) study of familicide in Western Australia that also found familicide more related to separation than to custody or access disputes. While separation alone does not necessarily increase risk of fatal child assault and neglect, its relevance increases when it occurs in combination with other risk factors, particularly mental illness such as depression (Brown et al., 2014). In a study of intimate partner homicide followed by suicide however, Sillito and Salari found the key risk factor for child fatalities in these situations was primarily suicidal intentions, rather than the separation itself (Sillito & Salari, 2011).

Involvement with child protection services – in the event of a child fatality from assault or neglect, the context of the family's current and/or prior involvement with relevant child protection services represents another signifier of heightened risk. In a longitudinal analysis of child mortality outcomes following a report to child protection services in the USA, a prior non-fatal report to child protection services was found to be the strongest predictor of a death from injury for children under five (Hornstein, 2010), while several other studies identify current child protection involvement as a risk factor (Pierce et al., 2017; Pritchard et al., 2013; Thurston et al., 2017). When fatalities as a result of abuse are analysed separately from those arising from neglect, history of prior child protection services involvement with any child in the home were reported to be at increased risk of death from neglect rather than abuse (Damashek et al., 2014). In contrast, current involvement with services has been found to increase the risk of abuse-related fatalities, but not those arising from neglect (Berson & Yampolskaya, 2013).

Family composition – two other variables have been identified as potential risk factors although results are somewhat inconsistent; the number of parents and number of children living in the household. Douglas' (2015) study of fatal child maltreatment among children known to child protection services showed living with both parents to be one of the strongest predictors of fatalities. In their study of intimate partner homicide and suicide, Sillito and Salari (2011) found children's outcomes dependent on the marital status of their parents, and that the majority of child fatalities had parents in an intact relationship. In contrast, an evaluation of the utility of birth certificate variables to identify children at risk of filicide reported that infants born to unmarried women, with the father's name missing from the birth certificate, were at highest risk of maltreatment related deaths (Parrish & Gessner, 2010).

Additional children within the family unit also increases the risk of fatality (Parrish & Gessner, 2010), including that of fatal neglect (Damashek et al., 2014), with research suggesting that the risk of fatal maltreatment increased for each extra child in the house under the age of five (Thurston et al., 2017). Conversely, one study reported that compared risk factors between fatal and non-fatal cases of child maltreatment found a significant difference in number of children living at home, with the fatal risk group having fewer children compared with the non-fatal group (Whitt-Woosley et al., 2014).

Caregiver relationship with child/ren – the relationship between the caregiver and child or children in their care may also represent a risk factor for fatal child assault. In a USA study to identify factors that distinguish child abuse fatalities from child abuse non-fatalities, Pierce et al. (2017) report that the ascription of negative attitudes towards the child by the caregiver is a common risk factor. Such



negative interpretation of children's actions can lead to potentially abusive disciplinary behaviour, which in some instances resulted in the child's death (p.275). Similarly a poor quality of connection between a caregiver and child can also increase risk of subsequent child fatality (Graham et al., 2010). Such risk factors are problematic, for while they may be indicative of higher risk, their existence can be difficult to document and harder to address through preventative action (Graham et al., 2010, p. 279).

Perpetrator-related risk factors

Mental illness – along with domestic and family violence, mental illness is another dominant theme in the literature around fatal child assault and neglect, particularly for mothers. Frequently cited as a key risk factor in fatal child assault or neglect, a study of mothers who committed filicide in the USA found the majority had received prior mental health treatment (Friedman, Holden, Hrouda, & Resnick, 2008). There is however growing recognition of the complexity of mental illness and understanding that presence of a psychiatric diagnosis is not by itself a risk factor (Barone et al., 2014). Particular types of mental illness identified as having higher risk for fatal child assault and neglect include depression (Brown et al., 2014), psychosis (Barone et al., 2014) and specific cluster B personality disorders such as borderline personality disorder and antisocial personality disorder (Sachmann & Johnson, 2014), as well as affective disorders and schizophrenia (Laursen et al., 2011). Previous treatment or hospital admission for mental illness has also been found to denote higher risk (Friedman et al., 2008; Laursen et al., 2011), as has untreated mental health issues (Johnson, 2006). Mental health issues are commonly present with other risk factors such as separation (Brown et al., 2014). Major mental health disorders also appear to be a factor in situations of multiple filicides within a single incident. A Victorian study of 52 filicides that occurred between 2000-2009 “broke incidence of mental illness down in terms of the numbers of victims and found that 78% of all victims were killed by a perpetrator with mental illness” (Brown et al., 2014, p. 149).

Caregiver criminal history and history of violence – a perpetrator's propensity for violence, together with their criminal history has been found to be another risk factor for fatal child assault and neglect. A retrospective case review of 20 fatal and near-fatal cases of physical abuse in Kentucky, USA, found that all 20 of the perpetrators had a criminal history that included burglary, armed robbery or drug possession with intent to sell (Pierce et al., 2017), while other research highlights the role of previous convictions for violence (Pritchard et al., 2013). Other research has considered perpetrators' histories of violence more broadly.

A study to determine possible predictors of fatal child maltreatment in the USA found that when compared to perpetrators of non-fatal abuse, significantly more perpetrators in the fatal risk group (24%) had confirmed histories of violence (Whitt-Woosley et al., 2014, p.311). Similarly results from a re-analysis of child homicides in the UK showed that while the majority of within-family perpetrators were mentally ill, it was men with previous convictions for violence, and step-fathers with a history of violence, who posed a greater risk of fatal child assault (Pritchard et al., 2013, p.1425). These results suggest that psycho-criminological factors, especially violence, were more relevant than socio-economic factors when determining levels of risk (Pritchard et al., 2013).

In contrast, two studies included in this review suggest that a caregiver's criminal history and history of violence may reduce the risk of fatal child assault or neglect. Dixon's (2011) study to identify factors associated with increased risk of fatal child abuse in the USA reports that perpetrator prior abuse report history, total number of arrests and history of violence are protective factors that seem to contribute to non-fatal outcomes (Dixon, 2011, p.85). Potential explanations for this result include



increased access to interventions to reduce violence, or removal of the perpetrator or child after the first occurrence of violence (Dixon, 2011). Similarly a study of children in households that experience intimate partner homicide followed by suicide also found that known history of violence reduced the risk of child death outcome, possibly because the intimate partner is the target of the retaliation rather than the children (Sillito & Salari, 2011, p.292).

Drug and alcohol use – Brown, Lyneham et al.'s (2019) study of filicide in Victoria between 2000 and 2009 found that 13 of the 26 cases involved drug use. Notably drug use was more common among step-fathers (7/9) than mothers (3/14) or fathers (3/12) who committed filicide. Eriksson et al. (2016) noted misuse of alcohol was more common among men who committed filicide compared to either women who had killed their children or someone else.

In their study of the national data on filicides between 2001-2002 and 2011-2012, Brown, Lyneham et al. (2019, p. 57) found “the presence of drugs (n=40; 23%) was more prevalent than the presence of alcohol (n=27; 15%)” which they note contrasts with other homicides where alcohol use tends to be more prevalent than drug use. They further observed that the presence of drugs was equally likely among male and female offenders and custodial, non-custodial and step-parents.

Parents’ or caregivers age - Several studies in the field of filicide in the context of child protection have highlighted parents’ age as a risk factor. These studies have identified the youth of a caregiver as a risk factor (Dixon, 2011; Thurston et al., 2017). However, this factor has not been supported in studies of filicide in other contexts, particularly when filicide in the context of family breakdown is considered. In their national study of filicide offenders, Brown, Lyneham et al. (2019, p. 6) found the median age of filicide offenders was 32 years, with the youngest offender being 17 years and the oldest 75 years. They also found no statistically significant difference in the ages of male and female filicide offenders.

Prior threats of harm to children - Threats to kill are an established risk factor for domestic homicide (Humphreys, 2007), though this factor is infrequently discussed in the filicide literature. Several studies have indicated that threats of harm to the child are associated with increased risk, though this risk has been identified primarily in the context of parental relationship breakdown. In Johnson’s (2006, p. 552) analysis of seven cases of family homicide in the context of Family Court proceedings and involving the deaths of 15 children in Western Australia, she found that “in six of the seven cases it was known that threats had been made by the perpetrator to harm himself or others prior to the offense. It seems that often threats were veiled and not recognised as threats by those who heard them.” Similarly, a Canadian study exploring the utility of risk assessment tools for adult victims of domestic violence found some individual factors more associated with paternal filicide include prior threats of harm to children (Olszowy, Jaffe, Campbell, & Hamilton, 2013). In her study of 32 cases of filicide in Wales (UK), Wilczynski (1997, p. 246) noted that the majority of perpetrators had previously physically abused the child and that four mothers (and no males) had threatened to kill the child prior to the actual act.

While a threat to kill a child would appear to be a self-evident risk factor, there is very limited research evidence on this topic. The existing evidence on death threats is primarily found in the literature on family separation. There is also some evidence within the mental health literature of parents or carers disclosing an intention to harm their child. An additional issue is that where death threats or threats to harm the child have occurred, they may not have been recognised as such at the time. Indeed, as Johnson (2006) notes threats may be veiled and often discerned in hindsight after the act. It would appear that further research is needed to understand whether and how



parents' and caregivers' intentions to kill their children are expressed, and what responses can be best employed to reduce the risk of harm to children. The way in which the parent or caregiver articulates the threat may also be linked to their motivation to harm, and so we turn to the research evidence on motivations to kill.

Parent/carer motivations to kill

A large body of international literature exists on parent and carer motivations to kill. Several researchers highlight gender differences in the motivations to commit filicide and these different motivations have implications for whether and to whom parents or carers may disclose their motivations, and the options for intervention to prevent child death. Australian and international research indicates that women are more likely to commit altruistic filicide, that is "where the killing is perceived by the offender to be in the child's best interest" (Poteyeva & Leigey, 2018, p. 5). Altruistic filicide occurs because the parent is affected by mental illness or perceives the child's life to be affected by suffering. Eriksson et al. (2016, p. 24) note that "filicides that were motivated by altruism or neglect or occurred in the context of extreme stress were the purview of mothers." By contrast, "motive categories that are disproportionately characteristic of men include retaliatory killings, where the anger towards another person is displaced onto a child, or escalating physical abuse" (Poteyeva and Leigey, 2018, p. 5. See also Eriksson et al., 2016; Jaffe et al., 2014).

The differing motivations and contexts for parents and carers to kill also provides varying options for screening and early identification. International and Australian evidence suggests that women who commit filicide are likely to have received treatment or assessment for mental health illness, including relatively high rates of in-patient mental health treatment (see Eriksson et al., 2016; Poteyeva & Leigey, 2018). This points to the importance of engaging mental health service providers in the screening for potential filicide intentions and providing appropriate referral and support to prevent child death. Wilczynski's (1997) study of 48 cases of filicide also confirmed prior research highlighting that approximately 70% of perpetrators had prior contact with professionals and that, in particular, mothers in the sample had prior contact with health professionals, particularly social workers, psychiatrists and general practitioners. Fathers and other male carers who commit filicide are also noted to have extensive prior contact with a range of professionals including legal, human service and child protection professionals (see Johnson, 2006; Wilczynski, 1997).

The context of filicide may provide different opportunities for intervention. Where the filicide is planned, as is often the case for killing motivated by revenge in the context of relationship breakdown (see Jaffe et al., 2014), there may be opportunities to disrupt these plans. Further contact with health, human service and legal professionals can also contribute to opportunities for intervention. Wilczynski's (1997) study identified that concerns about the mental health of the perpetrator and concerns about the physical abuse of children were the primary reasons for health and social agency contact prior to filicide. These contacts were initiated by either the perpetrator, or by family or professionals concerned about the perpetrator and the child's health and safety. This again points to the potential of engaging these professional groups in screening, assessment and referral in situations where elevated risk of filicide is suspected.

Identifying and responding to Red Flags for fatal child assault and neglect

This literature review has identified key factors associated with elevated risk of child assault and neglect in relation to the individual child and parent/carer characteristics and their family and social context. In Table 7.1, we outline the factors and level of evidence to support these factors as



indicating heightened risk of filicide. As the literature review indicates, combinations of these factors appear to confer increased risk of filicide.



	Strong evidence	Moderate evidence	Comments
Child's characteristics			
Child's age	✓		0-4 years more at risk
Child's gender		✓	Males (especially aged 0-4)
Child's disability		✓	
Parent/caregiver and family context			
Socio-economic disadvantage	✓		Current financial stress especially significant for mothers
Presence of a step-father as carer		✓	Strong factor when combined with young age of child and other risk factors for the step-father
Domestic and family violence	✓		
Substantiated child protection concerns	✓		This is not a risk factor, but rather a signifier of risk for ongoing harm
Family separation	✓		High conflict separation especially where prior domestic and family violence
Severe mental illness	✓		Psychotic illness including major depression is a strong factor for mothers who kill
Prior criminal convictions		✓	Criminal convictions for violence
Drug/alcohol use		✓	Especially for step-fathers
Service provision context		✓	Limited studies – some evidence of health, human service and legal service engagement

Threats to kill or seriously harm child or other family member		✓	Limited studies on this risk factor and may be more common in filicide associated with high conflict separation and parental (especially maternal) severe mental illness
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Table 8: Risk factors for fatal child assault and neglect

Our study ‘A study of indicators of Red Flags for child assault and neglect in Queensland’ (see Healy & Gillingham, 2020) included all of the risk factors for which data was available. These items are: socio-economic context; child’s age and gender; parent context – the presence of severe mental illness; drug and alcohol use; domestic and family violence; family separation; presence of step-father or recent partner of the mother; repeated contact with child protection services; and threats to kill the child or children.

This review of the literature indicates strong and moderate evidence of several factors for elevated risk of filicide. Even so, the significant challenges in predicting filicide must be acknowledged. While we can identify risk factors there are substantial obstacles to distinguishing who, among those at heightened risk, will go on to commit, or be subject to, filicide. There are two related statistical problems in this matter. First, filicide is a rare event affecting approximately 0.52 children per 100,000 in Australia between 2001-2002 and 2011-2012 (Brown, Lyneham, et al., 2019, p. 11). Second, the risk factors for this event are relatively common among sub-populations, such as parents who use mental health services, parents who are experiencing high conflict relationship breakdowns, and those who come to the attention of child protection services.

Given this challenging context, we concur with Brown, Lyneham et al. ‘s (2019, p. 66) conclusion that

“Educating the sector on the risk factors for filicide and, in particular, the actions needed when there is an overt warning sign, such as if a parent discloses an intention to harm themselves, to harm or kill their children, or to harm or kill their partner, would be a useful means of better identifying such matters to prevent child deaths.”

We would also add that it is important that this awareness of increased risk for filicide is heightened across the human services, health and legal sectors. This seems especially important given that parents and caregivers are likely to have either referred themselves or been referred to these services prior to the filicide event (see Wilczynski, 1997).

Red Flags

Our review of the literature indicates that the term Red Flag is a widely accepted term within the health and human services sectors, though it is not commonly used in relation to the protection of children. The value of the concept of the Red Flag is that it can be used as an educative tool for professionals and the community in identifying circumstances where heightened risk of filicide is present, and for taking action to establish the level of risk.

As discussed, a significant concern is the potential for false positives referring to the potential for a Red Flag being raised for large numbers of children in the at-risk population. Given this context, in order for a Red Flag to be meaningful signal for action, we suggest the definition of Red Flag be refined as follows:



A Red Flag refers to the identification of an act or intention that is likely to adversely affect a child's immediate safety, such as injury, threats of harm or death; or an accumulation of risk factors that, when considered together, may adversely affect a child's immediate safety. The factors leading to a Red Flag response should be linked to a limited number of clearly identifiable indicator(s) of elevated risk; and information about these risk indicators should be readily accessible to those responsible for raising a Red Flag for elevated risk of fatal child assault and neglect.

The indicators for a Red Flag response must be sufficiently clear to avoid dispute or confusion about whether an indicator for a Red Flag response is present or not. It is also important that the observer has access to accurate information in order to raise a Red Flag. For this reason, it is important that risk factors associated with increased risk are as clearly defined and measurable as possible.

Increasing professionals' and other stakeholders' awareness of the risk factors of filicide is an important first step in promoting informed actions in relation to children at risk. A Red Flag system, such as is used in health services to identify elevated risk of developmental delay, could be developed and utilised for all service providers and community members who are concerned about parent/caregiver or their children. In their review of responses to filicide risk, Brown, Lyneham et al. (2019) observe that while professionals may be aware of specific risk factors, no professional group responded to all the risk factors identified in the literature.

A Red Flag involving both the production of a risk factor chart, understanding of the challenges of predicting this rare but tragic event, and education and training across all relevant health, legal and human services professionals would help to build capacity in the sectors for identifying circumstances where elevated risk of filicide is present. This training should also increase professionals' awareness of the key contexts in which filicide is more likely to occur and to recognise the similar and different opportunities and challenges these contexts provide for promoting children's safety.

The second step is building capacity to assess the level of risk. Given that parents' or caregivers' intentions and also their relationship with the child are significant factors in determining risk of filicide, it is important that health, legal and human service professionals are able to engage parents and caregivers in skilled conversations about any intention to harm oneself or others. The literature review indicates that the parents/carers and, sometimes their children, are already in contact with a range of service systems including voluntary engagement such as with health care professionals. This presents an opportunity for professionals who have already established effective working relationships with these parents/carers and children to engage in the skilled conversations needed to establish any intention to harm self or others, and about the current safety and well-being of the child.

Third, it is important that a range of strategies are developed in response to Red Flags for filicide that both reduce the risk to the child while providing a trauma informed and supportive response to parents/carers and children. Several studies have highlighted the social, economic and emotional vulnerability of parents and caregivers who are at heightened risk of filicide (see Eriksson et al., 2016; Jaffe et al., 2014). The responses to risk of filicide should include strategies for reducing the financial and housing stresses on vulnerable families that contribute to a heightened risk for fatal child assault and neglect. Such strategies should form part of a broader policy approach that provides increased investment in adult-focused services to ensure they can better support parents caring for their children. Brown, Lyneham et al. (2019, p. 66) argue for "further investment by adult-



focused mental health, substance abuse rehabilitation and domestic violence services to address their clients as parents, and take a focus on the children of their clients.”

Conclusions

The fatal assault or neglect of children is a rare and tragic event. This literature review reveals key risk factors for filicide. We have also highlighted debates about the risk factors and the identification and responses to heightened risk of filicide. Key statistical challenges associated with responding to this rare event combined with the relative frequency of the risk factors in sub-populations have been discussed. We have considered some options for the concept of Red Flags to be utilised to engage professionals and community members in understanding and responding to circumstances where there is elevated risk of filicide.

An important message from the literature is that while filicide is a child protection matter, it must not only be the concern of child protection services. Many health and human service professionals are in contact with families at increased risk for child harm including child death. There is much that can be done to improve the capacity of the entire health, human services and legal sectors to identify and respond to further reduce the risk of filicide.



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Appendix A - Empirical studies on risk factors of fatal child assault and neglect

Author/ year	Title	Key objective	Methods/approach	Key findings
Amon, Putkonen et al. (2012)	Potential predictors in neonaticide: The impact of the circumstances of pregnancy Austria & Finland	To identify and describe the psychological, social, economic, and mental health-related risk factors in offenders with special emphasis on the pregnancy, including stressful circumstances and the awareness of offender's social environment of the pregnancy	<ul style="list-style-type: none"> - Comparative analysis of Austria (23 cases) and Finland (5 cases) - Secondary data analysis – coroners' reports, death certificates, court files, police files, hospital records 	<ol style="list-style-type: none"> 1. Socio-economic factors eg age or financial situation did not predict a higher risk for committing neonaticide 2. Variables most associated with neonaticide <ul style="list-style-type: none"> - Woman's high fertility rate - High rate of negation of pregnancy - Frequent trauma in offender's childhood - Lack of awareness of pregnancy in offender's social environment 3. Appears pregnancy negation has a higher predictive value than sociodemographic factors



Author/ year	Title	Key objective	Methods/approach	Key findings
Barone, Bramante et al. (2014)	Mothers who murdered their child: An attachment-based study on filicide Italy	To investigate the separate and combined effect of descriptive and attachment derived risk variables in predicting assignment to a filicide mother group	<ul style="list-style-type: none">- Quantitative - simultaneous analysis of multiple variables- Three groups of participants (n=121)<ul style="list-style-type: none">– 1. Mothers from general population (n=61), 2. Mothers with mental illness (n=37), 3. Mothers who had committed filicide (n=23)- Measures: SES, psychiatric diagnosis, traumatic events, attachment states of mind – including the HH coding system – hostile or helplessness	<ol style="list-style-type: none">1. Having a psychiatric diagnosis was not, in itself, a predictor of belonging to the filicide group, however, when associated with an HH - hostile or helplessness - state of mind it was (p.1475)2. Adding the HH attachment states of mind – related to an inability to reflect upon past negative experiences – significantly increased change of filicidal behaviour, particularly when the psychiatric diagnosis was the one most prevalent in filicidal mothers3. Authors conclude that descriptive variables are not by themselves predictive, but become strongly so when associated with particular attachment states of mind



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Berson and Yampolskaya (2013)	<p>Factors Predicting Child Maltreatment Fatalities: A Competing Risk Model</p> <p>Florida, USA</p>	<p>To examine types of child death and factors associated with it in Florida, US</p>	<ul style="list-style-type: none"> - Two group comparison design – child death through abuse vs through neglect - All child deaths from maltreatment 1999-2002 with at least one prior CP report (n=126) - Data – all child death review records and Medicaid claims database for treatment - Measures – child demographics, health status, Medicaid eligibility (proxy for income), seen by child protection services (CPS), attends school/day care, location of incidence, witness - Competing risks survival analysis 	<ol style="list-style-type: none"> 1. All child maltreatment deaths (abuse and neglect) – involvement with CPS at time of incidence increased likelihood of death – also true to deaths from abuse, but NOT from neglect 2. Children with mental health problems and those enrolled in day care or school had a decreased likelihood of child death 3. Identified trend – children with social visibility at school prolongs their life while involvement with CPS is opposite



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Brandon et al. (2014)	The role of neglect in child fatality and serious injury UK	To re-examine cases of neglect which resulted in child death or serious injury related to maltreatment	<ul style="list-style-type: none">- Data from over 800 serious case reviews 2003-2011- N=46 of catastrophic neglect- Developed a six-fold typology	<ol style="list-style-type: none">1. Deprivational neglect eg withholding food or water2. Medical neglect – parents failure to comply with medical advice or administer medication3. Accidents with some element of forewarning4. SUDI – in a context of neglectful care/hazardous home environment5. Neglect in combination with physical abuse/assault6. Suicide among young people



Author/ year	Title	Key objective	Methods/approach	Key findings
Brown et al. (2019)	Filicide offenders Australia	To describe perpetrators of filicide in Australia between 2000- 01 and 2011-12	<ul style="list-style-type: none">- Data from National Homicide Monitoring Program- Between 2000-01 and 2011-12 238 incidents of filicide involving 284 victims	Findings in relation to risk factors include: <ol style="list-style-type: none">1. Alcohol and drug use – 23% used drugs and 15% alcohol at or near the time of the filicide2. Criminal histories – 43%, with 54% of men. Where type of offence was recorded, largest proportion was violent offence (41%)3. Domestic violence – 30% between offender and partner, more male offenders with history of DV4. Mental health – 32% had history of mental illness, mainly females5. Separation – was not a common factor among filicidal parents6. Authors suggest filicide occurs when there is an interaction of risk factors – but note that such risk factors are common among families involved with child protection, so not easy to predict filicide



Author/ year	Title	Key objective	Methods/approach	Key findings
Brown, Tyson et al. (2014)	Filicide and parental separation and divorce Victoria, Australia	To identify perpetrator characteristics and factors associated with filicide including parental separation, mental illness, DV, gender and substance abuse	<ul style="list-style-type: none">- Coroner's records of 40 cases of filicide that occurred in Victoria between 2000 – 2009- Psychosocial analysis of forensic psychiatry reports	Study identifies a variety of stress factors that may increase the risk of filicide <ol style="list-style-type: none">1. Mental illness, especially depression, combined with parental separation for mothers and fathers – less so for step-fathers2. Parenting very young children (1-4) – to young (5-9) children, especially boys, combined with parental separation and mental illness3. Step-fathers are high risk when combined with parenting very young children, DV and substance abuse4. While a variety of services had been consulted this offered no protection to children



Author/ year	Title	Key objective	Methods/approach	Key findings
Cavanagh, Dobash & Dobash (2005)	Men who murder children inside and outside the family UK	To compare two types of child murder – men who murder within the family, and men who murder outside the family context	<ul style="list-style-type: none"> - Data from the Murder in Britain study – includes data from homicide indexes, case files and in-depth interviews - Data collection instrument developed to gather information on over 400 variables, analysed statistically; qualitative data also collected - Subset of 90 case files, with men who killed in the family (FM) (n=49) and men who killed outside the family (NFM) (n=41) 	<p>Some similarities between FM and NFM killers :</p> <ol style="list-style-type: none"> 1. Low SES backgrounds, undereducated, unemployed, histories of disruption and offending in childhood and adulthood <p>Also some significant differences with family murders:</p> <ol style="list-style-type: none"> 2. Mainly perpetrated by biological or step-fathers 3. Victims younger, perpetrators older 4. Offenders more likely to have cohabited, have birth or other children 5. Over two thirds have history of previous violence and abuse to victim – although a third had no previous history 6. At time of murder, social services involved in quarter of cases, maybe due to previous violence to victim



Author/ year	Title	Key objective	Methods/approach	Key findings
Ciani & Fontanesi (2012)	Mothers who kill their offspring: Testing evolutionary hypothesis in a 110-case Italian sample Italy	To identify incidents of mothers killing their own children, and test an adaptive evolutionary hypothesis to explain their occurrence	<ul style="list-style-type: none"> - Retrospective case review - Psychiatric hospital data from 1976 – 2010 - 110 mothers who killed 123 children - Variables – young, poverty, foreigner, hidden body, no partner, if murder happened at home, violent killing/suffocation, other offspring, suicide, psychopathology - Descriptive statistics, hierarchical cluster analysis, ANOVA 	<ol style="list-style-type: none"> 1. Neonaticide is a different phenomenon to infanticide and filicide 2. Child most at risk of being killed by biological mother during first 24hrs of life 3. Neonaticidal mothers (kill child in first 24hrs) were significantly younger than infanticidal and filicidal mothers, more likely to have no other children and face social and economic difficulties 4. Neonaticide is non-violent, attempts are made to conceal the body, occurrences are never followed by suicide, and mothers not particularly affected by psychopathologies 5. Infanticidal and filicidal mothers more likely to be affected by psychopathologies, be older, suicide or attempt suicide after killing child, with the killing likely to result from improper functioning or beneficial adaptations



Author/ year	Title	Key objective	Methods/approach	Key findings
Damashek, Drass & Bonner (2014)	Child maltreatment fatalities related to inadequate caregiver supervision Oklahoma, USA	To examine number of child fatalities due to inadequate caregiver supervision (ICS), and identify which child, caregiver, family, alleged perpetrator and incident characteristics predicted risk that child maltreatment deaths were due to ICS	<ul style="list-style-type: none"> - 115 children who died of maltreatment in Oklahoma between 2000-2003 - Data from child death review board – death certificates, medical reports, CPS reports, police reports - Range of variables – victim, caregiver, family, alleged perpetrator characteristics, maltreatment type - Modified Maltreatment Classification System used to determine if ICS was the cause of death 	<ol style="list-style-type: none"> 1. Results found 51 of 115 deaths were due to ICS, most commonly caused by drowning or smoke inhalation 2. Maltreatment deaths are more likely to be due to ICS for <ul style="list-style-type: none"> - Homes with greater number of children - Older children - Biological mothers more likely to be alleged perpetrator where ICS occurred - Fathers of children of ICS deaths likely to be older - Alleged perpetrator more likely to be female and biological related to child
Damashek, Nelson & Bonner (2013)	Fatal child maltreatment: Characteristics of deaths from physical abuse verses neglect Oklahoma, USA	To examine victim, family and alleged perpetrator characteristics associated with fatal child maltreatment, and examine differences in characteristics of death from abuse vs neglect	<ul style="list-style-type: none"> - Data on all FCM deaths from 1986-2006 in Oklahoma, based on records from the Child Death Review Board 	<p>Findings of relevance to predictors:</p> <ol style="list-style-type: none"> 1. Greater number of children living in the home predicted higher risk of fatal neglect 2. Children living in homes with any history of prior CPS involvement with any child ie siblings, were at increased risk of death from neglect rather than abuse



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Diem & Pizarro (2010)	Social Structure and Family Homicides USA	To examine whether social structure significantly affects occurrence of family homicide (including filicide)	<ul style="list-style-type: none">- Data from Supplementary Homicide Reports between 2000 and 2007, and US 2000 Census- Unit of analysis – cities with 100 000+ residents – n=235- Dependent variable – homicide rate per 100 000 population for family homicide, IPH, filicide, parricide and sibicide- Filicide data – n=1350- Analysis – ordinary least squares regression	<ol style="list-style-type: none">1. Increases in economic deprivation are associated with higher rates of family homicides as a whole, but relationship is not strong – other factors are also involved – but may have an important indirect effect eg lack of formal support in more deprived areas2. Economic deprivation had stronger effect on filicide and IPH than other types of family homicide3. Social structure found to explain only 17.1% of filicide variation4. Social disorganisation eg % foreign born, house ownership, was found to have a negative relationship with both total and family homicides



Author/ year	Title	Key objective	Methods/approach	Key findings
Dixon (2012) PhD thesis	Children Who Die of Abuse: An Examination of the Effects of Perpetrator Characteristics on Fatal Versus Non-Fatal Child Abuse Florida, USA	To determine what risk factors associated with perpetrator characteristics contribute most to increased risk of fatal child abuse as opposed to non-fatal child abuse?	<ul style="list-style-type: none">- Secondary analysis of existing data- Multivariate statistical analysis- Sample – individual who engaged in abusive acts (fatal and non-fatal) in Florida between 2003 – 2008- Fatal abuse perpetrators n=501- Non-fatal abuse perpetrators n=648	<ol style="list-style-type: none">1. Results show perpetrators are most often young (18-31), and mothers fatally abuse at a much higher rate than other caretakers2. Children 0-3 most at risk of abuse, the younger in this group being at higher risk of fatal abuse3. Research identified 1 risk and 3 protective factors in fatal child abuse:<ul style="list-style-type: none">- Perpetrator's relationship to child is a risk factor that contributes to abuse fatality- Perpetrator prior abuse report history, total number of arrests and history of violence are protective factors that seem to contribute to non-fatal outcomes p. 854. While paramours abuse at much lower rates than parents, they almost always abuse children to death



<p>Douglas, E (2016)</p>	<p>Testing if Social Services Prevent Fatal Child Maltreatment Among a Sample of Children Previously Known to Child Protective Services</p> <p>USA</p>	<p>To examine the potential impact of child welfare services on the risk for fatal child maltreatment</p>	<ul style="list-style-type: none"> - Secondary data analysis - Data from the National Child Abuse and Neglect Data System (NCANDS) in US - Data on maltreatment fatality available for 4 588 713 cases with 1161 ending in fatality - Dependent variable=maltreatment fatality - Independent variables=child and parent characteristics, household information and services - Bivariate/multivariate analyses 	<ol style="list-style-type: none"> 1. Children most at risk of fatality are those who are younger, are African American or have a disability 2. When analysed together, regardless of type of maltreatment, receiving family support services, court-appointed representation and case management services significantly reduces risk of maltreatment fatality 3. Physical abuse victims – family preservation and foster care services reduced risk of fatality, increased risk for those receiving transport services, younger children and when DV was present 4. Neglect victims – no services found to reduce risk, while those in receipt of case management services, younger children, physical disability or African American were at increased risk of fatality 5. Children not receiving foster care services – case management services reduced risk of fatality, but no other services did 6. Domestic violence findings inconclusive – increased risk in some circumstances but decreased risk in others
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Author/ year	Title	Key objective	Methods/approach	Key findings
Douglas, E (2015)	Using theory to examine fatal child maltreatment among a sample of children known to Child Protective Services USA	To use theory to test different models (parent psychopathology, social/economic stress, ecological theory) to predict fatal child maltreatment	<ul style="list-style-type: none"> - Secondary data analysis - Data from the National Child Abuse and Neglect Data System (NCANDS) in US - Data on maltreatment fatality available for 3 130 865 cases with 1037 ending in fatality - Dependent variable=maltreatment fatality - Independent variables=child characteristics, parent mental health and substance abuse, social/economic stress factors and ecological approaches – impact of multiple stressors - Bivariate/multivariate analyses 	<p>Strongest predictors of child fatal maltreatment:</p> <ol style="list-style-type: none"> 1. Child age - being an infant – most significant predictor 2. Being African/American 3. Presence of partner violence in the home increased risk of fatality, particularly due to physical abuse 4. Living with both parents 5. Inadequate housing p.228-9 <p>Factors that decreased risk of fatalities:</p> <ol style="list-style-type: none"> 1. Living with a single parent 2. Financial problems, or financial problems with another social stressor 3. Having an infant with other stressors 4. Calling child protective services p.229



Author/ year	Title	Key objective	Methods/approach	Key findings
Douglas, E (2011)	Child Maltreatment Fatalities: Predicting Rates and the Efficacy of Child Welfare Policy USA	To investigate state-level factors and child welfare practice characteristics related to CMFs and assess the potential impact of legislation on the CMF rate	<ul style="list-style-type: none">- State level data from government sources and think tanks- Dependent variable – CMF rate for 2006, 2007 and 2008- Independent variables – alcohol and drug abuse, violent crime, housing, race, region, SES, child maltreatment substantiation rate, child welfare spending- Bivariate/multivariate analysis	<ol style="list-style-type: none">1. Only variables that reliably predict CMFs are<ul style="list-style-type: none">- Crime rate- Poverty level- Region of the country – South and Midwest had higher rates of CMFs2. States with higher levels of poverty have more CMFs3. Legislation designed to reduce the CMF rate failed – there was no difference in CMF rate between states that passed legislation and those which did not



Author/ year	Title	Key objective	Methods/approach	Key findings
Eriksson, Mazeroll et al. (2016)	Maternal and Paternal Filicide: Case Studies from the Australian Homicide Project Australia	To examine the developmental background of filicide perpetrators, as well as motives and contexts of fatal child maltreatment	<ul style="list-style-type: none"> - Qualitative – primary data from interviews with perpetrators from Australian Homicide Project - 14 filicide perpetrators – five mothers and nine fathers, 217 homicide perpetrators - Data collected on background variables, childhood experiences, criminal history, alcohol and drugs, relationship/family factors, other individual risk factors eg mental health, motivation - Thematic analysis 	<ol style="list-style-type: none"> 1. Gender differences apparent in childhood and adulthood <ul style="list-style-type: none"> - Fathers reported higher levels of violence during childhood, higher rates of severe drug and alcohol abuse, and previous violence towards children - Mothers more commonly assessed for mental health issues, and involvement with Dept of Child Safety 2. Identified six motivational classifications <ul style="list-style-type: none"> - Accidental/discipline – 6 fathers - Spousal revenge – 2 fathers - Mental health – 1 father - Altruistic – 2 mothers - Neglect – 2 mothers - Extreme stress/loss of control – 1 mother



Author/ year	Title	Key objective	Methods/approach	Key findings
Frederico, Jackson and Dwyer (2014)	Child Protection and Cross-Sector Practice: An Analysis of Child Death Reviews to Inform Practice When Multiple Parental Risk Factors Are Present Victoria, Australia	To explore the impact of the combination of family violence, mental illness and substance abuse on selected child maltreatment fatalities in Victoria, and service response to the co-existence of these risk factors	- Mixed methods – child death review reports (n=16), survey of practitioners from the three sectors (n=172), 5 focus groups with key stakeholders	<ol style="list-style-type: none">1. More mothers than fathers were reported as experiencing all three risks factors2. More fathers noted as perpetrators of family violence – but limited data on fathers so maybe missing information3. All children were alleged or substantiated to have experienced neglect and family violence4. Gender influence engagement of CPS, with lack of engagement of fathers5. Difficulties among the different services in terms of collaboration and information sharing – each sector has its own knowledge which is hard to share



Author/ year	Title	Key objective	Methods/approach	Key findings
Friedman, Holden et al. (2008)	Maternal filicide and its intersection with suicide Ohio, USA	To compare characteristics of three groups of filicidal mothers; those who completed suicide (FS), those who made non-fatal suicide attempts (FAS), and those who made no suicide attempt (FO)	<ul style="list-style-type: none">- Retrospective records review- Two groups<ol style="list-style-type: none">1. Mothers who committed filicide followed by suicide (1965- 2002)2. Mothers who committed filicide, both with and without a non- fatal suicide attempt, who were found not guilty by reason of insanity (1974-2002)- Sample n=49 – FS n=10, FAS n=19, FO n=20	<ol style="list-style-type: none">1. Majority of all mothers had prior mental health treatment2. Mothers who committed FS or FAS predominantly had altruistic motives3. Mothers who committed FS most commonly used firearms, and killed older children, and be married – contrary to findings that suggest married women have lower risk of suicide4. Mothers who committed FS had a trend to being less likely to have had a known previous psychiatric hospitalisation



<p>Graham, Stepura et al. (2010)</p>	<p>Predicting child fatalities among less-severe CPS investigations</p> <p>Texas, USA</p>	<p>To identify variables that distinguish CPS maltreatment fatality cases from CPS non-fatality cases</p>	<ul style="list-style-type: none"> - CPS data - Less severe child fatality cases in Texas 1992-1996 (n=75) were compared with less severe non-fatal cases (n=456) that occurred between June-August 1993 and had no fatality by 1996 - In fatal cases, the most recent incident prior to the fatality was used for comparison - Developed seven constructs: caregiver capability, physical violence indicators, caring indicators, child vulnerability, response to CPS, degree of harm and home environment - Extracted nine case factors: quality of connection, non-cooperative/self-absorbed, aggressive adult, life troubles, indicators of sexual molestation, immediately dangerous situation, challenging child, severe harm and lapse of care - Logistic regression analyses 	<ol style="list-style-type: none"> 1. Constructed 3 predictive models – general, neglect-specific, physical abuse-specific – results show while a physical abuse-specific model can help identify risk of CFM from less severe maltreatment, this is not the case with neglect 2. Can use identification of high-risk group to target interventions 3. Identification of three categories in terms of risk of child fatality and the extent to which they are actionable ie lend themselves to protective action from CPS <ul style="list-style-type: none"> - Mostly more actionable and indicative of reduced risk – variables related to the home environment, recognition of dangerous or violent situation, child behavioural concerns - More actionable but indicative of increased risk – variables related to highly violent situation, in conjunction with dangerous environments, difficult child behaviours, stress, and lack of care
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Author/ year	Title	Key objective	Methods/approach	Key findings
				<ul style="list-style-type: none">- Less actionable and indicative of increased risk – mainly related to family characteristics, so more difficult to document and to take action – quality of connection between caregiver and child, caregiver abilities and skills, child vulnerability



Author/ year	Title	Key objective	Methods/approach	Key findings
Hamilton, Jaffe and Campbell (2013)	<p>Assessing Children's Risk for Homicide in the Context of Domestic Violence</p> <p>Canada</p>	<p>To identify potential risk factors for child maltreatment fatality in the context of domestic violence</p>	<ul style="list-style-type: none"> - Secondary data analysis – data from domestic homicide case summaries in Ontario between 2002-2009 - Comparison study – all cases reviewed for child involvement and divided into 3 groups (n=84) <ol style="list-style-type: none"> 1. No child in the home (child lives elsewhere) – control group 2. No child target (lives in home but no attempt on their life) 3. Child target (child was killed or tried to be killed) – groups 2 and 3 used to identify predisposing factors to child homicide - 12 most common risk factors selected – separation, history of DV, obsessive behaviour, depression (opinion of family etc), depression (diagnosed), escalation of violence, threats to kill, threats to commit suicide, prior suicide attempts, violence outside family, attempts to isolate victim, sense of fear 	<ol style="list-style-type: none"> 1. No significant difference between domestic homicides with or without children in the family 2. Great number of agencies involved – child target group had most community agency involvement when compared to cases with no child in the home 3. Cases with children had almost twice as many agencies involved compared to no child in the home p.184 4. Despite larger number of agencies involved, findings do not show greater protection from child maltreatment fatality – suggests insufficient risk assessment and management 5. Of the 12 risk factors examined, 11 showed no difference between the 3 groups – only one was victim's sense of fear was higher in the no child group 6. Conclude children need to be protected if agencies have concern for mother's risk of homicide



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Hornstein (2010) PhD thesis	Do “Accidents” Happen? An Examination of Injury Mortality Among Maltreated Children California, USA	To undertake a longitudinal analysis of child mortality outcomes following a report to CPS, to determine explore risk factors	<ul style="list-style-type: none">- Longitudinal cohort design- CPS records, birth records and death records cover 4.3 million children born 1999-2006- Maltreatment allegation for 500 000 children, and death reports on 2 000 children fatally injured under 5- Includes variables to control for a number of sociodemographic risk factors- Multivariate survival models – overall risk of injury death, risk of unintentional injury death, and risk of intentional injury death	<ol style="list-style-type: none">1. A prior non-fatal report to CPS is the strongest predictor of a death from injury (both intentional and unintentional) for children under 52. Children reported for physical abuse died from injuries at a higher rate than sexual abuse, neglect or other maltreatment – when only intentional injuries were considered, prior allegation of physical assault meant these children were 38 times more likely to die than unreported children



Author/ year	Title	Key objective	Methods/approach	Key findings
Johnson (2006)	Familicide and family law: a study of filicide-suicide following separation WA, Australia	To determine whether there were common factors among a cohort of familicide cases where there appeared to be a dispute about custody and/or access to children, which may help in identifying families at risk	<ul style="list-style-type: none">- Qualitative study, exploratory and descriptive- In-depth case studies – n=7- Data from documentary analysis and survivor interviews- All perpetrators were men, six committed suicide after the event, one survived his suicide attempt- Seven families lost 23 members in total	<ol style="list-style-type: none">1. Familicide more related to separation than custody or access dispute2. History of domestic violence3. Perpetrator had history of obsession, egocentricity, pathological jealousy, and evidence of untreated mental health issues4. Previous threats to harm or kill5. Offense was premeditated6. Women underreported violence7. Abandonment fears in perpetrator linked to emotional deterioration at time of separation



Author/ year	Title	Key objective	Methods/approach	Key findings
Kajese, Nguyen et al. (2011)	Characteristics of child abuse homicides in the state of Kansas from 1994 to 2007 Kansas, USA	To describe the epidemiology of child abuse homicides in Kansas from 1994 – 2007, to identify risk factors for child abuse fatalities	<ul style="list-style-type: none"> - Retrospective case chart review - Data from Kansas State Child Death Review Board - Data collected on subject characteristics, factors related to death, environmental factors and perpetrator characteristics - 170 child abuse fatalities identified, majority from child physical abuse 	<ol style="list-style-type: none"> 1. Younger children at higher risk for abuse 2. Biological parents most common perpetrators, then mother's paramour 3. Majority of deaths occurred in victims' homes 4. Largest percentage of victims were children of single mothers, with no prior history of child abuse
Kirkwood & McKenzie (2013)	Filicide in the context of parental separation Australia	To review cases of intentional filicides that occur in the context of separation	<ul style="list-style-type: none"> - Case study review - Filicide data from between 1997 – 2008 obtained from the National Homicide Monitoring Program - 239 incidents involving 291 child victims - 8 case studies of fathers who killed their children in the context of separation - Thematic review 	<ol style="list-style-type: none"> 1. Prior intimate partner violence 2. Anger towards ex-partner and desire for revenge in relation to separation 3. Using the child/ren to hurt ex-partner 4. Few cases involved family law courts, as fathers had access to children 5. Most cases had contact with various services prior to death eg police, court, mental health, GP, social services



Author/ year	Title	Key objective	Methods/approach	Key findings
Laursen, Munk-Olsen et al. (2011)	Filicide in offspring of parents with severe psychiatric disorders: a population-based cohort study of child homicide Denmark	To examine risk of child homicide if parents had a psychiatric history, compare effects of different psychiatric diagnoses, and assess whether child homicide will be perpetrated by parents according to their psychiatric history	<ul style="list-style-type: none"> - Population based cohort study - Data obtained from police records and Danish national registers between 1973 and 2007 - Cohort members followed from birth until they turned 18, died, or emigrated - 187 child homicide victims identified - Survival analysis 	<ol style="list-style-type: none"> 1. Children with parents previously admitted to psychiatric hospital had higher risk of child homicide 2. Risks especially high for young children with mothers previously admitted to hospital for affective disorders or schizophrenia 3. Relatively high risk of child homicide if parents had records of mental disorders, but overall very low absolute risks of child homicide
Nielssen et al. (2009)	Child homicide in New South Wales from 1991 to 2005 New South Wales, Australia	To examine the circumstances of child homicides that occurred between 1991 and 2005 in NSW	<ul style="list-style-type: none"> - Retrospective analysis of all child homicides in NSW 1991-2005 - Data obtained from legal documents, newspaper archives, medico legal reports - 165 child homicides during study period identified 	<ol style="list-style-type: none"> 1. Fatal child abuse most common cause of death (36%) – both offenders and victims on fatal child abuse were significantly younger than in other forms of child homicide 2. Most child homicide offenders were men 3. Most infants were killed by men – but most infant homicides do not involve a mentally ill perpetrator 4. Minority of offenders were affected by severe mental illness at time of death, most during first episode of psychosis – consistent with other findings



Author/ year	Title	Key objective	Methods/approach	Key findings
Nobes et al. (2018)	Child Homicides by Step-fathers: A Replication and Reassessment of the British Evidence UK	To replicate an earlier study (Daly & Wilson, 1994) that explores the risks of children being fatally abused by their stepfather	<ul style="list-style-type: none">- Data from Home Office's Homicide Index – includes both cohabiting and non-cohabiting step-fathers- Explored risk of children being killed by step-fathers vs genetic fathers, whether method of killing varied, whether older stepchildren were also at increased risk, whether risk is reduced if only cohabiting step-fathers are considered, the effect of age of stepfather	<ol style="list-style-type: none">1. Children were at increased risk of being killed by a stepfather, particularly between age 0-4 – across all ages nearly 4 times more likely than genetic father2. Where stepfather cohabits with child the, the risk of child being killed was twice that of than being killed by genetic father3. Older children (5+) were not found to be at increased risk of death from stepfather rather than genetic father4. Step-fathers overall are younger than genetic fathers – when age is controlled for, much lower level of increased risk of death – 1.7 times across all ages5. Authors argue that being a step-father posed little or no greater risk of death than from genetic fathers, and that child age and father age have much greater impact



Author/ year	Title	Key objective	Methods/approach	Key findings
Olszowy et al. (2014)	Effectiveness of Risk Assessment Tools in Differentiating Child Homicides From Other Domestic Homicide Cases Ontario, Canada	To determine whether risk assessment tools used for adults victims of domestic violence can help identify a child's risk of fatality in the context of domestic violence	<ul style="list-style-type: none">- Retrospective domestic homicide case analysis- 40 cases from Ontario between 2003 – 2010- Cases divided into two groups; child homicide/attempted homicide, and no child homicide/attempted homicide but present in home- Comparison of three standardised risk assessment tools – the Danger Assessment, the Ontario Domestic Violence Assault Risk Assessment, and the Brief Spousal Assault Risk Assessment	<ol style="list-style-type: none">1. Current risk assessment tools for adults victims of DV cannot be used to determine whether children are similarly at increased risk of fatality2. Results showed no significant differences in cases where children were killed compared to cases when mothers were killed3. Although no overall significant difference, some individual items more likely to be associated with paternal filicide<ul style="list-style-type: none">- Prior threats of harm to children- Intimate relationship problems – problems establishing or maintaining a long term intimate relationship



Author/ year	Title	Key objective	Methods/approach	Key findings
Parrish & Gessner (2010)	Infant maltreatment-related mortality in Alaska: Correcting the count and using birth certificates to predict mortality Alaska, USA	To evaluate the usefulness of birth certificate variables for identifying children at increased risk of fatal child maltreatment, as well as to estimate fatality rate using multiple data sources	<ul style="list-style-type: none">- Retrospective observational cohort study- Infants born in Alaska between 1992 and 2005- Three categories to predict fatalities:<ol style="list-style-type: none">1. Married2. Unmarried, father's name on birth certificate3. Unmarried, father's name missing from birth certificate	<ol style="list-style-type: none">1. Infants born to unmarried women with father's name missing from birth certificate at highest risk of maltreatment-related deaths2. Nearly all maltreatment-related deaths had at least one of the following risk factors:<ul style="list-style-type: none">- Family with additional children- An unmarried mother- Mother with prenatal substance abuse3. Lack of father's name on the birth certificate one of the most important variables, and additional children4. 74% of maltreatment deaths had 2 or 3 of these risk factors present, compared with 28% of the general population



<p>Pierce, Kaczor et al., (2017)</p>	<p>History, injury, and psychosocial risk factors among cases of fatal and near-fatal physical child abuse</p> <p>Kentucky, USA</p>	<p>To determine if commonalities existed between cases of fatal and near-fatal abuse, and if indicators of abusive trauma and environmental risk were present to the fatal or near-fatal event</p>	<ul style="list-style-type: none"> - Retrospective case review in Kentucky of children under 4, classified as physical abuse by Health and Family Services - Fatal cases (n=10), near-fatal cases (n=10) - State records – medical records, CPS reports, legal proceedings, caregiver criminal history, autopsy findings - Information retrieved on 6 psychosocial risk factors (PRF): criminal histories, prior child social service involvement, prior domestic abuse/intimate partner violence, negative or hostile attitudes about the child/siblings, mental health issues, substance abuse histories 	<ol style="list-style-type: none"> 1. At least 2 PRFs were present in each case, while the majority had at least 4 PRFs 2. Common risk factors include <ul style="list-style-type: none"> - caregiver criminal history (n=20) - prior child social service involvement (n=17) - history of domestic violence/intimate partner violence (n=16- half of DV cases were classified as severe) - caregiver ascribing negative attributes to the child, or placed child at risk without thought for well-being 3. 90% of fatalities/near-fatalities were due to traumatic brain injury, yet only 4 presented at hospital with an initial history of trauma – the rest presented as medical issues, obscuring the physical abuse 4. 70% had a male caregiver at the time of the event 5. Two-thirds of cases had indicators of prior physical abuse (atypical bruising), but significance of bruising was often overlooked as a risk of subsequent severe maltreatment
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Pritchard, Davey & Williams (2013)	Who kills children? Re- examining the evidence UK	To explore whether there are differential risk levels among assailants (Reports on one aspect of multiple study objectives)	<ul style="list-style-type: none">- Re-analysis of regional child homicides and suicides from an earlier study, to focus on commonalities among assailants- Data from national police records	<ol style="list-style-type: none">1. Identifies three distinct within-family assailant categories:<ul style="list-style-type: none">- Mentally ill parents- Mothers with a child on the Child Protection register- Men with previous convictions for violence2. Results indicate that psycho-criminological factors – especially violence - rather than socio-economic are more relevant when determining risk of child abuse-related deaths3. Extra-family assailant - step father with a history of violence4. Men with previous convictions of violence, both within and extra-family assailants, posed much greater risk than mentally ill parents of either sex



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Rangel, Bird et al. (2010)	Socio-economic disparities in infant mortality after nonaccidental trauma: A multicenter study USA	To determine the impact of race, SES and insurance status on mortality of abused infants	<ul style="list-style-type: none">- Data obtained from nine paediatric trauma centres- Infants less than 12 months old with abusive injuries over a five year period- 867 patients with mortality rate of 8.8%- Measures – demographics, insurance status, Injury Severity scores, Glasgow Coma Scale scores, median household income and outcomes- Logistic regression	<ol style="list-style-type: none">1. Lack of private insurance was an independent predictor of mortality - infants without private health insurance had 3.8 times greater risk of dying2. Infants in lower three quartiles of income were at higher risk of dying, even after controlling for race, injury severity, and Glasgow Coma Scale3. Race was not an independent predictor of mortality, even though African American infants had a higher overall mortality than white infants



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Sachmann & Johnson (2014)	The relevance of long-term antecedents in assessing the risk of familial suicide following separation Western Australia, Australia	To explore the relevance of biopsychosocial antecedents in cases of familial-suicide in Western Australia between 1986 and 2005	<ul style="list-style-type: none">- Qualitative review of nine cases of familial suicide following separation in Western Australia- Descriptive data collected from media, police and court proceedings- In-depth interviews with some victims/perpetrator- Thematic analysis	Biopsychosocial risk profile identified by authors based on: <ol style="list-style-type: none">1. Early adverse childhood experiences (abuse and resulting attachment disturbances)2. Significant psychodynamic influences3. History of domestic violence4. Specific diagnostic profiles, specifically cluster B personality disorders eg borderline personality disorder and antisocial personality disorder <p>Authors hypothesise a six stage psychodynamic process leading up to and culminating in familicide-suicide; symbiosis, separating, abandoned male, attempts to reunify, realisation and lethal solution</p>



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Sillito & Salari (2011)	Child outcomes and risk factors in US homicide-suicide cases 1999-2004 USA	To examine outcomes of children in households that experience intimate partner homicide/suicide (IPHS)	<ul style="list-style-type: none"> - Data from larger study into IPHS - Data from multiple sources including media, police reports, internet searches - Content analysis of 208 cases involving 441 children across the USA between 1999 and 2004 - Dependent variable – child outcomes – killed, witnessed, not present - Independent variables – estrangement of couple, relationship between child and perpetrator, known previous violence, event location, use of firearm, time and region, suicidal intentions of perpetrators, existence of siblings 	<p>Key results include:</p> <ol style="list-style-type: none"> 1. Children’s outcomes depended on marital status of couple – majority of killed children had parents in an intact relationship – conflicts with other research on risk of separation 2. Majority of killed children were from families without a known violent history of the perpetrator 3. Homicidal intent perpetrators killed 11.52%, suicide intent perpetrators killed 55.26% 4. Firearms most common mode of death 5. Biological parent increased risk of child death outcome 6. Known history of violence reduced risk of child death outcome 7. Daytime IPHS reduced risk of child death 8. Regional variations – highest risk of child death in south or west 9. Children significantly more at risk of death if perpetrator was primarily suicidal 10. Key risk factor is primarily suicidal intentions, not separation



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Sim (2015)	Invisible children, dying to save others: A discussion of three fatal child abuse cases and the prevention of future deaths UK/Australia	To discuss three fatal child abuse cases (two from UK, one from Australia) to identify precursors to identify critical indicators of risk	<ul style="list-style-type: none">- Retrospective case review- Three widely reported child maltreatment deaths- Adopts an interactionist perspective – to understand the interactions that produce the particular concerns of endangerment in each of the cases	Two critical conditions: <ol style="list-style-type: none">1. Invisibility – child became silent or invisible prior to death, either physically through imprisonment, or metaphorically<ul style="list-style-type: none">- Children often not sighted by child protection workers, despite apparent concerns – hidden by parents2. Dysfunctional representation - lack of detection of false parental representations about the child's condition – key as if accounts were identified as false or misleading greater intervention may have occurred<ul style="list-style-type: none">- Parental cooperation and compliance may conceal risks to child



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Stone et al. (2005)	Infanticide in female forensic patients: the view from the evolutionary standpoint New York, USA	To compare infanticides committed by mentally ill mothers with those committed by mothers in the general population	<ul style="list-style-type: none">- Retrospective review of maternal infanticide between 1974 and 2000- Hypothesise that mentally ill mothers would behave differently to evolutionary expectations eg would be older than non-ill mothers- Sample n=57 – committed infanticide n=45, attempted infanticide but child survived n=12- Variables – age of mother, age of child, whether pregnancy resulted from rape or incest, behavioural or physical problems of the child, problems supporting the child- Descriptive analysis	<ol style="list-style-type: none">1. Much lower rate of infanticide and filicide among young mothers under 26 who had mental illness2. Children killed were older than those in study of infanticide in the general population – majority were between 1 and 17 years, 46% were filicides compared with 10% in comparison study3. Common factors were low SES – 81% of mentally ill mothers4. Poverty, low education level or low intellectual capacity, and lack of a spouse or partner were common factors in both mentally ill mothers and those in the general population



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Stroud & Pritchard (2001)	Child homicide, psychiatric disorder and dangerousness: a review and an empirical approach UK	To review child murder over a 10 year period, and identify potential risk groups of assailants	<ul style="list-style-type: none">- Retrospective review of police records of all child murders in two counties- 4 potential risk groups of potential assailants = intra-familial mentally ill parents; men with prior convictions for violent offences; neglecting parents; extra-familial group of male sexual abusers	<ol style="list-style-type: none">1. Argue best predictor of serious crime or violence is previous behaviour2. Mentally ill largest group of assailants (44%), half of whom were women – mentally ill women formed the largest single group3. Remaining mothers were neglecting4. Biological fathers were all psychiatrically disordered5. Non-biological fathers were all co-habiting with previous convictions for personal violence – all committed filicide jointly with mother6. All extra-familial murders associated with child sexual abuse – multi-criminal child sexual abusers with previous convictions for violence killed at highest rate



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Temrin, Nordlund et al. (2011)	Is the higher rate of parental child homicide in stepfamilies an effect of non-genetic relatedness? Sweden	To explore rate of parental child homicide within stepfamilies	<ul style="list-style-type: none">- Retrospective review of parental child homicides in Sweden between 1965 and 2009- Data from Statistics Sweden, police records, Swedish National Council for Crime Prevention- Statistical analysis using Chi-square tests	<ol style="list-style-type: none">1. Significantly higher number of filicides among parents in stepfamilies than in families with two genetic parents2. Higher incidence of crime in general (1.5 times higher) and violent crime (two times higher) in stepfamilies than genetic families3. Perpetrators in stepfamilies did not preferentially kill stepchildren over genetic children4. Conclude that non- genetic relatedness does not explain the relatively higher rates of filicide in stepfamilies



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Thurston, Freisthler et al. (2017)	<p>Environmental and individual attributes associated with child maltreatment resulting in hospitalisation or death</p> <p>California, USA</p>	<p>To explore the relative influence of individual and environmental factors on children who have been hospitalised or died as a result of child maltreatment</p>	<ul style="list-style-type: none"> - Retrospective case-control design - 234 cases of children who were hospitalised or died due to maltreatment between 1999 and 2013, who were under the age of 6 and had caregiver previously investigated by CPS - Matched control – 468 controls - Existing administrative data including CPS, health, criminal and human assistance - Measures – dependent variable is serious maltreatment - Independent variables – family level, child level, environmental predictors 	<p>Significant findings were that when compared to controls, caregivers were:</p> <ol style="list-style-type: none"> 1. 6 months younger than controls 2. More likely to be male 3. Had less exposure to DV 4. Less likely to have had a child maltreatment arrest 5. More likely to have mental health issues 6. Receiving CPS services 7. Risk increased with each extra child <5 in the house 8. Eligibility for Medi-Cal insurance reduced child’s risk of becoming a case 9. Increased distance from a Family Resource Centre lowered the risk of serious maltreatment



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Vaithianathan et al. (2018)	<p>Injury and mortality among children identified as at high risk of maltreatment</p> <p>New Zealand</p>	<p>To determine if children deemed as high risk of maltreatment by a predictive model have increased risk of early childhood injury and mortality</p>	<ul style="list-style-type: none"> - Developed a model to predict risk of maltreatment among children born in 2010 - Linked administrative data from the Integrated Child dataset - Developed predictive risk model for 2010 cohort using logistic regression, then assigned risk scores to 2011 cohort - Very high risk children in top 10%, high risk top 20% - Compared incidence of injury and mortality rates between very high risk, high risk and rest of cohort 	<ol style="list-style-type: none"> 1. Very high risk children were more likely to have a single mother, a mother under 20, and live in a family with high parenting demand, past or current CPS involvement, receiving welfare, recent criminal conviction, mental health record 2. Very high risk children had much higher post neonatal mortality rates than other children – 4.8 times – and higher risk of hospitalisation – 2 times higher 3. Largest risk of death due to unintentional injuries 4. High risk children mortality rates were 4.2 times greater, while risk of hospitalisation was 1.8 times higher 5. Argue can assist in targeting to support services to families at greatest risk



<p>Whitt- Woosley et al. (2014)</p>	<p>Lives at risk: Uncovering factors associated with fatal child maltreatment</p> <p>USA</p>	<p>To examine the relationships between factors associated with fatal risk and non-life threatening cases of child abuse and neglect, using caregiver, child and systemic factors to determine possible predictors of fatal child maltreatment</p>	<ul style="list-style-type: none"> - Two group comparison design - Data from outpatient assessment centre for CPS involved families - Fatal risk group (fatal n=15 and near fatal n=35), Comparison group (50 cases of non-threatening child maltreatment, matched - Data collection – interviews, psychometric measures, retrospective review - Caregiver measures – age, gender, ethnicity, relationship to child, employment status, education, history of violence, substance abuse, mental health - Child measures – age, ethnicity, number of children in home at time of incident, medical finding, positive mental health finding - Systemic factors – rurality, child protective service factors - Service provision factors – look at prior service delivery and attempts at risk reduction 	<p>Key findings when fatal risk group compared with Comparison group include:</p> <ol style="list-style-type: none"> 1. More co-parenting arrangements 2. More men and biological fathers as perpetrators 3. More confirmed histories of violence – 24% more in fatal risk group 4. Fewer children residing in the home 5. Children were typically under 4 and Caucasian, with high rates of medical, developmental and mental health issues 6. Logistic regression model showed ability to predict fatal cases could be improved to 71% if the significance of a male in the home, warning signs of physical abuse, in families with more than two children living in a rural setting is recognised
<p>Yampolskaya &</p>	<p>Profiles of child</p>	<p>To examine perpetrator</p>	<ul style="list-style-type: none"> - Case record review from CPS/Child 	<ol style="list-style-type: none"> 1. Biologically unrelated caregiver is the



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Greenbaum (2009)	maltreatment perpetrators and risk for fatal assault: A latent class analysis Florida, USA	profiles to determine which characteristics are associated with fatal child maltreatment, whether discrete sub-groups of perpetrators can be identified, and whether risk among sub-groups varies	Abuse Death Review Team - Sample – fatal case perpetrators (n=126) and matched non-fatal perpetrators (n=70) - Measures – perpetrator’s demographic characteristics, relationship to victim, living arrangements, health status, history of antisocial behaviour, history of childhood maltreatment - Bivariate/multivariate analysis, latent class analysis	strongest predictor of fatal assault 2. Juvenile justice involvement was also a significant predictor, but finding is tentative due to a large amount of missing data Sub-groups of perpetrators identified 1. Biological mothers with behavioural health problems – less likely than other two groups to commit a fatal assault – need more research looking at specific types of mental health issues 2. Male perpetrators with domestic violence history – highest 3. Multiple problem perpetrators – have more and diverse problems than other two groups – DV, substance abuse, criminal justice history – and prior maltreatment reports 4. Findings show women ie biological mothers less likely to commit a fatal assault – but warn this is inconsistent with other studies and requires further research