



Promoting safer sleeping for babies in high-risk groups in England

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Ethics

This qualitative component of the study was approved by the Faculty of Medical Sciences Research Ethics Committee (2252/16899), part of Newcastle University's Research Ethics Committee. This committee contains members who are internal to the Faculty. This study was reviewed by members of the committee, who must provide impartial advice and avoid significant conflicts of interests.

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List of acronyms

BCT	Behavioural change technique
COM-B Model	Describes how Capability, Opportunity and Motivation are essential for Behaviour change
FNP	Family nurse partnership
MECSH	Maternal early childhood sustained home visiting programme
SIDS	Sudden infant death syndrome
SUDI	Sudden unexpected death in infancy
TDF	Theoretical domains framework

At a glance

Promoting safer sleeping for babies in high-risk groups in England

Why we did this study

Whilst the ‘Reduce the Risks’ campaign of the 1990s resulted in a fall in the number of unexpected infant deaths, the recent report from the National Child Mortality Database¹ found higher rates of deaths amongst families living in the most deprived neighbourhoods in England. The Out of Routine report concluded that safer sleep interventions that focus solely on the provision of information, are unlikely to influence the behaviours of parents in this population. It was recommended that theories of behavioural change should be used to support the development of safer sleep interventions, taking into account families’ experiences and perspectives.

What we did

We carried out a mixed methods study with three components: (1) an analysis of the data from two recent systematic reviews to identify the key components of: i) decision-making amongst families with children at increased risk^a of SUDI; ii) safer sleep interventions for at-risk families; (2) interviews to identify beliefs about safer sleep practices with families who have had recent contact with children’s social care; and (3) a workshop with stakeholders to explore how our findings could be used to modify existing best practice. The above data were then mapped using the COM-B model.

What we found

- A range of motivational factors (such as parental sleep deprivation and the desire to bond with the infant) play a key role in influencing decision-making about the infant sleep environment.
- Professionals responsible for conversations about infant sleep safety have concerns about providing personalised and tailored support and managing risk in families with a social worker.

- Credible, trusted sources and sound evidence with regard to how and why safer sleep messages aim to protect infants are key to the delivery of effective communications about safer sleep with families of infants at increased risk of poor outcomes.
- Social pressures with regard to “good parenting” may act as barriers to parents acknowledging and discussing/planning for “out of routine” circumstances.

Why this is important

These findings suggest that change to current practice is needed if the risk of SUDI in this particular group of families is to be further reduced.

What are the implications

- Safer sleep messages might best be delivered to families in receipt of social care by a practitioner who can provide continuity of care and who has established a trusting relationship with them; peer and family support networks are also important;
- Professionals could incorporate the use of open conversations to identify parental motivations and provide personalised and tailored support based on the needs of different families, focused on minimising risk in all sleep scenarios, thereby moving away from a didactic approach;
- This is likely to require specific training and support for professionals and a change of organisational culture to allow professionals to manage risk more confidently.

^a The papers included in this review define ‘higher risk’ families as having young parental age, limited education, low socioeconomic status, residing in disadvantaged areas, or from an ethnicity which has a higher-than-average SUDI rate

Principles for promoting safer sleeping for babies with a social worker using the COM-B model of behaviour change

The COM-B model* states that capability, opportunity and motivation are essential for behaviour change.

CAPABILITY

The physical and psychological capacity to carry out a behaviour



Delivery of safer sleep conversations by practitioners who are trusted and provide continuity of care to families

OPPORTUNITY

External factors that might influence whether an individual can or cannot carry out a behaviour



Exploration with families of common parenting situations in which risk may be increased and planning for safety during those times

MOTIVATION

Reflective or automatic brain processes that may influence and direct behaviour



Use of 'open conversations' to find out why and when parents don't practice safer sleep

Joint exploration of the best ways for parents to keep their infant safe in these situations.

TRAINING AND SUPPORT NEEDS FOR PRACTITIONERS



Training in:

- i. Skills to conduct open conversations with families based on the principle of minimising and managing risks
- ii. Such conversations need to be consistent with existing guidelines from NICE and The Lullaby Trust while also being sensitive to the needs and context of individual families

Organisational culture change to support practitioners to manage risk.

Executive summary

Background

Whilst the 'Reduce the Risks' campaign of the 1990s resulted in a fall in the number of unexpected infant deaths, the recent report from the National Child Mortality Database found higher rates of deaths amongst families living in the most deprived neighbourhoods in England. The Out of Routine report concluded that safer sleep interventions that focus solely on the provision of information are unlikely to influence the behaviours of parents in this population. It was recommended that theories of behavioural change be used to support the development of safer sleep interventions, taking into account families' experiences and perspectives.

Aim

This study used the COM-B model of behaviour change to identify modifications to practice that involve delivering safer sleep messages to parents who have a social worker.

Research questions

- What are the relevant decision-making factors in terms of the capability, opportunities and motivations of parents with a social worker, that might provide a focus for the modification of existing practice with regard to safer sleep for this group of parents?
- What are the most promising behaviour change approaches in terms of capability, opportunities and motivations for promoting safer sleep practices among families with a social worker?
- What changes to existing best practice are needed to further reduce the risk of SUDI to infants of parents with a social worker?

Methods

We carried out a mixed methods study with three components: (1) an analysis using the COM-B model of two recent systematic reviews to identify the key components of: i) decision-making amongst families with children at increased risk of SUDI; ii) safer sleep interventions for at-risk families; (2) interviews to identify beliefs about safer sleep practices with

families who have had recent contact with children's social care; and (3) a workshop with stakeholders to explore how our findings could be used to modify existing best practice.

We coded the results from each of the above parts of the study using the COM-B model. This allowed us to identify what influences parents in this population in terms of their infant sleep and wider care practices using the following categories - Capability, Opportunity or Motivation - and the way in which promising safer sleep interventions described in the literature target these components of behaviour change. Our findings were then used to suggest implications for modifications to existing best practice for this group of parents.

Results

The key findings from mapping the data obtained from the three sources of data described above using the COM-B model are as follows:

1. CAPABILITY:

Skills - parents used co-sleeping because they were not able to settle their infants in a cot.

Knowledge - education and guidance on safer sleep influences how and where infants sleep but incorrect, conflicting or out of date guidance was cited and health professionals were perceived as not taking the time to explain safer sleep recommendations if it wasn't the parents' first child. Ineffective, didactic, approaches to delivering information were used. Interpersonal relationships between parent and practitioner were perceived to affect the guidance that is given, what is understood by the parent, and its impact on what parents disclose.

Memory, attention and decision-making factors included an inability to recall why safer sleep practices were protective or reluctance to follow recommendations if a credible mechanism of action had not been provided.

Stakeholder perspectives - Practitioners highlighted the need to have meaningful conversations about safer sleep with parents, which might involve planning for risk reduction as well as avoiding risk. These conversations should be personalised because the risk factor profiles of individual infants varies, and

because parents will have different perspectives and experiences in terms of which practices are more difficult to implement.

2. OPPORTUNITY:

Behaviour may be affected by interpersonal processes such as **social influences**, norms or group conformity. Parents may face conflicting advice in terms of other family members and family traditions. Sources of information need to be seen as credible to influence parents' behaviour. Some parents may be more likely to follow advice from family, peers or the internet than health professionals. In terms of the **environmental context** - co-sleeping can be linked to a lack of space for a cot although having a cot does not always mean that it will be used; mothers also co-sleep to protect their infant from wider environmental issues. **Stakeholder perspectives** focused on the influence of the wider family and peer support; the importance of continuity of care as being key for building trusting relationships with parents; the fact that this type of relationship may not be feasible within business-as-usual services.

3. MOTIVATION:

Beliefs about capability - experiences and instinct may be more influential on parental behaviour than guidance. Parents may doubt their capabilities, sometimes reporting that they do not have a choice in terms of where and how their baby sleeps. Unrealistic **optimism** (e.g. the belief that a sleep-related death could not happen to their infants) influences behaviours; attempts to mitigate risks involve the use of other techniques (e.g. breathing monitors; cushions to support the infant). **Beliefs about consequences** can lead parents to co-sleep to keep infants close for observation, particularly when they are ill. Co-sleeping is used to meet a range of **goals** in relation to themselves or their infant including breastfeeding, protecting the parents' and/or the child's sleep or to address **emotional needs** such as bonding with their baby; closeness; or to reduce anxiety. **Stakeholders** reflected on the need for a change in the narrative away from what parents 'should do' towards an open conversation about sleeping practice; that the conversation should be trauma-informed, attachment aware and resilience-informed and should involve the use of a tool that would help to move the interaction on from information/knowledge (CAPABILITY) towards

a focus upon emotion (MOTIVATION). Practitioners may lack the skills to deliver information to parents; and practitioners who attended our workshop told us that a harm reduction (i.e. risk minimisation approach) was felt to be complex and difficult when working with families with a social worker and not supported by their organisational culture.

Implications of these findings

The most appropriate professionals to deliver safer sleep messaging to families with a social worker will have the opportunity to provide continuity of care and to establish trusting relationships with these families. One way that this could be translated into practice is through embedding delivery of safer sleep messaging within existing high intensity home visiting programmes for parents, such as the Family Nurse Partnership (FNP) and Maternal Early Childhood Sustained Home Visiting programme (MECSH) where the statutory responsibility for safeguarding is less apparent to parents. Peer support and the maximisation of existing family support networks are also important.

Professionals could move from an emphasis on using messages to deliver knowledge about safer sleep practices, to a wider focus on the use of open conversations to identify motivations and provide individually tailored support based on the needs of different families. This should include: i) identifying the motivational factors that are influencing individual parenting behaviours within each family through open conversations about infant sleep that are embedded in conversations about wider infant needs and care; ii) addressing the motivational needs of the caregiver(s) and identifying the ways in which they can be met alongside safer sleep practices; and iii) exploring the reasons with regard to how and why safer sleep practices protect infants. This is likely to mean adaptations to existing infant sleep focussed information and resources to include the identification of motivational factors with regard to co-sleeping and possible mechanisms of protection.

Practitioners could acknowledge common parenting situations in which risk may be increased and support families with planning for safety during those times. This is likely to require the development of further risk identification and planning tools to increase practitioner expertise.

Practitioners need the necessary skills to have conversations with these families based on the principle of minimising risks to infants in all sleeping environments. Such conversations need to be consistent with existing guidelines from NICE and The Lullaby Trust while also being sensitive to the needs and context of individual families. This is likely to require specific training and support for professionals, in addition to organisational culture change to allow professionals to confidently and skilfully manage risk

Limitations

The majority of intervention and decision-making studies in the two systematic reviews that were used for the mapping were conducted in the US. Whilst all of the interventions were developed for families with children at increased risk of SUDI, the country, society and culture in which these families resided may have impacted on their capability, opportunity or motivation to carry out safer sleep behaviours and therefore findings may not be generalisable to the UK. In addition, as a result of the varying study designs and methods used to evaluate the effectiveness of the individual safer sleep interventions, we were unable to combine the results in a meta-analysis or assess which components were most associated with effectiveness. We have nevertheless, identified intervention components that map well on to the key components of the COM-B model. With regard to the interviews, we could only access families who were being supported by charities at the time during which the study was conducted, meaning that the families were not likely to be at the highest risk at the time we interviewed them. However, some of the parents did report drug or alcohol use whilst in charge of infants and young children. Finally, all participants were white British and from the same region, and we acknowledge that there may be limitations when generalising the findings to other regions or populations.

Background

Overview

Between April 2019 and March 2021, there were 711 sudden and unexpected infant deaths.¹ Whilst the 'Reduce the Risks' campaign of the 1990s resulted in a fall in the number of unexpected infant deaths, the recent report from the National Child Mortality Database¹ found higher rates of deaths amongst families living in the most deprived neighbourhoods in England. The term SUDI is used to describe the death of an infant up to one year of age, which was not foreseen as a significant possibility 24 hours before the death.² Following investigation, these deaths are either found to be 'explained SUDI', which includes medical diagnoses, accidents, and homicides or, if the death remains unexplained, they are described as 'unascertained' or 'Sudden Infant Death Syndrome' (SIDS).³

The Out of Routine report⁴ was commissioned by the National Child Safeguarding Practice Review Panel (hereafter, the Panel) following the national review of 568 serious incidents where a child had been injured or died in 2018-2019 and abuse or neglect was suspected, of which 40 involved infants who had died suddenly and unexpectedly – one of the largest groups of children among the 568 serious incidents. The Out of Routine report aimed to bring together existing evidence to develop a better understanding of families' decision-making with regard to care and sleep arrangements, and the ways in which practitioners work with families of at-risk infants. The Panel reviewed 14 incidents of SUDI from 12 local areas, and conducted discussions with health professionals, social workers, police and other involved practitioners, and carried out reviews of the literature and analyses of national child deaths 2018/19.⁴ The authors found that parents were often aware of, and could even cite safer sleeping advice. However, they did not always follow advice, particularly in out-of-routine instances, which the Panel define as 'unexpected changes in family circumstances immediately before SUDI, in which an infant is placed in an unsafe sleep environment. These situations occur across the full continuum of risk. In high-risk families they may be associated with situations where there is escalating safeguarding risk'.⁴

It was concluded that interventions that focus 'solely on giving information are unlikely to produce meaningful change in the above group of children',⁴ and that to ensure that future interventions for infants at risk are effective, families' experiences, circumstances and perspectives should be taken into account. The latter should include the wider support network of family and friends, to ensure that all those caring for the infant can contribute to safer sleep practices. Second, it was recommended that theories of behavioural change should be explored, with the COM-B model being identified as relevant when developing interventions to promote safer sleep among higher risk groups.⁴

The COM-B model, Theoretical Domains Framework and Behavioural Change Technique Taxonomy

The COM-B model and TDF Framework were developed as tools to enable developers of behaviour change interventions to 'identify appropriate targets for those interventions'.⁵ However, whilst principally designed as a tools for designing interventions, they have also been used as a framework with which to conduct a retrospective coding of the theoretical content of behaviour change interventions, where theories are not explicitly described by authors.⁶ For instance, McParland et al.⁶ used the COM-B model, TDF framework and BCT taxonomy to identify the 'active ingredients' of interventions that target anti-microbial resistance and their mechanisms of action.

The COM-B model identifies 3 components - Capability, Opportunity and Motivation - of which one or more must be modified in order to bring about behaviour change. Capability is defined as the physical and psychological capacity to carry out a behaviour. Opportunity refers to the external factors that might influence whether an individual can or cannot carry out the behaviour, and motivation is defined as reflective or automatic brain processes that may influence and direct behaviour.⁷ In this system, capability and opportunity can also influence motivation.⁷ For instance, having the knowledge about why a certain behaviour is important (capability) or the resources to carry out a certain behaviour (opportunity) may mean an individual is more motivated to change their behaviour.

The Theoretical Domains Framework (TDF) builds on the COM-B model and was developed as an integrative framework of behavioural change theories, providing a more granular breakdown of the components of the COM-B model.⁸ For instance, capability for a behaviour is broken down into the following TDF domains: knowledge, skills, memory, attention and decision processes, and behavioural regulation. Opportunity can be further separated into the two TDF domains - social influences and environmental context and resources. Motivation is broken down into the TDF domains: beliefs about capabilities, beliefs about consequences, intentions, social/professional role and identity, goals, optimism, reinforcement and emotion.⁹ The use of behavioural change theories, such as the COM-B model and the associated TDF domains, may improve the prospects of an intervention being successful.¹⁰

Diagram 1 - The three components of the COM-B model and the corresponding TDF domains⁸

● Sources of behaviour

● TDF Domains

SOC - Social influences

Env - Environmental Context and Resources

Id - Social/Professional Role and Identity

Bel Cap - Beliefs about Capabilities

Opt - Optimism

Int - Intentions

Goals - Goals

Bel Cons - Beliefs in Consequences

Reinf - Reinforcement

Em - Emotion

Know - Knowledge

Cog - Cognitive interpersonal skills

Mem - Memory, attention and Decision Processes

Beh Reg - Behavioural Regulation

Phys - Physical skills



The Behaviour Change Technique Taxonomy v1¹¹ provides a tool for identifying the behavioural change techniques (BCTs) that are incorporated into interventions. The Taxonomy provides descriptions of 93 different BCTs, which are grouped into 19 clusters such as 'Goals and planning', 'Social support' and 'Shaping knowledge'.¹¹ Many of the 93 BCTs have been mapped under the TDF domains, providing a tool for intervention designers to identify the appropriate 'active ingredient' or BCT for each TDF domain. For instance, the BCT 'Information on how to perform the behaviour' has been mapped under the TDF domain 'Knowledge'.⁹

This study uses the above frameworks to analyse data from primary (interviews with families and stakeholder workshop) and secondary (systematic reviews on decision-making and safer sleep interventions) data, in order to suggest modifications to ways of working with parents who have a social worker.

It should be noted that throughout the report we have avoided the terms 'at risk' or 'high risk' because they could potentially be seen as pejorative. Moreover, we currently lack the epidemiological evidence that would indicate how far infants who have a child and family social worker are at greater risk of SUDI than other infants whose parents and/or household circumstances are similar. However, we do know that there is overlap between the factors that put infants at risk of SUDI and factors that make involvement from social care more likely, and we know that of the infants who die suddenly and unexpectedly, a larger proportion of them will have been known to social care services.¹ In this report, we use the term 'families with a social worker', which more factually describes the participants that we interviewed and we hope is not seen as demeaning.

Methods

Aim

The overarching aim of this study was to use the COM-B model of behaviour change to identify modifications to practice that involve delivering safer sleep messages to parents who have a social worker.

Research questions

This study addressed the following questions:

- What are the relevant decision-making factors in terms of the capability, opportunities and motivations of parents with a social worker, that might provide a focus for the modification of existing practice with regard to safer sleep for this group of parents?
- What are the most promising behaviour change approaches in terms of capability, opportunity and motivation for promoting safer sleep practices among families with a social worker?
- What changes to existing practice are needed to further reduce the risk of SUDI to infants of parents with a social worker?

Study components

This research comprises a mixed methods study with three elements:

- 1) Component analysis of two systematic reviews;
- 2) Interviews with families;
- 3) Stakeholder workshop. The rationale for using further interviews was that there has not to date been any interviews conducted that have explicitly used the COM-B framework to structure the questions.

Component analysis of two systematic reviews

a) Decision-making review

We conducted an analysis of the behavioural determinants of decision-making using 16 papers identified in the most recent systematic review of decision-making for the infant sleep environment

amongst families with children considered to be at increased risk of SUDI.¹² The papers included in this review define 'higher risk' families as having young parental age, limited education, low socioeconomic status, residing in disadvantaged areas, or from an ethnicity which has a higher-than-average SUDI rate. Only studies carried out in Western Europe, North America or Australasia were included in the review. Pease et al.¹² found six themes which helped to explain why 'higher risk' parents make their decisions around infant sleep, such as the way in which knowledge alone does not necessarily translate into action; the need for guidance to be seen as credible; and the way in which instincts and previous experience were sometimes more influential than guidance.

The analysis involved reading through the results of each study line by line with author KS using the COM-B model and TDF framework to code the various determinants of decision-making for the infant sleep environment. For instance, if parents said they did not use pacifiers because they were unaware that they were protective against SUDI then this determinant of decision making was coded under Capability-Knowledge.

b) Intervention review

We conducted a component analysis of safer sleep interventions using quantitative and qualitative papers identified in a systematic review by Ellis et al.¹³ which describes safer sleep interventions tested with families with infants at increased risk of SUDI and provides an analysis of 'what works to reduce risk'. Only studies from Western Europe, North America or Australasia, published in the last 15 years, were included in this review. Ellis et al.¹³ categorised the interventions into five categories: infant sleep space and safer sleep education programmes; intensive or targeted home visiting services; peer educators/ambassadors; health education/raising awareness interventions; and targeted health education messages using digital media.

The objective of the component analysis was to extract key characteristics of the interventions, including the behavioural change components incorporated into the interventions and their mechanisms of action. We used

the Behavioural Change Technique Taxonomy v1¹¹ as a coding framework. The coding process involved first extracting the descriptions of interventions. If further material was included in the appendices or direct links provided to intervention materials, these were also extracted for coding. We also coded any behavioural theories described by the authors of the included studies, which explained how the safer sleep interventions have their effect by reading through the introduction, methods, results and discussion line-by-line, coding for theories and the authors' descriptions of how these theories have their effect.

The COM-B model and the TDF¹⁴ were then used as a framework with which to code inferred mechanisms of action through which the intervention components have their effect. Each TDF was first defined by authors KS, SB and HC using the TDF construct examples given by Michie et al.⁹ to guide the process. For instance, 'Knowledge' is defined as 'Awareness of the existence of something'. This definition was then adapted for this study whereby the TDF 'Knowledge' was coded if the intervention provided guidance on safer sleep practices. Authors KS and HC coded the papers independently. They then compared results. KS made the final decision. Due to the varying study designs and outcomes measured, we were unable to compare the effectiveness of the interventions. However, with the exception of two studies^{15,16} which did not report an effect of the interventions, study authors reported an impact on some or all of their outcomes of interest and therefore we have classified these 21 interventions as 'promising'.

The final stage in the intervention component analysis involved assessing the congruence across TDF components and BCTs. Each BCT was mapped to its corresponding TDF domain according to the expert consensus table of BCTs and TDF domains described by Michie et al.⁹ For those BCTs which have not yet been linked with TDF domains, author KS decided on the most logical connection. For instance, it was decided that the BCT 'Prompts/cues' should be mapped to the TDF domain 'Memory, attention and decision processes'.

Qualitative interviews

We approached national and local agencies and charitable organisations that work with families in need of extra support and asked them to help us identify families with young children who have had recent contact with children's social care. Although these families may not be the same as those at risk of SUDI, they may be experiencing many of the same types of problems in terms of the use of substances, mental health problems and domestic abuse. However, we did not seek specific information about the factors that led to them being in contact with children's social care services and they may have been in contact with child services for a variety of reasons (we do know that none of the families had an infant with disabilities). We initially recruited families with children aged between 0 and 24 months. Our primary contact within each family was the mother, and invitations were extended to include other family members in interviews, such as partners or grandparents, either together or separately.

We interviewed 14 mothers aged between 18–37 years from the North East of England between April and September 2022. Our sample was derived from one region in England, and although diverse in age and parity for example, they were homogenous in terms of ethnicity (all white British) and sexuality. Therefore these findings may not be generalisable to other populations and other contexts. Six of the mothers described themselves as single, and eight were currently being supported by a partner; in each case this partner was also the father of their baby. Two fathers consented to taking part in interviews, as well as one grandmother. Five of the respondents were first time mothers, seven had 2-3 children, one had four children, and one respondent had six children. All their most recent babies were aged between five weeks and 12 months at the time of interviews, except for one child who was three years of age. All the families had been in contact with statutory children's social care; two of the babies had been previously removed from the care of their parents and recently returned; six of the mothers interviewed had older children still in the care of others, and one had recently had her older children returned to her care (See Appendix 1

for a table summarising the demographic factors of the study participants). Each participant was given a £20 high street gift voucher as a thank you for their participation.

A semi-structured topic guide for the interviews was used, with questions based on each of the domains of the TDF (Appendix 2). Topics covered in the interviews included knowledge, skills, decision making, social influences and environmental contexts. We spoke to families about all the safer sleep information, guidance and advice they had received or sought and about their day-to-day infant sleep practices. Interviews were audio recorded and transcribed verbatim. One researcher (SB) coded each transcript according to the domains of the TDF, as well as coding inductively for themes. Transcripts were read by the team, and a social constructionist approach informed our analysis;¹⁷ themes were identified and discussed as a group, and an iterative process was adopted whereby early analysis and interpretations informed subsequent interviews and analysis. For example, we recognised that some families of infants may have found it difficult to disclose times when they did not adhere to safer sleeping advice, and latterly widened these criteria to include older children up to four years.

Stakeholder workshop

We held a two-hour stakeholder consultation in November 2022 with 34 stakeholders including midwives and health visitors, social workers, early years practitioners, public health specialists, professionals from the third sector and academics. We presented the main findings from the interviews and analyses of the literature and asked stakeholders to consider what these findings mean for professional practice and promoting parents' capability, opportunity and motivation to engage in safer sleep behaviours. We also asked about what practitioners might need to put such a model of working in place. Our study team took notes at the workshop and we then coded the notes according to the three components of the COM-B model.⁹

Results

This section presents the results of the mapping of the COM-B model and TDF domains against the data from the systematic review on decision-making, the interviews, the review of interventions, and the stakeholder workshop, and has been organised sequentially.

Table 1 in Appendix 3 shows the results of the coding and mapping process, firstly summarising the determinants of decision-making found in the literature according to the COM-B model and TDF domains. These findings are then compared with behavioural determinants of decision-making which were found in our interviews with parents.

Table 2 in Appendix 3 elaborates on the intervention BCTS, providing more detailed descriptions of the way in which the interventions incorporated these BCTS. For example, under capability (skills), in one study, parents were provided with demonstrations of how to make up a Pepi-Pod^a, its safe placement and use.¹⁸

It should be noted, however, that while The Panel define out-of-routine incidents as: 'unexpected changes in family circumstances immediately before SUDI, in which an infant is placed in an unsafe sleep environment',⁴ most of the families that we interviewed, understood 'routine' to refer to the infant's regular nap and sleeping times and only sometimes included reference to their own routines that might make sleep for the infant unsafe. Their ability to keep to the baby's routine was also part of their identity as a capable parent, and questions about disruption to routine were therefore received defensively. These findings suggest that the concept of routine/'out-of-routine' might not be helpful in facilitating frank conversations about infant sleep practices with parents and helping them to plan for situations or circumstances that they don't anticipate but which might feasibly happen (e.g. temporary housing, or alcohol or other drug use or unplanned sharing of a surface with the infant such as falling asleep on a sofa).

CAPABILITY: Skills; Knowledge; Memory, attention and decision processes

Skills

Decision-making analysis

One precursor to carrying out a specific behaviour may be possessing the relevant skills or abilities.⁹ In the decision-making analysis, it was found that mothers decided to co-sleep with their infants for a variety of reasons, including finding it difficult to settle their infants in a cot.^{19,20}

Interviews

In our interview study, despite frequent contact with a Family Nurse (as part the Family Nurse Partnership programme for young first-time mothers),²¹ one mother felt she had not received advice on how to put her baby to sleep in a cot: *I never got any advice on what you should do with the babies in a cot. I still haven't got a clue now.* Mother 4 (aged 19, 1 child). On the other hand, the same mother described how the Family Nurse had given detailed advice before her baby was born, including on sleep. This apparent contradiction between being given advice and feeling as if "I still haven't got a clue" underscores the importance of advice being given at a time and in a way that it can be received and of actively engaging the parent(s) in safer sleep conversations in order to transmit knowledge. This mother described how she was too preoccupied to take in any information during pregnancy and passively disengaged from the Family Nurse during visits.

Difficulties with getting their baby to sleep in a cot each evening also remained challenging and unpredictable for some parents, whether due to the needs of their child, or the family's living arrangements. In these circumstances, several families described regularly staying awake with their children all night when they will not settle, with some parents describing intending to stay awake holding them: *I'm there either watching something on my phone, because she's either on my chest or across, or I'm watching telly. And then I have to move very carefully. I usually just sit there like a zombie.* Mother 6 (aged 25+, 6 children)

Intervention component analysis

The interventions reviewed addressed capability by assisting parents to develop safer sleep skills, through **'Demonstration of the behaviour' (BCT 6.1)**. This included providing parents with demonstrations of how to settle their baby safely, for instance, through practical demonstrations and training in how to set up safer sleep environments,^{18,22,23,24} and through the provision of support for parents to provide responsive care of their infants in a home visiting programme delivered by specialist nurses in both the antenatal and postnatal period.²⁵ Secondly, development of skills in settling infants were targeted through **'Habit formation' (BCT 8.3)** in the baby book described by Hutton et al.²⁶ which included pictures demonstrating the safe sleeping position and environment and was designed to be read regularly.

Knowledge

Decision-making analysis

Knowledge or awareness of a certain practice may also influence behaviour.⁹ In the decision-making analysis, having received education and guidance on safer sleep was reported as influencing how and where infants slept in three studies.^{27,28,29} Mosely et al.²⁹ found that many of the women in their study were aware of the Back to Sleep Campaign, which influenced their decision to put their baby to sleep on their back to reduce the risk of SIDS. However, in some studies parents were found to have received incorrect,¹⁹ conflicting,^{20,27,29,30,31} or out of date guidance.^{19,27,28,30,32,33,34} Decision-making was also found to be influenced by confusion around the nature of SUDI, SIDS and cot death,^{20,27,28,29,31} with cot death sometimes believed to only occur when the baby was in a cot, influencing parents' decision to co-sleep.²⁹ Pease et al.³³ found that participants reported that occasionally health professionals did not take the time to explain safer sleep recommendations if it wasn't their first child, which left parents unsure of current recommendations.

The decision-making analysis also revealed ineffective approaches to delivering information, such as being given advice in a condescending, didactic style, without the opportunity to ask questions.³³

However, despite the role that knowledge may play in behaviour, the decision-making analysis revealed that some parents who were given information about SUDI said it made them more anxious without leading to a change in their behaviour.²⁰ This may suggest that targeting knowledge alone as a behavioural change mechanism may not be sufficient to change behaviour.

Interviews

Most participating mothers demonstrated awareness of the main aspects of safety, such as having their own Moses basket or cot. However, while each of the respondents described the guidance as simple to understand and as 'common sense', 'nothing I didn't already know', and 'nothing different to with my older two' (Mothers 5, 11 and 12) it also became clear that there was in fact variation in understanding of safer sleep advice among the participants, such that several parents were unaware of some aspects of the advice, such as having no bumpers or toys in the sleep space with the baby.

Parents also indicated that interpersonal relationships between parent and practitioner may affect the guidance that is given, what is understood by the parent, and impact on what parents disclose. Describing a 'not so good' relationship with her social worker, one mother reflected that she did not feel able to discuss safer sleep in any detail or ask questions. This relationship was difficult due to her previous experiences with social workers, and the fact that they have such a high case load - *'just tick a box really... they don't have the time to physically sit and go into depth about stuff, because they haven't got time'*. Mother 1 (aged 25+, 3 children). Often these families saw their health visitor as a trusted person; they were frequently the go-to person for specific questions on sleep or to check something is ok to do: *'mostly the health visitor or me mam'* (Mother 7, aged 34, 3 children), and in some cases of instead of their own family:

My mum does try to give me advice, but I always double-check with my health visitor as well, just because my mum is very old fashioned in the way that she raised me and my sister. (Mother 9, aged 19, 1 child).

However, others suggested that the advice Health Visitors gave was simply a brief conversation, giving out leaflets, or ‘more of a passing comment’ (Mother 14, aged 36, 3 children).

Four parents described regularly sharing a sleeping space with their children (families 1, 4, 13 and 14), all of whom withheld this information from their health visitors, social workers or Family Nurse. For one participant this was linked to her alcohol use and being ‘sensitive to criticism’, and for another it was also a ‘fear of judgement’ and a disinclination to ask questions about safer sleep because *“a lot of social workers will look at you as if you don’t know how to parent your child”*. Mother 14 (aged 36, 3 children)

Intervention component analysis

Interventions used the BCT ‘**Instruction on how to perform the behaviour**’ (BCT 4.1) in order to target parents’ knowledge about safer sleep practices. Provision of information took the form of written documents, such as a summary of risk factors,³⁵ educational pamphlets on SIDS risk reduction strategies³⁶ and a website for young parents to find information on safer sleep guidelines.³⁷ Information was also provided verbally, through educational baby showers,²² pre-natal and post-natal visits by health professionals,³⁸ school educational programmes for young people³⁹ and by training parents to deliver SIDS information to their peers.^{23,37} Dillon⁴⁰ and Rienks and Oliva⁴¹ used public health campaigns to increase awareness of SIDS. The latter intervention was based on social movement theory, where the author states that before an individual will be motivated to act, they must be made aware of the disparities which exist in their groups.⁴¹

Memory, attention & decision processes

Decision-making analysis

The ability to retain information and make informed decisions may be required in order to carry out a specific behaviour.⁹ In the decision-making literature, it was suggested that parents are sometimes unable to recall why safer sleep practices were protective.³⁰ Furthermore, some parents stated that they did not

follow recommendations if they did not understand how they protect the child.^{28,31,33}

Interviews

Respondents cited risks that were defined as suffocation, strangulation or rolling onto their babies while sharing sleeping areas as the main safety concerns, which suggests that at least some of the principals with regard to risk have been retained.

Intervention component analysis

Capability also was addressed through interventions that targeted parents’ memory, attention & decision processes. This was accomplished by incorporating ‘**Prompts or cues**’ (BCT 7.1) as an intervention component where the intervention content was designed to be placed where parents were likely to see it regularly. For example, a baby blanket printed with the nine risk factors for SIDS³⁵ and cots with stickers with safer sleep information and labels sewn into bedding.¹⁸ Hutton et al.²⁶ provided a baby book with safer sleep guidelines in rhyming verse designed for parents to read regularly to their baby. This intervention was informed by narrative learning theory, which states that learning can be effectively fostered through stories.

The rationale for safer sleep practices was provided through the delivery of ‘**Information about health consequences**’ (BCT 5.1). For instance, safety briefings for parents explaining why certain infants are more vulnerable and how they are at increased risk of suffocation from soft bedding or toys.^{15,16,18,42} The content of the intervention described by Salm-Ward et al.⁴³ was underpinned by the health belief model, describing the susceptibility of infants to SIDS and outlining the potential barriers to and benefits of following safer sleep recommendations.

Stakeholder findings in relation to capability

The practitioners at the workshop spoke about having meaningful conversations about safer sleep with parents which:

- accept that safer sleep might be low on priorities for these families;
- take into account that parents who are in contact with child protection services may experience high levels of fear or threat and may not feel able to say 'I don't understand'. If they say they do understand the information that is provided, they may still have low confidence in carrying it out;
- might involve planning for risk reduction as well as avoiding risk e.g. co-sleeping by building on the existing Lullaby Trust and UNICEF guidelines;
- are individualised, as 'not all parents learn in the same way'.

OPPORTUNITY: Social Influences; Environmental context & resources

Social influences

Decision-making analysis

Behaviour may be influenced by interpersonal processes such as social pressure, norms or group conformity.⁹ Findings from the decision-making analysis highlighted the conflict that parents may face from family members, and the way in which infants could be at increased risk when 'out of routine'. Pease et al.³³ found that safer sleep routines were disrupted on the weekend when mothers' partners were present and safer sleep became less of a priority. Mosley et al.²⁹ found that in some families, babies slept on their front when at their grandmother's house. Some mothers were also influenced by family 'traditions', such as using blankets or putting baby to sleep on their side, based on the rationale that their mothers had done these when they were younger without repercussions.^{29,44,45}

The findings also showed that sources of information need to be seen as credible to influence parents' behaviour. A greater number of studies reported that parents were more likely to follow advice from family, peers or the internet than health professionals.^{19,20,27,30,46}

Interviews

Interview participants also reflected on the way in which family influences can determine how and where their baby sleeps. There were fewer instances of babies sleeping at other people's houses or having to be moved within their own house due to guests over the first months of their new baby's arrival, due to the Covid-19 pandemic. But, when parents did speak of what the child safeguarding review panel might call 'out of routine' sleeping, these were often children spending a day or two per week at their grandparents' homes. In these situations, the mothers reported conflict but also confidence in discussing safer sleep practices with the grandparents and ensuring that these are in place when they stay overnight: *She'll have her own ways, but she goes with what I like. She tries to meet my standards, kind of thing.* Mother 9 (aged 19, 1 child); *And I've told her, even if she has a bad night, she does not put him in the bed.* Mother 1 (aged 25+, 3 children)

Some families – none of whom described any instances of bedsharing or co-sleeping - appeared to have very open and frank conversations with those health visitors and social workers who were supporting them: *She [home midwife] wasn't happy [with the mattress in the Moses basket], so we had to go get it changed straight away. She came back - Father 8 (aged 19, 2 children); *Literally she came back the next day and we'd already got it sorted for him... she could see that we were listening to her and actually taking her advice.* Mother 8 (aged 18, 1 child)*

The interview data also suggests that the internet and social media are also frequently seen as credible sources of information, with little consideration given to the reliability of this guidance - *I Google it, then I'll read every single one, think which one is the best and I'll just click on that one.* Mother 2 (aged 24, 2 children). Furthermore, one mother described not accessing an online reliable and trusted source.

Finally, one participant married to a partner from a different culture described the positive benefits that co-sleeping has brought for her and her family and how she is reassured by people around her doing the same things as she does.

Intervention component analysis

Two interventions were found to specifically work with parents to develop confidence to be able to challenge unsafe sleep advice from their social influences through the BCT **'Identification of self as a role model' (BCT 13.1)**: the intervention described by Gilchrist³⁷ educated parents on SIDS so that they had the confidence to challenge the views of those in their social network, and Cowan and Pease²³ provided parents with the opportunity to practice ways of managing various challenges to safer sleep information. Three studies encouraged parents to make a commitment to share safer sleep knowledge within their networks.^{18,22,47}

Two interventions incorporated the BCT **'Credible Source' (9.1)**, with young mums accessing advice from their peers via the Little Lullaby website, which was described as more realistic than advice from health professionals.³⁷ Cowan and Pease²³ found that link parents believed it was a strength that they were peers, which made it easier for them to start conversations with other parents about safer sleep as they already had something in common.

Environmental context & resources

Decision-making analysis

The environmental context, such as resources and barriers and facilitators within the environment may play a role in determining an individual's behaviour.⁹ The analysis of decision-making in the literature found that access to a cot did not necessarily mean that it was used or used consistently.^{19,29,34,48} In two studies, co-sleeping was linked to lack of space for a cot,^{45,49} and in one study, the baby was moved to a cot in their own room due to a lack of space for a cot in the parents' bedroom.⁴⁵ The influence of the wider environment on parents' behaviour was also revealed. For instance, Chianese et al.⁴⁶ and Joyner et al.⁴⁹ found that mothers co-slept to protect their infant from

environmental concerns, such as vermin, housefires, kidnapping and violent older siblings.

Interviews

For some mothers, changes to their environments impacted on their sleep routines and practices. One participant describing an overwhelming sense of depression, as well as cramped sleeping spaces and a noisy environment within the mother and baby unit she had to suddenly move into. Thus, although aware of safer sleep practices, her environment led to difficulties with maintaining any routine, along with the safer sleep behaviours she had previously practised suggesting that capability (i.e. knowledge) alone is not enough when the environment does not provide opportunity for safer sleep. Even in cases where mothers were provided with accommodation in refuges or mother and baby units, which included cots and beds, they did not have such equipment when returning to their own homes.

Intervention component analysis

The BCT **'Adding objects to the environment' (BCT 12.5)** was commonly targeted, with ten interventions supplying a cot or similar safer sleep enabler.^{18,22,24,36,43,47,50-53} The intervention described by Young et al.⁴⁷ which provided a portable Pepi-Pod crib, was informed by socio-ecological theory, which states that interventions also need to take into account the way in which an individual's environment influences their behaviour. However, the evidence from our interviews and the decision-making literature suggests that families may not always face challenges with obtaining cots, and furthermore, that having access to a cot does not necessarily entail its use. Therefore, this may not be the most pertinent mechanism of behavioural change for a best practice model to incorporate, particularly if families already have access to cot through other means, such as charities.

Only two interventions^{38,40} considered the wider environmental context, incorporating the active ingredients **'Restructuring the physical environment' (BCT 12.1)**. Both interventions addressed parents' holistic needs. For instance, the intervention described by Dillon⁴⁰ facilitated

multiagency case planning meetings for at risk families, which included working with housing services, and Kemp et al.³⁸ reported a sustained home visiting programme where nurses supported mothers both antenatally and postnatally, addressing topics such as housing and the physical environment.

One intervention included the BCT '**Pharmacological support**' (BCT 11.1), with drug services listed as a multi-agency partner, providing support for alcohol/substance misuse⁴⁰

Stakeholder findings in relation to opportunity

The practitioners at the workshop spoke about:

- The influence of the wider family and also peer support and discussed the value of interventions aimed at the wider family (e.g. social media campaigns aimed at grandparents);
- Continuity of care as being key for building relationships with parents, particularly to form non-judgemental, trusting relationships where parents feel that they can disclose and discuss their infant sleep practices, including the desire to co-sleep; it was noted that these relationships may not be feasible within business-as-usual services;
- The provision of cots or equipment was often not a key determinant of parents' behaviour.

MOTIVATION: Beliefs about capabilities; Optimism; Beliefs about consequences; Goals; Emotion

Beliefs about capabilities

Decision-making analysis

Beliefs about capability may play a part in influencing an individual's behaviour. The decision-making analysis revealed that parents may not always have accepted 'the truth, reality or validity about an ability',⁹ such that their experiences were what were most influential on their behaviour. For instance, previous parenting experience was sometimes found to

influence parents' current decision-making, even if unsafe, and these experiences were seen as more influential than guidance.^{27,29,33,45,46} Tipene-Leach et al.³⁴ found that some parents want to be autonomous in their decision-making, and advice that goes against their instincts may lead to tensions with health professionals.

Conversely, parents may doubt their capabilities, sometimes reporting that they do not have a choice in regards to where and how their baby sleeps, which also reflected parents' accounts during the interviews we conducted. For instance, parents in a study by Chianese et al.⁴⁶ found that their infant will only sleep in bed with them so they are left with no other option but to co-sleep, and Tipene-Leach et al.³⁴ found that some parents reported that their infants would only sleep prone and that they use pillows to try and prevent this. Some mothers also believed that SIDS was random or God's will and there was nothing they could do about it.³¹

Interviews

In our interviews with parents, we also found that previous experiences of parenting could be potentially more influential than safer sleep guidance. Mother 13's decisions were in part influenced by her use of alcohol, which she describes as problematic at the time, but something she kept hidden from health visitors and midwives. However, Mother 13 feels that co-sleeping was the right decision, and one which she would repeat: *I'm in recovery. At the time I was drinking. Yes, I mean... even if I had another baby and it was an issue, I would still do it [bed share] now. I would be confident and comfortable doing it now, because it suited us.* Mother 13 (aged 31, 1 child)

Intervention component analysis

Two interventions were found to directly target this TDF, incorporating the BCT '**Verbal persuasion about capabilities**' (BCT 15.1). Firstly, the Little Lullaby website for young parents helped to instil confidence in young mothers that they were doing a good job as parents³⁷ and the MECOSH programme delivered by specialist nurses in both the antenatal and postnatal period aimed to develop mothers' confidence in caring for their babies.³⁸

Three interventions^{15,16,42} aimed to increase self-efficacy by using enhanced messaging for parents who believed that suffocation was avoidable but that SIDS was an act of destiny and could not be prevented. Mathews et al.⁴² focused on enhanced messaging for reducing soft bedding use and the authors reported a positive effect on parents' behaviours. However, the intervention described by Moon et al.,¹⁶ which focused on reducing bedsharing, and the intervention described by Carlin et al.,¹⁵ which focused on sleep position, did not report an effect of enhanced messaging on parents' behaviours.

Optimism

Decision-making analysis

Optimism, the confidence that things will happen for the best, could also play a part in influencing behaviour.⁹ There were several examples in the literature of what could be classed as 'unrealistic optimism'.⁹ In one study some parents were of the opinion that a sleep-related death could not happen to their infants.²⁷ It was also found that unsafe sleep practices may become more common as the infant gets older as parents gain in confidence that nothing bad will happen.^{20,31,54} In an attempt to reduce the risks of co-sleeping, parents described relying on other techniques to balance out harm. For instance, the use of breathing monitors, checking the baby more regularly, using soft bedding to protect the infant, cupping the baby in their arm when in bed.^{28,29,33,44, 48} It was also a common belief that mothers' intuition would prevent harm when co-sleeping.^{20,27,29,34,46} Finally, Pease et al.³³ found that for some parents, unsafe sleeping situations that are only occasional are seen as less risky.

Interviews

Our interviews found examples of reliance on certain techniques to balance out harm. For instance, one participant described the risks associated with sharing her bed with her baby, but also the measures that she puts in place to mitigate some of this risk: *So, I would try and stay awake so I could make sure that when he's next to me he's far enough away from me that if I rolled over.* Mother 14 (aged 36, 3 children). Another participant similarly described how she *"had big cushions, and I put them down the side of the bed, and I put them in between us. Thinking, if I did roll*

over, I would go onto the cushions, and not her... My biggest fear is one of them being in my bed and me rolling over onto them. Mother 1 (aged 25+, 3 children)

Intervention component analysis

No specific BCTs are currently linked with unrealistic optimism.⁹ However, several BCTs could be relevant for targeting this mechanism of behaviour, such as **'Instruction on how to perform the behaviour' (4.1)**, **'Information about health consequences' (5.1)**, **'Salience of consequences' (5.2)**.

Beliefs about consequences

Decision-making analysis

Michie et al.⁹ state that beliefs about outcomes can influence behaviour. Two studies in the literature described how parents made the decision to place their infant in a cot to sleep as they feared that co-sleeping could become a habit that would be difficult to stop.^{27,49} Fear of suffocation or injury was also another deciding factor influencing parents' decisions to place their infant in a cot.^{19,29,32,34,49} However, some parents believed that soft bedding such as blankets was essential to stop child from becoming cold;¹⁹ bumper pads were seen as protective¹⁹ and also used for aesthetic reasons;⁴⁴ and pillows were used to protect baby when co-sleeping.^{19,34,44,49} Parents were found to be fearful of choking, and used the side or prone position to alleviate these worries.^{20,27,29,31} Some also perceived co-sleeping to be a way to keep infants close for observation,^{19,46,49} particularly when they are ill.¹⁹

Interviews

While feelings of anxiety did not affect the sleep practices of all interviewees - *I've always been scared to put her in the cot. She never went [from a Moses basket] into a cot until she was seven months old. I've been too scared... [but] I wouldn't let her sleep with me. Couldn't. Just in case I rolled over and squished them.* Mother 2 (aged 24, 2 children), we also found examples of when sickness and anxiety around what to do led to practices being adopted that were potentially less safe: *So like acid reflux, what if they've got that, what do I do then? Because she wakes up constantly through the night. So how do I prevent that from happening when she's asleep? I*

had no advice on that. So it, kind of... the starting of the bed share came back. Mother 4 (aged 19, 1 child). Another mother described how the decision to co-sleep with her son was being driven by her own anxiety, which was exacerbated by complications her son faced when he was born.

Intervention component analysis

Two interventions were found to address parents' beliefs about consequences. The intervention described by Dillon⁴⁰ incorporated the BCT '**Salience of consequences**' (BCT 5.2) whereby a public health approach was undertaken using posters in the local area to warn of the consequences of unsafe sleep practices. The intervention described by Ostfeld et al.³⁹ incorporated the BCT '**Comparative imagination of future outcomes**' (BCT 9.3), with high school students taking part in an educational program asked to consider whether the baby of a pregnant woman with smoke exposure would have a higher risk of SIDS.

Goals

Decision-making analysis

The goals which an individual wishes to achieve may also influence decision making.⁹ Studies described parents choosing to co-sleep in order to meet a number of different parental goals in relation to themselves or their infant more easily, including breastfeeding,^{19,29,32,34,45,46,49,54} and improving the parents' and/or the child's sleep.^{19,27,28,32,33,46,48,49} In one study, unsafe sleep locations were reportedly used during the day, which was linked to the need to carry out tasks downstairs whilst monitoring their infant.³²

Interviews

Our interviews also showed that the decision to bed share was connected to the need to have their infant close - *She did seem to get better sleep. She settled a lot better. I think just knowing that she was next to us, settled her down. She's from then been a really good sleeper. She's still there [sharing our bed] now. That's the only thing, yes.* Mother 13 (aged 31, 1 child). Parents also cited practical reasons linked to difficulties in feeding and winding due to colic: *There*

was one time [when daughter was 4 months of age] that I went in, when she'd woken up, and she was almost choking on the milk that was coming up. So, from then on, I would put her down in her cot, but through the night I would just have her in my bed, next to us. [...] I wanted her close to us. And as well, because it took so long to wind her. It was pretty exhausting, to be honest. (Mother 13, aged 31, 1 child).

Intervention component analysis

Only two interventions were found to target parents' goals. Kemp et al.³⁸ described incorporating the BCT '**Goal Setting (Outcome)**' (BCT 1.3), whereby the pre-natal intervention was strongly focused on the mother's goals for themselves and their babies. The intervention described by Dillon⁴⁰ incorporated the BCTs '**Goal setting (behaviour)**' (BCT 1.1), '**Goal setting (outcome)**' (BCT 1.3) and '**Action planning**' (BCT 1.4), whereby the vulnerable baby service facilitated case planning meetings with families and identified needs and mobilised resources. This plan was then reviewed by health professionals with outcomes measured: **BCTs 1.5 'Review behaviour (goals)'** and **1.7 'Review outcome (goals)'**.

Emotion

Decision-making analysis

Various emotional reactions to events may have an impact on behaviour.⁹ Other emotional reasons for co-sleeping were elicited by parents in the included studies, such as the way in which it provided a means of bonding with their baby.^{19,20,29} In one study, a mother stated how she would feel lonely if not co-sleeping with her baby.⁴⁶ Miller et al.³⁰ found that parents co-sleep as this provided comfort to the child and Yuma-Guerrero et al.⁴⁵ found that, even if the child pointed to the cot, parents would insist on co-sleeping for closeness.

Interviews

Emotional reasons were also given for co-sleeping: *It was so lovely falling asleep with her there, and waking up with her there...to have that time, especially when I got sober, to have that time of before I go to sleep, just seeing her there, and then waking up in the*

morning and seeing her there, it's precious. That time is really important to us. It's one of my favourite points of the day...it's added to the relationship that we have together, as well, as a unit, together. Mother 13 (aged 31, 1 child).

Another mother who had experienced domestic violence talked about how having her baby in bed helped her to overcome feelings of hostility to the baby: *I know a lot of people say, "Oh, the love that you have for your baby is like no other," where I despised her... I still loved her in my heart, but in my head, I didn't, because of everything that's happened [trauma from violent relationship with baby's dad]. So sharing the bed with her, made me love her in my head as well as in my heart. And now we're just inseparable.* Mother 4 (aged 19, 1 child).

Intervention component analysis

One intervention used the BCT '**Framing/Reframing**' (BCT 13.2) to address the influence of emotion on behaviour: Salm-Ward et al.⁴³ described an intervention which involved health educators suggesting alternative ways that mothers could bond with their babies besides co-sleeping.

Stakeholder findings in relation to motivation

Stakeholders reflected on the following motivating factors for co-sleeping and less safe sleep behaviours:

- Co-sleeping and breastfeeding were noted to be intrinsically interwoven, although the latter is lower in disadvantaged populations;
- Lack of sleep with stakeholders emphasising the need for dads and other members of the support circle to help mothers to get more sleep;
- The lack of support for parents at night was also raised, as most services supporting parents are 9-5 despite the fact that crisis points relating to infant sleep may be during the night;
- The way in which usual practice tends to focus on physical aspects of caring for a baby, with emotional aspects often being neglected;
- The need for a change in the narrative away from what parents 'should do' towards a realistic

conversation about sleeping practice (e.g. including very specific examples/experiences and working through situations that might occur and pose more risk to the baby);

- This conversation should take a trauma-informed, attachment aware and resilience-informed approach, and should involve the use of a tool that would help to move the interaction on from purely an information/knowledge approach (CAPABILITY) towards a focus upon emotion (MOTIVATION);
- A current research project was described which is looking at co-producing a safer sleep intervention for vulnerable groups, which will potentially be based on Pepi-Pods and which takes into account emotional motivators for co-sleeping, such as facilitating close contact but reducing risk of suffocation.

Practitioners also reported that:

- They do not always feel up to date with the latest recommendations and may lack the skills to deliver information to parents;
- Health professionals should receive regularly updated guidance from key players (e.g. NICE and Lullaby Trust);
- A harm reduction (i.e. risk minimisation approach) was felt to be a complex and difficult approach when working with high-risk families such that practitioners might default to the use of a zero-tolerance approach to safer sleep messages;
- Practitioners may benefit from a toolkit and regular training on how to tailor and document conversations with families about safer sleep so that they feel empowered to have confident conversations about risk minimisation;
- All practitioners are experiencing time and work pressures and any new best practice model based on the COM-B model should be succinct and not more time-consuming to implement.

Our study has provided insights into the decision-

Discussion

making of families who have had recent contact with a children and families social worker and the way in which COM-B components may influence decisions in regards to their infant's sleep. We have also explored the way in which the COM-B model can be used to understand how safer sleep interventions may work to change behaviours in this population. We have used these findings, along with input from stakeholders, to suggest a number of implications for practice.

Our key finding is that efforts to reduce SUDI among families with a social worker should go beyond safer sleep 'messaging' and aim to provide information alongside open and meaningful conversations between parents and practitioners about infant sleep and sleep practices. Even among this group of families who are receiving intensive levels of support, health visitors are trusted but often parents saw their contact as quick and infrequent without proper time for discussion. These meaningful conversations may be difficult because of limited time, as well as the threat and judgement that families feel from child protection services and the complex problems within these families such as alcohol and drug use. It is likely these conversations would focus upon supporting parents rather than adversarial identification of risk. It should be noted that 'out of routine' may not be a helpful term in this regard.

Practitioners will need time, skill and significant organisational support to have such conversations which will need to be trauma-informed, may involve acknowledging and minimising risk and eliciting a family's motivations in order to prioritise infant safety as well as ways to achieve parental goals such as sleep or bonding. The Prevent and Protect practice model for reducing the risk of SUDI may provide a useful tool for working with parents in this way.⁴ The most unsafe situation might be one in which practitioners assume compliance with safer sleep guidance and parents feel they cannot disclose uncertainty or lack of confidence in their own parenting and will not admit practices they know are contradictory to safer sleep advice. Recent findings from the National Child Mortality Database¹ suggest that unplanned co-sleeping, co-sleeping on a sofa and co-sleeping in the presence of adults who have consumed alcohol and drugs remain the key

risk factors that are present at many infant deaths. Interventions that actively support families to prioritise infant safety in all sleep environments, and to plan for safety during times when the risks to an infant may be increased, may help ameliorate the impact of these particular risk factors.

Limitations

With regard to the component analysis of the systematic review of interventions, only three were conducted in the UK. Similarly, only four of the papers in the decision-making review were carried out in the UK. Whilst interventions were developed for families with children at increased risk of SUDI, the country, society and culture in which these families reside may impact on their capability, opportunity or motivation to carry out safer sleep behaviours in different ways to families in the UK. For instance, guidance around co-sleeping may be received differently according to cultural or societal practices; social influences amongst different cultures may have greater or less sway; and cultural or societal factors may mean that thought processes are constructed in different ways. Despite these limitations, the studies are representative of higher income countries with largely similar safer sleep advice given at the national level. Cultural and social influences do also vary within countries, including within the UK.⁵⁴

In addition, due to the varying study designs and methodologies used to evaluate the effectiveness of the individual safer sleep interventions, we were unable to compare their effectiveness or thereby to say conclusively which of these interventions and their behavioural change components would be suitable for best practice models to include. We have nevertheless, identified intervention components that map well on to the key components of the COM-B model.

In terms of the interviews, we were not able to ascertain whether the infants of the parents we interviewed were at greater risk of SUDI, although they were experiencing problems such as use of substances, mental health problems and domestic abuse which may be similar to at-risk families. The parents were

also well-supported at the time of the interviews as a result of recruiting through a charity, meaning that they were not likely to be at the highest risk at the time we interviewed them. Finally, all participants were white British and from the same region, and we acknowledge that there may be limitations when generalising the findings to other regions or populations.

Implications

Principal finding 1:

A range of motivational factors (such as parental sleep deprivation, settling the infant, and the desire to bond with the infant, including following recent trauma) play a key role in influencing decision-making about the infant sleep environment. **Source:** Decision-making analysis; intervention component analysis; interviews; stakeholder workshop.

Implication 1:

Professionals should move from an emphasis on using messages to deliver knowledge to a wider focus on the use of open conversations to identify motivations and provide individual and tailored support based on the needs of different families. In these conversations, the practitioner should focus on understanding why and when the parent(s) do or don't follow safer sleep guidance, listening to parental goals (e.g. to sleep or bond with the baby) and seeing infant sleep as a part of wider infant care (e.g. sleep practices connected to settling and comforting strategies during waking hours). This might allow practitioners to explore the safest ways for parents to meet their own goals and discuss with parents the reasons behind safer sleep advice. This may mean the identification of motivational factors with regard to planned co-sleeping and accidental sharing of a sleep surface and possible mechanisms of protection should be included into existing infant sleep focused information and resources.

Principal finding 2:

Professionals responsible for conversations about infant sleep safety have concerns about providing individualised and tailored support and managing risk in families with a social worker as identified in Principal finding 1. **Source:** Stakeholder workshop

Implication 2:

Practitioners need skills to have conversations with families based on the principle of minimising risks to infants in all sleeping environments. Such conversations need to be consistent with existing guidelines from NICE and The Lullaby Trust while also being sensitive to the needs and context of individual families. This is likely to require specific training and support for professionals and perhaps organisational culture change to allow professionals to confidently and skilfully identify and then manage risk. The review into the deaths of Arthur Labinjo-Hughes and Star Hobson⁵⁵, recommended that specialist multi-agency child protection units are implemented in each local authority in England. These units have the potential to lead on organisational culture change and skill development within services supporting families with a social worker, if the units prioritise this expertise and approach.

Principal finding 3:

Credible, trusted sources and sound reasons with regard to how and why safer sleep messages protect infants are key to the delivery of effective conversations about safer sleep with families with a social worker. **Source:** Decision-making analysis; intervention component analysis; interviews; stakeholder workshop

Implication 3:

The most appropriate professionals to deliver safer sleep messaging to families with a social worker are likely to be those who have the opportunity to provide continuity of care and to establish trusting relationships with these families. One way that this could be translated into practice is through embedding delivery of safer sleep messaging within existing high intensity home visiting programmes for parents, such as the such as the Family Nurse Partnership (FNP) and Maternal Early Childhood Sustained Home Visiting programme (MECSH,) where practitioners have frequent contact with families and where the statutory responsibility for safeguarding is less apparent to parents. If high contact, continuity of care, trusting relationships and sufficient organisational support can be established within business-as-usual health visiting for families with a social worker (i.e. in “specialist or targeted support”),⁵⁶ health visitors outside of programmatic interventions such as FNP or MECSH may be the appropriate professional to have safer sleep conversations with these families. Peer support and the maximisation of existing family support networks may also be beneficial.

Principal finding 4:

Social pressures with regard to ‘good parenting’ may preclude the possibility of parents acknowledging and discussing/planning for ‘out of routine’ circumstances, especially if the word ‘routine’ is used. **Source:** Interviews; stakeholder workshop

Implication 4:

Practitioners could acknowledge common parenting situations in which risk may be increased and support families with planning for safety during those times. This is likely to require the development of further risk identification and planning tools into practitioner expertise.

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Appendix 1 – Demographic details of interview participants

Participant	Age of person who gave birth	Baby's sex	Baby's birth weight	Baby spent time in Neonatal Intensive Care?	Number of babies (including this birth)?	Has this child previously been removed from their care?	Older child[ren] removed from their care?	Did person who gave birth smoke tobacco during pregnancy?	Is the primary caregiver of the baby supported by a partner?	Does the partner smoke tobacco?
01	25+	Male	2500g +	No	2-3	Yes	Yes, still in care of others	Yes	No	-
02	21-24	Female	-	No	2-3	No	Yes, still in care of others	-	No	-
03	Under 21	Male	-	No	1	No	-	No	No	-
04	Under 21	Female	-	No	1	No	-	-	No	-
05	25+	Male	-	No	2-3	No	Yes, still in care of others	-	No	-
06	25+	Female	2500g +	Yes	4+	No	Yes, still in care of others	No	Yes	Yes
07	25+	Male	2500g +	No	2-3	No	No	No	Yes	Yes
08	Under 21	Male	1750g - 2499g	No	1	No	-	No	Yes	Yes
09	Under 21	Male	2500g +	No	1	No	-	No	Yes	Yes
10	25+	Female	2500g +	No	4+	Yes	Yes, still in care of others	No	No	-
11	21-24	Female	2500g +	No	2-3	No	Yes, still in care of others	No	Yes	No
12	25+	Female	2500g +	No	2-3	No	Yes, now returned	No	Yes	Yes
13	25+	Female	2500g +	No	1	No	-	Yes	Yes	No
14	25+	Male	2500g +	Yes	2-3	No	No	Yes	Yes	Yes

Appendix 2 – Interview topic guide

Positioning as a curious but ignorant person to family's circumstances, non-judgemental interviewer, highlighting the importance of honesty within the study to bring real life into the research that will help support families better in the future (and can prove this with changes to how advice is given which acknowledges difficulties)

1. Background - Can you tell us about your current family life/living situation?

- a. Probe: ages and numbers of children, partner, extended family members or others sharing house, support in place etc.
- b. Probe around reasons for their contact with children's social care services?
- c. Probe around social role (mother, father, grandparent) – and the influence they have over safe sleep on a day-to-day basis

Ask them to think back to a typical day with a/their baby in terms of bedtime. Get them to tell you what they do...then probe...how did you learn to do that; who has given your advice; what advice did they give you. Then you might ask them to think back to a time when they were out of routine with the baby at bedtime...what happened...what would have been helpful.

2. Knowledge - Can you tell us what you know about safe sleep guidance, and your experiences of receiving safe sleep advice or information for your child/children/grandchildren

- a. Probe around knowledge of risk factors/risky practices
- b. Probe: sources of information
- c. Were they seeking this advice, or given this advice without asking for it?
- d. Did this change if they had subsequent/previous children?

3. Beliefs about consequences – what do you feel would happen if you did/didn't follow safe sleep guidance?

- a. Optimism – strong parental or maternal
- b. Fatalism – nothing they can do to control fate
- c. Reinforcement – what are the benefits/disadvantages of following safer sleeping advice
- d. Intentions/Goals – what are your motivations to follow/not follow sleep guidance? Do you set goals to follow all/some/most, on most days/weekends/until a certain age etc.

4. Skills – what are the techniques and practices you employ for managing sleep in your family?

- a. Probe around practices they use(d) – co-sleeping, crib, etc.
- b. and how they acquired these practices or techniques – previous experience, advice, social media, trial and error

5. Beliefs about capabilities – how confident do you feel about [consistently] managing sleep practices for your child/ren/grandchildren?

- a. Probe if they feel able to introduce sleeping routines/respond to babies needs when crying/manage their competing responsibilities e.g. as a mother of other children, partner, work).
- b. Self-efficacy – confidence to implement some or all of the safer measures
- c. Behavioural regulation - Do they feel confident to maintain these practices/responses out of routine
- d. What happens in out of routine circumstances such as visiting family and friends, weekends away, parties etc.

Appendix 2 – Interview topic guide (continued)

6. Decision process - What informs your decisions relating to safer sleep practice?

- a. parent's needs,
- b. baby's needs,
- c. other family member's needs
 - i. (these may relate to conflict in family need but also cognitive processes such as parental reflective functioning i.e. does the parent consider the babies needs or their own needs)
 - i. Other children – changes to safe sleep over time

7. Environmental context and resources – are there things about where you are living or about your situation that impact on safer sleeping?

- a. Probe around presence of risk factors – overcrowding, smoking, substance use
- b. Probe around other issues like lack of resources, baby equipment/furniture/bedding etc.

8. Social influences – are there other people in your life who impact upon the sleeping practices you use?

- a. Probe around friends' or parents' influence
- b. Social media
- c. IPVA, controlling/substance using partner
- d. Other children

9. Emotion – how do you feel when you are not able to follow the guidance?

- a. Are there feelings of remorse or guilt etc. cognitive dissonance allowing for more positive emotions e.g. baby sleeps on tummy, we all get more sleep and are able to cope with day times better?
- b. Does this impact on future decisions
- c. Does this make asking for support or discussing with practitioner difficult/fear of consequences etc.

10. How do you feel safer sleep guidance/advice could be delivered better?

- a. ask about individual messages and what would have helped them to follow the advice, if anything, with some ideas e.g. tips to help babies settle on their backs, would you have looked at those and tried any of them out?
- b. Probe around terminology, medium, person delivering message, language?
- c. Resources? Baby boxes
- d. Any other ideas about how to improve information, skills, and change behaviours?

Table 1 – Summary of the determinants of decision-making from the literature and our interviews with parents

COM-B Behavioural component	TDF	Findings from decision-making literature	Findings from interviews
CAPABILITY	Skills	Some parents reported co-sleeping as infant would not settle in the cot.	Several parents described being unable to settle their baby in a cot or Moses basket, and would choose to co-sleep or try to stay awake all night.
		Knowledge	Some parents reported that safer sleep education was influential on how and where their baby slept.
	Some parents stated that receiving safer sleep guidance did not mean that it was followed, and in some cases, only increased anxiety.		Several participants reported that safer sleep advice they were given was not followed, and this was not discussed with practitioners.
	Some parents reported a lack of guidance or guidance that is inconsistent, conflicting, incorrect and outdated.		Most participants felt that the advice they had received was current and consistent.
	Some parents with more than one child reported that health professionals do not take time to explain guidance again.		Most parents with older children felt that any advice they were given was common sense and that practitioners generally did not go into detail about updated guidance; however, others felt they had learned new things.
	Some parents reported confusion around SUDI, SIDS and cot death terminology which influenced sleep practices.		For parents interviewed, safer sleep encapsulated SUDI, SIDS, but most often their focus was on suffocation, rolling onto babies, or babies falling from the bed.
	Some mothers stated that they were unhappy with guidance being delivered using a didactic approach without opportunities to ask questions.		The majority of mothers felt able to ask questions of their health visitor or support worker, and appreciated this option if they were unsure about guidance they had been given.
	Memory, attention & decision processes	Some parents reported engaging in safer sleep practices but were unable to recall why they reduced risks.	All parents described various safer sleep practices and understood how these reduced risk.
		Some parents stated that they do not follow guidance if they do not understand how it protects infant.	All parents indicated that understanding risks and why practices protected infants was an important part of safer sleep messaging.

COM-B Behavioural component	TDF	Findings from decision-making literature	Findings from interviews
<u>OPPORTUNITY</u>	Social influences	Some parents reported that usual safer sleep behaviours can become compromised by social influences (i.e., family members).	None of the parents described social influences that disrupted safer sleep behaviours.
		Some parents report following family traditions even if unsafe.	One parent described how extended family traditions of co-sleeping was used to rationalise their choice.
		Some parents report that their decisions are influenced by sources seen as credible: partners, peers, family members, the internet, television, and less often, practitioners.	Several parents suggested that social media was an important and credible source, alongside parents and siblings. Younger parents report informing their own parents about updated guidance.
	Environmental context & resources	Some parents report co-sleeping as a way to protect infant against unsafe environment.	None of the parents reported protection of their infant as a factor in co-sleeping.
		Some parents report co-sleeping or placing infant in another room as no space for a cot in their bedroom.	The majority of parents were able to easily source cots and baskets etc. and had sufficient space. One parent described difficulties when having to stay in a mother and baby unit.

COM-B Behavioural component	TDF	Findings from decision-making literature	Findings from interviews
MOTIVATION <u>Reflective</u>	Beliefs about capabilities	Some parents report that previous parenting experiences influence current sleep practices, even if unsafe.	None of the parents indicated a continuation of previous unsafe practices. One mother described co-sleeping with her third child, despite never having done so with her older children and being adamant that she would not do so.
		Some parents believed that they do not have a choice about how and where their infant sleeps as child influences sleep decision-making.	The vast majority of parents felt they had autonomy; however, several parents described how their decisions were influenced by social workers, and that they were keen to demonstrate this 'compliance' with safe sleep guidance.
		Some mothers believed that SUDI was random or God's will and could not be prevented.	One mother described how her decision to co-sleep began when her four-month-old daughter was unwell, but it had become impossible to break this habit at nearly four years of age.
		Some parents stated that they want to be autonomous in their decision-making.	
	Optimism	Some parents believed that a sleep-related death could not happen to their infant.	This was not reported by any of the parents.
		Some parents reported that potentially unsafe sleep practices become more common as infant gets older as anxiety decreases with successful sleep episodes.	This was not reported by any of the parents.
		Some mothers believed that their intuition will prevent harm when co-sleeping.	Those mothers who did co-sleep described themselves as light sleepers or hyper aware of their babies when sharing a sleeping space with them.
		Some parents reported relying on other techniques to balance out harm, such as checking the infant more frequently or using soft bedding to protect infant from falling from the bed.	Mothers who reported co-sleeping relied on practical measures such as pillows to prevent them from rolling onto their babies, or babies from rolling out of bed, and adjusting their own sleeping position or style to make it safer for their baby.
		Some parents believed that occasional unsafe practices are less risky.	The majority described never co-sleeping; where co-sleeping was described, it was a frequent, often ongoing practice.

COM-B Behavioural component	TDF	Findings from decision-making literature	Findings from interviews
<u>MOTIVATION</u> Reflective	Beliefs about consequences	Some parents reported using a cot as they feared co-sleeping could become a habit.	The majority of parents described getting the baby to sleep in a cot was an important aspect of establishing good habits and routines.
		Some parents reported using a cot as they feared suffocation or other injury from co-sleeping.	Many parents described using a cot and never co-sleeping due to fear of harming their baby.
		Some parents saw soft bedding as essential to stop infant from becoming cold or to prevent injury or for aesthetic purposes.	None of the parents described this.
		Some parents reported using prone or side position because they feared infant could choke if placed on their back.	Several parents reported propping up mattress to elevate the baby's head when they were vomiting or were ill.
		Some parents viewed co-sleeping as safe as it provides a way to monitor infant more closely.	Several parents described how they felt more able to monitor their baby while co-sleeping, and that doing so meant they all got better sleep.
	Goals	Some parents reported co-sleeping to facilitate breastfeeding.	None of the mothers were breastfeeding their baby.
		Some parents reported that their need to sleep influences decision to co-sleep and other behaviours (e.g., using pacifiers, moving baby to another room).	Decisions to co-sleep were framed around being able to take better care of their baby, and get better sleep as a result. No mothers reported that co-sleeping was motivated by the need to sleep.
		Parents reported sometimes using unsafe sleep locations during the day for convenience.	All parents described putting their baby to nap in pushchairs, baskets or cots etc.
<u>MOTIVATION</u> Automatic	Emotion	Parents report co-sleeping for bonding and closeness with their infant.	Those parents who co-slept all reported that doing so gave them a closer bond with their baby, reduced their anxieties, and provided them with better sleep.

COM-B component	TDF	BCT	Description of the interventions	Number of interventions
<u>CAPABILITY</u>	Skills	6.1 Demonstration of the behaviour	Interventions provided parents with visual or practical demonstrations of settling skills and safe sleep practices.	5
		8.3 Habit Formation	Parents provided with baby book designed to be read regularly which included pictures demonstrating the safe sleep position.	1
	Knowledge	4.1 Instruction on how to perform the behaviour	Interventions involved providing parents in with safe sleep guidance in the form of: written safety briefings; verbal information face to face in a group or on an individual level; baby blanket printed with risk factors for SIDS; baby book with safe sleep guidance; social marketing campaigns to increase awareness of SIDS; safety information as a sticker on the cot and sewn into infant bedding; public health approach using posters to warn of risks; advice from trained peers; website to access information about SIDS and seek advice; advice from practitioners during pre-natal and post-natal visits; high school educational programmes.	23
		Memory, Attention & Decision Processes	7.1 Prompts & cues	Interventions involved supplying guidance designed to be placed where parents likely to see it repeatedly: on a baby blanket, a sticker on the cot, labels sewn into bedding and in a baby book designed to read regularly to their infant.
	5.1 Information about health consequences		Interventions involved providing parents with guidance on risk factors for SUDI/SIDS, such as how babies suffocate, and ways to reduce/eliminate these risks.	11

COM-B component	TDF	BCT	Description of the interventions	Number of interventions
<u>OPPORTUNITY</u>	Social influences	9.1 Credible source	Interventions provided peer advice online or through training peers to have conversations about safe infant sleep with other parents.	2
		13.1 Identification of self as a role model	Interventions encouraged and empowered parents to challenge unsafe advice and share safer sleep information within their social networks or anyone caring for their infant.	5
	Environmental context & resources	11.1 Pharmacological support	One intervention included pharmacological support for parents.	1
		12.1 Restructuring the physical environment	Interventions included support for housing, the physical environment and to reduce hazards in the home.	2
		12.5 Adding objects to the environment	Interventions provided families with a cots and suitable bedding.	10

COM-B component	TDF	BCT	Description of the interventions	Number of interventions
<u>MOTIVATION</u>	Beliefs about capabilities	15.1 Verbal persuasion about capabilities	Interventions aimed to develop mothers' confidence as parents.	2
			Interventions provided enhanced messaging for both SIDS risk reduction and suffocation prevention in order to increase parents' self-efficacy for preventing SIDS.	3
	Optimism	-	No specific BCTs were found to target optimism	
	Beliefs about consequences	5.2 Salience of consequences	A public health intervention with posters describing consequences of unsafe sleep practices displayed in the local area.	1
		9.3 Comparative imagination of future outcomes	Students in a high school education program were asked to consider the risks of SIDS for an infant whose mother was exposed cigarette smoke.	1
	Goals	1.1 Goal setting (behaviour)	The vulnerable baby service intervention facilitated case planning meetings with families.	1
		1.3 Goal setting (outcome)	Needs were identified and resources mobilised.	
		1.4 Action planning	One pre-natal intervention had a strong focus on the mother's goals for themselves and their babies.	1
		1.5 Review behaviour (goals)	The vulnerable baby service intervention involved measuring and reviewing outcomes.	1
		1.7 Review outcome (goals)		
Emotion	13.2 Framing/ Reframing	Intervention involved suggesting alternative ways of bonding with baby other than co-sleeping.	1	

