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Title: How do nurses keep children safe from abuse and neglect, and does it make a difference? A scoping review.

Highlights

- Nurses have a professional duty to keep children safe from abuse and neglect.
- Nurses' interventions included prevention, detection and addressing existing abuse.
- The efficacy of nurse interventions was inconsistent across studies.
- Literature did not comprehensively represent nurses' activities.

Abstract

Objectives: To explore the extent of child protection work performed by nurses and identify which interventions hold the strongest evidence for future practice.

Design: This scoping review was guided by Arksey and O'Malley's framework for scoping reviews.

Data sources: Electronic databases (CINAHL, Medline, Scopus, Web of Science) and grey literature were searched in August 2017. Further studies were identified through manual literature searching.

Results: Forty-one studies from seven countries met the inclusion criteria. The studies showed nurses keep children safe primarily through the prevention of abuse (n=32), but also through detection of abuse (n=1) and interventions to mitigate the effects of abuse (n=8). Nurses' specific interventions most frequently involved post-natal home visiting (n=20), parent education (n=10) and assessment and care of children or adolescents following sexual abuse (n=4). The main findings showed that although nurses did have positive impacts upon some measures of abuse and neglect, results were not consistent across studies. In addition, some studies used indirect measures of abuse and neglect, which may not impact children's experiences of abuse. It is difficult to extrapolate these findings to the broader nursing profession as literature did not accurately represent the range of ways that nurses keep children safe from abuse and neglect.

Conclusions: This review demonstrated nurses prevent, detect and respond to abuse and neglect in many ways. However, given mixed evidence and absence of some nurse interventions in the literature, further research is needed to represent the range of ways that nurses keep children safe and determine their effectiveness.

Keywords

Child, Child Abuse, Child Welfare, Nurses, Nurses' Role, Review Literature, Scoping Review, Violence.

Introduction

Child abuse and neglect is a significant global public health issue (World Health Organization, 2006). Contemporary approaches to addressing the problem of child abuse and neglect recognise that a multi-disciplinary approach involving all sectors of society is a valuable way forward (Wulczyn et al., 2010). One such approach is the public health model that aims to prevent abuse, provide early intervention and on-going care to children and families when abuse does occur (World Health Organization, 2006). A public health approach is necessary because factors that leave children vulnerable to abuse and neglect are often multifactorial and dependent on the interplay of various social, economic and parental factors (Proctor and Dubowitz, 2014). For example, poverty (Maguire-Jack and Font, 2017), homelessness (Haskett et al., 2017), parental wellbeing (Proctor and Dubowitz, 2014) and childhood disability (Jones et al., 2012) can influence a child's likelihood of experiencing abuse and neglect. Children who experience one or more of these risk factors come in contact with different services, meaning that all professionals who work with children have an important role in keeping children safe from abuse and neglect.

Nurses are the largest group of health professionals and have frequent contact with children who are at increased risk of abuse and neglect. They may work directly with children in paediatric or child health settings, and indirectly through their work with parents who are experiencing adversity like homelessness or poor physical health. For example, mental health nurses consider the wellbeing of their client's children (Korhonen et al., 2010, Maddocks et al., 2010) and nurses working with women are aware of the impacts of domestic violence on women and their children (Brykczynski et al., 2011, Drinkwater et al., 2017). This places nurses in an ideal position to

contribute to prevention, identification and responses to vulnerable children and families across settings from primary health care to tertiary paediatric hospitals.

Nurses are ethically and in some jurisdictions also legally obliged to intervene when children are at risk of harm (International Council of Nurses, 2009, Mathews, 2015, Sahib El-Radhi, 2015). Unfortunately, recent literature has shown that nurses are not always well equipped to keep children safe, perceiving a lack of knowledge and confidence in their role (Lines et al., 2017). Despite the challenges that nurses encounter, it remains unclear whether or not they are effective in keeping children safe in ways that make measurable differences to children's lives. Consequently, the purpose of this scoping review is to firstly describe what nurses do to keep children safe from abuse and neglect, and secondly to identify evidence related to the effectiveness of nursing practice in safeguarding children. This knowledge will guide decision making around which professional groups are best equipped to prevent, identify and respond to child abuse and neglect.

The effectiveness of interventions that address child abuse and neglect have been reported in existing literature. For example Fryda and Hulme (2015) and Walsh et al. (2015) have reviewed the literature on interventions to prevent sexual abuse. While Poole et al. (2014), and Mikton and Butchart (2009) have looked at interventions to prevent neglect, physical abuse and/or emotional abuse. However, these reviews look at the effectiveness of specific programs without consideration of the personnel who are involved in their implementation. This review will contribute to current knowledge by synthesising the literature to identify what nurses do to keep children safe and which interventions are supported by the strongest evidence. In addition, this review will contextualise the main findings by outlining nurses' professional characteristics and the rationale for nurse involvement in keeping children safe.

Methods

This scoping review was guided by Arksey and O'Malley's (2005) framework in addition to more recent literature on scoping reviews (Colquhoun, 2016, Colquhoun et al., 2014, Daubt et al., 2013, Khalil et al., 2016, Levac et al., 2010). Although there is currently no consensus on the definition of a scoping review (Daubt et al., 2013), we have used the Colquhoun et al. (Colquhoun, 2016, Colquhoun et al., 2014) definition

as outlined in the 'current best practices for the conduct of scoping reviews' (Colquhoun, 2016). A scoping review is '*a form of knowledge synthesis that addresses an exploratory research question aimed at mapping key concepts, types of evidence and gaps in research telated to a defined area or field by systematic searching, selecting and synthesising existing knowledge*'(Colquhoun, 2016, Colquhoun et al., 2014). This scoping review design was chosen because the authors expected that evidence in this field would be produced using a wide variety of methodologies and thus would be better synthesised by a scoping review than a systematic review (Khalil et al., 2016). In this way, it was intended that this scoping review would map existing research, identify any gaps in the literature and if necessary, make recommendations for future research (Khalil et al., 2016). This review followed the five key stages of Arksey and O'Malley's framework which were 1. Identifying the research question, 2. Identifying relevant studies, 3. Study selection, 4. Charting the data and 5. Collating, summarising and reporting the results (Arksey and O'Malley, 2005, Levac et al., 2010). The optional sixth step of consultation with stakeholders was not undertaken as it was not relevant to this review (Arksey and O'Malley, 2005, Levac et al., 2010).

1. Identifying the research question

The research question arose from the need to understand how nurses contribute to keeping children safe and whether nurses' interventions can make a difference for children. Due to known difficulties associated with directly measuring abuse, including under-reporting and observation bias (Flemington and Fraser, 2016, Howard and Brooks-Gunn, 2009), it was necessary to also include studies that measured factors that contribute to abuse and neglect without directly measuring abuse and neglect.

2. Identifying relevant studies

The second step in this review was to identify relevant studies through searching databases, grey literature and the reference lists of relevant literature. The first author initially searched the literature using keywords such as 'abuse', 'neglect', 'child' and 'nurse' but it became clear this was generating large volumes of irrelevant papers. Consequently, the authors involved their department's librarian to assist with setting up a search that included proximity operators to reduce the number of irrelevant results (see Table 1) in August 2017. Given the variety of roles that nurses perform worldwide, the search strategy included terms such as 'nurse*' and 'health visit*' to include

literature relating to nurses using different titles. A search of the grey literature was also conducted including websites of the National Society for the Prevention of Cruelty to Children, Trove, major children's hospitals, Google, Google Scholar and the Australian Institute of Family Studies.

Table 1: Search strings

Database	Search String
Scopus	(TITLE-ABS-KEY ((nurse* OR "health visitor*")) AND TITLE-ABS-KEY ((child OR children OR infant* OR adolescen*) W/3 (abuse* OR neglect* OR violen* OR maltreat*))) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (PUBYEAR , 2017) OR LIMIT-TO (PUBYEAR , 2016) OR LIMIT-TO (PUBYEAR , 2015) OR LIMIT-TO (PUBYEAR , 2014) OR LIMIT-TO (PUBYEAR , 2013) OR LIMIT-TO (PUBYEAR , 2012) OR LIMIT-TO (PUBYEAR , 2011) OR LIMIT-TO (PUBYEAR , 2010) OR LIMIT-TO (PUBYEAR , 2009) OR LIMIT-TO (PUBYEAR , 2008) OR LIMIT-TO (PUBYEAR , 2007)) Limited to: 2007-2017; English Language, category 'articles',
CINAHL	TI (nurse* OR "health visitor") OR AB (nurse* OR "health visitor") AND TI((child OR children OR infant* OR adolescen*)N3 (abuse* OR neglect* OR violen* OR maltreat*)) OR AB ((child OR children OR infant* OR adolescen*) N3 (abuse* OR neglect* OR violen* OR maltreat*)) OR (MM "Nurses") AND (MH "Child Abuse, Sexual") OR (MM "Child Abuse") Limiters: Published Date: 20070101-20170810, English language.
Web of Science	(TS=(nurse* OR "health visitor*")) *AND* **LANGUAGE:** (English) Refined by: **TOPIC:** ((child OR children OR infant* OR adolescen*) NEAR/3 (abuse* OR neglect* OR violen* OR maltreat*)) AND **LANGUAGES:** (ENGLISH) AND **DOCUMENT TYPES:** (ARTICLE) AND **DOCUMENT TYPES:** (ARTICLE)
Medline	(nurse* or "health visitor").mp AND ((child or children or infant* or adoelscen*) adj3 (abuse* or neglect* or violen* or maltreat*)).mp Limited to: 2007-2017, English language, journal article.

3. Study selection

At the study selection stage, it became clear that were many papers that described nurses' roles in keeping children safe but did not necessarily provide data to support the effectiveness of the interventions. For example, some studies reported on nurses' experiences or perspectives rather than how the intervention affected their clients. Consequently, the inclusion and exclusion criterion were developed to include only studies that reported evaluation data relating to client outcomes (Table 2). Only studies published from 2007 until August 2017 were included to ensure they reflected current practice. The full-text of 104 papers were accessed and sixty-three were excluded because they did not meet the inclusion and exclusion criteria. The majority of these came from database searching (n=30) while some came from reference list searching (n=6), the grey literature (n=1) and the authors' previous knowledge of the topic (n=2). A full outline of the study selection can be found in Figure 1.

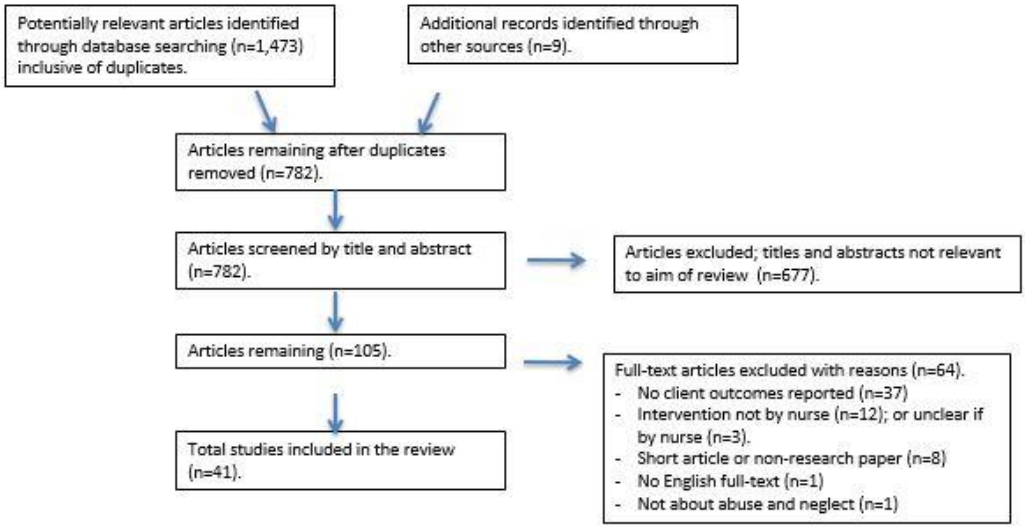

Figure 1: Flow diagram of study selection

Table 2: Inclusion and Exclusion Criteria

Inclusion Criteria	**Exclusion Criteria**
English language	Non-English language
Published in 2007 onwards.	Published prior to 2007
Described and/or evaluated how nurses intervene to keep children safe from abuse and neglect.	Did not describe or evaluate how nurses intervene to keep children safe from abuse and neglect
Nurses are involved in implementation of program/intervention	No nurses involved in implementation or program/intervention, or unclear whether nurses are involved.
Reported on client outcomes.	Did not report on client outcomes.

4. Charting the data

Arksey and O'Malley's (2005) framework was used to chart the data by summarising key information from the included studies into a purpose made data charting form (Khalil et al., 2016, Levac et al., 2010) (see Supplementary Online Material). However, complete charting of the data was not possible when studies did not provide sufficient information, for example information specifically about nurses' roles was often only given a cursory mention.

5. Collating summarising and reporting the results

As there is currently no standardised reporting guidance for scoping reviews (Colquhoun, 2016), data were reported thematically according to the aims of the study. For example, it was found that nurses' work ranges across the spectrum from prevention through to intervening after abuse had occurred, and so relevant data were reported under this heading. This is consistent with the recommendations of Daudt et al. (2013) who presented their findings thematically to facilitate linking of the findings with the research goals. After charting the data, it was clear that there were many different measures of how nurses keep children safe and so this data was summarised in Table 3 to answer the second part of the review aim.

An additional step of quality appraisal of the included studies (Daubt et al., 2013) was implemented using the Critical Appraisal Skills Program tools. This was undertaken with the intention of contextualising the evidence rather than to exclude studies of poor quality. Overall, study quality was generally high (n=39), although some studies did not provide sufficient information for the quality to be adequately assessed (n=2).

Results

There were 41 studies that met the inclusion criteria. They were conducted primarily in the USA (n=20), Australia (n=7) and Japan (n=4), but there were also a small number from The Netherlands (n=3), Canada (n=3), United Kingdom (n=3), and Nigeria (n=1). Only six studies looked at official reports of abuse or neglect, while the remainder (n=35) looked at other outcomes such as parental risk factors, child outcomes and service use or quality. The results will now be outlined firstly by considering what the literature shows that nurses do to keep children safe, followed by a discussion around whether nurses' interventions make a difference to abuse and neglect.

What do nurses do to keep children safe?

Nurses' interventions to keep children safe involved activities across the spectrum of prevention, detection and intervention after abuse had occurred. In the majority of studies, nurses worked to prevent abuse and neglect (n=32). This occurred most frequently through nurse home visiting in the post-natal period (n=20), especially for families experiencing vulnerabilities such as poverty, family violence or young maternal age. Other studies reported nurses' preventative interventions that included parent education for shaken baby syndrome (n=6), group parent education and activities (n=4), assessment of risk factors in primary care (n=1), sexual abuse education for adolescent girls (n=1) and residential services for parents with mental illness (n=1). Only one study from the Netherlands exclusively reported on how nurses detected abuse and this study investigated how nurses could screen for suspicious injuries in the emergency department (Louwers et al., 2012).

Although nurses were most frequently involved in prevention, some studies (n=8) outlined how nurses intervene when child abuse is suspected or confirmed. For example, common responsibilities of nurses in the USA involved assessment, treatment and/or involvement in the court proceedings of children and young people following sexual assault (n=4). Nurses in Japan and the USA also used home visiting to intervene in families with known abuse and neglect issues (n=1), working with sexually abused adolescents (n=1) and supporting grandparents who were custodians of their grandchildren due to parental abuse or neglect (n=1).

What do nurses do to keep children safe: prevention and intervention

The studies showed that nurses use a range of skills to prevent and address abuse in a variety of settings. Nurses prevented abuse primarily through working with parents in both structured and individually tailored interventions. For example, structured educational interventions included those that aimed to reduce the risk of abusive head trauma through education of new parents (Altman et al., 2011, Dias et al., 2017, Fujiwara, 2015, Goulet et al., 2009, Reese et al., 2014, Zolotor et al., 2015) or prevent sexual abuse through the education of adolescent girls (Ogunfowokan and Fajemilehin, 2012). Conversely, nurses who worked with families who were experiencing multiple risk factors typically delivered more flexible interventions in recognition of unique and complex family needs. Although Kemp et al. (2011, 2012) described their home visiting programs as 'structured', nurses still had the flexibility to tailor the programs to meet families' individual goals and needs. The ways that nurses intervened to prevent abuse included comprehensive assessment of children and parents (Dubowitz et al., 2012, Kemp et al., 2012, Kitzman et al., 2010), developmental screening (Kemp et al., 2012), education (Mejdoubi et al., 2015), motivational interviewing (Robling et al., 2016), role modelling (McDonald et al., 2009), group facilitation (Kendall et al., 2013, McDonald et al., 2009, Porter et al., 2015), video taping and discussion of parent-infant interactions (Guthrie et al., 2009, Hogg et al., 2015) and referrals to relevant services (Fujiwara et al., 2012, Sawyer et al., 2013, Stubbs and Achat, 2016).

However, nurse intervention after abuse had occurred, took a less educative approach and focussed on collection of evidence and meeting victims' physical and emotional needs. In one study, nurses only had a brief role in documenting indicators for suspicious injuries to help flag potential cases of physical abuse with emergency department doctors (Louwers et al., 2012). In the remaining studies (n=7) where nurses addressed suspected or confirmed abuse or neglect, they took a more comprehensive approach that attended to the complexity of issues. For example, public health nurses in a Japanese study (Kobayashi et al., 2015) found that nurses provided a variety of interventions including assessment of family needs and resources, building a trusting relationship and facilitating management of issues contributing to abuse. Kelley et al. (2010) in the USA found that nurses worked with social workers to enhance the health and wellbeing of grandparent custodians whose grandchildren had experienced abuse and neglect.

At other times, nurses worked directly with victims to address their physical and emotional wellbeing following sexual abuse (Bechtel et al., 2008, Golding et al., 2015, Hornor et al., 2012). For example, paediatric sexual assault nurse examiners were involved in physical assessment, referrals and court proceedings for children or adolescents (Bechtel et al., 2008, Golding et al., 2015, Hornor et al., 2012, Patterson and Campbell, 2009). Similarly, Edinburgh and Saewyc (2009) reported that nurse practitioners were involved with the longer-term needs of adolescents after sexual abuse such as crisis intervention, connecting with schools, health education and screening. Thus nurses played a significant role in assessing children and families affected by abuse and attending to their immediate and on-going needs.

Rationale for selecting a nurse to deliver the intervention

Although it was evident that nurses are important in prevention and intervention in child abuse and neglect, it was not always explicitly stated why nurses were chosen to deliver the intervention. In home visiting, the rationale for the choice of a nurse was typically built upon on the existing body of evidence for nurse home visiting, for example (Armstrong et al., 2000, Olds et al., 1997, Olds et al., 1999). Alternatively, nurses were chosen because of the inherent trust that families may have in nurses (Sadler et al., 2013). However, at other times the rationale for choosing an nurse seemed to be opportunistic given nurses' existing roles which put them in an ideal position to address abuse and neglect – for example screening for abuse in emergency departments (Louwers et al., 2012), educating new parents about shaken baby syndrome (Altman et al., 2011, Zolotor et al., 2015) or addressing psychosocial risk factors in primary care (Dubowitz et al., 2012). There was also an example of nurses identifying a community need and developing a home-visiting intervention to improve the health and wellbeing of adolescent girls following sexual abuse (Edinburgh and Saewyc, 2009). However, in some studies, it was unclear or not stated why a nurse was chosen to be involved in the delivery of care to prevent or address abuse and neglect (McDonald et al., 2009, Ogunfowokan and Fajemilehin, 2012).

Characteristics of nurses who respond to abuse and neglect

Even though nurses worked in a variety of ways to prevent and address abuse and neglect, their roles or professional characteristics were not always clearly outlined. For example, some home visiting nurses were simply described as 'public health nurses'

(Garcia et al., 2013, Kobayashi et al.) with no summary of their professional background, education and qualifications. Similarly, interventions relating to prevention of abusive head trauma stated that nurses were working in maternity or perinatal units (Altman et al., 2011, Dias et al., 2017, Fujiwara, 2015, Goulet et al., 2009, Reese et al., 2014, Zolotor et al., 2015). In some cases, nurses did receive training about the intervention (Dias et al., 2017, Dubowitz et al., 2012) or were provided with a program handbook (Kendall et al., 2013). The lack of information in some cases about nurses' background other than their attendance at short training session suggests that nurse characteristics such as education, professional experience and qualifications were not considered as influential to these programs' outcomes. A clear exception was specialist paediatric sexual assault nurse examiners who needed a specific level of education to be accredited to perform their role (Golding et al., 2015).

Can nurses make a difference for children?

The literature has shown that nurses work in a variety of way to prevent, detect and respond to abuse and neglect. This section presents the evidence around whether nurses' interventions can make a difference for children.

What measures are used to determine whether nurses are effective?

The studies in this review used a variety of measures to determine the effects of nurse interventions to prevent and intervene in cases of abuse and neglect. For example, some of the studies directly measured abuse or neglect through reports to child protection services (n=6), severity of abuse or neglect (n=1), detection or hospitalisation for abuse (n=4), health professional documentation of abuse (n=2) and family self-reports of violence (n=2). As it is not always possible to directly measure abuse and neglect, some studies used other measures such as parent factors that might impact upon the risk of child abuse and neglect, such as parental knowledge and behaviours (Altman et al., 2011, Dias et al., 2017, Fujiwara, 2015, Goulet et al., 2009, Guthrie et al., 2009, Reese et al., 2014) or parent health and wellbeing (Flemington and Fraser, 2016, Kelley et al., 2010, Kemp et al., 2012, Porter et al., 2015, Rowe and Fisher, 2010). Still other studies focussed on whether nurses' interventions could influence child physical and mental wellbeing (Edinburgh and Saewyc, 2009, Kemp et al., 2011, Olds et al., 2007, Sawyer et al., 2013, Sawyer et al., 2014) or educational outcomes (Kitzman et al., 2010, Olds et al., 2007) given the known negative impacts of abuse in these areas.

The final way that studies evaluated the impacts of nurse interventions was through broader service measures such as the quality of nursing care (Bechtel et al., 2008, Hornor et al., 2012), service use (Sawyer et al., 2013, Sawyer et al., 2014, Zolotor et al., 2015) and judicial outcomes (Golding et al., 2015, Hornor et al., 2012, Patterson and Campbell, 2009). The ways that nurses can make a difference for children will be discussed, firstly in regards to the outcomes that directly measured abuse and neglect, followed by those that focussed on parental risk factors and child health and wellbeing outcomes. Finally, the ways that nurses influence service use and quality will be summarised. An outline of these results can also be found in Table 3.

Do nurses make a difference to direct measures of abuse and neglect?

Some studies (n=13) directly measured nurses' impacts on abuse and neglect. This included the number and nature of reports to child protection services, health professionals' self-reports of abuse/neglect, detection of abuse, non-accidental injuries and parental report of in-home violence. In three out of five studies, children who received home visiting by a nurse had fewer substantiated reports of abuse (Eckenrode et al., 2017, Mejdoubi et al., 2015, Zielinski et al., 2009). In the remaining studies, there was no change in reports to child protection services (Barlow et al., 2007, Dubowitz et al., 2012) or the number of active cases (Sadler et al., 2013), although it was suggested this could be due to surveillance bias where home visiting nurses are more likely to see and report abuse. It was unclear whether nurses were able to effectively prevent shaken baby syndrome as two studies showed no change (Dias et al., 2017, Zolotor et al., 2015), while the remaining study showed a significant decrease in abusive head injuries (Altman et al., 2011). Other studies used parental or health professional self-report or documentation to explore whether the nurse was able to influence the incidence or severity of abuse with varying results (Dubowitz et al., 2012, Kobayashi et al., 2015). Thus it seems that nurses might be successful in reducing rates and severity of abuse in some situations but not others; it is not clear what leads to this difference in outcomes between studies.

Do nurses make a difference to risk factors for abuse and neglect?

As abuse and neglect cannot always be directly measured, some studies looked at other parent and child outcomes or risk factors. These were mainly parent-related factors such

as parental knowledge (Altman et al., 2011, Dias et al., 2017, Fujiwara, 2015, Goulet et al., 2009, Guthrie et al., 2009, Reese et al., 2014), stress (Fujiwara et al., 2012, Kendall et al., 2013, McDonald et al., 2009, Porter et al., 2015, Sawyer et al., 2013) parental behaviours such as responsivity (Flemington and Fraser, 2016, Guthrie et al., 2009, Kemp et al., 2011, Porter et al., 2015) and provision of an appropriate home environment (Flemington and Fraser, 2016, Guthrie et al., 2009, Mejdoubi et al., 2015). Although some results were mixed, the studies generally indicated that nurses had a positive impact upon parents' knowledge, attitudes, stress, mood and perceived health (Guthrie et al., 2009, Hogg et al., 2015, Kemp et al., 2012, Kendall et al., 2013, Porter et al., 2015, Stubbs and Achat, 2016). There were some studies that looked at maternal social trust (n=2) and pregnancy spacing (n=3), but these gave conflicting results making it difficult to tell whether nurses can reliably make a difference in this area (Fujiwara et al., 2012, Olds et al., 2007, Robling et al., 2016, Sadler et al., 2013, Stubbs and Achat, 2016). Importantly, although nurses may be able to influence parental risk factors for child abuse, it was not evident whether this had an impact on actual cases of abuse and neglect.

Do nurses have an effect on outcomes for children at-risk of or experience abuse or neglect?

Given the adverse affects of child abuse and neglect on children's educational and health outcomes, some studies (n=7) investigated how nurse interventions mitigated the impacts of abuse and neglect. In particular, studies in this review looked at infant physical and mental health (Edinburgh and Saewyc, 2009, Kemp et al., 2011, Olds et al., 2007, Sawyer et al., 2013, Sawyer et al., 2014), rates of breastfeeding, educational outcomes (Kitzman et al., 2010, Olds et al., 2007), child substance use (Kitzman et al., 2010) and adolescent sexual health (Edinburgh and Saewyc, 2009). There was again mixed outcomes, with several studies finding no or minimal impact on infant health (Sawyer et al., 2013, Sawyer et al., 2014) while others identified improved mental development (Kemp et al., 2011) or lower infant/child mortality (Olds et al., 2007). However, Olds et al. (2007) identified that in their study this difference in child mortality was only just statistically significant. In later childhood, studies of nurse home visiting indicated there were higher grade point averages in primary school (Kitzman et al., 2010, Olds et al., 2007) and lower rates of substance use (Kitzman et al., 2010). Similarly, in Edinburgh and Saewyc's (2009) study with sexually abused adolescent

girls, they found that after their home visiting intervention, adolescents had fewer sexually transmitted infections, reduced risky behaviour and no pregnancies. However, the lack of a control group in this study makes it difficult to say whether this was due to the intervention or other factors.

Do nurses have an impact on service quality and service use?

The final area that was measured to determine whether nurses could influence child abuse and neglect was around service quality and service use. This was most frequently around the health care or judicial outcomes following child or adolescent sexual assault (Bechtel et al., 2008, Golding et al., 2015, Hornor et al., 2012, Patterson and Campbell, 2009). Two studies found that when a specialist sexual assault nurse was involved in the young person's care, he/she was more likely to receive appropriate interventions such as screening for pregnancy and sexually transmitted infections (Bechtel et al., 2008, Hornor et al., 2012). Nurses' influence also seemed to extend to the judicial system where two studies showed higher numbers of guilty verdicts (Golding et al., 2015, Patterson and Campbell, 2009), although one of these studies used a mock jury (Golding et al., 2015). Another study identified no change in judicial outcomes (Hornor et al., 2012), making it uncertain whether nurses can consistently influence judicial outcomes for child and adolescent victims of sexual assault.

There were also mixed results around whether nurses' influenced families' use of health services, with two home visiting programs showing no change (Sawyer et al., 2013, Sawyer et al., 2014). Conversely, an intervention to prevent abusive head injury was associated with fewer phone calls to a nurse telephone advice centre relating to infant crying (Zolotor et al., 2015), which the authors suggested could mean the intervention adequately equipped parents to manage infant crying.

Table 3: Summary of nurse effects on measures of abuse and neglect

Effect	Studies	Summary of effects (statistically significant, if relevant)
Direct measures of abuse and neglect		
Reports to child protection services	Barlow et al. 2007,	No change.
	Dubowitz et al. 2012,	No change.
	Eckenrode et al. 2016,	Fewer substantiated reports.
	Mejoubi et al. 2015,	Fewer reports.
	Sadler et al. 2013,	No change in active child protection cases.
	Zielinski et al. 2009.	Longer time until first report; fewer overall reports.
Severity of abuse/neglect	Kobayashi et al. 2015	Reduced severity of abuse/neglect.
Detection of abuse	Louwers et al. 2012	Five times higher rate of detection of abuse.
Parental reports of violence	Dubowitz et al. 2012	Less psychological & physical aggression towards children (maternal report).
	Mejdoubi et al. 2013	Reduced victimisation and perpetration of intimate partner violence.
Abuse/neglect documented in medical record.	Dubowitz et al. 2012	No change in abuse/neglect documented in medical record
	Robling et al. 2016	Higher rates of documented abuse/neglect.
Non-accidental injury (child)	Altman et al. 2011	75% decrease in abusive head injury incidence.
	Dias et al. 2017	No change in hospitalisation for abusive head injury.
	Zolotor et al. 2015	No change in incidence of abusive head injury.
Risk factors for abuse and neglect		
Knowledge and attitudes	Altman et al. 2011	Most parents could recall intervention (head injury prevention)
	Dias et al. 2017	Most parents could recall intervention (head injury prevention)
	Fujiwara et al. 2015	Increased maternal knowledge of crying and dangers of shaking a baby.
	Goutlet et al. 2008	Most parents felt information and action plan was useful (head injury prevention).
	Guthrie et al. 2008	Increased parenting knowledge.

	Hogg et al. 2015	Increased parenting knowledge.
	Ogunfowokan & Fajemilehin 2012	Increase in girls' knowledge of sexual abuse; no change in attitudes.
	Reese et al. 2014	Most parents recalled intervention and had increased knowledge of head injury prevention.
Self-efficacy; maternal confidence; parental stress	Fujiwara et al. 2012	No change in in parental stress.
	Hogg et al. 2015	Increased parental confidence.
	Kendall et al. 2013	Reduced parental stress; increased self-efficacy.
	Kemp et al. 2012	Mothers felt more able to care for themselves and their baby.
	McDonald et al. 2009	Improved self-confidence, decreased parental stress.
	Porter et al. 2015	Reduced parental stress.
	Rowe & Fisher 2010	Increased maternal confidence.
	Sawyer et al. 2014	No change in parental stress or satisfaction with parenting role.
	Sawyer et al. 2013	Reduced parental stress; greater satisfaction with parenting role.
	Stubbs & Achat 2016	Most parents felt better able to cope
Home environment	Flemington et al. 2015	Improved suitability of home environment
	Guthrie et al. 2008	Improved suitability of home environment
	Medjoubi et al 2015	Improved suitability of home environment
Birth spacing	Olds et al. 2007	Longer pregnancy spacing.
	Sadler et al. 2013	Longer pregnancy spacing.
	Robling et al. 2016	No change in pregnancy spacing
Parental responsivity	Flemington et al. 2015	Increased maternal responsivity.
	Guthrie et al. 2008	Increased maternal responsivity.
	Kemp et al. 2011	Increased maternal responsivity.
	Porter et al. 2015	No change in attachment or maternal responsivity.
	Ordway et al. 2014	No change in parental reflective functioning.
	Sadler et al. 2013	High risk mothers had improved reflective functioning.
Parental social trust and community connectedness	Fujiwara et al. 2012	No change in social trust.
	Stubbs & Achat 2016	Increased participation in community groups.

Parent/carer physical and mental health.	Flemington et al. 2015 Hogg et al. 2015 Kelley et al. 2010 Kemp et al. 2012 Porter et al. 2015 Sadler et al. 2013 Rowe & Fisher 2010	Increased maternal depressive symptoms Reduced anxiety and depressive symptoms Increased perceived health. Increased perceived health, no change in objective measures. Reduced maternal depressive symptoms. No difference in maternal depressive symptoms or psychological distress Improved maternal mood.
Substance Use	Olds et al. 2007 Robling et al. 2016 Sawyer et al. 2014 Sawyer et al. 2013	Lower substance use (mothers). No change in smoking (mothers). No change in alcohol or tobacco use (mothers). No change in alcohol or tobacco use (mothers).
Functioning	Kelley et al. 2010 Kobayashi et al. 2015 McDonald et al. 2009	No change in perceived physical functioning. Improved family functioning. No change in mothers' family functioning; grandmothers perceived lower family conflict.
Reliance on welfare	Olds et al. 2007	Lower reliance on food stamps; no change in welfare use.
Child health and wellbeing outcomes		
Sexual health	Edinburgh & Saewyc 2009	Reduced STIs and no pregnancies (adolescent).
Infant/child behaviour	Barlow et al. 2007 Kitzman et al. 2010 Mejdoubi et al. 2015 Rowe & Fisher 2010 Ordway et al. 2014	Infant more cooperative. Reduced internalising behaviour, unchanged externalising behaviour. Reduced internalising behaviour, unchanged externalising behaviour. Reduced infant crying and fussing; improved infant sleep. Reduced externalising behaviour.
Infant/child physical and mental health.	Kemp et al. 2011 Sadler et al. 2013 Sawyer et al. 2014	Improved mental development for children of psychologically distressed mothers. Improved attachment relationships at 12 months. More infants up-to-date with screening & immunisation at 12 months, but not 24 months. No change in infant health.

	Sawyer et al. 2013	Small change in infant sleep; otherwise no change.
	Edinbrugh & Saewyc 2009	Decreased risky behaviour (adolescent).
	Olds et al. 2007	Lower infant mortality.
Substance use	Kitzman et al. 2010	Lower substance use (child).
Child educational success	Kitzman et al. 2010	Higher GPAs.
	Olds et al. 2007	Higher GPAs.
Rates of breastfeeding	Barlow et al. 2007	No change
Service use and quality		
Judicial outcomes (SANE)	Golding et al. 2015	Guilty verdict more likely when SANE testified (mock juror).
	Horner et al. 2012	No change in judicial outcomes.
	Patterson & Campbell 2008	Guilty verdict more likely when SANE involved.
Quality of care	Bechtel et al. 2008	More likely to receive appropriate interventions post-sexual assault.
	Horner et al. 2012	More likely to receive appropriate interventions post-sexual assault.
Service use	Sawyer et al. 2013	No change in service use.
	Sawyer et al. 2014	No change in service use.
	Zolotor et al. 2015	Fewer phone calls to parent help line about infant crying.

Key: GPA=grade point average; SANE= sexual assault nurse examiner, STI=sexually transmitted infection,

Discussion

The findings of this review demonstrate that nurses intervened in many different ways to keep children safe from abuse and neglect. However, the evidence around whether nurses can make a difference to children was mixed. For example, studies with similar interventions such as nurse home visiting, showed instances where nurses had positive impacts, such as Eckenrode et al. (2017), Garcia et al. (2013). While other studies demonstrated no or minimal impact (Fujiwara et al., 2012, Sawyer et al., 2013, Sawyer et al., 2014). This could be due to the large number of variables between the studies such as health care delivery in different countries, presence of maternal psychosocial risk factors and the lack of clarity and consistency around nurse characteristics. However, it is important to look at the broader context of factors that may impact upon results – for example Flemington and Fraser (2016) found that mothers involved in home visiting experienced deteriorating depressive symptoms, but also showed higher levels of responsivity to their child. Thus even though nurses were not able to influence mothers' mental health, they were able to affect the quality of parenting. It is also important to note that although many of these studies (n=33) were undertaken in colonised countries (countries settled/invaded by other countries who displaced local inhabitants (Taylor and Guerin, 2014)) none of the interventions specifically addressed child abuse and neglect in First Nations (native) populations where there are typically higher rates of child abuse and neglect.

Another key finding from this review was that the included studies were all specific programs that aimed to address abuse and neglect rather than nurses' daily practices in keeping children safe. Recent literature that suggests nurses frequently experience concerns around child abuse and neglect in their usual practice settings (Lines et al., 2017) such as emergency departments (Reijnders et al., 2008, Tiyyagura et al., 2015), schools (Hackett, 2013, Kraft and Eriksson, 2015, Kraft et al., 2017) and paediatric or neonatal inpatient areas (Barrett et al., 2016, Lavigne et al., 2017, Saltmarsh and Wilson, 2017) which are practice settings that are largely absent from this review. Consequently, nurses' activities within this review may not be representative of all the ways that nurses keep children safe. For example, nurses are mandated notifiers of abuse in countries such as the USA and Australia (Mathews, 2015), yet there was no discussion of mandatory notification by nurses whether this makes a difference for children. Thus although the broader literature suggests that nurses keep children safe in

a wider variety of settings, there is no evidence as to what impact these other nurse interventions might have on outcomes for children.

It is also difficult to know whether nurses might be preventing abuse and neglect in ways that were not measured, or even not measurable. It is known that nurses have a unique role in building and sustaining relationships with families who might be suspicious of services. For example, nurses have a valuable role in building relationships with families and may be the only contact the family has with the health care system (Browne et al., 2010, Fraser et al., 2016). In this way, nurses use advanced social skills to cultivate a relationship of trust with families who may be suspicious of services; this occurs to the extent that families have reported that their nurse was 'like a friend' (Landy et al., 2012, Zapart et al., 2016). Within this professional 'friendship', nurses facilitated parental reflection, including encouraging parents to reflect upon how their behaviours may impact upon their child's health and wellbeing (Fraser et al., 2016). Due to the relational nature of this aspect of nurses' interventions, it is difficult to measure parental relationships and reflection, but more importantly, it is unclear whether nurses' relational interventions led to changes that prevented child abuse and neglect. Consequently, it is not known whether nurses might have other positive affects on the prevention of child abuse and neglect that were not measured through this review.

Despite the relational aspect of nurse interventions, there was a variable emphasis on nurse characteristics across the literature. In some studies, nurses had postgraduate qualifications and/or were advanced practice nurses (Bechtel et al., 2008, Edinburgh and Saewyc, 2009, Patterson and Campbell, 2009). This could be related to the level of skill required – for example, complexity of skill varied from completing a risk assessment form (Louwers et al., 2012) to autonomous home visiting and case management (Edinburgh and Saewyc, 2009). However, there were discrepancies in the information about nurse characteristics even across similar interventions – such as delivering autonomous care in the context of home visiting (Edinburgh and Saewyc, 2009, Kemp et al., 2011, Kemp et al., 2012). This shows a lack of clarity around the significance of nurses' educational preparation considered essential knowledge to deliver the intervention. This review did not compare the difference between the success of nurse interventions delivered by bachelor prepared nurses compared to

nurses who had postgraduate qualifications that explicitly prepared them to work with vulnerable families so it is uncertain what affect this had on abuse related outcomes.

It is important to consider nurse education and their specialisations because this has an impact upon nurses' level of knowledge and competence. In Australia, one such example can be found in the Australian Registered Nurse Standards of Practice, which inform the scope of practice of all registered nurses in Australia, as compared to specialist standards which recognise and inform the unique characteristics of specialist nursing practice in caring for children. Perhaps most significantly, the registered nurse standards for practice do not explicitly outline the importance of advocating for vulnerable populations such as children (Nursing and Midwifery Board of Australia, 2016). However, the specialist standards for Maternal, Child and Family Health Nurses, and for Children and Young People's Nurses specifically recognise children as a vulnerable group who may need nurses to negotiate and challenge priorities when adults demonstrate attitudes or behaviours that put children at risk of harm or neglect (Australian College of Children and Young People's Nurses, 2016, Maternal Child and Family Health Nurses Australia, 2017). The diversity of ways that nurses keep children safe within this scoping review coupled with these examples of specialist standards show it is essential all specialist nurses who work with children are equipped with advanced communication skills and knowledge of core elements for children's wellbeing.

Limitations

This review has some limitations. Firstly, the included studies were not representative of the nursing profession's daily activities in preventing, detecting and responding to child abuse and neglect. This means that the results may not accurately reflect the kinds of activities nurses are involved in, but more importantly, it means that many nurse interventions remain invisible with unknown effectiveness. Although there is a body of research relating to nurses' everyday experiences in keeping children safe, no literature was found that addressed whether nurses' daily interventions are actually effective making a difference in the lives of children who may be at risk of or experiencing abuse and neglect.

Another limitation of this review lies in the established difficulties associated with measuring abuse and neglect. All measures of abuse and neglect have limitations – for example underreporting of abuse and different definitions across jurisdictions (Wald, 2014) and surveillance bias where nurse intervention means abuse is more likely to be detected and reported (Howard and Brooks-Gunn, 2009). Other measures such as improving parental knowledge do not necessarily translate to improved outcomes for children (Walsh et al., 2015). It was also challenging to compare the different study designs and outcome measures; many of which were conducted in different countries, populations and health settings.

Conclusion

This review outlined the ways that nurses keep children safe from abuse and neglect and whether these interventions made a difference to children's lives. It is clear that nurses prevent, detect and respond to abuse and neglect across many settings through interventions with children and their families. However, it was less obvious whether nurses' interventions were able to make positive changes in children's lives given the mixed findings and indirect measures of abuse and neglect. In addition, the interventions assessed in this study did not represent nurses' daily activities in keeping children safe, making it difficult to determine the extent to which nurses keep children safe from abuse and neglect. Further research or a systematic review is needed to investigate the range of different ways that nurses keep children safe, but more importantly whether nurses can make a measurable difference in the lives of children in all areas of their practice.

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Supplementary online material: summary of included studies

Intervention name or description. Authors, publication date and location.	Study design and outline of intervention. Summary of nurses' role(s).	Evidence to support or refute efficacy of the intervention.
Home Visiting Interventions		
Home visiting for high-risk families United Kingdom **Barlow et al. 2007**	RCT (n=131) with a range of pregnant women experiencing multiple vulnerabilities with the aim of promoting positive parenting and parent-infant interactions. Health visitors visited families on a weekly basis for 18 months; unclear exactly what intervention health visitors delivered. Health visitors were trained in the Family Partnership Model.	Women in intervention group more sensitive to babies (p= .04) and babies more cooperative (p= .02). No statistically significant difference in mothers' Edinburgh Postnatal Depression Score at 2 months. More infants breastfeed up to six months (not statistically significant). Non-significant difference that there would be child protection issues (17% intervention versus 15% in control and whether the child would be on placed on the child protection register or be removed from home (6% vs 0%).
Family Care and Parents Under Pressure Australia **Flemington et al. 2015**	Retrospective case note review of mothers (n=40) who had been enrolled in a nurse home visiting program to examine the relationship between maternal involvement in a home visiting program and effects on maternal depression and adjustment to parenting role. Nurses visited mothers who had a history of mental illness or intimate partner violence. Participants received home visiting weekly until the infant was 6 weeks and then fortnightly until the infant was 6 months old. Exact role of nurse unclear, but goals broadly addressed enhancing adjustment to the parenting role.	Greater involvement with home visiting program led to improved maternal responsivity (HOME responsivity) and suitability of the home environment (HOME Inventory), despite deteriorating maternal depressive symptoms (Edinburgh Postnatal Depression Score).
Home Visit Service for New-borns (HVSN) and Home Visit Service for all Infants (HVSI). Aichi, Japan **Fujiwara et al. 2012**	Self-report questionnaires administered to mothers (n=936) to assess whether the home visit program reduced parenting stress and increased social capital. Nurses or community staff visited mothers with young babies with the aim of boosting social capital and reducing parenting stress. The program included infant and maternal health-checks, listening to mothers' concerns, and connecting with services as required.	No substantial reduction in parenting stress at 6 months (parental stress scale) in either group. No significant increase in social trust.

Family home visiting program Midwest USA **Garcia et al. 2013**	Retrospective cohort study of Latina women (n=680) to evaluate ratings of knowledge, behaviour and mental health status after a nurse home visiting intervention. Public health nurses visited mothers weekly to at least monthly using the Omaha System to prevent or identify illness and restore health.	N= 158 of the mothers had mental health problems; these mothers received more visits than mothers without mental health problems. Over the period of home visiting, mothers had improved knowledge, behaviour and status as rated using the Omaha system.
Toward Better Beginnings Minnesota, USA **Guthrie et al. 2008**	Non-randomised control trial (intervention n=33, control n=39) investigating whether a short-term intervention could improve parenting attitudes and home environments. The role of nurses was to encourage positive infant-parent interactions through video-taping of parent-infant interactions and discussion of video tapes with parents in home visits. Visits occurred twice per month for one hour until the infant was three months old.	Intervention group had increased responsivity and provision of age appropriate learning materials for their infants (p=.05). Intervention group had higher levels of parenting knowledge as measured on the Adult-Adolescent Parenting Inventory (p=.01).
Long-term nurse home visitation programme Sydney, Australia **Kemp et al. 2013** **Kemp et al. 2011**	RCT with mothers (n=208) living in a disadvantaged area to determine whether a sustained nurse home visiting intervention could family health outcomes and reduce health and developmental disadvantage for vulnerable children. Child and family health nurses visited families for two years following birth. The nurses delivered a structured program in which individual visits were tailored to the mothers' needs.	Mothers more emotionally and verbally responsive to children at 12 and 24 months; but no changes to other aspects of the home environment. Overseas-born and first-time mothers more likely to report positive experience of being a mother. More mothers reported their health to be significantly better at 4-6 weeks postpartum.
Nurse Family Partnership Memphis, Tennesee **Kitzman et al. 2010**	RCT to test the effects of home visiting on children's (n=743) substance use, behavioural adjustment and academic achievement at 12 years of age. Nurse Family Partnership model implemented into a public system of obstetric and paediatric care in an economically disadvantaged, primarily African American population. Nurses aimed to improve pregnancy outcomes, children's health and development and enhance parents' life chances though a tailored home visiting intervention.	At 12 years of age, children were less likely to have used cigarettes, alcohol or marijuana (p=.04) and reported fewer externalising behaviours (p=.02) and had higher GPAs (p=.03).
Public Health Nurses Japan **Kobayashi et al. 2015**	Self-report questionnaire of public health nurses (n=205) who cared for families where there was observed child abuse or neglect. The aim of the study was to highlight changes in family functioning and circumstances of abuse and neglect after receiving support from a public health nurse.	Reduced severity of abuse/neglect, and improved family functioning after public health nurse intervention.

	Nurses working in public health centres who were caring for families where there was high risk of or confirmed abuse or neglect.	
Nurse Family Partnership program New York, USA **Eckenrode et al. 2016**	RCT (n=251 mothers) investigating whether a nurse home visiting intervention to would reduce child maltreatment fifteen years later in families where there was low-to-moderate domestic violence. The intervention was comprised of home visiting by nurses, which focussed on health-behaviours during pregnancy and the early years, parental care to children and maternal life-course development (i.e. education, employment).	First-born children had 4.52 times fewer substantiated maltreatment reports than the control. This was mediated by a reduction in numbers of subsequent births and mother's use of public assistance.
VoorZorg: Dutch Nurse-Family Partnership **Mejdoubi et al. 2015** **Mejdoubi et al. 2013**	RCT of nurse home visiting for young, disadvantaged families (n=460) in the Netherlands. The aim of the intervention was to determine the effect of home visiting on child maltreatment and intimate partner violence. Families received 10 nurse visits during pregnancy, 20 in first year of child's life, 20 in the second year of child's life.	Fewer child internalising behaviours, but no change in externalising behaviours at 24 months. Fewer child protection reports (19% in control versus 11% in intervention). Reduced levels of physical assault but no impact on other forms of violence (i.e. psychological, sexual) at two years post-intervention.
Maternal and child health clients of public health agencies Minnesota **Monsen et al. 2010**	Exploratory, descriptive study from four country public health departments of home visiting services to low-income high risk maternal child health clients. Public health nurses visited the families and conducted assessments using the Omaha System which is a standardised problem orientated framework to address client concerns.	34 out of the 40 problems identified in the Omaha system had a statistically significant improvement (p=.05). For example, there were reductions in 'abuse', 'neglect' and 'mental 'health' as categories
Nurse-led intensive home visiting program for first-time teenage mums (Building Blocks) England **Robling et al. 2016**	Non-blinded RCT comparing usual care (n=822) with the family nurse partnership (n=823). Mothers were up to 19 years old and were recruited at <25 weeks gestation and visited by specifically recruited and trained family nurses. Families were provided with up to 64 structured visits based on the Family Nurse Partnership program	No change in smoking rates or timing of second pregnancy. Increased used of EDs in treatment group.
South Australian Family Home Visiting (SA-FHV) to socially disadvantaged families	Non-randomised control trial of socially disadvantaged mothers (n=428 intervention group, comparison group n=239) to investigate the effects of a postnatal home-visiting program.	Mothers in intervention group had greater improvement in parenting stress and satisfaction with their parental role. Smaller increase in infant sleep problems in intervention group.

Adelaide, Australia **Sawyer et al. 2013**	Nurses provided home visiting to socially disadvantaged mothers in metropolitan Adelaide after their child's birth with the aims of improving mother-infant relationships, providing anticipatory guidance and connecting families with community supports.	Otherwise, no statistically significant difference in use of child and parent services, child accidents.
South Australian Family Home Visiting (SA-FHV) to rural families Rural South Australia **Sawyer et al. 2014**	Non-randomised control trial of socially disadvantaged mothers (n=225 intervention group, comparison group n=239) to investigate the effects of a postnatal home-visiting program. Nurses provided home visiting to socially disadvantaged mothers in metropolitan Adelaide after their child's birth with the aims of improving mother-infant relationships, providing anticipatory guidance and connecting families with community supports.	No statistically significant differences to maternal or child outcomes.
Sustained home visiting Sydney, Australia **Stubbs & Achat 2016**	Descriptive service evaluation of a nurse home visiting program delivered to disadvantaged families (n=118) to increase family engagement with community networks and improve infant health outcomes. Nurses provided home visiting to families with significant risk factors until the child's third birthday. Visits were flexible, but aimed to promote parents' knowledge and parental self-efficacy, and improve children's health safety and wellbeing.	Nurses provided approx. 1 hour a fortnight with each family and provided mainly emotional support and education. Families reported improved participation in community networks but no change in feelings of closeness with another person. Self-report of better coping, confidence and understanding family. No improvement in health-related behaviours.
Prenatal and infancy home visits by nurses. Memphis, Tennessee, USA. **Olds 2007**	RCT with n=743 primarily black women with socio-demographic risk factors to assess whether the program would affect children's school grades and behaviour. Nurses attended home visits pre and postnatally for 2 years post-partum. Nurses followed pre-prepared guidelines that aimed to improve the health and wellbeing of the woman, health and development of the child and facilitate parental life-course development (i.e. education and employment plans).	Women had longer intervals between births of first and second children (approx. 40 vs 34 months, p=0.002), and lower reliance on food stamps (6.98 vs 7.8 months per year, p=0.017) but not welfare (3.4 vs 4 months per year, p=0.1117). No statistically significant effect on miscarriages, abortions, stillbirths, incarceration, depression, employment or relationship status. Some positive effects on children's reading and math achievement. No change in mothers' or teachers' reports of disruptive behaviour.

Minding the Baby Connecticut, USA Ordway et al. 2014 Sadler et al. 2013	Prospective pilot study with longitudinal follow-up with first-time mothers (n=132) with multiple risk factors. A paediatric nurse practitioner and a social worker provided weekly home visiting to families until the child was two years of age. The aim of the program was to enhance parental reflective functioning. Specific role of the nurse practitioner within this intervention was not stated.	Parental reflective functioning unchanged overall, but improved in higher-risk mothers. Less child externalising behaviour Fewer instances of rapid repeat pregnancy No change in mothers' mental health Improved infant attachment quality at 12 months. Children more likely to be up-to-date with immunisations and health checks at 12 months, but not 2 years.
Nurse Family Partnership (NFP) Appalachian region, New York **Zielinski et al. 2009**	RCT with women (n=137) who were pregnant with their first child and had at least one factor that placed their child at risk of health and developmental problems. The aim was to determine whether the Nurse Family Partnership influenced the timing of verified reports of child maltreatment. Nurses visited women primarily from disadvantaged backgrounds with the aim of reducing risks for child abuse and neglect. The nurses' role involved improving pregnancy outcomes, improving children's health and development and improving mothers' economic self-sufficiency.	Children in the intervention group were older when the first child protection report was made; more children (81% vs 58%) reached 15 without a child protection report. After age 8, there were no first-time reports to CPS in the intervention group.
Sexual Abuse Interventions		
Sexual Assault Nurse Examiners (SANE) in the paediatric emergency department Connecticut **Bechtel et al. 2008**	Retrospective case note review (n=114 medical records) to evaluate whether the use of SANEs improves the care of children and adolescents who have experienced sexual assault. SANEs are specialist nurses who work with medical staff to assess and manage the care of children and young people presenting with a history or suspected sexual assault. Not on the qualifications or training the SANEs have.	Children who received care from the SANE were more likely to have a document genitourinary examination (78 vs 41%, p= <.001), have STI testing (78 vs 41%, p= .001), receive pregnancy prophylaxis (82 vs 64%, p= .025) and receive referral to a rape crisis centre (95% vs 19%, p= <.001).
Sexual Assault Nurse Examiner (SANE). USA **Golding et al. 2015**	2x2x3 between-participants design; n=252 participants read a fictional criminal trial summary for a child sexual assault to examine factors that influence jurors' decision-making processes, including the effects of a SANE involvement. The role of a SANE in cases of child sexual assault include physical examination of the child, preparing forensic evidence and testifying in court.	Participants up to ten times more likely to render guilty verdicts when SANE testified versus no-medical testimony. SANE perceived as more credible than RN; participants three times more likely to render guilty verdict with SANE testimony than non-specialist RN.

Paediatric sexual assault nurse examiner (P-SANE) program. Midwest USA **Horner et al. 2012**	Retrospective medical and legal record review of cases of paediatric (aged 1-20 years) sexual assault (n=464) to compare quality indicators before and after introduction of a P-SANE to a paediatric emergency department. The role of the P-SANE was to provide specialist assessment of sexual assault victims inclusive of documentation of the examination, collecting forensic evidence, prophylaxis of STIs and pregnancy and providing appropriate psychosocial support.	After implementation of P-SANE role there was: Improved detection/documentation of physical injuries (20 vs 34%, p=.006). Improved assessment of pregnancy status (47 vs 59%, p=.03) and chlamydia evaluation (80 vs 95%, p=<0.0001). Similar quality of forensic evidence and judicial outcomes.
School based sexual abuse prevention education program Nigeria **Ogunfowokan & Fajemilehin 2012**	Quasi-experimental study with girls (n=200) aged 13-24 years attending public high schools in Nigeria to determine whether it could influence their knowledge and attitudes towards sexual abuse. An educational intervention about sexual abuse was delivered by a nurse and supported by a research assistant in 30 minute intervals over a period of ten days.	Significant effects on knowledge of girls in intervention group but not on their attitudes.
Paediatric forensic nurse examiner (FNE) programs Midwestern USA **Patterson et al. 2009**	Quasi-experimental, non-equivalent comparison cohort design of children who received examination s by a FNE program (n=95) or another facility (n=54). The FNE had completed approved training and received clinical preceptoring.	Compared to the control group, FNEs saw more younger children (56% less than 6 years old vs 46%), where children may not be able to effectively communicate. FNE more likely to submit evidence to crime lab, but still typically negative for DNA evidence. FNE cases more likely to result in a successful guilty plea bargain or conviction (36% vs 29%).
Physical Abuse Interventions		
Hudson Valley Shaken Baby Initiative New York **Altman et al. 2011**	Program evaluation (n=20 hospital sites) to assess whether an educational program could successfully prevent abusive head injuries in babies. Maternity nurses implemented the program in hospitals and were involved in encouraging parents to access the educational materials and acknowledge the commitment statement to refrain from shaking their baby. The materials included a custom-designed leaflet and short video outlining the dangers of shaking infants and how to cope with infant crying.	Decreased frequency of abusive head injuries (reduced by 75 %, P= .03); regions outside intervention area were unchanged. At six-month follow-up, most parents (98 %) remembered watching the video about injuries from shaking a baby. Fifty-six per cent of parents could recall a situation of infant crying where the information helped them cope.

Pennsylvania Shaken Baby Syndrome Prevention Program Pennsylvania, USA **Dias et al. 2017**	Non-randomised study to determine whether a state-wide intervention could reduce the incidence of abusive head trauma in infants and young children (n=1,180,291 parents). The role of nurses was to deliver a short intervention to families that involved a video, pamphlet and discussion about the dangers of shaking a baby.	No changes in hospitalisation rates of shaken baby syndrome. Of parents surveyed at 7 months (n=146), most reported recalling the information when their baby was crying (74-79%).
Education to prevent abusive head trauma in infants (Period of PURPLE Crying) Kamagaya City, Japan **Fujiwara 2015**	Non-randomised self-report questionnaire of mothers (n=1594) to compare mothers who were exposed to different levels of the intervention to determine the impact of educational interventions to prevent abusive head trauma in infants. Mothers received either no intervention, one intervention or two interventions that were intended to provide education about shaken baby syndrome and ways to manage infant crying. Parents watched an educational DVD during a prenatal class and public health nurses distributed a pamphlet postnatally. Community home visiting staff collected information about exposure to the intervention during home visiting when the infant was four months.	Mothers' knowledge of techniques to manage crying and dangers of shaking a baby increased. There was a stronger impact on mothers' knowledge when they had received both interventions rather than just one. Mothers in intervention group less likely to share information about infant crying with other caregivers.
Perinatal Shaken Baby Syndrome Prevention Program (PSBSPP) Montreal, Canada **Goulet et al. 2008**	Interviews and questionnaires of nurses (n=69) and parents (n=263) to determine nurses' and parents' opinions of the adequacy of an educational program about shaken baby syndrome. The nurses worked in perinatal units in two hospitals and they were trained to use cue cards to educate parents about the dangers of shaking babies, normal crying behaviours and strategies to deal with crying in a 5-10 minute intervention.	Most (57%) parents believed they learned from the intervention and found their action plan useful (98%). Most parents (94%) believed that the nurse's role in delivering the information was essential. After returning home, 80% of parents reporting thinking about the cue card information, but most did not think about them often (55%). All nurses were satisfied or highly satisfied with their training; many (70%) felt it was not easy to find an appropriate time for the intervention because it required both parents' presence.
Systematic screening and detection of child abuse in ED South Holland, The Netherlands **Louwers et al. 2012**	Intervention cohort study that screened children (n=104,028 aged 0-18years) who attended an ED at one of seven hospitals using a brief, structured tool. The aim was to determine whether implementation of a screening checklist could improve the detection rate of child abuse. Nurses were expected to fill out a brief checklist to screen for abuse;	The screening rate for abuse increased twice as much in the intervention hospitals. Out of the children screened, the detection rate of significant higher in those who were screened than not screened (0.5 vs 0.1%, $p<0.001$).

	nurses at four of the seven hospitals received training via an interactive workshop about interviewing techniques (no further details) .	
Period of PURPLE Crying intervention Midwest city in USA **Reese et al. 2014**	Non-experimental, post-test design with (n=211) and nurses (n=47) to evaluate the effects of the program on mothers' knowledge of the dangers of shaking infants and the use of settling techniques at 2 months post intervention. Mothers received an educational intervention to help them respond to infant crying with the aim of reducing the incidence of shaken baby syndrome. Nurses received training and then delivered education to parents using the acronym PURPLE to outline normal infant crying and ways to respond.	Most (76%) of mothers rated the usefulness of the education as 9 or 10 out of ten. More than half of mothers correctly answered all questions relating to the dangers of shaking an infant (54%) and crying (57%). Fifty-one per cent of mothers could remember one or more soothing techniques and 58% had used a soothing technique.
Period of PURPLE Crying intervention North Carolina, USA **Zolotor et al. 2015**	Pre and post intervention comparison of phone calls to a parent help line and analysis of abusive head trauma rates. Parents of newborns (n=405,060) received an educational intervention to help them respond to infant crying with the aim of reducing the incidence of shaken baby syndrome. Nurses received training and then delivered education to parents using the acronym PURPLE to outline normal infant crying and ways to respond.	Decreased number of parent phone calls to nurse helpline about baby crying (20% for infants <3mo, 12% for infants <3 months). No change in state cases of abusive head trauma.
Other interventions		
SEEK (Safe Environment for Every Kid) model of pediatric primary care. USA **Dubowitz et al. 2012**	RCT (n=18 private practices with n=1,119 mothers) to investigate whether the SEEK intervention could reduce child maltreatment in a low-risk population. Paediatricians and nurse practitioners implemented the SEEK model after attending a four-hour training session. The SEEK intervention involved brief assessment and initial intervention for certain social problems that affect children's wellbeing (i.e. depression, substance abuse, major stress, IPV).	Mothers in SEEK reported less psychological aggression (p=0.006) and minor physical assaults (p=0.19) towards their children at baseline and 12 months later. No statistically significant difference in abuse/neglect concerns documented in medical record. No statistically significant difference in reports of abuse/neglect to child protection services.
Runaway Intervention Programme (RIP) Canada	Program evaluation of runaway intervention program delivered to n=21 adolescents. Advanced practice nurses offered home-visiting and case management to adolescents (10-14 years) who had experienced extra-familial sexual abuse. Visits initially	Decreased chlamydia infections (55% down to 15%). No pregnancies. All participants re-enrolled in school. Risky behaviours and runaway episodes appeared to decrease (difficult to assess due to varying definitions).

Edinburgh & Saewyc 2009	occurred four times per month and then tapered off over the period of a year. Nurses assisted with activities tailored to the adolescent such as screening for STIs and pregnancy, connecting with community services and health promotion.	All participants used some form of contraception during part of the program. One hospitalisation due to suicidal ideation, one hospitalisation due to substance dependency.
Baby Steps United Kingdom **Hoggs et al. 2015**	Program evaluation of parents who participated in a perinatal education program (n=148 surveys, n=51 interviews, n=>200 pre/post tests, n=28 follow-up surveys). Intervention can be delivered by nurses, midwives and children's services' professionals and aims to improve the wellbeing of disadvantaged families as they prepare for their child's birth. Intervention is inclusive of fathers and is based on positive relationships and engagement with families.	Parents felt they had acquired new knowledge about parenting Parents felt that they had decreased anxiety and depressive symptoms Parents experienced increased confidence Parents felt they experienced a more positive relationship with their baby and partner
Intervention to improve wellbeing of grandmothers raising grandchildren South-eastern USA **Kelley et al. 2010**	Longitudinal pre-test, post-test (n=529 grandmothers) of an intervention that aimed to improve the wellbeing of grandmothers who were legal carers for their grandchildren. Nurses were accompanied by social workers and visited the grandmothers monthly or bi-monthly for 12 months. The focus of these visits was on the grandmothers' physical and mental health and the nurse conducted health assessments, identified client goals and addressed health concerns as required.	Grandmothers experienced an increase in emotional role functioning, general health, vitality, social functioning, and mental health as measured by the Short Form-36 General Health Survey (SF-36). There was no significant increase in grandmothers' physical functioning.
123Magic Parenting Program Japan **Kendall et al. 2013**	Exploratory, quasi-experimental study to investigate whether a parenting program (n=49 mothers) influenced parenting self-efficacy and stress. The 123Magic parenting program was facilitated a public health nurse in a public nursery school. The aim of the program was to teach parents techniques to reduce undesirable behaviour and encourage positive behaviour in their children.	Mothers reported that they saw changes in the way the responded to their child and in their ability to control their emotions. Mothers had increased parenting self-efficacy (TOPSE) and reduced parenting stress scores (PSI).
Families and School Together (FAST) babies Canada **McDonald et al. 2009**	Mixed methods, programme evaluation (pre/post test) of adolescent mothers (n=128) who along with their families participated program. The aim of the program was to engage adolescent mothers in a socially inclusive experience to enhance mother-infant bonds, increase positive parenting and social support.	Adolescent parents reported improvements in self-confidence, relationship with their baby and decreases in parenting stress. Grandmothers reported improved family functioning and reduced conflict.

	Nurses worked with a social worker and occupational therapist to facilitate the group sessions that encouraged cross-generational interactions, baby-friendly activities, mother-baby massage and peer-support.	Qualitative feedback showed that the adolescent parents felt their baby enjoyed the activities and interactions with other children.
Infant massage and parenting enhancement program Florida, USA **Porter et al. 2015**	Three group RCT (n=62 massage and parenting education 1, n=37 parenting education only, 2, n=39 control) investigating whether an infant massage intervention integrated into a multi-dimensional parenting enhancement program could improve mental health outcomes, degrease parental stress, improve self-esteem and mother-infant interactions in mothers who were recovering from substance-abuse. Nurses taught mothers infant massage, infant appropriate play activities and led discussions about childcare practices to mothers recovering from substance abuse.	Both intervention groups had decreased in depressive symptoms (Beck Depression Inventory) and reduced parenting stress (Parenting Stress Index). No differences in self-esteem, attachment or mother-infant interactions.
Residential early parenting centres Melbourne, Australia **Rowe and Fisher 2010**	Prospective cohort design to examine the impact of a residential early parenting program (n=153 mothers with babies <12 months) on maternal mental health and infant behaviour disturbance at one and six months post-discharge. The residential program was staffed by maternal and child health nurses and early childhood professionals to provide support, education and role-modelling in group and individual settings.	At one month post intervention, mothers felt less worried, sad and irritable, and felt their levels of energy and ability to think clearly had improved. Infant crying/fussing had reduced and were sleeping for longer. Maternal confidence increased (94% fairly or very confident at six months post discharge).