Family focused interventions and intervention components that have combined or common impacts across domestic violence, mental ill-health and substance misuse: A systematic review and intervention components analysis protocol

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Background

Interventions targeting domestic violence, mental ill-health and substance misuse tend to be largely delivered in siloes by separate services and commissioners despite the fact that these three public health issues often co-occur (Mason & O'Rinn, 2014; Mason, Wolf, O'Rinn, & Ene, 2017; Zweig, Schlichter, & Burt, 2002). Individuals suffering from a combination of these issues are particularly vulnerable, at increased risk of harm, and are presented with multiple barriers to accessing siloed domestic violence/mental health/substance misuse services which fail to address and accept the complexity of individuals' needs (Safe Lives, 2019; Zweig et al., 2002). Within the family context these combined issues present yet another problem, with children who are exposed to domestic violence, mental ill-health and substance misuse being at risk of developing a number of problems later on in life (Bellis, Lowey, Leckenby, Hughes, & Harrison, 2014; Cleaver, Unell, & Aldgate, 1999; Hughes et al., 2017).

This study will involve a systematic review of randomised controlled trials (RCTs) examining the effectiveness of family focused interventions aiming to prevent parental domestic violence, mental ill-health and/or substance misuse and/or the negative impacts these three public health issues can have on children within the family unit. The study will explore; 1) which family focused interventions have a *combined* impacts on parental domestic violence, mental ill-health and/or substance misuse; and 2) which shared intervention components have *common* impacts across parental domestic violence, mental ill-health and substance misuse. The former will involve a narrative synthesis (Popay et al., 2006) of all relevant studies which report on two or more of the three outcomes of interest (i.e. parental domestic violence, mental ill-health and substance misuse). The latter will involve an Intervention Components Analysis (ICA; Sutcliffe, Thomas, Stokes, Hinds, & Bangpan, 2015) of all relevant studies which report on one or more of the three outcomes of interest.

The two parts of this review are important for different reasons. The first will help identify what the current '*best bet interventions*' are for families at risk of, or experiencing, domestic violence, mental ill-health and/or substance misuse. This will be of use for service providers and commissioners looking to prevent these co-occurring issues. The second will help identify what the '*best bet packages*' are for this target population, which will help inform the development of new interventions and the provision of current services. It will also highlight potential iatrogenic effects of intervention components and those that may warrant further consideration (i.e. those that have had positive impacts on some outcomes but are understudied in others).

Definitions

Domestic violence

Domestic violence will be defined according to the UK governments' definition of the term which is; *"any incident or pattern of incidents of controlling, coercive, threatening behaviour, violence or abuse between those aged 16 or over who are, or have been, intimate partners or family members, regardless of gender or sexuality. The abuse can encompass, but is not limited to, psychological, physical, sexual, financial and emotional"* (HM Government, 2019). This definition will be expanded, however, to recognise that domestic violence is a gendered issue, disproportionately affecting women and girls.

Mental ill-health

Mental ill-health will include common mental health disorders as defined by NICE (National Institute for Health and Care Excellence, 2011). These include; depression, anxiety (including generalised anxiety disorder and social anxiety), post-traumatic stress disorder (PTSD), panic disorder and obsessive-compulsive disorder (OCD) (National Institute for Health and Care Excellence, 2011).

Substance misuse

Substance misuse will be defined as use of a substance (illicit psychoactive drugs or alcohol), that is not in line with medical use, despite the negative impact this has on the individual or their family in relation to psychological, sociological, financial or physiological factors (Kroll & Taylor, 2003; WHO, 1994). For the purposes of this review, this definition will not include the use of tobacco as this is a drug which is more likely to cause harm later on in life rather than in the short-term (Advisory Council on the Misuse of Drugs (ACMD), 2018).

Family

Family will defined as at least one parent/carer (aged 16 years and over) who is the primary caregiver for at least one child (aged 18 years and below). Taking a life course approach, this definition will include adults who are pregnant and, therefore, soon-to-be the parent of a newborn child.

Prevalence of domestic violence, mental ill-health and substance misuse

Domestic violence, mental ill-health and substance misuse are recognised worldwide as significant public health issues. Below we consider the global prevalence rates of each of these three public health issues in turn, followed by the prevalence of co-occurring domestic violence, mental ill-health and substance misuse within the UK. The studies referenced below predominately report on the prevalence of these three issues

within the general adult population rather than parents specifically. This is due to a lack of literature in this area.

Prevalence of domestic violence

Global prevalence rates for lifetime physical and sexual intimate partner violence against women are estimated at 30%, ranging from 23.2% in high-income countries and 36.6% in African, Eastern Mediterranean, and South East Asia (WHO, 2013). Studies considering the prevalence of emotional and financial abuse in addition to these two types of domestic violence are rare, meaning that it is hard to estimate the prevalence of these on a global scale.

Focusing on England and Wales, the Office for National Statistics (2019) have estimated that approximately 6% of adults have experienced domestic violence within the last year, and around 21% have experienced domestic violence at some point since the age of 16.

Prevalence of mental ill-health

Global lifetime prevalence rates for common mental health disorders (including mood and anxiety disorders), have also been shown to be high. Across 17 countries, WHO report rates to range from 3.6% - 21.4% for mood disorders, and 5.2% - 31% for anxiety disorders (Kessler et al., 2009). In a recent meta-analysis pooling data from 39 countries, Steel et al. (2014) reports slightly lower lifetime prevalence rates for mood disorders (9.6%) and anxiety (12.9%).

Using data from the Adult Psychiatric Morbidity Survey (2014), Stansfield et al. (2016) found that 15.7% of adults were estimated to have symptoms of common mental health disorders in England and Wales, and around 8.1% displaying severe symptoms of common mental health disorders at the time of the survey. Participants reported lifetime prevalence rates were much higher, with 43.3% reporting that they had had a mental health disorder during their lifetime, and 19.5% and 33.7% of men and women respectively reporting that they had been diagnosed with a mental health disorder at some point.

Prevalence of substance misuse

Globally, it's estimated that around 24.8% of adults have been involved in illicit drug use during their lifetime and around 3.5% have been diagnosed with drug use disorders at some point (including drug dependence or drug abuse) (Degenhardt et al., 2019). The use of alcohol is much more widespread, with global lifetime prevalence estimated at 8.6% (for just non-abstainers this increases to 10.7%) with higher rates in high-income countries (Glantz et al., 2020).

In 2018 in England and Wales, it was estimated that around 19.8% of adults had taken an illicit drug within the last year and around 34.6% of adults had taken an illicit drug at some point during their lifetime (Home Office, 2018), with further data suggesting that 3.1% are likely to be dependent on drugs (C. Roberts, Lepps, Strang, & Singleton, 2016). Using data from the Adult Morbidity Survey (2014), it was estimated that around 57.5% of adults drank alcohol within England and Wales (Drummond, McBride, Fear, & Fuller, 2016). A much lower proportion of these were deemed to drink at 'hazardous' levels (19.7%), and lower still the number of those who were, or were likely to be, dependent alcohol drinkers (3.1%) (Drummond et al., 2016).

Prevalence of co-occurring domestic violence, mental ill-health and substance misuse

There are few studies assessing the prevalence of co-occurring domestic violence, mental ill-health and substance misuse within the general adult population or the family context however, an initial report has estimated that around 3.6% of children are living within a household where these three public health issues are present (Chowdry, 2018). Although researchers are yet to explore the risk factors for co-occurring domestic violence, mental ill-health and substance misuse, shared risk factors are likely to include socio-economic deprivation, which has been shown to be a risk factor for all three, separately (EMCDDA, 2015; Russello, 2007; Yakubovich, Heron, Feder, Fraser, & Humphreys, 2019).

Persistence of domestic violence, mental ill-health and substance misuse

Co-occurring parental domestic violence, mental ill-health, and substance misuse are public health issues that are likely to persist due to a distinct lack of services that recognise and address the complexity of individuals' co-occurring needs (Mason & O'Rinn, 2014). There is also evidence to suggest they are intergenerational; with children who are exposed to such issues being more likely than those not exposed to develop problems with violence, mental ill-health and substance misuse later on in life (Hughes et al., 2017). Thus, these issues may persist not only through an individuals' life course but also across future generations, creating a cycle of disadvantage.

Description of the intervention

Given the intergenerational nature of domestic violence, mental ill-health and substance misuse, and the negative impact these co-occurring public health issues can have on both parents and children (Cleaver et al., 1999), interventions aiming to prevent parental issues, and/or the negative impact these issues can have on children, offer a promising way to prevent the persistence of these intergenerational issues. For this reason, this review will focus on preventative family focused interventions that aim to either prevent parental domestic violence, mental ill-health and/or substance misuse and/or the negative impact these issues can have on children.

Family focused interventions will be defined as any psychosocial interventions that include a parent or child component. This may include a focus on parents' skills, knowledge and attitudes, parenting capacity, the parent-child relationship and interactions, working with the parent(s) in order to improve child outcomes (in the context of parental risk of, or experiences of, domestic violence, mental ill-health and/or substance misuse), or working with the child alone to reduce the impact of parental domestic violence, mental ill-health and/or substance misuse. Family focused interventions may involve the parent and/or child, or involve other family members in addition to the parent and/or child (e.g. partner/ex-partner/grandparents etc.). Where the intervention involves more than one family member, the intervention may be delivered to family members in a group, individually (separately, but simultaneously), or delivered using a combination of the two.

Family focused interventions are likely to be underpinned by theories such as family systems theory which argues individuals must be considered within the context of their family unit; with family interactions and dynamics playing a crucial role in an individuals' behaviours and emotions (Bowen, 1966). They are likely to include elements such as cognitive behavioural therapy, relationship interaction therapy, family therapy, motivational interviewing, advocacy or contingency management, home visiting, mindfulness, or peer support groups. They may also include components which address education, welfare, pharmaceuticals, financial/economic support and legal aid alongside the aforementioned psychosocial components.

Following consultation with local commissioners, *preventative* family focused interventions will include secondary and tertiary interventions as defined by the public health framework (Caplan, 1964), and also 'treatment' focused interventions, in recognition of the fact that these often include preventative elements, and could be utilised by commissioners for preventative efforts. Secondary interventions will be defined as interventions targeting individuals/populations at risk of, or experiencing early signs of, a particular problem, aiming to prevent this problem from occurring or getting worse; tertiary interventions will be defined as interventions aiming to prevent the negative impacts associated with a particular problem; and treatment interventions will be defined as interventions targeting an individual/population already experiencing a particular problem, aiming to alleviate symptoms associated with this problem. The review will not include primary prevention interventions (often referred to as universal interventions) for domestic violence, mental ill-health and/or substance misuse as the vast majority of these interventions are school-based targeting young children rather than the adult, or more specifically parent/carer, population (Caldwell et al., 2019; Stanley et al., 2015; Tancred et al., 2019). In addition, primary prevention interventions tend to measure changes in attitudes and beliefs rather than behaviour. Although it is likely that such changes may result in changes in behaviour later on in life, we cannot be certain that this is the case, with many studies failing to

measure behavioural outcomes. Indeed, there is limited evidence to suggest primary prevention interventions targeting domestic violence have an impact on such outcomes (Stanley et al., 2015).

How the intervention might work

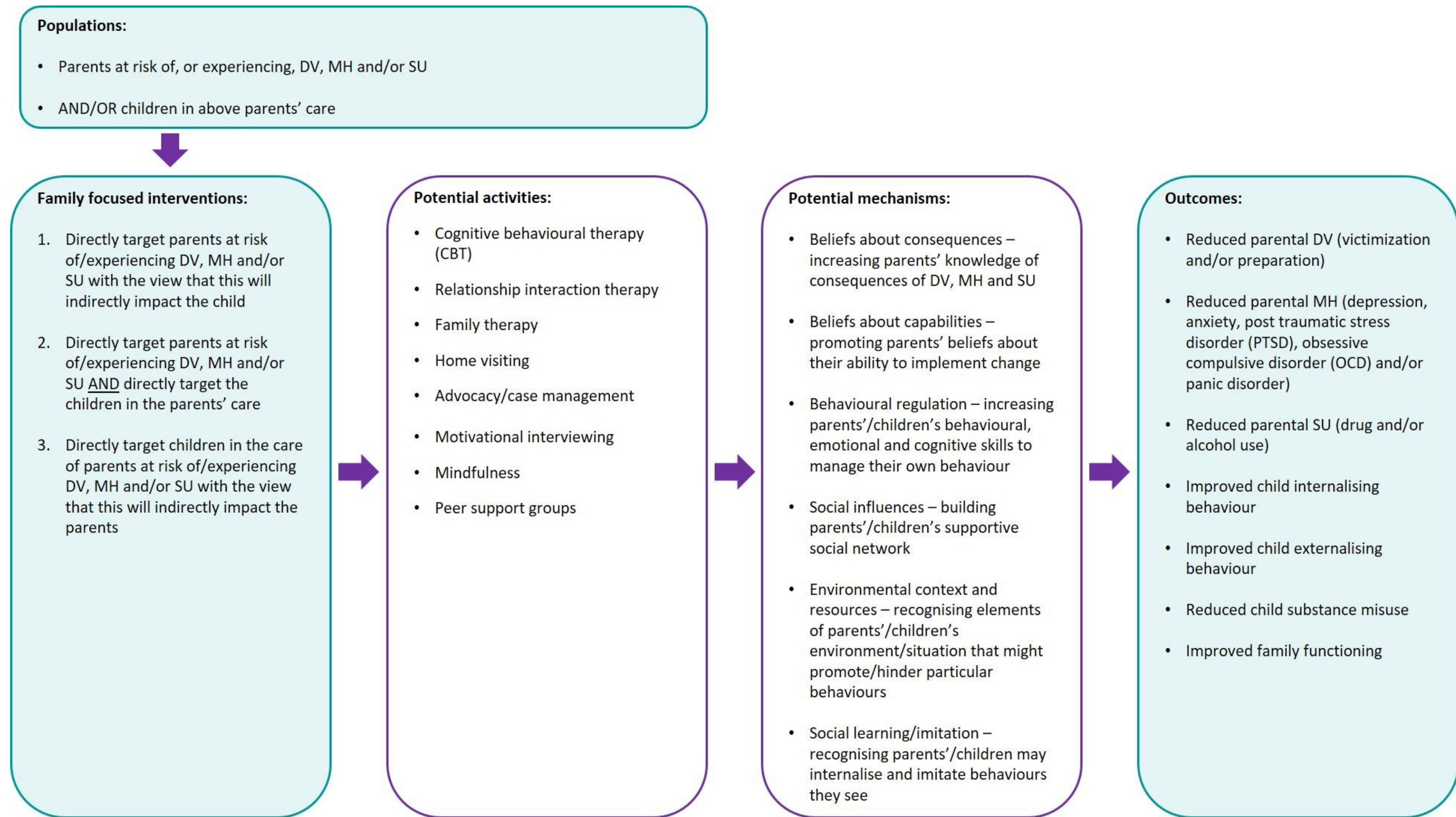
Expanding on the framework set out by Woodman, Simon, Hauari, and Gilbert (2019), family focused interventions included within this review can be said to fall into three main categories; 1) those that directly target parents' issues with the view that this will have an indirect impact on the child; 2) those that directly target parents' issues and directly target the negative impact these may have on children; and 3) those that directly target the negative impact these parental issues may have on children with the view that this will have an indirect impact on the parent. Adopting a family systems theory perspective (as described above; Bowen, 1966) it is argued that preventing/reducing parental domestic violence, mental ill-health and substance misuse is likely to have a positive impact on both the parent and child, and likewise, preventing/reducing the negative impacts these issues can have on the child is likely to have a positive impact on both the child and parent.

The psychosocial interventions family focused interventions employ are likely to have different theoretical underpinnings, employ different behavioural change techniques, and operate using different mechanisms in order to prevent parental domestic violence, mental ill-health and substance misuse and/or the negative impact of these three public health issues on children. Drawing from the work of Mitchie and colleagues (Carey et al., 2019; Connell et al., 2019; Johnston et al., in press), some of the key mechanisms interventions in this review are likely to use can be summarised as; 1) beliefs about consequences; 2) beliefs about capabilities; 3) behavioural regulation; 4) social influences; 5) environmental context and resources; and 6) social learning/imitation. Considering each of these in turn, *beliefs about consequences* involves thinking about what can be achieved/lost by adopting a particular behaviour and involves increasing awareness of the health, social, emotional and environmental consequences of domestic violence, mental ill-health and/or substance misuse in order to empower parents to make educated choices around their behaviours/actions. *Beliefs about capabilities* involves promoting parents' beliefs about their own ability to change and involves problem solving, promoting positive self-talk, and demonstrating, practicing and rehearsing behaviours that can be later employed at home (e.g. ways to communicate, play and interact with children). *Behavioural regulation* involves increasing behavioural, emotional, and/or cognitive skills parents'/children might need to manage their behaviour and involves techniques such as reducing negative emotions and substituting negative behaviours for more positive behaviours. *Social influences* recognises the influence relationships can have on promoting behaviour change and involves developing supportive relationships between parents and their peers and/or parents/children and professionals in order to socially encourage change.

Environmental context and resources involves recognising aspects of a parents' environment/situation that might promote/hinder particular behaviours and involves restructuring this environment to promote desired behaviours. Finally, *social learning/imitation* highlights how parents/children may internalise and imitate behaviours they see in others and involves encouraging and helping parents to model desired behaviours for their children in order to minimise any negative impacts domestic violence, mental ill-health and substance misuse might have on them within the home environment.

Diagram 1 illustrates the population, the types of family focused interventions the systematic review aims to examine, the activities these may involve, potential mechanisms, and potential outcomes.

Diagram 1: Populations, activities, mechanisms, and outcomes



Key: DV = Domestic Violence; MH = Mental ill-health; SU = Substance misuse.

Why it's important to do this review

There are a number of reviews that examine the effectiveness of family focused and/or psychosocial interventions targeting domestic violence, mental ill-health or substance misuse in isolation (e.g. Barlow, Bennett, Midgley, Larkin, & Wei, 2015; McGovern, Addison, Newham, Hickman, & Kaner, 2017; Rizo, Macy, Ermentrout, & Johns, 2011), however few that examine the effectiveness of interventions that have combined impacts on two or more of these public health issues. Studies looking at combined impacts tend to focus on two specific outcomes such as domestic violence and mental health (Keynejad, Hanlon, & Howard, 2020) or mental health and substance misuse (Hides, Quinn, Stoyanov, Kavanagh, & Baker, 2019; N. P. Roberts, Roberts, Jones, & Bisson, 2016). To our knowledge, there is only one review that aims to synthesise the evidence on interventions that have combined impacts on all three of these issues. In this systematic review, Mootz, Tol, Statz, Wainberg, and Mumey (2018) aim to explore which psychosocial interventions reduce household violence (including both domestic violence and child abuse) and mental ill-health and/or substance misuse in low- and middle-income countries. Although this review will offer valuable insights into this area, it tells us little about interventions in high-income countries which are likely to differ due to fundamental differences health care provision, and family focused interventions which might serve to *prevent* the intergenerational transmission of these issues.

Evidence to support which interventions might have combined impacts on these three issues within the family unit is an important concern for policy and practice within the UK. Commissioning and service provision within the UK currently remains largely siloed, making it difficult to support families with such co-occurring needs (Knight, Lowe, Brossard, & Wilson, 2017; Lowe & Plimmer, 2019). However, there are signs the UK is gradually moving away from this siloed way of thinking; highlighting the importance of addressing complex needs, particularly within the family context. For example, in 2012, the UK government launched the Troubled Families programme which aimed to provide support for families with complex needs such as domestic violence, mental ill-health, substance misuse, crime, anti-social behaviour and truancy (Bate, Bellis, & Loft, 2020; Department for Communities and Local Government, 2012). This came in recognition of the fact that these issues can have a substantial negative impact on the lives of parents and children, with serious case reviews indicating that children who grow up in households where domestic violence, mental ill-health and substance misuse are present often experience serious child maltreatment (Brandon et al., 2009). Following the first phase of this programme (2012-2015), the government extended the scheme to run until 2021 and there are hopes that this programme will be extended further, highlighting the continued need for programmes that address these co-occurring needs (Bate et al., 2020).

In addition to this, a number of recent reports have called for more interdisciplinary and collaborative working between domestic violence, mental ill-health and substance misuse services, in light of evidence to suggest these issues often co-occur and can have negative impacts on children within the family context (HM Government, 2017, 2019; Safe Lives, 2019). Following timely reports on how funders and commissioners can move towards creating such a system that moves away from soiled provision and towards addressing complexity (Knight et al., 2017; Lowe & Plimmer, 2019), addressing such co-occurring needs has become a priority for a number of local authorities (LAs). Recognising the complexity of peoples' lives, the need for continuous learning, and the need to work with the *whole* system in order to promote change (Lowe & Plimmer, 2019), several LAs have created 'Group Alliances' to fund services that respond to needs in more than one domain, particularly in relation to domestic violence, mental ill-health and substance misuse (e.g. Plymouth and Torbay, UK; see http://lhalliances.org.uk/).

Coupled with the fact that the UK have explicitly made preventative interventions a priority (Department of Health & Social Care, 2018), evidence on which preventive family focused interventions might have combined impacts on domestic violence, mental ill-health and substance misuse would be useful for commissioners and service providers looking to adapt their services and move towards more collaborative working which addresses the 'complexity' of families' everyday lives. Furthermore, in the absence of any effective, targeted interventions for this population, highlighting key intervention components which have common impacts across these three issues, and those which may have iatrogenic effects, is essential to enable the development of future interventions that target such co-occurring needs.

Objectives

This systematic review aims to synthesise the evidence on family focused psychosocial interventions that have combined impacts on parental domestic violence, mental ill-health and/or substance misuse. This will be achieved by conducting a narrative synthesis of interventions which have combined impacts on two or more of these issues. The review will also examine which intervention components have common impacts across these three public health issues by conducting an Intervention Components Analysis (ICA; Sutcliffe et al., 2015). Combined, the narrative synthesis and ICA aim to answer the following research questions:

1. Which psychosocial family focused interventions have *combined* impacts on parental domestic violence, mental ill-health and/or substance misuse?

2. Which shared intervention components have *common* impacts across parental domestic violence, mental ill-health and substance misuse?

a. Are there any intervention components that have iatrogenic effects across parental domestic violence, mental ill-health and substance misuse?

Methods

Criteria for considering studies for the systematic review

Types of studies

Studies will include randomised controlled trials (RCTs) of secondary preventive, tertiary preventive, and treatment family focused interventions targeting parents/carers who are at risk of, or experiencing, domestic violence, mental ill-health, and/or substance misuse and/or the children in their care. Studies will be restricted to RCTs (as opposed to including quasi-experimental trials) due to the anticipated quantity of evidence available. Studies must aim to prevent/treat parental domestic violence, mental ill-health and/or substance misuse, and/or prevent these three public health issues from having a negative impact on the children within the family unit.

Types of study participants

Participants will include parents/carers (16 years and over) who are described as at risk of, or experiencing, one or more of the following; 1) domestic violence; 2) mental-ill health; or 3) substance misuse. Adults must be the primary caregiver of one or more children (aged 18 years and below). This may include adults who are expecting a child.

Studies will only be included if parents/carers are reported to be at risk of, or are experiencing, domestic violence, mental ill-health and/or substance misuse. Parents/carers at risk of these issues may include, but are not limited to, pregnant women, new parents, and those living in disadvantaged neighbourhoods.

Types of interventions

This systematic review focuses specifically on family focused psychosocial interventions. As described above, family focused interventions will be defined as any intervention that includes a parent or child component. This may include a component focusing on parents' skills, parenting capacity, parent-child relationship, working with the parent in order to improve child outcomes (in the context of parental risk of, or experiences of, domestic violence, mental ill-health and/or substance misuse), or working with the child alone to reduce the impact of parental domestic violence, mental ill-health and/or substance misuse. Family focused interventions may involve the parent/carer and/or the child(ren) in their care. In addition, they may

also involve the wider family network (e.g. partners, ex-partners, grandparents, and friends). Where this is the case, the intervention may be delivered to family members in a group, individually (separately, but simultaneously), or delivered using a combination of the two. Interventions may be delivered by professionals and non-professionals alike.

Family focused interventions must be psychosocial in nature to be included within the review. Psychosocial interventions include those that have a predominately psychological and/or social focus. However, they may also include other additional educational, pharmaceutical, economic or legal components. Psychosocial interventions for parental domestic violence, mental ill-health and/or substance misuse are likely to include, but are not limited to, cognitive behavioural therapy, relationship interaction therapy, family therapy, motivational interviewing, advocacy or contingency management, home visiting, mindfulness, or peer support groups.

Following consultation with commissioners, this review will focus on preventative interventions, including secondary and tertiary interventions (Caplan, 1964). It will also include 'treatment' interventions in recognition of the fact that treatment interventions often have preventative elements and may be used by commissioners for preventative efforts. The review will not include primary or universal interventions (please see background section for further details).

Secondary, tertiary and treatment family focused interventions will include:

1. Family focused interventions aiming to prevent parental domestic violence, mental ill-health and/or substance misuse from happening or getting worse by targeting parents/carers at risk of domestic violence, mental ill-health or substance misuse or experiencing early signs of any one or more of these three issues (secondary prevention)

2. Family focused interventions aiming to prevent parental domestic violence, mental ill-health and/or substance misuse from having a negative impact on the children in their care (tertiary prevention)

3. Family focused interventions aiming to treat current parental domestic violence, mental ill-health or substance misuse (treatment)

Types of outcome measures

Primary outcomes

Our primary outcomes will include:

1. Inter-parental violence victimisation/perpetration
2. Parent/carer mental ill-health (restricted to common mental health problems)
3. Parent/carer substance misuse

These outcomes will not be restricted to any specific measures to answer research question 1 (RQ1; i.e. which psychosocial family focused interventions have *combined* impacts on parental domestic violence, mental ill-health and/or substance misuse?) or research question 2 (RQ2; i.e. which shared intervention components have *common* impacts across parental domestic violence, mental ill-health and substance misuse?).

In addition to the primary outcome measures, we will also examine which studies have also considered child outcomes. This will be particularly relevant for those interventions directly targeting children in the context of parental domestic violence, mental ill-health and/or substance misuse. Child outcomes will include child internalising behaviour, child externalising behaviour, and child substance misuse. However, these will not be the main focus of the study.

Search methods for identification of studies

The search strategy for the current review has been developed following a review of the literature and consultation with Information Specialists from the PenARC Evidence Synthesis Team at the University of Exeter (https://www.arc-swp.nihr.ac.uk/evidence-synthesis-team).

Electronic searches

We will search the following electronic databases from inception to present:

- MEDLINE (via Ovid)
- PsycINFO (via Ovid)
- Embase (via Ovid)
- CINAHL (via EBSCOhost)
- Education Research Information Centre (ERIC; via EBSCOhost)

- Sociological Abstracts (via ProQuest)
- Applied Social Sciences Index & Abstracts (ASSIA; via ProQuest)
- ProQuest Dissertations and Theses Global (via ProQuest)
- Web of Science Core Collection (via Web of Science)
- Cochrane Central Register of Controlled Trials (CENTRAL; via Cochrane)

Searching other resources

Grey literature, such as RCTs included within PhD theses, will be searched for within the review. Backwards and forwards citation chasing will also be conducted to help identify any other relevant RCTs that may not have appeared in the original search.

Search terms

The search strategy includes terms related to the population and study type, with terms falling into five main categories including; 1) domestic violence; 2) mental ill-health; 3) substance misuse; 4) parents/family; and 5) RCTs (using established RCT search filters where appropriate). The search terms will combined as follows; [domestic violence OR mental ill-health OR substance misuse] AND parents/family AND RCTs. The search strategy includes both free-text and controlled search terms, and will be adapted for each database to include database-specific truncation, controlled search terms, and Cochrane recommended RCT filters. The search results will be limited to 'English Language' only.

The search terms that will be used for MEDLINE (via Ovid) can be found in Appendix 1.

Data collection and analysis

Selection of studies

Studies will be imported to EndNote V9, which will be used to manage the extracted references, and any duplicates will be removed. The likelihood that each study employed a RCT design will then be estimated using the EPPI-Reviewer 4 RCT classifier. Title and abstract screening will be conducted by two independent reviewers where studies are classified as >=20% likelihood of employing an RCT, and by one reviewer where they are classified as <20% likelihood of employing an RCT. Predefined inclusion/exclusion criteria will be used to screen titles and abstracts. Where two independent reviewers have been involved in this process, reviewers will meet to discuss and resolve any disagreements. A third reviewer will be consulted in the event of unresolved disagreements.

Full texts will be obtained for all those studies that have been selected for inclusion at the title and abstract screening stage. Full texts will then be screened using two different sets of pre-defined inclusion and exclusion criteria; one pertaining to RQ1 and one to RQ2. The main difference between these two sets of inclusion/exclusion criteria is that RQ1 will involve selecting studies that have combined impacts on two or more of the primary outcome measures and RQ2 will involve selecting studies that have an impact on one or more of the primary outcome measures. All full texts will be screened by the one reviewer (main author) and a random selection of 10% will also be screened by a second independent reviewer to ensure inclusion criteria is being applied consistently and studies are not being missed. As above, the two reviewers will meet to discuss and resolve any disagreements and a third reviewer will be consulted where necessary. Where there are low levels of agreement between the two reviewers (i.e. < 90% agreement), the second reviewer will screen a further 5% of the full text records selected at random. This process will continue until > 90% agreement has been achieved.

This process will result in two final sets of references; one final set for RQ1 and one final set for RQ2. A PRISMA flow diagram (Moher, Liberati, Tetzlaff, & Altman, 2009) will be produced to document the studies identified and included and excluded at each stage of the process for both RQ1 and RQ2.

Data extraction and management

Data will be extracted from the studies included for both RQ1 and RQ2 using a standardised data extraction form by one reviewer (main author). This form will be developed following the full text screen and will be informed by templates used in previous systematic reviews, expert advice and guidance, and standardised forms such as the TiDier checklist (Hoffmann et al., 2014). The data extraction form will include extracting information on; the study design, intervention, control, participants, inclusion/exclusion criteria, outcome measures, and intervention and control group raw scores (including N, mean, SD, SE, CI and p-value). A second independent reviewer will conduct data extraction on a random selection of 10% of the records to ensure data completeness/accuracy.

Assessment of risk of bias of included studies

Risk of bias of included studies for both RQ1 and RQ2 will be assessed using the Cochrane Risk of Bias Tool (RoB) 2 (Sterne et al., 2019). This tool assesses bias in several different domains including risk of bias arising from; 1) the randomisation process; 2) deviations from the intended interventions (effect of assignment to intervention and effect of adhering to intervention); 3) missing outcome data; 4) outcome measurement; and 5) selection of reported results. Risk of bias assessments will be conducted by one reviewer (main

author), with a second independent reviewer conducting checks on a random selection of 10% of the quality assessments to ensure accuracy.

Measures of treatment effect

RQ1 – Narrative synthesis

To examine RQ1 (i.e. which psychosocial family focused interventions have *combined* impacts on parental domestic violence, mental ill-health and/or substance misuse) a narrative synthesis (Popay et al., 2006) will be conducted of all primary studies which have reported an impact on *two or more* of our primary outcome measures. This narrative synthesis will report on the primary focus of the interventions included and explore whether interventions that have combined impacts on domestic violence, mental health and substance misuse also have impacts on the wider family.

The framework used to organise the results of the narrative synthesis will be informed by PPI (see PPI section) to ensure that the results are presented in a way that is useful for commissioners and service providers in the field.

RQ2 – Interventions Components Analysis (ICA)

To examine RQ2 (i.e. which specific intervention components might have *common* impacts across domestic violence, mental ill-health and substance misuse) an ICA (Sutcliffe et al., 2015) will be conducted on all primary studies which have reported an impact on *one or more* of the primary outcome measures.

The ICA involves two main stages; the first involves developing an understanding of the differences between interventions and the second involves using this information to assess differences in outcomes (Sutcliffe et al., 2015). To develop an understanding of the differences between interventions, intervention descriptions from each study will be examined for specific intervention components. This will be done by; 1) use of a pre-defined intervention components framework developed by the authors in consultation with PPI; and 2) thematic analysis (Braun & Clarke, 2006) of the methods/discussion of each study to allow for the identification and inclusion of any additional components not included in the pre-defined framework. Two independent researchers will conduct this analysis using NVivo, meeting regularly to discuss additions/changes to the pre-defined intervention components framework in light of the thematic analysis. We will rely on authors' descriptions of the interventions throughout this process. After all intervention descriptions have been coded, and a final intervention component framework agreed upon, a table will be generated to highlight the intervention components present across each intervention/primary study along with the study effect sizes.

Heterogeneity will be explored (see below for details) to determine whether or not effect sizes can be pooled across studies and further statistical analyses can be conducted on the data. If there are high levels of unexplained heterogeneity (i.e. $I^2 > 50\%$) then it will be deemed inappropriate to conduct any further analyses. However, if there are low levels of heterogeneity further analyses will be conducted to explore the moderating effects of the intervention components previously identified.

To assess the differences in outcomes based on the intervention components identified, study effect sizes for each primary study will be converted into standardised mean differences. We anticipate that studies will vary in relation to the population, duration of intervention and intervention type. We also anticipate that studies will use multiple measures to assess the same underlying construct (i.e. multiple measures to assess domestic violence, mental ill-health and substance misuse, respectively). To account for this, we plan to conduct random effects meta-analyses (Borenstein, Hedges, & Rothstein, 2007) with robust variance estimates (Tanner-Smith & Tipton, 2014; Tipton, 2015) for each primary outcome. Outcomes used to assess domestic violence, mental ill-health and substance misuse will be grouped together and analysed in three separate analyses. We will also examine domestic violence outcomes (omnibus, physical victimisation, emotional victimisation, sexual victimisation, perpetration), mental ill-health outcomes (omnibus, depression, anxiety, PTSD, OCD, panic disorder) and substance misuse outcomes (omnibus, illicit drug use, alcohol use), separately. Short-term outcomes (outcomes assessed post-intervention) and long-term outcomes (i.e., outcomes assessed at follow-up time points beyond post-intervention) will also be examined separately. Provided there are sufficient studies within the analyses, separate meta-regressions will then be conducted for each of our three primary outcomes to see which intervention components have common impacts across multiple outcomes.

Unit of analysis issues

It is anticipated that studies for RQ1 and RQ2 may include cluster-randomised controlled trials (i.e. those where randomisation has occurred at a group level, rather than the individual level). These trials will be examined to ensure that they have accounted for clustering to avoid unit-of-analysis error and artificially small confidence intervals and p-values (Higgins, Li, & Deeks, 2019). If authors have not accounted for clustering, they will be contacted to request further information.

It is also anticipated that studies may have collected data at multiple time points and that these time points may vary from study to study. In this case, separate analyses will be conducted for short-term outcomes

(outcomes assessed post-intervention) and long-term outcomes (i.e. outcomes assessed at follow-up time points beyond post-intervention).

Dealing with missing data

If there is missing data, authors will be contacted to request further information.

Assessment of heterogeneity

Studies included in this systematic review are likely to be heterogeneous due to variations in participants, interventions and outcomes measured. The degree of heterogeneity will be assessed using χ^2 (also known as Cochran's Q) and I^2 (Higgins & Thompson, 2002). Conservative p-values of less than 0.1 will be considered significant for χ2 and for I2 percentages between 30-40% will be considered to indicate low heterogeneity, 40-60% moderate heterogeneity, and 75-100% high.

Assessment of reporting biases

Potential reporting biases will be assessed for both RQ1 and RQ2 using funnel plots. Funnel plots will be created for each primary outcome; plotting study precision across the y-axis and study effect size across the x-axis.

Data synthesis

Subgroup analysis and investigation of heterogeneity

If there is any unexplained heterogeneity, this will be explored by conducting a sub group analysis. This will include exploring whether heterogeneity can be attributed to; 1) participants (i.e. parents at risk of, or experiencing, domestic violence, mental ill-health and/or substance misuse); 2) intervention type (i.e. cognitive behavioural therapy, parent-child psychotherapy, family therapy, motivational interviewing, advocacy or contingency management, home visiting, mindfulness, or peer support groups); 3) intervention focus (i.e. secondary prevention, tertiary prevention, or treatment); 4) intervention recipient (i.e. individual, individual and abuser/partner, individual and child, or individual and whole family); or 5) length of intervention.

We anticipate that there will be a high number of interventions targeting postnatal depression. Although this falls under our definition of common mental health disorders, this is a time-specific common mental health disorder, making it different from depression, anxiety, PTSD, OCD and panic disorder. Therefore, we will treat studies focusing on postnatal depression as a separate subgroup of studies, conducting a subgroup analysis accordingly.

In relation to RQ2, we will only conduct random effects meta-analyses with robust variance estimates followed by meta-regressions where sufficient studies are identified. More than 40 studies would be considered sufficient for this type of analyses (Tanner-Smith & Tipton, 2014). Where there are fewer than 40 studies, robust variance estimates for small study sample sizes will be conducted (Tipton, 2015). Where there are fewer than 10 studies, meta-analyses with robust variance estimates and meta-regressions would not be deemed appropriate and an alternative narrative summary of the results and intervention components will be conducted to explore potential moderating impacts of specific intervention components.

Patient and Public Involvement (PPI)

This research has been shaped through involvement from commissioners and service providers within the area of public health, domestic violence, mental ill-health and substance misuse. We plan to use PPI throughout the research process, using experts' views to help further inform several key aspects of the study including the framework used to organise the narrative synthesis, the pre-defined intervention components list used within the ICA, and the dissemination of results.

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Appendix 1: Example of search terms used in MEDLINE (Ovid)

	#	Search terms
Domestic violence terms	1	domestic violence.ti,ab
	2	(abuse* adj3 wom*n).ti,ab.
	3	(abuse* adj3 spous*).ti,ab.
	4	(abuse* adj3 partner*).ti,ab.
	5	((wife or wives) adj3 abuse*).ti,ab.
	6	((wife or wives) adj3 batter*).ti,ab.
	7	(partner* adj3 violen*).ti,ab.
	8	(spous* adj3 violen*).ti,ab.
	9	(gender adj3 violen*).ti,ab.
	10	(batter* adj3 wom*n).ti,ab.
	11	IPV.ti,ab. (6050)
	12	(VAW or VAWG or VAWC).ti,ab. (151)
	13	interpersonal violence.ti,ab. (1669)
	14	domestic violence/ or spouse abuse/ or battered women/ or intimate partner violence/
	15	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14
Mental ill-health terms	16	(mental* adj2 health).ti,ab.
	17	(mental* adj3 disorder*).ti,ab.
	18	(mental* adj3 ill*).ti,ab.
	19	mood disorder*.ti,ab.
	20	(well being or well-being or wellbeing).ti,ab.
	21	(depression or depressed or depressive disorder).ti,ab.
	22	anxiet*.ti,ab.
	23	(post-traumatic stress or post traumatic stress or posttraumatic stress or PTSD).ti,ab.
	24	(obsessive compulsive disorder or OCD).ti,ab.
	25	panic disorder*.ti,ab.
	26	trauma.ti,ab.
	27	mental health/ or depression/ or exp depressive disorder/ or anxiety/ or exp anxiety disorders/ or exp stress disorders, traumatic/ or exp psychological trauma/ or obsessive-compulsive disorder/ or panic disorder/
	28	16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27

Substance misuse terms	**29**	((substance* or drug* or stimulant* or polydrug*) adj6 (misuse* or "use" or abus* or dependen* or disorder* or addict* or intoxicat*)).ti,ab.
	30	((heroin or opiod* or methadone or temegesic or subutex or opiate* or cocaine or ecstasy or methamphetamine* or crystal meth or amphetamine* or cannabis or marijuana or marihuana or lsd or magic mushrooms or mephedrone or khat or cathinone or ketamine or steroid* or performance enhancing drug* or gammahydroxybutrate or ghb or amyl nitrate) adj3 (misuse* or "use" or abus* or dependen* or disorder* or addict* or intoxicat*)).ti,ab.
	31	(alcohol adj3 (dependen* or drink* or intoxicat* or abus* or misus* or risk* or consum* or excess* or reduc* or intervention*)).ti,ab.
	32	(drink* adj3 (excess or heavy or heavily or harm or harmful or hazard* or risky or binge or harmful or problem*)).ti,ab.
	33	exp alcohol drinking/ or exp "marijuana use"/ or alcohol-related disorders/ or amphetamine-related disorders/ or cocaine-related disorders/ or marijuana abuse/ or "marijuana use"/ or opioid-related disorders/ or substance abuse, intravenous/ or substance abuse, oral/
	34	29 or 30 or 31 or 32 or 33
Parent terms	**35**	(parent or parents or parental).ti,ab.
	36	(mother? or mom? or mum? or father? or dad?).ti,ab.
	37	(pregnant or pregnancy or postpartum or paternal).ti,ab.
	38	(family or families).ti,ab.
	39	maternal deprivation/ or parent-child relations/ or father-child relations/ or mother-child relations/ or parenting/ or paternal behavior/ or paternal deprivation/ or nuclear family/ or exp parents/ or single-parent family/
	40	35 or 36 or 37 or 38 or 39
RCT terms – Cochrane recommended search filter for sensitivity and	**41**	randomized controlled trial.pt.
	42	controlled clinical trial.pt.
	43	(randomized or randomised).ab.
	44	placebo.ab.
	45	clinical trials as topic.sh.
	46	randomly.ab.
	47	trial.ab.
	48	41 or 42 or 43 or 44 or 45 or 46 or 47
	49	exp animals/ not humans.sh.

	50	48 not 49
Combo	**51**	15 or 28 or 34
	52	40 and 50 and 51
	53	**limit 52 to English language**