



The Association Between Adverse Child Health, Psychological, Educational and Social Outcomes, and Nondependent Parental Substance: A Rapid Evidence Assessment

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Abstract

Background: Between 5% and 30% of children in high-income countries live with a substance misusing parent, the majority of which is below dependent levels. However, little is understood about the impact of nondependent parental substance misuse upon children. **Methods:** We searched the international literature using rigorous systematic methods to identify studies examining parental substance misuse and adverse outcomes in children. The inclusion criteria were cross-sectional, longitudinal, case-control, and cohort studies; of children aged 0–18 years whose parents are high-risk substance misusers; reporting on their health, psychological, substance use, educational, and social outcomes. **Results:** We identified 36 papers (from 33 unique studies), most of which were assessed as being of medium to high methodological quality ($N = 28$). Parental nondependent substance misuse was found to be associated with adversity in children, with strong evidence of an association with externalizing difficulties ($N = 7$ papers, all finding an association) and substance use ($N = 23$ papers, all finding an association) in adolescents and some evidence of adverse health outcomes in early childhood ($N = 6/8$ papers finding an association). There is less evidence of an association between parental substance misuse and adverse educational and social outcomes. The body of evidence was largest for parental alcohol misuse, with research examining the impact of parental illicit drug use being limited. **Conclusion:** Methodological limitations restrict our ability to make causal inference. Nonetheless, the prevalence of adverse outcomes in children whose parents are nondependent substance misusers highlights the need for practitioners to intervene with this population before a parent has developed substance dependency.

Keywords

alcohol and drugs, prevention of child abuse, child abuse, family issues and mediators

Parental substance misuse is a prevalent and substantial child protection concern worldwide (Canfield, Radcliffe, Marlow, Boreham, & Gilchrist, 2017; HM Government, 2015). There is well-established evidence documenting the harmful effect of parental substance dependency has upon the child throughout their life course (Cleaver, Unell, & Aldgate, 2011). Children whose parents are dependent upon substances are more likely to suffer an injury (Advisory Council on the Misuse of Drugs, 2003; Bijur, Kurzon, Overpeck, & Schieidt, 1992), as well as an injury of greater severity (Damashek, Williams, Sher, & Peterson, 2009) and experience health problems which their parents may not respond effectively to (Cleaver et al., 2011). Preschool children are at risk of delays in cognitive and language development (Barnard, 2007) and greater likelihood of education deficits (Royal College of Physicians, 1995). They go on to have lower educational performance in adolescence

(Kolar, Brown, Haertzen, & Michaelson, 1994), resulting in poor life chances (Cleaver et al., 2011). Parental substance dependency has been found to negatively affect the structures and functions of the family (Velleman & Templeton, 2007). This includes disrupting family routines and rituals (Holland,

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Forrester, Williams, & Copello, 2014), affecting the quality of the relationship between the parent and the child (Cleaver et al., 2011), lower levels of parent–child supervision (Kandel, 1990), harsh parenting (Kelley, Lawrence, Millettich, Hollis, & Henson, 2015), higher prevalence of domestic violence and other traumatic events (Sprang, Staton-Tindall, & Clark, 2008), and family deprivation (Holland et al., 2014).

Many factors have been highlighted as possible mechanisms that impact upon the child, these include direct exposure to alcohol and/or drug use and to other users (Advisory Council on the Misuse of Drugs, 2003), ineffective parenting practices and a reduction in parenting capacity brought about by the intoxicating effect of the substance and/or withdrawal from it (Kandel, 1990; Miller, Smyth, & Mudar, 1999), and a lack of parental emotional availability and warmth (Suchman, Rounsaville, DeCoste, & Luthar, 2007) as well as greater likelihood of experiencing trauma such as abuse or neglect as a child (Dube et al., 2001). Due to the potential negative impact on the child, parental substance dependence is often identified as a risk factor in child welfare and child protection assessments. In England, 18% of all children in need assessments identify parental drug misuse and 19% identify parental alcohol misuse (Department for Education, 2016). In the United States, parental substance misuse has been associated with up to two thirds of all child maltreatment cases (Traube, 2012).

It has been estimated that 162,000 children (1%) in England may live with a dependent opiate-using parent (Department for Work and Pensions, 2017) and between 189,119 (1%) and 207,617 (2%) children who live with an alcohol-dependent parent (Pryce et al., 2017). A far larger number of children are likely to live with substance-misusing parents whose use does not meet the diagnostic criteria for dependence. Research estimates that between 5% and 30% of children in European countries live with at least one parent who misuses substances (European Monitoring Centre for Drugs and Drug Addiction [EMCDDA], 2010), 10.5% of children in the United States, and 13% of children in Australia (Dawe et al., 2007). In the United Kingdom, 30% of children aged under 16 years live with at least one parent who misuses alcohol and 8% with a parent who misuses illicit drugs (Manning, Best, Faulkner, & Titherington, 2009). Moreover, 14% of UK infants (aged under 1 year) are exposed to parental problem, drinking, or illicit drug misuse (Manning, 2011), while U.S. research estimates 13% of mothers are misusing alcohol 1 year after delivery (Liu, Mumford, & Petras, 2015).

Study Objectives

Despite the high prevalence of parental substance misuse that is below the diagnostic criteria for dependence, little is understood about the impact of such patterns of parental substance misuse upon children. As the number of children living with a substance-misusing parent is higher than those living with a substance-dependent parent, the greatest burden of harm on a population level is likely to be experienced by these children. The furthering of knowledge in this area is fundamental to

enable effective and early responses to address the needs of the families affected. This rapid evidence assessment reviews published evidence reporting on adverse health, psychological, substance use, educational, and social outcomes of children of nondependent substance-misusing parents. We limit our review to high-risk patterns of parental substance misuse.

Method

The international literature was searched in November 2016 using electronic databases Medline (OVID), PsychoINFO (OVID), CINAHL (EBSCO), SCOPUS, Applied Social Science Index and Abstract (ProQuest), International Bibliography of Social Science (ProQuest), ProQuest Criminal Justice (ProQuest), ProQuest Social Science Journals (ProQuest), ProQuest Sociology (ProQuest), Social Service Abstracts (ProQuest), and Sociological Abstracts (ProQuest). Due to population flux and changes in economic conditions, we restricted our search for evidence to publications from 1998 onward. A search strategy using mesh terms, thesaurus headings, Boolean, and proximity operators was adapted for each database and implemented.

Review Inclusion Criteria

Two researchers independently screened all titles and abstracts using specified inclusion and exclusion criteria, retrieving full articles for all potentially eligible studies and evaluating in full text. Discrepancies at each stage were resolved by discussion or by consulting a third researcher if consensus could not be reached. Studies adopting a cross-sectional, longitudinal, case-control, and cohort design were included if the sample consisted of children aged 0–18 years whose parents were high-risk substance misusers. To be included, studies must report on parental substance misuse that meets one of the following criteria:

- a pattern of alcohol consumption that leads to the presence of physical or psychological problems (typically over 35 units per week for women and over 50 units per week for men);
- frequent illicit drug misuse (more than once per month as defined by the Crime Survey for England and Wales); and
- alcohol or illicit drug abuse defined as a maladaptive pattern of drinking/drug use, leading to clinically significant impairment or distress, as manifested by at least one related problem in a 12-month period (failure to fulfill major role obligations, use in situations in which it is physically hazardous, alcohol or drug-related legal problems, having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of alcohol or drugs; American Psychiatric Association, 2013).

Further, studies were required to include comparison samples of children whose parents were not substance misusers.

The condition of interest was adversity experienced by the child defined as any negative health, psychological, child substance use, educational, and social effect. A health harm includes direct impact (e.g., brought about by accidental ingestion by the child or exposure to the substance or contaminated environments) or indirect impacts (e.g., child physical injury, health service usage, fatality); psychological harm such as internalizing (e.g., emotional or behavioral problems that are focused inward such as depression, anxiety, dissociative disorder, and eating disorder) and externalizing problems (e.g., behaviors that are directed toward the external environment including physical aggression, disobeying rules, and anti-social and offending behaviors); substance use by the child includes early onset of alcohol and/or drug use, frequent use, and experience of alcohol and/or drug problems; educational impact includes school attainment, punctuality, truancy, or suspension; and social impact includes parent–child relationship quality, family functioning and home environment, parent supervision, and experience of abuse.

Papers were excluded if $\geq 50\%$ of the parent sample were dependent upon substances other than tobacco (defined as those with a diagnosis of dependence, in receipt of agonist prescribing or attendance at treatment services); insufficient detail is reported for the review team to confidently assess the criteria for high-risk substance misuse levels; were reporting on a qualitative study or were not published in English. The methodological quality of each study included was assessed according to the criteria presented in the quality assessment tool for systematic reviews of observational studies (Wong, Cheung, & Hart, 2008). This scale is based on a cumulative score across 5 items: external validity, reporting (2 items), bias, and confounding factors. Studies achieving 67% or more in scoring were regarded as high quality, 34–66% medium, and less than 34% low quality. We have standardized the language used within the review when referring to all studies meeting the criteria for high-risk parental substance misuse. We use the term parental substance misuse when referring to studies that report on parents who misuse alcohol and/or drugs. When the source study examines only alcohol or drug misuse, we use the term parental alcohol misuse or parental drug misuse, respectively. Within the tables and figures, however, we will include further clarification relating to the specific levels reported upon within the source studies.

Results

Description of Studies

We identified 36 papers (reporting on 33 unique studies) that reported upon adverse outcomes of children of nondependent parental substance misusers. The majority ($N = 17$) of the studies were conducted in the United States, 5 in the United Kingdom and 12 in other European countries and two other countries worldwide (Australia and Korea). The sample sizes of the included studies ranged from 30 to 740,618 (mean sample 23,896). We assessed 13 studies as being of high

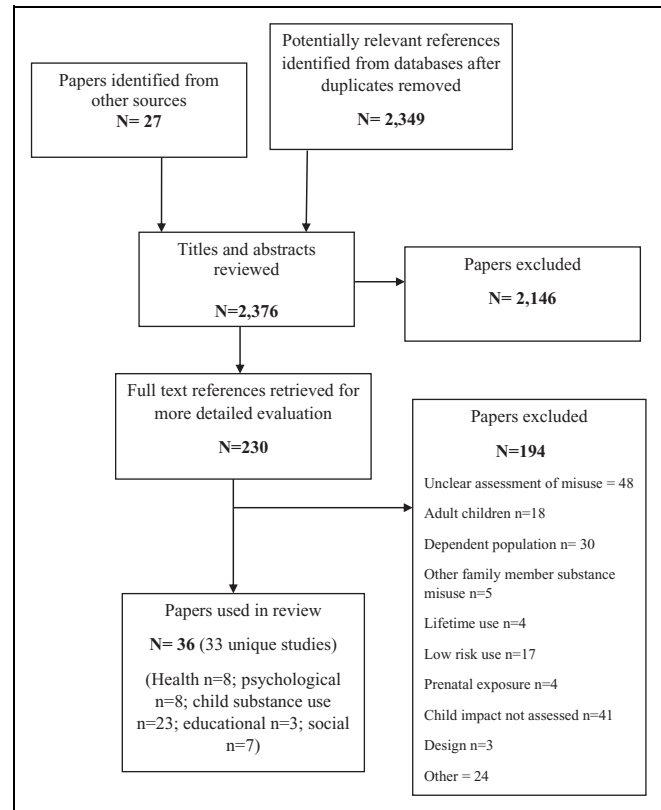


Figure 1. Flow of studies.

methodological quality, 15 of medium quality, and 8 of low quality. We have divided the adverse child outcomes into physical health, psychological well-being, child substance use, educational, and social. Figure 1 provides further details of the flow of the studies identified for the review, and the summary of findings for the included studies is presented in Table 1. Table 2 highlights the implications for practitioners working with children at different developmental stages.

Child Health Impact

Six unique studies showed a significant positive association between parental substance misuse and negative child health outcomes. Baker et al. (2015) and Tyrrell, Orton, Tata, and Kendrick (2012) conducted high-quality large UK population-based matched nested case-control studies investigating the association between maternal alcohol misuse and other risk factors for accidental child injury aged 0–5 years. Children whose mother’s medical record showed a history of alcohol misuse were found to have a 2-fold higher odds of long bone fracture (odds ratio [OR] = 2.33, 95% CI [1.13, 4.82], $p < .05$; Baker, Orton, Tata, & Kendrick, 2015) and a 5-fold higher odds of medicinal poisoning (OR = 5.44, 95% CI [1.99, 14.91], $p < .01$; Tyrrell, Orton, Tata, & Kendrick, 2012) compared to those without a record of maternal alcohol misuse. A large, high-quality, retrospective population study based on Finnish health-care registers found that children of substance-misusing mothers were hospitalized due to injury or illness significantly

Table 1. Evidence of Adverse Child Health, Psychological, Substance Use, and Educational and Social Outcomes.

Author, Date, Country	Cohort Number	Age of Child Participants	Evidence of Harm	Study Quality
Health impact				
Baker, Orton, Tata, and Kendrick (2015), United Kingdom	N = 26,117	Birth–5 years	Children of mothers who misuse alcohol are twice as likely to experience long bone fracture	High
Cornelius et al. (2004), United States	N = 385	10–16 years	Fathers' substance misuse is associated with increased likelihood of dental abnormalities in sons	Low
Jeffreys, Hirte, Rogers, and Wilson (2009), Australia	N = 99	<12 months–15 years	Parental substance misuse is reported to be associated with poorer dental hygiene and healthcare usage—no formal statistical testing conducted	Low
Joya (2009), Spain	N = 90	18 months–5 years	11.8% of children whose parents misuse cocaine are underweight (below 10th percentile) compared to 1.6% children of parents who do not misuse cocaine	Low
Raitasalo, Holmila, Autti-Ramo, Notkola, and Tapanainen (2015), Finland	N = 54,519	0–7 years	Children of alcohol misusing mothers are almost twice as likely to be admitted to hospital	High
Tarokh and Carskadon (2010), United States	N = 30	9–10 years	No association found between parental alcohol misuse and child sleep disturbance	Low
Tarokh et al. (2012), United States	N = 48	9–10 years; 15–16 years	No association found between parental alcohol misuse and child sleep disturbance	Low
Tyrrell, Orton, Tata, and Kendrick (2012), United Kingdom	N = 19,528	0 to ≥37 months	Children of alcohol misusing mothers (recorded in medical records within last year) are 5 times as likely to suffer medicinal poisoning	High
Psychological impact—externalizing difficulties				
Finan Schulz, Gordon and Ohannessian (2015), United States	N = 492	Mean = 16.15 years	Mothers' alcohol misuse is associated with rule-breaking and aggressive behavior in girls and fathers' alcohol misuse is associated with aggressive behavior in boys but not girls or rule breaking	High
Kendler et al. (2013), United Kingdom	N = 4,231	Birth–12 years	Neither mothers' nor fathers' alcohol misuse is associated with child conduct difficulties at 42 months or child conduct symptoms 13 years or antisocial behavior at 15 years. Fathers' but not mothers' alcohol misuse is associated with hyperactivity at 42 months	High
Lee and Cranford (2008), Korea	N = 482	12–16 years	Parental alcohol misuse is associated with externalizing difficulties in children	Medium
Malone, Iacono, and McGue (2002), United States	N = 2,766	13–16 years	Fathers' alcohol misuse is associated with conduct disorder and disruptive disorders but not attention deficit hyperactivity disorder or oppositional defiant disorder	High
Malone, McGue, and Iacono (2010), United States	N = 2,766	17 years	Mothers' alcohol misuse is associated with conduct disorder, disruptive disorders, and oppositional defiant disorder (in girls only) but not attention deficit hyperactivity	High
Rossov, Pape, and Wichstrom (1999), Norway	N = 10,839	12–20 years	Parental alcohol misuse is associated with violent behavior in children	Medium
Torvik, Rognmo, Ask, Roysamb, and Tambs (2011), Norway	N = 8,984	13–19 years	Both mothers' and fathers' substance misuse is associated with attention difficulties and conduct problems	High
Psychological impact—Internalizing difficulties				
Lee and Cranford (2008), Korea	N = 482	12–16 years	Parental alcohol misuse is associated with internalizing behaviors in children	Medium
Malone et al. (2002), United States	N = 2,766	13–17 years	Fathers' alcohol misuse is not associated with depression in children	High
Malone et al. (2010), United States	N = 2,766	17 years	Mothers' alcohol misuse is not associated with depression in children	High
Ohannessian (2012), United States	N = 1,001	Mean = 16.09 years	Fathers' and mothers' alcohol misuse (mediated by parent–child communication) is associated with depression in boys and girls	Medium

(continued)

Table 1. (continued)

Author, Date, Country	Cohort Number	Age of Child Participants	Evidence of Harm	Study Quality
Child's substance use				
Cranford, Zucker, Jester, Puttler, and Fitzgerald (2010), United States	N = 259	9–11 years; 12–14 years; 15–17 years	Mothers' alcohol misuse is not associated with child alcohol use, fathers' alcohol misuse is associated with number of times the child is intoxicated but not any child drinking, number of drinking days, or any intoxication	Medium
Delaney-Black et al. (2011), United States	N = 559	14 years	Current caregiver cocaine misuse is associated with teen cocaine use	Medium
Finan, Schulz, Gordon, and Ohannessian (2015), United States	N = 492	Mean = 16.15 years	Mothers' alcohol misuse is associated with drug use in girls (but not boys) and alcohol use in boys (but not girls), fathers' alcohol misuse is associated with drug and alcohol use in boys but not girls	High
Haugland, Strandheim, and Bratberg (2012), Norway	N = 2,399	Mean = 18.3 years	Being exposed to parental intoxication is associated with child repeat intoxication, frequent alcohol use, and experimented with drugs	Medium
Haugland, Holmen, Ravndal, and Bratberg (2013), Norway	N = 5,032	13–19 years	Fathers' alcohol use is associated with high alcohol consumption in both boys and girls and alcohol intoxication in girls only. Mothers' alcohol misuse, frequent alcohol intoxication in girls, and high alcohol consumption in boys.	High
Haugland, Holmen, Krokstad, Sund, and Bratberg (2015), Norway	N = 2,306	Mean = 16.2 years	Both boys and girls are over 3 times more likely to get intoxicated with alcohol if they have seen their parents intoxicated	Medium
Hofler et al. (1999), Germany	N = 1,877	14–17 years	Family history of marijuana misuse is associated with child marijuana use	Medium
Hopfer, Stallings, Hewitt, and Crowley (2003), United States	N = 781	Mean = 15.7 years	Parent marijuana misuse is associated with child marijuana use	Medium
Jeffreys et al. (2009), Australia	N = 99	<12 months–15 years	Parental substance misuse is reported to encourage child substance use—no formal statistical testing conducted	Low
Jennison (2014)	N = 4,648	Mean = 16.3 years	Children are almost 3 times as likely to drink heavily if their fathers are alcohol misusers	Medium
Keeley, Mongwa, and Corcoran (2015), Ireland	N = 2,716	15–17 years	One parent substance misuser is associated with child frequent alcohol use and drug use in past month but not frequent intoxication. A larger effect was found in families were two parent substance misusers	Medium
Kendler et al. (2013), United Kingdom	N = 4,231	Birth–12 years	Mothers' alcohol misuse is associated with alcohol use and problems at 15 years and 18 years, fathers' alcohol misuse is associated with alcohol use at 15 years and 18 years and alcohol problems at 18 years but not 15 years	High
Kerr, Stattin, and Burk (2012), United States	N = 125	13 years	Mothers' and fathers' alcohol misuse is associated with early onset alcohol use	Medium
Lieb et al. (2002), Germany	N = 2,427	14–24 years	Mothers' alcohol misuse is associated with regular alcohol use in children but not with child problematic use. Fathers' alcohol misuse is associated with regular alcohol use and problematic use.	Medium
Malone et al. (2002), United States	N = 2,766	14 years	Fathers' alcohol misuse is associated with tobacco, alcohol, illicit drug use, and dependence as well as the child having been intoxicated with alcohol. Children whose fathers misuse alcohol are more likely to have alcohol or drug problems	High
Malone et al. (2010), United States	N = 2,766	17 years	Mothers' alcohol misuse is associated with number of drugs tried and maximum alcohol consumption in children	High
Ohannessian (2012), United States	N = 1,001	Mean = 16.09 years	Fathers' but not mothers' alcohol misuse is associated with child alcohol use	Medium
Rossow et al. (1999), Norway	N = 10,839	12–20 years	Child exposure to frequent parental intoxication is associated with child alcohol intoxication	Medium

(continued)

Table 1. (continued)

Author, Date, Country	Cohort Number	Age of Child Participants	Evidence of Harm	Study Quality
Shorey et al. (2013), United States	N = 927	14–16 years	Mothers' alcohol misuse is associated with alcohol use in girls but not boys, cigarette use in boys and girls, marijuana and ecstasy use in boys but not girls. Fathers' alcohol misuse is associated with all measures of alcohol and drug use in both boys and girls	Medium
Swaim, Beauvais, Walker, and Silk-Walker (2011), United States	N = 251	13–18 years	Both parents misusing alcohol is associated with child alcohol problems at 18 years	Medium
van der Zwaluw et al. (2008), the Netherlands	N = 428	Mean = 15.2 years; mean = 13.4 years	Mothers' and fathers' alcohol misuse is associated with increased level of alcohol use in children	Medium
Vermeulen-Smit et al. (2012)	N = 2,319	15 years	Children are more likely to initiate alcohol use if their mothers incidentally drink and fathers drink heavily, or if both parents are heavy weekend drinkers	High
Yule, Wilens, Martelon, Simon, and Biederman (2013), United States	N = 465	Mean = 17.92 years	Children whose mothers misuse drugs are 7 times more likely to use substance than those children whose mothers do not	Low
Educational impact				
Berg, Back, Vinnerljung, and Hjern (2016), Sweden	N = 740,618	16 years	Mothers' and fathers' alcohol-related hospital admissions are associated with poorer educational attainment. Children are twice as likely not being eligible for secondary school if their mothers or fathers have had an alcohol-related hospital admission. And almost 3 times as likely if both parents have had alcohol-related hospital admissions	High
Jeffreys et al. (2009) Australia	N = 99	<12 months–15 years	Approximately one fifth of children whose parents misused substances had poor school attendance and punctuality	Low
Jennison (2014) USA	N = 4,648	Mean 16.3 years	Children whose fathers were alcohol misusers when they were <10 years are twice as likely to have school-related behavior problems. If there is also marital conflict in the home, children are over 3 times as likely to have school-related behavior problems	Medium
Social impact				
Forrester and Harwin (2000), United Kingdom	N = 50	Birth–18 years	68% of parents whose children were on child protection register were known to use substances by the social worker. 52% were considered by the social worker to be at levels/patterns of some concern	Low
Freisthler, Johnson-Motoyama, and Kepple (2014), United States	N = 3,023	≤12 years	Inconsistent results regarding an association between parental alcohol misuse and neglectful supervision by parent	Medium
Hussey and Guo (2005), United States	N = 126	Mean = 9.86 years	Children whose parents misuse alcohol were discharged from child care 183% quicker. Parental drug misuse was not associated with length of stay	Low
Jeffreys et al. (2009), Australia	N = 99	<12 months–15 years	33.3% of children whose parents were substance misusers were recorded as experiencing emotional abuse compared to 8.3% of children whose parents did not misuse substances	Low
Jennison (2014), United States	N = 4,648	Mean = 16.3 years	Fathers' alcohol misuse is associated with poor father–child bonding	Medium
Raitasalo et al. (2015), Finland	N = 54,519	0–7 years	Children of alcohol misusing mothers are 5 times more likely to be placed in care, 7 times as likely if their mothers misuse drug, and almost 9 times as likely if they misuse both alcohol and drugs drug abusing mothers	High
van der Zwaluw et al. (2008), the Netherlands	N = 428	13–15 years	Parental alcohol misuse was not associated with social support of adolescents	Medium

Table 2. Evidence of Adversity by Age of Child: Implications for Practitioners Working With Children.

Age of Children	Potential Impact Upon Children
Early childhood (0–7 years)	Greater likelihood of being involved in an accident, self-poisoning incident, and sustaining an injury (Baker et al, 2015; Tyrrell et al, 2012). Requirement for medical attention and admittance to hospital (Raitasalo et al, 2015). More likely to require inpatient care for a longer period (Raitasalo et al, 2015). Inadequate diet and underweight. Children maybe left in places of unknown safety (Freishleret al, 2014).
Early adolescence (10–13 years)	Poor dental hygiene resulting in higher likelihood dental problems, however may not access dental care (Cornelius et al, 2004). Low shyness, hyperactivity, attention difficulties, and conduct problems (Kendler et al, 2013). Early onset alcohol use, cigarette use, and illicit drug use (Cranford et al, 2010; Jeffreys et al, 2009; Kendler et al, 2013; Kerr et al, 2012). Externalizing and internalizing difficulties may begin to emerge (Lee and Cranford, 2008; Malone et al, 2002; Rossow et al, 1999; Torvik et al, 2011).
Middle adolescence (14–16 years)	Externalising difficulties including conduct problems, delinquent behaviour, rule breaking, aggressive behaviour, attention difficulties (Finan et al, 2013; Lee and Cranford, 2008; Malone et al, 2002; Rossow et al, 1999; Torvik et al, 2011). Internalising difficulties including depression and anxiety Lee and Cranford, 2008; Ohannessian, 2012). Regular substance misuse include frequent intoxication, illicit drug use and the development of substance misuse problems (Cranford et al, 2010; Delaney-Black, 2011; Finan et al, 2013; Haugland et al, 2013; Hofler et al, 1999; Hopfer et al, 2003; Jeffreys et al, 2009; Jennison et al, 2014; Keeley et al, 2015; Lieb et al, 2002; Malone et al, 2002; Rossow et al, 1999; Shorey et al, 2013; Swaim et al, 2011; van der Zwaluw et al, 2008; Vermeulen-Smit et al, 2012; Yule et al, 2013). Poor school attendance relating to truancy, absenteeism and punctuality (Berg et al, 2016; Jeffreys et al, 2009; Jennison et al, 2014). Poor attachment to parents, relationship and communication problems within the family (Jennison et al, 2014).
Late adolescence (16–18 years)	Violent behavior, attention difficulties, alcohol and drug problems, and school-based conduct difficulties (Cranford et al, 2010; Finan et al, 2013; Haugland et al, 2012; Haugland et al, 2013; Haugland et al, 2015; Hofler et al, 1999; Jennison et al, 2014; Keeley et al, 2015; Lieb et al, 2002; Malone et al, 2010; Ohannessian, 2012; Rossow et al, 1999; Swaim et al, 2011; Torvik et al, 2011; Yule et al, 2013).

more frequently and for longer than children whose mothers did not misuse substances. Inpatient care episodes per 1,000 children were almost double in the group of children with substance misusing mothers to that of the comparison group (2,117 vs. and 1,184) with a mean duration of 3.3 days and 2.4 days, respectively (Raitasalo, Holmila, Autti-Ramo, Notkola, & Tapanainen, 2015). This association was most pronounced in mothers who misused both alcohol and drugs. Remaining studies were of low quality; therefore, caution should be applied when considering results. These studies reported that poor diet (Jeffreys, Hirte, Rogers, & Wilson, 2009), low weight (below the 10th percentile; Joya et al., 2009), and increased rates of dental problems (Cornelius et al., 2004, Jeffreys et al., 2009) in children were associated with substance misuse by parents, while studies have found no correlation between parental alcohol misuse and sleep in children (Tarokh & Carskadon, 2010; Tarokh et al., 2012).

Psychological Impact

There is strong evidence of significant positive association between parental alcohol misuse and externalizing problems, with all seven papers (reporting on six unique studies) of medium to high quality found a significant and positive relationship (Kendler et al., 2013; Lee & Cranford, 2008; Malone, Iacono, & McGue, 2002; Malone, McGue, & Iacono, 2010; Torvik, Rogmo, Ask, Roysamb, & Tambs, 2011). Parental alcohol misuse has been found to be associated with conduct problems (Kendler et al., 2013; Malone et al., 2002, Malone et al., 2010), most defiant disorders (Malone et al., 2002;

Malone et al., 2010), delinquency (Kendler et al., 2013), and violence (Rossow, Pape, & Wichstrom, 1999). There were mixed findings relating to attention and hyperactivity difficulties in the children of alcohol misusers, with two studies finding a significant association (Kendler et al., 2013; Torvik et al., 2011), while two papers from one linked study found no association (Malone et al., 2002; Malone et al., 2010). Only one study examined the impact of parental misuse of substances other than alcohol (Torvik et al., 2011), finding an association of modest effect size upon child attention and conduct problems. Studies mostly reported association between both mothers' and fathers' substance misuse and child externalizing difficulties. One paper reported that the relationship was greater when maternal alcohol misuse was present (Torvik et al., 2011). A further study found gender-modeling associations between the parent and child; maternal alcohol misuse was found to be significantly correlated with rule-breaking and aggressive behavior in girls but not in boys, while paternal alcohol misuse was found to be significantly associated with aggressive behavior in boys but not girls (Finan, Schulz, Gordon, & Ohannessian, 2015).

There was limited evidence of a significant association between maternal or paternal alcohol misuse and internalizing disorders in children. In a medium quality study using child report measures of parental drinking, both paternal and maternal alcohol misuse were related to depression and anxiety for girls but not for boys (Ohannessian, 2012). In a small, medium-quality cohort study of Korean school children aged 12–16 years, parental alcohol misuse was found to be

positively and significantly associated with internalizing disorders (Lee & Cranford, 2008). Associations in a high-quality study however did not reach significance (Malone et al., 2002; Malone et al., 2010).

Child Substance Use Impact

There is a large volume of evidence that parental substance misuse influenced their child's own substance use, with all 23 included papers (reporting on 20 unique studies) finding a significant association. This evidence is mostly of medium to high quality with only two studies being of low quality (Jeffreys et al., 2009; Yule, Wilens, Martelon, MSimon, & Biederman, 2013). Parental alcohol and/or drug misuse was significantly associated with early onset adolescent drinking (Kerr, Capaldi, Pears, & Owen, 2012; Vermeulen-Smit et al., 2012), alcohol consumption (Cranford, Zucker, Jester, Puttler, & Fitzgerald, 2010; Haugland, Holmen, Ravndal, & Bratberg, 2013; Jennison, 2014; Keeley, Mongwa, & Corcoran, 2015; Shorey et al., 2013; Vermeulen-Smit et al., 2012), alcohol intoxication (Haugland, Holmen, Krokstad, Sund, & Bratberg, 2015; Haugland et al., 2013; Haugland, Strandheim, & Bratberg, 2012; Keeley et al., 2015; Rossow et al., 1999), and the development of alcohol problems (Kendler et al., 2013; Lieb et al., 2002) as well as adolescent illicit drug use (Delaney-Black et al., 2011; Haugland et al., 2012; Hofler et al., 1999; Hopfer, Stallings, Hewitt, & Crowley, 2003; Jeffreys et al., 2009; Keeley et al., 2015; Malone et al., 2002; Malone et al., 2010; Shorey et al., 2013). Having two parents who misuse substances was highlighted as being particularly predictive of adolescent substance use (Keeley et al., 2015; Swaim, Beauvais, Walker, & Silk-Walker, 2011), with regular alcohol use being almost 4 times as likely ($OR = 3.83$, $CI [1.65, 8.89]$, $p < .01$) and past year illicit drug use almost 6 times as likely ($OR = 5.90$, $CI [2.54, 13.7]$, $p < .001$) as adolescents with two non-substance misusing parents (Keeley et al., 2015).

There were mixed findings as to whether the mothers' or fathers' substance misuse had the strongest association with child alcohol and/or drug use. Six studies found that both maternal and paternal substance misuse correlated with adolescents' alcohol (Finan et al., 2015; Haugland et al., 2013; Keeley et al., 2015; van der Zwaluw et al., 2008) and drug use (Finan et al., 2015; Keeley et al., 2015) to a similar size of effect. Studies found that only fathers' and not mothers' substance misuse was positively associated with adolescent drinking (Cranford et al., 2010; Ohannessian, 2012) and the range of substances used in adolescent children (Shorey et al., 2013). Further studies, however, reported only maternal alcohol misuse (Kerr et al., 2012) and maternal drug misuse (Yule et al., 2013) to be significantly associated with development of alcohol or drug misuse in children. When also considering child gender, both boys and girls have been found to be significantly more likely to engage with substance using behaviors if their parents misused alcohol, with boys in particular being found to experience a negative effect (Haugland et al., 2012).

Educational and Social Impact

Three papers of mixed quality reported on parental alcohol misuse and its association with negative child education outcomes. Using a large cohort of over 740,000 Swedish individuals, Berg, Back, Vinnerljung, and Hjern (2016) conducted a high-quality study finding that alcohol-related hospital admissions in parents were significantly associated with lower school performance in adolescents aged 15–16 years (Berg, Back, Vinnerljung, & Hjern, 2016). School behavioral problems were associated with paternal alcohol misuse in early childhood, with a 3-fold risk of truancy, absenteeism, suspensions, and conduct problems in a medium quality study (Jennison, 2014). Family dysfunction, conflict, and ineffectual parenting were found to be strongly correlated to adverse school outcomes for children in families with an alcohol misusing father. The low levels of attachment and bonding to biological fathers found to be associated with an increase in school-related behavioral problems of the children were notable. A small low-quality study in Australia also found children of substance misusers were more often absent or late for school (Jeffreys et al., 2009).

The literature on the social outcomes of children whose parents misuse substances was mixed. Four studies of medium quality considered the association between alcohol misusing parents and the parent–child relationship. While one study showed no significant impact upon the support provided to the child from the parent (van der Zwaluw et al., 2008), a further study reported that children of alcohol misusing parents were significantly less likely to feel emotionally close to their father, either due to the impact of alcohol misuse upon the father's behavior, conflict within the home, abdication of family responsibilities, or estrangement (Jennison, 2014). Parental bonding and the parent–child relationship were negatively related to both mothers' and fathers' alcohol misuse in other research (Shorey et al., 2013). There is conflicting evidence that parental monitoring is negatively associated with parental alcohol misuse. One study reported a significant association between parental alcohol misuse and lower levels of parental monitoring (Shorey et al., 2013), while a further study reported that parental alcohol misuse was unrelated to a number of measures of neglectful parenting practices (Freisthler, Johnson-Motoyama, & Kepple, 2014).

A significant association with a particularly large effect was shown in a high-quality study of the number of children of substance misusing mothers who were placed in care (Raitasalo et al., 2015). Children of alcohol misusing mothers were 5 times more likely to be placed in care by their seventh birthday than those raised by nonalcohol misusing parents. Those born to drug misusing mothers were over 7 times more likely to be in care by the age of 7, while children whose mothers misused both alcohol and drugs faced a 9-fold increased risk. These relationships persisted after controlling for the child's gender and mothers' socioeconomic status. Once in care, children of substance misusing mothers were discharged 183% faster than those children whose mothers did not misuse substances

(Hussey & Guo, 2005). This somewhat counterintuitive finding is most likely to relate to an accelerated decision to place the children in permanent care however rather than reunification of the family. Further, the low quality of this study means that findings should be interpreted with caution. A cohort study of children taken into care also reported on the range of abuse children may experience while living within substance misusing homes (Jeffreys et al., 2009). Due to the small sample size in this study, no statistical testing could be conducted. As such, the existence of a correlation between parental substance use and abuse is unknown.

Discussion

It is clear from this evidence that nondependent parental substance misuse is associated with adversity in children. This evidence is more pronounced when both parents misuse alcohol and/or drugs or when one or more parents misuse a combination of alcohol and drugs. In early childhood (0–7 years), the evidence from high-quality studies suggests an increased likelihood of experiencing an injury or health concern, resulting in the need for medical care. The methodological quality of studies examining an association with diet, child weight, and dental health is however of low quality and should be interpreted with caution. Maternal alcohol misuse in particular is highlighted as a key predictor for poorer child health. This may in part relate to the greater role mothers tend to play in the child's early years. However, there was a paucity of research considering substances other than alcohol and relating to fathers' substance misuse that may result in a misleading focus on mothers.

The literature suggests that parental alcohol misuse increased the likelihood of externalizing problems in children, with a significant association being reported in all studies being of medium or high quality. There was less evidence for an association between parental substance misuse and internalizing difficulties such as depression and anxiety. Those showing an association were of medium quality and involved children exposed to parental intoxication or where family and/or parental factors are present, while a high-quality study did not find a significant correlation.

There was a large and methodologically robust evidence base consisting of 23 papers, all finding a significant and positive relationship between parental alcohol and/or drug misuse and the child's own use. The evidence appeared particularly strong in families where both parents misused substances or when the child was directly exposed to the substance misuse. Social learning theory explains that we learn behavior from observing, imitating, and modeling those around us (Bandura, 1997). It is possible that when children observe their parents consuming alcohol and/or drugs, it encourages the development of normative views about substance use. Further, the availability of alcohol or other substances within the home may increase the likelihood of adolescent use (Peeters, Koning, Monshouwer, Vollebergh, & Wiers, 2016).

There is emerging evidence that parental alcohol misuse is predictive of educational challenges including truancy, school-

related behavioral problems, and lower educational attainment, although the methodological quality of these studies varied. The involvement of child welfare services as well as out-of-home placements for children was also higher in children whose parents misuse substances. The evidence for an association with other social and relational difficulties is however mixed. There was some suggestion that parental alcohol use was associated with lower levels of parent–child bonding, communication, and overall relationship quality. However, evidence of neglectful parenting or inadequate parental supervision was limited and at times contradictory and as such caution should be exercised when drawing conclusions regarding an association between parental substance misuse and the quality of parental supervision. Methodological issues further limit the evidence.

Social workers often interact with families experiencing a wide range of difficulties. While social workers within children's welfare services consider it legitimate within their role to ask parents about their drug and alcohol use, they experience difficulty in identifying parents who are substance misusers (Galvani, Hutchinson, & Dance, 2013; Loughran, Honhman, & Finnegan, 2010). Typically, they rely upon observations of the parent's physical presentation and behavior, which is unlikely to detect levels of misuse below the diagnostic criteria for dependence (Galvani et al., 2013). Furthermore, those parents who are identified as being substance misusers often do not receive an intervention, with parents expressing reluctance to engage with specialist drug and alcohol treatment providers as they did not perceive themselves as having a substance misuse problem (Forrester & Harwin, 2006). This suggests that early, opportunistic intervention delivered by a nontreatment specialist may be more appropriate.

There is a large amount of high-quality evidence that has accumulated to support the effectiveness of alcohol screening and brief interventions with adults who have an alcohol use disorder with nondependent populations in primary care setting (Kaner et al., 2007; O'Donnell et al., 2013). However, there are no studies examining the effectiveness of screening and brief interventions with substance misusing parents including those whose children are involved with child welfare services. This represents a missed opportunity to intervene with this population before a parent has developed substance dependency. Such intervention has the potential to prevent the development of more problematic patterns of use and prevent harm to children. Social workers should engage in conversations with parents, which promote the parent's ability to link their substance misuse with adverse experiences and risk of negative outcomes for their child. Such an interaction may replicate the "teachable moment" found to be conducive of behavior change following the delivery of brief interventions within other settings (Babor & Grant, 1992) and improving outcomes for children.

Limitations

The evidence examined within this review provides support for an association between parental substance misuse and a

number of adverse child outcomes at different stages of development. There are however some notable gaps. In early childhood (0–7 years), the literature focuses upon the relationship between mothers' substance misuse and child physical health, with a paucity of research examining behavioral problems, parent–child bonding, or preparation for school as well as the impact of fathers' substance misuse. In early adolescence (10–13 years), there is a lack of research into child education outcomes, and in each stage of adolescence (10–18 years), there is a lack of research into parental substance misuse and child health. There is limited research that considers parental illicit drug misuse throughout the child's development, with the majority of research examining the difficulties in children of alcohol misusing parents.

Due to the inclusion of cross-sectional studies, causal relationships cannot be determined. Such naive comparisons of exposed and unexposed groups cannot adequately account for the many potential confounders nor precisely account for the measurement of effect (Fewell, Davey Smith, & Sterne, 2007). For example, genetic predisposition (Agrawal & Lynskey, 2008) and the interaction between genes and the environment (Cleveland & Wiebe, 2003) may result in intergeneration transmission of substance misuse. Alcohol permissive parenting (Ennett et al., 2016; Hung, Chang, Luh, Wu, & Yen, 2015), adolescent monitoring (Kerr, Stattin, & Burk, 2010), lower parent–child relationship quality (Donaldson, Handren, & Crano, 2016; El-Sheikh & Buckhalt, 2003; Shorey et al., 2013), and greater family conflict (El-Sheikh & Flanagan, 2001; Kelly et al., 2011) have been associated with increased child substance misuse. Furthermore, the direction of a reported relationship cannot be determined. For example, while children's conduct difficulties could be a result of parental alcohol misuse, a parent whose child has conduct difficulties may struggle to cope with their child's behavior and their alcohol consumption may increase in response. While longitudinal studies can highlight the temporal associations between variables and may offer greater insight into causation, such inferences are reliant upon the timing of the behavior in relation to the outcome. For example, studies examining the impact of parental substance misuse upon internalizing difficulties in children may assess children prior to the emergence of any symptoms or early childhood exposure to parental substance misuse may be undetected due to behavior change that predates study inclusion (Katikireddi, Green, Taylor, Smith, & Munafo, 2017).

Further Research

Further research into the impact of parental substance misuse upon the child is needed to address the gaps in the evidence. Specifically, research examining the various impacts of both alcohol and illicit drug misuse throughout the stages of the child's development. Future research should include both fathers and mothers and be sufficiently powered to enable analysis of the impact of mothers' versus fathers' use upon male and female children and utilize longitudinal design,

with regular follow-up throughout the child's development. This would offer opportunity for causal inferences and also enable age-related and temporal associations to emerge. There is also a need for more high-quality research examining the health, educational, and social impact of parental substance misuse. The significant variation in how substance misuse patterns are described within research has presented a great challenge to this review and ultimately in the further of knowledge in this area. There is a need for consistency in the use of terminology describing levels of parental substance misuse in future research.

In considering the evidence for the impact of nondependent parental substance misuse on children, focus invariably is on risks. There is also a need to consider the protective factors that may be present, which may enhance child resilience to harm. This review has highlighted evidence that an association between parental substance misuse is greater when both parents are substance misusers. Put another way, the presence of one nonsubstance misusing parent offers some protection. Using the language of protection, rather than risk, affords an opportunity to view such protective factors as a possible intervention mechanism to enhance resilience. Given the evidence identified that factors such as maternal closeness, attachment, and parent–child relationship quality are moderators of adversity (Shorey et al., 2013), future research should include a range of mediators and, importantly, moderators of harm, which may inform intervention development.

Conclusions

The findings of this review suggest that the vulnerability to adverse outcomes is not restricted to children living with substance-dependent parents. Rather, children may be affected by a wider continuum of harmful parental substance misuse; children who are likely to be less visible to practitioners. While practitioners may find it challenging to identify parents whose use is not within the dependent range (Galvani et al., 2013), intervening early in parental risk factors including alcohol and drug misuse to safeguard children has been highlighted in guidance for health, social care, and third sector partners (Department of Health, 2013; HM Government, 2015; Munro, 2011). As the number of children living with a nondependent substance misusing parent is likely to be greater than those living with a substance-dependent parent, intervening with nondependent parents is likely to bring about most benefit to children on a population level. Working to promote resilience and to enhance the child's protective factors is also important. Parents who do not misuse substances are a resource to this end. Moreover, intervening before a parent has developed a dependency has the potential to prevent the development of more problematic patterns of use and prevent harm to children.


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