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Invited Review

Maternal substance use and child protection: a rapid evidence assessment of factors associated with loss of child care

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ABSTRACT

This article reviews the literature on the factors associated with mothers who use substances losing care of their children. A rapid evidence assessment was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta Analyses. Medline and PsycINFO databases were searched to identify primary research studies published in English during January 2000–September 2016. Studies were included if they presented individual, formal support (e.g., receiving substance use treatment) or informal support (e.g., receiving social and family support) factors associated with mothers who use substances retaining or losing care of their child/ren (losing care refers to child protection services placing child/ren under the custody of a family relative, foster care, child care institution, or adoption). Evaluation studies or trials of interventions were excluded as were studies that focused on reunification or re-entering care as the outcome. Thirteen studies were included. Factors associated with mothers who use substances losing care of their children included: maternal characteristics (low socioeconomic status, younger age of first child, criminal justice involvement); psychological factors (mental health co-morbidity, adverse childhood experiences); patterns of substance use (use of cocaine prenatally, injection drug use); formal and informal support (not receiving treatment for substance use, fewer prenatal care visits, lack of social support). There is not enough evidence to determine the influence of substance use treatment in preventing mothers losing care of their children. Factors identified in this review provide the evidence to inform a prevention agenda and afford services the opportunity to design interventions that meet the needs of those mothers who are more likely to lose care of their children.

1. Introduction

Maternal substance use is considered a significant risk for child maltreatment and neglect (Blakey, 2012; Minnes, Singer, Humphrey-Wall, & Satayathum, 2008). The consequences of intoxication or withdrawal, and the high prevalence of comorbid psychiatric disorders, especially depression may limit the mother's abilities to provide a stable and nurturing environment for their child/ren (Cleaver, Cleaver, & Tarr, 2007; Grella, Hser, & Huang, 2006; Torrens, Gilchrist, & Domingo-Salvany, 2011). The lack of appropriate parenting skills, basic knowledge of parental behaviours, inconsistency in care giving and the range of socioeconomic adversities that are typically related to substance use (i.e., unstable housing and economic hardship) have been strongly associated with mothers who use substances and the risk of child maltreatment (Boden, Fergusson, & Horwood, 2013; Forrester & Harwin, 2007; Velleman & Templeton, 2007). Reviews of the literature have emphasized problems for children with substance using parents

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throughout the lifespan – beginning in utero with delays in physical, cognitive and socioemotional development; progressing through early; through primary school ages where educational attainment and socialisation for these children is lower and disruptive behaviour is higher; into adolescence where there are increased risks of mental health and substance use problems (Alati et al., 2013; Gray, Mukherjee, & Rutter, 2009; Huestis & Choo, 2002; Kandel, 1990; Vaughn, Ollie, McMillen, Scott, & Munson, 2007).

As a result of an increased risk of serious harms and poor outcomes, a high proportion of children of mothers who use substances have been placed under child protection (Brandon et al., 2012). It is estimated that between 50% and 80% of children in foster care are from households with at least one substance using parent (Besinger, Garland, Litrownik, & Landsverk, 1999; Fernandez & Lee, 2013). Just over 50% of adults receiving substance use treatment are either parents or live with children (Grella et al., 2006; National Treatment Agency for Substance Misuse, 2012), with the figure rising to over 80% for women entering opioid substitution treatment (Lundgren, Schilling, Fitzgerald, Davis, & Amodeo, 2009). Evidence from England suggests that majority of alcohol-related care proceedings involve lone mothers (Netmums, 2007). Evidence also suggests that almost half of the mothers receiving treatment for substance use had experienced the loss of care of at least one of their children (Conners et al., 2003, 2004; Porowski, Burgdorf, & Herrell, 2004). Further, compared to child protection involving mothers who did not use substances, those mothers who have substance use problems were more likely to have their children in foster care for longer and/or to lose their parental rights permanently (McGlade, Ware, & Crawford, 2009; Sarkola, Gissler, Kahila, Autti-Ramo, & Halmesmaki, 2011). Analysis of case studies in four London boroughs where children had been allocated a social worker as a result of concerns about parental substance use reported that two years later, only 46% of children referred remained with their main carer, 26% lived with a family member and 27% were in the formal care system (Forrester & Harwin, 2007). While the strong relationship between maternal substance use and involvement with child protection is well documented, substance use is rarely the only risk factor for child removal (Marcenko, Lyons, & Courtney, 2011).

Research suggests a set of demographic factors, psychological factors, patterns of substance use and environmental factors may mediate the relationship between maternal substance use and child maltreatment including low educational achievements, unstable housing, younger age at first pregnancy, adverse childhood experiences in their own childhood and psychiatric history (Brandon et al., 2012). Research supports an increased risk of not retaining care of their children after birth and/or later in their childhood among mothers who use substances prenatally (Ogunyemi & Hernandez-Loera, 2004; Simmat-Durand & Lejeune, 2012). However, as not all children of substance using mothers are removed from maternal care, several questions remain about which specific maternal characteristics contribute to child care outcomes. Moreover, it should not be assumed that all mothers who use substances neglect their children and are in need of social service intervention (Taplin & Mattick, 2013).

In a recent systematic review of programmes and strategies designed to facilitate the reunification of substance using mothers who have had a child removed from their care; psychiatric comorbidities, use of opiates and having a greater number of children presented particular challenges to mother-child reunification because of their complex and multiple needs (Doab, Fowler, & Dawson, 2015). The review stressed that reunification rates improved for mothers entering drug treatment quickly, spending more time in drug treatment, and where matched services for mental health and programmes providing a greater level of integrated care were implemented (Doab et al., 2015). While Doab et al.'s review presents important factors associated with interventions aimed at promoting substance using mothers reunification with their children, the extent to which participation in drug treatment contributes to prevent mothers losing care of their children remains unclear.

Studies suggest that mothers who use substances and who have had a child removed from their care, often become the subject of child protection intervention with the birth of subsequent children (Lean, Pritchard, & Woodward, 2013). In a recent English study on recurrence in care proceedings, Broadhurst et al. (2015) pointed that '*a sizeable percentage of women reappear because their problems are repeated rather than resolved*' (p. 2256). The limited evidence about the population of women from whom children are removed has in part contributed to the lack of programmes in preventing repeat care proceedings (Broadhurst et al., 2015). To date, there is little information on how to support substance using mothers to break the cycle of involvement with child protection services, and there has been no review of the literature on which factors increase the risk of not retaining care of the child in this population.

We conducted a rapid evidence assessment (REA) to identify factors associated with mothers who use substances losing care of their children. The term losing/not retaining care in this review refers to a mother who has experienced their child/ren being placed under the care/custody of a family relative, foster care, child care institution, or adoption. This review is important to both the fields of child maltreatment and maternal substance use as questions remain about which individual, formal (e.g., receiving substance use treatment) or informal support (e.g., receiving social and family support) factors are associated with mothers who use substances losing care of their child/ren. Identification of the factors associated with mothers who use substances' involvement with child protection is needed to inform a prevention agenda (Broadhurst et al., 2015) and the design of interventions to support those mothers who are more likely to have their child/ren removed. To develop appropriate interventions, we must first clearly determine which factors should be targeted.

2. Methods

A rapid evidence assessment (REA) was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Moher, Liberati, Tetzlaff, Altman, & PRISMA Group, 2009).

2.1. Search strategy

The search strategy is presented in Fig. 1. Medline and PsycINFO were searched to identify eligible primary studies. Keyword

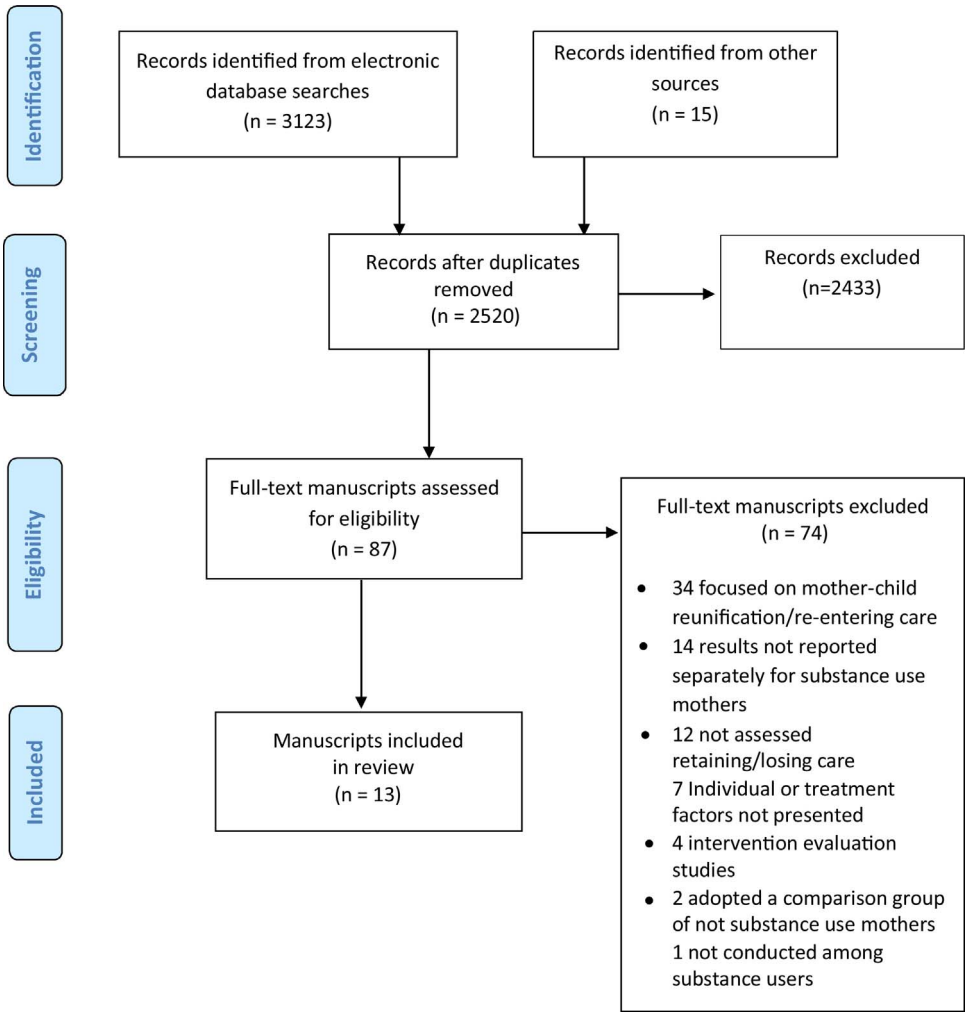

Fig. 1. PRISMA flow chart.

searches relevant to substance use; childcare; and parenthood were used (see supplementary material; S1; for the keyword searches). In addition; forward and backward hand-searching of references from relevant studies was undertaken.

2.2. Eligibility

Studies were included if full text was published in English and was published during January 2000 − 2 September 2016. Studies were eligible for inclusion, regardless of methodology, if they discussed individual factors or formal (e.g., receiving substance use treatment) and informal (e.g., receiving social and family support) support factors associated with mothers who use substances retaining/losing care of at least one child − defined in the literature as out-of-home placement, custody, child care outcomes, living in/out the same maternal household, guardianship (for further information see definitions in Table 1). Evaluation studies or trials of interventions were excluded as were studies that examined factors associated with family reunification and children re-entering out-of-home care; that did not present findings by custody outcome; did not include mothers who used substances or did not present findings separately for mothers who use substances.

GG and MC independently screened all titles and abstracts and potentially eligible full-text manuscripts against eligibility criteria. Where disagreement regarding study inclusion occurred, decisions were reached through referral to PR.

2.3. Data extraction

MC extracted data on each study based on authors, publication year, country where the research was conducted, aim of the study, participant description, study design and results (Table 1). A standardised form was used to extract relevant data on study methodology and findings. These data were verified by second reviewer, GG.

Table 1
Description of the studies: factors associated with mothers who use substance losing care of their children (n = 13).

Authors	Country	Participants	Aim	Definition	Design and Methods	Individual Factors	Formal and Informal Support Factors
Substance use during pregnancy (n = 6)							
Davidson-Arad & Mussel, 2008	Israel	Data from 120 children born to drug addicted mothers originated from Child Protection report files and social workers information.	To explore initial placement of the new-borns	Placement defined as remain entrusted in mother care/not remain in mother care (placed in extended family, foster care, child care institutions, or adoption)	Data linkage design study using data from Chief Child Protection Officer and structured questionnaire applied to child protection workers about maternal characteristics	Retaining care post-partum: Being married, slightly better educated, tenable economic situation, absence of withdrawal symptoms in the newborns. Retaining care early childhood: absence of withdrawal symptoms in the newborns.	n/a
Minnes et al., 2008	USA	205 cocaine-using post-partum mothers recruited from a hospital maternal ward: 63 women with infants placed outside of maternal care at birth or shortly thereafter; and 142 who maintained maternal custody	To determine factors associated with infant custody status.	Loss of infant custody status defined as infants placed outside of maternal care (i.e., foster care, adoption, extended family)	Data linkage design study using maternal medical and demographic data from hospital records and structured questionnaires completed by the mothers 7 weeks port-partum.	Losing care post-partum: greater parity, heavier prenatal cocaine use, psychological distress, psychoticism, somatization, anxiety, hostility, physical abuse, physically and emotional neglect in childhood, physical abuse, maladaptive coping strategies, lack of adaptive coping strategy	Losing care post-partum: Fewer prenatal visits.
Sarkola et al., 2007	Finland	526 pregnant women with suspected or detected significant alcohol and/or substance abuse problems referred to special antenatal clinics of the maternity hospitals and their 626 offspring	To assess risk factors for early and long-term out-of-home placement of the children from 2 to 12 years	Out-of-home placement defined as children placed in custody (i.e. placed outside home at some point during the 12 years)	Population-based cross-sectional retrospective design study using prospectively recorded data from structured interviews during maternal pre-,peri- and postnatal phases and infant medical records.	Losing care 2-12 years follow-up: rental housing, homelessness and low education at the delivery (early-term custody only), unemployment at the delivery, unplanned pregnancy, mothers own experience in out-of-home care as a child, had a previous child in custody, daily smoking during pregnancy, daily alcohol use before and during pregnancy (long-term custody only), positive urine toxicology screen, substance abuse problems after delivery.	Losing early and Long-term custody: newborns transferred for intensified surveillance and/or to the neonatal intensity care unit, delayed discharge of 8 days or more from hospital, discharged of hospital without the mother.
Simmat-Durand & Lejeune, 2012	France	170 neonates of mothers who declared using at least two psychoactive drugs at the beginning of pregnancy	To analyse the consequences of multiple drug use during pregnancy to child care outcomes	Child care outcomes defined as retaining/not retaining care (taken into foster care) at the end of stay in the maternity ward	Data linkage design study using data from obstetrical, neonatal and addiction file records.	Losing care post-partum: use of four or more substances during pregnancy	n/a

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Table 1 *(continued)*

Authors	Country	Participants	Aim	Definition	Design and Methods	Individual Factors	Formal and Informal Support Factors
Tsantefski et al., 2014	Australia	Interviews were conducted with 54 substance use mothers assessing Women's Alcohol and Drug Service (ADS), 20 ADS counsellors, and 20 Child Protect (CP) workers.	To identify risk and protective factors influenced maternal care outcomes among substance-exposed infant at infant age 12 months	Maternal care outcomes defined as retaining care/ removal care of the children (i.e., lost permanent care, grandparents retaining care)	Mixed methods prospective case study using semi structured interviews with open ended questions.	Losing care at early infant year: poverty, poor or unstable housing, history of childhood trauma, depression, domestic violence, and having experienced placement in out-of-home care in their own childhood	Losing care at early infant year: social isolation
Wobie et al., 2004	USA	154 women who used cocaine prenatally recruited from prenatal care services.	To describe the postnatal living status of cocaine exposed infants; to identify the prenatal characteristics of the mothers; and to assess risk factors for infant placement outside of the maternal home through age 1.	Placement outside of the maternal home defined as not living in the same household of the mother at some time during the first year of life (i.e., living with extended family or in foster care)	Prospective longitudinal cohort design study using structured questionnaires.	Losing care: greater percentage of weeks cocaine used for the three months prior to and during pregnancy, higher amount of daily prenatal alcohol use, higher amount of money spend daily on cocaine during pregnancy, low self-esteem, depressive symptoms, feeling at the mercy of powerful authority figures, few positive life experiences, and rigid parental style Retaining care: More positive life experiences, higher education and higher level of intellectual functioning.	Losing care: lack of family social support
Drug treatment (n = 6)							
Basnet et al., 2015	Finland	775 women receiving treatment for drug use with completing information regarding their parental status.	To explore the characteristics of women receiving treatment for drug use according to child's living situation.	Child's living situation defined as children living in the same household/ living outside maternal household (i.e., living in foster care, elsewhere, and in other unspecified places)	Cross-sectional study using data of a drug treatment database	Losing care: Homelessness, unemployment, income support, having other illicit drug abusers in the same household, lifetime intravenous drug use and sharing of needles and syringes, stimulants as primary drugs of abuse, intravenous administration of primary drugs, psychotic, symptoms while using drugs and hepatitis C.	n/a
Gilchrist & Taylor, 2009	UK	185 female drug users (FDU) who had ever given birth receiving and not receiving treatment for substance use recruited from an evening	To describe children's living arrangement and the variables associated with FDU not living with any of their children.	Living arrangement defined as living with the mother or with not living with the mother (i.e., living with the father,	Cross-sectional design study using structured questionnaires.	Losing care: lifetime involvement in prostitution, homelessness and incarceration, live in a residential home as children,	Losing care: less likely to have been prescribed methadone or have received treatment, help or advised for drug use

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Table 1 *(continued)*

Authors	Country	Participants	Aim	Definition	Design and Methods	Individual Factors	Formal and Informal Support Factors
		drop-in for sex workers, a drug crisis centre (providing short-term detoxification, a 12 bed rehabilitation unit, drug substitution treatment and a 24 h needle exchange) and clients entering or beginning OST		another family member, children in local authority care or adopted)		lifetime time emotional and sexual abuse, somatic and depressive symptoms, greater level of neurotic disorder, history of injecting drug use, to have ever accidently overdosed on drugs, use of cocaine or crack	
Lam et al., 2004	USA	635 crack-cocaine African–American mothers recruited from a study of crack users not receiving drug treatment and were at risk of HIV, and attended an HIV risk-reduction intervention: 378 separated from all of their children and 257 living with at least one of their children	To compare factors associated with caregiver status	Caregiver status defined as mothers who reported living with at least one child and mothers who reported living with none of their children (children placed with a family relative, foster care, institutions, or adoptive homes	Cross sectional study using data from the NC Women's CoOp intervention programme	Retaining care: to have home, to live in the home for at least 12 months, to have health insurance, less likely to use alcohol or drugs before age 15, Losing, heavier alcohol use	Receiving public assistance benefits
Lundgren et al. (2009)	USA	9018 women receiving drug use treatment who reported having injected drugs during the past year.	To examine the association between entering methadone maintenance (MM) and having children residing with tem	Not residing with mothers defined as out-of-home placement (children in the care of family relatives, foster care, institution, or adoption)	Cross sectional design study using data of state wide drug treatment services databases	Retaining care: Employability and non-homeless	Retaining care: entering methadone maintenance
Schilling et al., 2004	USA	256 African American and Latina mothers in detoxification who had at least one child under age 18 recruited from community hospitals.	To examine the children living situation and to identify predictors of loss of guardianship.	Loss of guardianship defined as the care of the children was with grandparents or foster care.	Cross sectional design study using structured questionnaires.	Loosing care: African American background, low income and education attainment, no live in their own house, regular use of alcohol, crack/cocaine, heroin and multiple drugs.	n/a
Taplin & Mattick, 2013	Australia	171 mothers in opioid pharmacological treatment who had at least one child under 16 years of age	To evaluate child's custody after having recent child protection system involvement	Involvement with child protection system defined as receiving services due to reports of child neglect	Cross sectional using structured questionnaires	Loosing care: Low education attainment, recent trouble with the police, having a prison history having a greater number of children, younger age at the birth of first child, less year living in the current residence, being on psychiatric medication, having been forced/ persuaded to have sexual intercourse as a child or teenager, not seeing parents daily, being unable to get help when needed and a younger age of first heroin use	Losing care: received a greater number of substance abuse treatments and younger age of first substance abuse treatment.

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Table 1 *(continued)*

Authors	Country	Participants	Aim	Definition	Design and Methods	Individual Factors	Formal and Informal Support Factors
Child protect services (N = 1)							
Lussier et al., 2010	Canada	56 mothers with substance addiction problems: 32 receiving, voluntarily or otherwise, child protection services; 24 mothers receiving no such services	To identify factors associated with the utilization of child protection services	Utilization of child protection services defined as participation in psychosocial services including parental support program	Cross sectional study using data from the Quebec Youth Centre services.	Losing care: younger age at the birth of first child, low socioeconomic conditions and greater family dysfunction (i.e., lack of supervision and more inconsistent discipline)	Losing care: low interpersonal resources (i.e., fewer friends or neighbours on whom to count, less supportive family, fewer people they trust, and less time for establishing reciprocal relationships)

Table 2
Studies that did not met the criteria for inclusion in the REA.

Focused on reunification/children re-entering care (n = 34)	Results were not reported separately for mothers who use substances (n = 14)	Outcomes of interest not assessed (n = 12)	Individual, informal or formal support factors were not presented (n = 7)	Intervention Evaluation studies (n = 4)	Compared substance using mothers with non-substance using mothers (n = 2)	Not substance using mothers (n = 1)
Blakey, 2012	Aguiniga, Madden, & Hawley, 2015	Bailey et al., 2010	Akin et al., 2015	Dakof et al., 2010	Lean et al., 2013	Sloan et al., 2013
Boles et al., 2007	Arad, 2001	Ben-David, 2016	Brook et al., 2010	Jansson, Svikis, & Beilenson, 2003	Perry, Newman, Hunter, & Dunlop, 2013	
Brook & McDonald, 2007	Barrow & Lawinski, 2009	De Bortoli et al., 2013	Hong et al., 2014			
Brook & McDonald, 2009	Broadhurst et al., 2015	Callaghan, Crimmins, & Schweitzer, 2011	Forrester, 2000	Mullins, Bard, & Ondersma, 2005		
Bruns et al., 2012	Cheng, 2010	Doggett, Burrett, & Osborn, 2005	Laslett et al., 2012			
Carlson, Matto, Smith, & Eversman, 2006	Forrester & Harwin, 2007	Gifford et al., 2016	Lloyd & Akin, 2014			
Child & McIntyre, 2015	Gourdine, Smith, & Brown, 2013	Huebner, Willauer & Posze, 2012	Ogunyemi & Hernandez-Loera, 2004			
Choi & Ryan, 2007	Lewis & Petry, 2005	Hytinantti et al., 2008				
Dakof, Cohen, & Duarte, 2009	Orsi, Winokur, Crawford, Mace, Batchelder, 2012	Laslett, Room, Dietze, & Ferris, 2012				
Degarmo, Reid, Fetrow, Fisher, & Antoine, 2013	Pelton, 2008	Natale et al., 2012				
Doab et al., 2015	Pilowsky et al., 2001	Patel et al., 2013				
Forrester et al., 2008	Simkiss, Spencer, Stallard, & Thorogood, 2012	Smith et al., 2007				
Gifford et al., 2014	Vanderploeg et al., 2007	Taplin & Mattick, 2015				
Grant et al., 2011	Young, Boles, & Otero, 2007					
Green, Furrer, Worcel, Burrus, & Finigan, 2007						
Green, Rockhill, & Furrer, 2007						
Gregoire, 2001						
Grella et al., 2006						
Grella, Needell, Shi, & Hser, 2009						
Huang & Ryan, 2011						
Knight & Wallace, 2003						
Kyzer, Conners-Burrow, & McKelvey, 2014						
Marsh & Smith, 2011						
Meier, Donmall, & McElduff, 2004						
Meyer, McWey, McKendrick, & Henderson, 2010						
Meyer et al., 2010						
Mitrani, Weiss-Laxer, & Feaster, 2009						
Smith, 2003						
Ryan et al., 2006; Twomey, Caldwell, Soave, Fontaine, & Lester, 2010						
Twomey, Miller-Loncar, Hinckley, & Lester, 2010b						
Twomey, Caldwell, Soave,						

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Table 2 *(continued)*

Focused on reunification/children re-entering care (n = 34)	Results were not reported separately for mothers who use substances (n = 14)	Outcomes of interest not assessed (n = 12)	Individual, informal or formal support factors were not presented (n = 7)	Intervention Evaluation studies (n = 4)	Compared substance using mothers with non-substance using mothers (n = 2)	Not substance using mothers (n = 1)
Fontaine, & Lester, 2011 Worcel, Furrer, Green, Burrus, & Finigan, 2008						

3. Results

3.1. Literature search

A total of 3123 records were identified through the database searches and 15 additional manuscripts were identified from hand-searching reference lists from published reviews (Fig. 1). After removal of duplicates, 2520 titles and abstracts were screened for potential relevance and 87 full-text manuscripts were assessed in full for eligibility. Seventy-four manuscripts were excluded. The main reasons for exclusion of studies were: focus on reunification/children entering care; results were not reported separately for mothers who use substances; outcomes of interest were not assessed; individual or treatment factors were not presented; intervention evaluation studies; compared mothers who use substances with those who did not; or were not conducted among women who used substances (Table 2). A total of 13 manuscripts met inclusion criteria.

3.2. Description of studies

The 13 studies included in this review are described in Table 1. A greater number of studies were conducted in the US (n = 5) (Lam, Wechsber & Zule, 2004; Lundgren et al., 2009; Minnes et al., 2008; Schilling, Mares, & El-Bassel, 2004; Wobie, Eyler, Garvan, Hou, & Behnke, 2004); two were conducted in Australia (Taplin & Mattick, 2013; Tsantefski, Humphreys, & Jackson, 2014); two in Finland (Basnet, Onyeka, Tiihonen, Fohr, & Kauhanen, 2015; Sarkola, Kahila, Gissler, & Halmesmaki, 2007); one in the UK (Gilchrist & Taylor, 2009); one in Canada (Lussier, Laventure, & Bertrand, 2010); one in Israel (Davidson-Arad & Mussel, 2008); and one in France (Simmat-Durand & Lejeune, 2012). Eight studies were cross-sectional (Basnet et al., 2015; Gilchrist & Taylor, 2009; Lam et al., 2004; Lundegren et al., 2009; Lussier et al., 2010; Sarkola et al., 2007; Schilling et al., 2004; Taplin & Mattick, 2013), three included data linkage (Davidson-Arad & Mussel, 2008; Minnes et al., 2008; Simmat-Durand & Lejeune, 2012), one was a mixed-method study (Tsantefski et al., 2014) and one was a longitudinal cohort study (Wobie et al., 2004). More specifically, six studies examined the living situation of those children of mothers who used substance(s) during pregnancy (Davidson-Arad & Mussel, 2008; Minnes et al., 2008; Sarkola et al., 2007; Simmat-Durand & Lejeune, 2012; Tsantefski et al., 2014; Wobie et al., 2004), six studies investigated custody status of mothers receiving treatment for substance use (Basnet et al., 2015; Gilchrist & Taylor, 2009; Lam et al., 2004; Lundgren et al., 2009; Schilling et al., 2004; Taplin & Mattick, 2013), and one study was conducted with mothers using social services (Lussier et al., 2010). Two of the six prenatal studies were conducted with cocaine users (Minnes et al., 2008; Wobie et al., 2004). Of the studies with samples from drug treatment services, one was conducted with crack-cocaine users (Lam et al., 2004), one was conducted with injection drug users (Lundgren et al., 2009), and one with women receiving opioid substitution treatment (Taplin & Mattick, 2013). The remaining studies included mothers who used various substances (Davidson-Arad & Mussel, 2008; Sarkola et al., 2007; Simmat-Durand & Lejeune, 2012; Tsantefski et al., 2014; Basnet et al., 2015; Gilchrist & Taylor, 2009; Lussier et al., 2010).

Overall, factors associated with losing care of their children among mothers who use substances are described across four specific domains in this review: maternal characteristics, psychological factors, substance use patterns, and factors associated with formal and informal support.

3.3. Factors associated with children custody outcomes

3.3.1. Maternal characteristics (n = 11)

The most consistently reported risk factor for losing care of their children was a high number of socioeconomic adversities experienced by mothers. Of the studies investigating the relationship between mothers who used substances during pregnancy and custody of their children, two found an association between maternal unstable housing at the time of delivery and losing care of the infant during his/her early years (Sarkola et al., 2007; Tsantefski et al., 2014). Maternal low educational attainment and unemployment at the time of delivery were also associated with loss of infant care during the early years (Sarkola et al., 2007), whereas unemployment at the time of the delivery was found to be associated with losing care later in the children's lives (Sarkola et al., 2007). This analysis also found that being better educated (Davidson-Arad & Mussel, 2008), with higher intellectual functioning (Wobie et al., 2004) and being less poor and married at the time of the birth contributed to mothers who used substances retaining care of the infant (Davidson-Arad & Mussel, 2008). Additional characteristics associated with mothers who used substances during pregnancy and the risk of losing care of the infant soon after birth or in their early years includes greater number of birth given (Minnes et al., 2008), unplanned pregnancy and history of child custody loss (Sarkola et al., 2007). Furthermore, one study found that those mothers whose new borns were absent of neonatal withdrawal symptoms were more likely to take their babies home after birth (Davidson-Arad & Mussel, 2008).

Of the studies using data from mothers in substance use treatment and the one using data from social services, similar characteristics linked to socioeconomic disadvantage were found to be associated with mothers losing care of their children including homelessness (Basnet et al., 2015; Gilchrist & Taylor, 2009; Lam et al., 2004), unstable housing (Schilling et al., 2004; Taplin & Mattick, 2013), low educational attainment (Schilling et al., 2004; Taplin & Mattick, 2013), unemployment (Basnet et al., 2015; Schilling et al., 2004), economic problems (Schilling et al., 2004), low socioeconomic status (Lussier et al., 2010), and receiving income support (Basnet et al., 2015). Two studies also found that involvement with criminal justice (i.e., problems with the police, history of incarceration) increased risk of losing care of children (Gilchrist & Taylor, 2009; Taplin & Mattick, 2013). Involvement in prostitution was associated with having children taken into care in one study (Gilchrist & Taylor, 2009). Other reported maternal

characteristics associated with children being removed from the care of their mothers included maternal younger age (Lussier et al., 2010; Taplin & Mattick, 2013), a greater number of children (Taplin & Mattick, 2013); having no health insurance (Lam et al., 2004), having a diagnostic of hepatitis C (Basnet et al., 2015), and being from an African American background (Schilling et al., 2004).

3.3.2. Psychological factors (n = 7)

Negative early life experiences were highly prevalent among mothers who used substances and lost care of their children. Among those mothers who used substances during pregnancy and lost the care of their children thereafter, those who had experienced out-of-home care in their own childhood (Sarkola et al., 2007; Tsantefski et al., 2014); who had been physically and/or emotional neglected or physically abused as children (Minnes et al., 2008) or experienced childhood traumas (Tsantefski et al., 2014) were at increased risk of having their children taken into care. Similar association between adverse childhood experiences and not retaining care of children were found among mothers receiving substance use treatment (Gilchrist & Taylor, 2009; Taplin & Mattick, 2013). In addition, Tsantefski et al. (2014) found an association between domestic violence victimisation and losing care of children among mothers who used substances during pregnancy.

Having a co-morbid mental health disorder was common among substance using mothers who lost the care of their children. Mothers who experienced psychological distress (Minnes et al., 2008) including depression (Gilchrist & Taylor, 2009; Tsantefski et al., 2014; Wobie et al., 2004), greater rates of neurotic disorder (Gilchrist & Taylor, 2009), few positive life experiences, low-self-esteem and feeling at the mercy of powerful authority figures (Wobie et al., 2004) and who were prescribed psychiatric medication (Taplin & Mattick, 2013) were less likely to retain care of their children. Furthermore, a study with mothers who used cocaine found that those who lost care of their infant at birth or shortly thereafter reported greater levels of psychoticism, somatization, anxiety, hostility, maladaptive coping strategies (including denial and substance use) and lack of adaptive coping strategy (planning) (Minnes et al., 2008), whereas another study found an association between ever having experienced psychotics symptoms while using drugs and the lost of child care (Basnet et al., 2015).

3.3.3. Substance use patterns (n = 9)

The findings from the 13 studies included in this review concerning patterns of maternal substance use and care status of their children were mixed. Of the studies that investigated drug use during pregnancy, heavier use of cocaine (Minnes et al., 2008; Wobie et al., 2004), daily smoking, positive urine toxicology screen (Sarkola et al., 2007), daily alcohol use before (Sarkola et al., 2007) and during pregnancy (Sarkola et al., 2007; Wobie et al., 2004), and use of four or more substances (Simmat-Durand & Lejeune, 2012) were associated with having infants placed in out-of-home care. Sarkola et al. (2007) also found that while daily alcohol use before pregnancy and the ongoing substance misuse after delivery were not associated with losing the care of their children soon after birth, it increased the risk of having the child removed from the mothers later in their childhood.

Of the seven studies conducted with mothers receiving drug treatment, two reported greater risk of losing care of their children among mothers' who injected drugs (Basnet et al., 2015; Gilchrist & Taylor, 2009). Two studies reported the association between cocaine/crack-cocaine use and not retaining care of their child/ren (Gilchrist & Taylor, 2009; Schilling et al., 2004), while one study identified regular use of alcohol, heroin and multiple drugs as predictors of losing care of a child (Schilling et al., 2004). In a clinical sample of mothers who used crack-cocaine, Lam et al. (2004) found that those who also reported heavy drinking were at greater risk of losing the care of their children, while later onset of alcohol and drug use (aged 15 and above) was found to be a protective factor for retaining care of their children. In line with this, Taplin and Mattick (2013) found an association between earlier onset of heroin use and losing care of a child among mothers receiving opioid pharmacological treatment. Further patterns of maternal substance use associated with loss of care of children included ever having accidently overdosed on drugs (Gilchrist & Taylor, 2009), and having another substance user in the same household, and having exchanged needles and syringes (Basnet et al., 2015).

3.3.4. Factors associated with formal and informal support (n = 7)

There was a lack of evidence on the association between drug treatment outcomes and the custody status of children of those mothers who used substances during pregnancy. However, two studies reported the association between pre- and post-natal care and loss of custody, with poorer engagement with antenatal care more likely to result in loss of custody (Minnes et al., 2008), newborns transferred to intensive care units, delay in discharge from hospital and discharge from hospital without the mother (Sarkola et al., 2007).

With regards to findings from studies of mothers receiving drug treatment, two studies reported that receiving methadone maintenance was a protective factor for mothers retaining care of their children (Gilchrist & Taylor, 2009; Lundgren et al., 2009). Another study found that higher frequency of previous substance use treatment episodes and younger age of first substance use treatment were strongly associated with losing care of their children (Taplin & Mattick, 2013). Gilchrist and Taylor (2009) reported that the risk of losing care of their children increased for those mothers who used substances who were not receiving treatment, help or advice for their substance use.

There was an indication of experiencing low family support and social isolation (Sarkola et al., 2007; Simmat-Durand & Lejeune, 2012) among mothers who lost the care of their children Additionally, in the study conducted with mothers using social services, mothers who had their children taken into care reported less social support including low interpersonal resources (i.e., fewer friends, less supportive family, fewer people they trusted, and less time for establishing reciprocal relationships) (Lussier et al., 2010).

4. Discussion

Factors identified in this review reflect the interaction of complex issues involving maternal characteristics (low socioeconomic status, younger age of first child, criminal justice involvement); psychological factors (mental health co-morbidity, adverse childhood experiences); patterns of substance use (use of cocaine prenatally, injection drug use); formal and informal support (not receiving treatment for substance use, fewer prenatal care visits, lack of social support) among mothers who use substances and are at risk of losing care of their children. While the majority of studies reported on child care outcomes associated with maternal individual factors, very few studies investigated the extent to which elements of drug treatment may mediate the relation between maternal substance use and child care outcomes. Therefore, there is not enough evidence to develop firm conclusions in this review on the influence of substance use treatment in preventing the loss of children from the care of mothers who use substances.

In line with a broader literature on socioeconomic deprivation in substance using populations (Baumann et al., 2007; Redonnet et al., 2012), mothers who use substances and have lost the care of their children, experienced a range of socioeconomic adversities. Other factors identified to increase the risk of losing care of children that may also be related to mothers who use substances' low socioeconomic status include involvement with criminal justice (Gilchrist & Taylor, 2009; Taplin & Mattick, 2013) and prostitution (Gilchrist & Taylor, 2009). These findings highlight the need for strategies that account for the greater maternal stress associated with socioeconomic problems that place their children at greater risk of abuse and neglect. It was evident in this review that providing mothers who use substances with services that addressed their housing needs and improved their education, can assist women retain care of their children (Davidson-Arad & Mussel, 2008; Lundgren et al., 2009; Wobie et al., 2004). Addressing maternal education by, for example, facilitating mothers to obtain a high school diploma, job skill training and parenting education, has the potential to improve their skills and confidence in supporting and caring for their children (Wobie et al., 2004). Important also, is the development of early interventions that improve parenting skills in mothers who use substances experiencing greater socioeconomic problems. Previous research shows that precarious living conditions are often related to poor parenting ability among substance using parents (Flores, 2004; Lussier et al., 2010). Evidence also suggests that when drug use occurs in the context of other multiple risks, the mother's ability to care for their children is poor. In a study about the association between child abuse and cumulative environmental risks in substance using mothers (i.e., domestic violence, non-domestic violence, family size, incarceration, no significant other in home, negative life events, psychiatric problems, homelessness), Nair et al. (2003) found that the greater the cumulative risks, the more likely the mothers were to experience stresses related to caring for their children and to abuse or neglect their children. The authors also found that the effects of the stress related to caring for their children were stronger when the child was aged 18 months than earlier in life. Therefore, it is imperative that support is offered to mothers who use substances throughout the perinatal phase to reduce such cumulative risks. Early interventions such as nurse home visitations present interesting avenues for intervention (McNaughton, 2004). In England, for example, the Family Nurse Partnership programme supports first-time young mothers (from early in pregnancy continuing until their child is 24 months old) to improve maternal and child pregnancy outcomes, child health and developmental outcomes, and parent's economic self-sufficiency (Barnes et al., 2011). Evaluation studies conducted in the US shows significant improvements for young mothers and babies that took part in the programme including improvements in prenatal diets (Kitzman et al., 2000), reductions in cigarette smoking during pregnancy (Olds et al., 2002), decreases in subsequent pregnancies and births (Olds et al., 1997), reduction in use of welfare assistece (Kitzman et al., 2000), reduction in episodes of mothers involvement in intimate partner victimisation and perpetration (Eckenrode et al., 2000) and improvement in children language and emotional development (Olds et al., 2004). Moreover, the programme has been identified by MacMillan et al. (2009) as one of the most effective programmes for preventing child abuse and neglect.

The complex family and social systems associated with women who use substances and have had their children removed from their care may also be related to an increased risk of sexual violence (Gilchrist & Taylor, 2009) and sexual risk taking behaviours that result in unplanned pregnancy (Sarkola et al., 2007), having a greater number of children (Minnes et al., 2008; Taplin & Mattick, 2013) and younger maternal age (Lussier et al., 2010; Taplin & Mattick, 2013). To help ensure that pregnancies are planned, services should be able to assess risks associated with the daily-lived experiences of women who use substances that can inform a prevention response to sexual risk taking behaviours and violence.

The association between drug use during pregnancy and loss of child care was evident in this review. For instance, mothers who lost the care of their infant were more likely to report poly drug use during pregnancy (Simmat-Durand & Lejeune, 2012), higher drug (Minnes et al., 2008; Wobie et al., 2004) and alcohol use during pregnancy (Sarkola et al., 2007), higher psychological distress and greater adverse childhood experiences (Minnes et al., 2008; Tsantefski et al., 2014). The prenatal period presents a critical opportunity for services to engage with women who use substances and to address their substance use behaviours and psychosocial needs (Day et al., 2003; Toner, Hardy, & Mistral, 2008). The evidence that fewer prenatal visits (Minnes et al., 2008) and more post-partum infant health complications (Sarkola et al., 2007) were associated with loss of child care suggests that interventions targeting vulnerable pregnant women with higher needs may require additional strategies (e.g., making key information visible and easily understandable, sending reminders, assertive outreach, flexible appointment times, day care) to improve their engagement with services. One additional factor that emerged from a large cross-sectional study with pregnant women with a history of alcohol and drug use (Sarkola et al., 2007) was that loss of the care of a subsequent child if a previous child had been removed from their care. While there is a dearth of research on mothers who use substances who are subject to repeat removal of their children, the concern of serial removal of infants/children is growing in the literature (Broadhurst & Mason, 2013; Grant et al., 2011; Taplin & Mattick, 2014). Research evidence from Broadhurst et al. (2015) has estimated that 24% of women in care proceedings in England had previously lost the right to care for a child, with a substantial proportion of infants being subject to proceedings at or close to birth. Women aged between 18 and 19 years and who have a pattern of rapid repeat pregnancy were at increased risk of recurrence of repeat removal

(Broadhurst et al., 2015). The authors' stress the importance of developing a post-proceeding service that promotes psychological rehabilitation that recognises feelings of grief and loss in those mothers who have lost the care of their child/ren as a form of preventing successive removals (Broadhurst et al., 2015). It is possible that, if integrated into substance use treatment services, a post-proceeding service may not only enable the women to overcome the impact of losing the care of the child, but it could provide efforts to improve their engagement with services and the ability to build skills that will allow them to take control of their actions.

Studies reported a series of stressful events faced in life by substance use mothers who had their children taken from them including adverse childhood experiences (Gilchrist & Taylor, 2009; Minnes et al., 2008; Tsantefski et al., 2014) and domestic violence (Tsantefski et al., 2014). Substance use co-morbidity with mental health problems was also commonly reported in this review (Gilchrist & Taylor, 2009; Minnes et al., 2008; Taplin & Mattick, 2013) suggesting that those mothers who lost care of their children share a past marked by trauma, and personal difficulties in the present. Additionally, there was indication from a data linkage study that mothers who used substances during pregnancies and lost the care of the infant typically adopt poor coping strategies (Minnes et al., 2008). Previous research has shown that childhood abuse, interpersonal violence, less effective coping strategies, and mental health problems are not isolated events in women's' lives (Clay, Olsheski & Clay, 2000; Harris & Fallot, 2001) and often impact on women's experience of parenting. Recognising the role that traumatic experiences have in women's lives provides social and drug treatment services the opportunity to develop effective approaches and resources to address these (Elliott et al., 2005).

It is perhaps not surprising that different studies, using different populations and methodologies, provide inconsistent results on patterns of substance use and the risk of mothers retaining care of their children. For example, when specifically studying cocaine using mothers, Minnes et al. (2008) and Wobie et al. (2004) found that heavier consumption of cocaine during pregnancy was associated with the loss of the infant. Two cross-sectional studies that had largely representative samples in terms of types of drug used and recruitment approach identified the greater risk of mothers' injection drug use for loss of care of their children (Basnet et al., 2015; Gilchrist & Taylor, 2009). More specifically, these studies reported the association between not retaining care of children and mothers who use stimulants (Basnet et al., 2015; Gilchrist & Taylor, 2009), had shared needles and syringes with other people who use drugs, had a diagnosis of hepatitis C (Basnet et al., 2015), had experienced an accidental overdose (Gilchrist & Taylor, 2009) and reported an earlier onset of heroin use (Taplin & Mattick, 2013). While there is evidence that receiving methadone treatment may protect mothers from losing care of their children, no equivalent substitute medication exists for users of stimulants. This may contribute to the lack of studies reporting on the protective role of treatment for mothers who use stimulants. One cross-sectional study reported that mothers who lost the care of their children had limited support resources for dealing with their substance use problems (Gilchrist & Taylor, 2009) and several studies reported the lack of informal support (i.e., family support) experienced by this population (Lussier et al., 2010; Taplin & Mattick, 2013; Wobie et al., 2004). This review lacks evidence on the association between treatment for alcohol use and mothers retaining care of their children. Additionally, while studies reported the risk of heavy alcohol use among drug using mothers (Lam et al., 2004; Sarkola et al., 2007; Wobie et al., 2004), there are gaps in the literature with regards to the risk factors associated with retaining care of children and maternal drinking in the absence of other drug use. Further studies are needed to increase understanding of the association between maternal drinking and child care, the role that drug and alcohol treatments may play in enabling mothers who use substances to retain care of their children, and how service provision could support building healthy and positive relationships with this population. However, efforts should be made to promote greater coordination and collaboration across substance use treatment and child welfare systems (Grant et al., 2011; Grella et al., 2006). Studies linking information from both care systems are urgently needed to provide insight on how to address the broader range of service needs for mothers to achieve recovery and remain with their children.

The current study compiles evidence that problems associated with substance use among mothers involved with the child welfare system is not an isolated problem in their lives. Many mothers who use substances have multiple and complex needs including co-occurring mental health problems, such as depression and trauma, resulting from a history of childhood abuse and/or intimate partner violence. The contextual factors of substance using mothers' socio-economic status is highly associated with numerous stresses that affects parenting practices and increases the risk of child maltreatment. The cycle of deprivation that these women are often exposed to may also influence behaviour and involvement with criminal justice. Poorer social networks may reflect deeper issues resulting from socio-economic strains, substance use and mental health problems. Reviews of the literature emphasize the need for substance use treatment and child welfare systems to work collaboratively towards an integrated service that meets the psychosocial needs and comorbid psychiatric conditions of these women (Grella et al., 2006; Marsh & Smith, 2011; Ryan, Marsh, Testa, & Louderman, 2006; Smith, 2002). Findings from this study further supports the need for continued commitment to the development of comprehensive services.

4.1. Limitations

This review has limitations that need to be considered when interpreting the findings. We reviewed only studies published in peer reviewed journals, and grey literature may contain valid results that augment our findings. Only literature published in English and from 2000 to 2016 was reviewed. Due to the inclusion of a wide range of studies with different study designs and methodologies, it was not possible to perform a meta-analysis which would allow a quantitative analysis of risk and protective factors of losing care. Similarly, majority of the studies included were cross-sectional in design, limiting the ability to draw conclusions about the direction of causality. There exists a lack of consistency in definitions of retaining or not retaining/losing care of children in the studies, making comparisons between studies difficult. In many instances, data are presented in the literature without qualification of how not retaining care has been defined (i.e., losing care permanently or having the children taken into foster care). In general, most studies report associations between risk factors for the substance using mother losing care of their child/ren. This limited the opportunity to

assess which factors may protect against losing care. In response to these limitations, future research should attempt to use consistent terminologies to ensure that cross-study comparisons evaluate similar outcomes. In addition, more longitudinal study designs are needed to examine causality between factors associated with substance using mothers losing care of their children. In particular, there is a need for studies exploring protective factors for mothers who use substances retaining care of their child/ren, and how substance use treatment services could integrate such factors in their practices.

5. Conclusion

Our findings highlight the need for supportive services addressing the full array of maternal characteristics, psychological outcomes, patterns of substance use and forms of support that place children of substance using mothers at risk of child maltreatment and subsequent maternal loss of the child care. Although this review did not find strong evidence of the role of treatment for substances use on protecting mothers retaining care of their children, reviews of the literature have emphasized the need of a model of substance use treatment that integrates psychosocial determinants of health (Grella et al., 2006; Marsh & Smith, 2011). Providing services that meet the severe and multiple disadvantages of mothers who use substances is critical to preventing loss of child care and to improve maternal and child outcomes.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.chiabu.2017.05.005.

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