

To Cry or Not to Cry?

Long-term outcomes of techniques used to manage sleep disturbance in the under-5s.

Authors:

1. Gilly Mancz MSc SCPHN (Health Visiting), BN (Hons), RN Adult
Lecturer in Adult Nursing, University of Portsmouth
gilly@mancz.com <https://gilly.mancz.com>
2. Dr Wendy Wigley
Principal Teaching Fellow, University of Southampton

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Abstract

Health visitors identify and support families coping with infant sleep disturbances, however conflict in the literature impacts on professional confidence in managing sleep issues. Sleep disturbance is common in under-5s and linked to negative outcomes for the child and their families. Behavioural interventions such as 'extinction', controlled crying and gradual retreat are the recommended treatment. Contemporary understanding of neuroscience questions the use of such interventions because of the potential impact on attachment and development. This paper reviews the literature to ascertain the success of behavioural interventions, the impact on maternal mood and infant mental health, and also considers parental perspectives on the controlled crying technique. The key implications and recommendations for health visiting practice are highlighted.

Key words:

Infant, child pre-school, sleep disturbance, extinction, psychological, parenting, health visitor

Introduction

Child sleep disturbance is one of the most common reasons parents seek professional support (Wake et al 2006; Smart and Hiscock 2007; St James-Roberts and Peachey 2011). Health visitors, as the lead professional for the delivery of the Healthy Child Programme (HCP) (Department of Health [DH] 2009), are ideally placed to recognise children with sleep disturbances and provide timely support to their families (DH 2009; Fisher 2013; NHS England 2014).

The term 'sleep disturbance' encompasses a range of disorders originating from an organic and/or behavioural background. Sleep disturbance includes sleep related movement disorders, behavioural insomnias (Mindell and Owens 2009), parasomnias (sleep walking, night terrors) and obstructive sleep apnoea (Heussler et al 2013). Frequent night waking affects approximately 30% of one-year-olds, while

50% of this age group have difficulties with sleep onset (Mindell and Owens 2009). The most frequently reported sleep disturbances in young children fall into the category of *behavioural insomnias*. Behavioural insomnias present as three subtypes; *sleep onset association disorder*, *limit setting disorder* or a combination of both (Moturi and Avis 2010; Hill 2011).

Sleep onset association disorder describes a child who struggles to independently initiate sleep and lacks the ability to self-soothe (Moturi and Avis 2010; Hill 2011). In sleep onset association disorder the child often demands specific rituals and comforters to fall asleep such as parental presence, rocking, feeding, a dummy, lights or music (American Academy of Sleep Medicine [AASM] 2005; Morgenthaler et al 2006; Moturi and Avis 2010; Hill 2011). If rituals and comforters are attended to the child experiences good quality sleep (AASM 2005). While night arousal is a normal process for most children and can occur between one and four hourly, this becomes problematic for parents when a child wants rituals to be repeated to re-initiate sleep (Hill 2011).

Limit setting disorder generally occurs in early to mid-childhood, most commonly when a child is moved from a cot into bed, although depending on family dynamics, can occur earlier (AASM 2005; Hill 2011). Limit setting disorder is characterised by the child refusing to go bed, through stalling or making multiple requests such as a drink, needing the toilet, or being fearful, and inconsistent parental boundaries (AASM 2005; Morgenthaler et al 2006; Moturi and Avis 2010; Hill 2011). Another example of limit setting disorder is when there is bedtime inconsistency and the child falls asleep where and when they like, often near the parents, resulting in sporadic parental frustration with occasional attempts of boundary setting (AASM 2005).

The third disorder comprises of a *combination* of sleep onset association and limit setting disorders. Limit setting disorder can cause bedtime to become a battle and often combines with sleep onset association disorder, as exhausted parents will use their presence as a technique to settle the child (Moturi and Avis 2010; Hill 2011).

Impact of Sleep Disturbances

Young children with sleep deprivation are likely to experience negative impacts on cognitive development, attention skills, mood, behaviour and health (Mindell et al 2006; Gregory and Sadeh 2012; Heussler et al 2013). Holley et al (2011) concluded that children are at risk of the negative effects of sleep deprivation if the total time a child sleeps is reduced by an hour, when compared to the average for that age group, with reduced sleep increasing the risk of the child developing significant behavioural difficulties. Chen et al (2008) conducted a systematic review, which found an increased likelihood of a child experiencing sleep deprivation being obese. Pre-school age group who slept for less than twelve hours as an infant have a heightened risk of obesity as identified by Taveras et al (2008).

Chronic sleep issues can also have a long-term negative impact on the wider family, such as a significant increase in postnatal depression (PND), family breakdown, poor health and, in rare cases, child abuse (Bayer et al 2007; Wake et al 2006; Martin et al 2007; Smart and Hiscock 2007; Giallo et al 2011; Sadeh et al 2011).

Behavioural Techniques

Behavioural insomnias are complex and involve a myriad of factors including the circadian rhythm, biological elements and often a delay in the child meeting neuro-developmental milestones such as learning to self-soothe (Morgenthaler et al 2006; Hill 2011). These factors are influenced by the child's predisposed personality traits, parenting styles, culture and environment (Morgenthaler et al 2006). Behavioural interventions have been developed in response to parents seeking support (Sadeh et al 2011) with the objective of encouraging the child to develop self-soothing skills and to independently initiate sleep, thus improving sleep length and quality (Moturi and Avis 2010).

Behavioural techniques often focus on extinction or modified extinction strategies, which aim to 'extinguish' unwanted learnt behaviour and enable the child to self-soothe (Morgenthaler et al 2006; Hill 2011). These techniques involve parents either:

- completely withdrawing their attention (extinction/cry it out),

- withdrawing but offering brief reassurance at timed intervals (modified extinction/controlled crying),
- the parent remaining present yet ignoring the child's demand for attention and gradually increasing their physical distance from their child (modified extinction with parental presence/gradual retreat)

(Moturi and Avis 2010; Hill 2011).

Behavioural interventions, such as controlled crying or gradual retreat, have been found to be effective in the treatment of behavioural insomnias in young children (Ramchandani et al 2000; Lam et al 2003; Mindell et al 2006), whereas unmodified extinction techniques are now rarely recommended due to the distress caused to parent and child, resulting in a high parental dropout rate (Sadeh et al 2011).

Neuroscience and Brain Development

There has been a shift in professional understanding over the last two decades, shaped by the growing evidence base of neuroscience which has highlighted the importance of the prenatal period and the first three years of a child's life in shaping the brain (Carnegie Corporation 1994; McCain and Mustard 1999; UNICEF 2001; Hall and Elliman 2003; Gerhardt 2004; DH 2009; The Marmot Review 2010; Allen 2011 and UNICEF 2014). Seminal work on neuroscience (Shore 2003) expanded existing knowledge on the importance of a child's attachment to their primary carer, recognising that early experiences and the environment a child is exposed to are directly linked to the development of neural pathways. Early experiences, such as whether a primary carer responds to a baby's needs, particularly when distressed, determine whether the baby is supported with the regulation of emotions (Gunnar and Donzella 2002; Gerhardt 2004; Malekpour 2007). The regulation of emotions, especially the stress response, on the developing brain is significant, if a baby's stress response is not regulated by their care giver, for example when they are left to cry, the cortisol levels remains high and this can cause damage to the hippocampus and neuro-transmitter development, increases the likelihood of physical illnesses and impacts the regulation of the stress response in adulthood (Caldji et al 2000; Gunnar and Donzella 2002; Gerhardt 2004).

Conflict in the Literature

Ethical concerns regarding promoting behavioural interventions when there is a possibility of negative impacts on the parent-child dyad and brain development provides a contention in the research, affecting professional and parental confidence in managing sleep issues (Mindell et al 2006; Murray and Ramchandani 2007; Hiscock et al 2008; Fisher 2013). Consequently a review was undertaken to ascertain the evidence base for the behavioural interventions that promote infant sleep.

Methodology

To facilitate the successful search of the research evidence, it is necessary to translate the information needed into a concise and specific question (Cleary-Holdforth 2008; Reading 2008; Strauss et al 2010). For this review, a PIO (population, intervention and outcome) tool was used, see *Table 1* (Ireland 2007).

Population	Babies, toddlers and pre-school children (aged 0-4 years) with behavioural insomnias.
Intervention	Extinction, controlled crying (modified extinction), gradual retreat (extinction with parental presence) – the three main behavioural techniques.
Outcome	Negative and positive effects of techniques

Table 1: PIO Framework (Ireland 2007)

To ensure papers were not missed, pertinent journals were hand-searched, grey literature was examined and a search of the Internet was undertaken (Centre for Reviews and Dissemination [CRD] 2009; Polit and Beck 2010; Bettany-Saltikov 2012). This process revealed no additional papers, however, a relevant paper (Hiscock et al 2008) was found when scanning the reference list of linked research and included in the literature review.

Prior to the database search, key search terms were identified through the use of a mind map and further synonyms were pinpointed using the PIO question. The

search terms were paired with database tools such as Boolean logic and truncation symbols that restrict the number of papers retrieved by the database so ensuring the most relevant research is collected (Timmins and McCabe 2005) (see *Table 2*). The three databases searched were Cumulative Index of Nursing and Allied Health Literature (CINAHL), Medline and PsychINFO.

Population (Part 1)	Population (Part 2)	Intervention
1. Babies	10. Sleep*	14. Extinction
2. Infant*	11. Insomnia*	15. Graduated extinction
3. Toddler*	12. Waking*	16. Modified extinction
4. Pre-schooler*		17. Controlled cry*
5. Child		18. Cry*
6. Child – with age cap on using the database limits within the search engine		19. Gradual withdrawal
7. Parent*		20. Gradual retreat
8. Carer*		21. Modified extinction with parental presence
		22. Self-sooth*
9. Combine 1,2,3,4,6 &7 using OR	13. Combine 10-12 using OR	23. Combine 14-22 using OR
The last step is to combine 9+13+23 using the logical AND operator.		

Table 2 - Key Words Used in the Search Strategy as Identified by the PIO Question

A three-stage inclusion/exclusion criteria strategy was implemented to reduce the number of papers retrieved, many of which were not relevant to the research question (CRD 2009). Specific inclusion/exclusion criteria enables the restriction of literature and ensures relevance and currency (Polit and Beck 2010).

The first stage of the inclusion/exclusion strategy involved analysing the paper title and abstract against the pre-determined inclusion/exclusion criteria to determine whether to include, exclude or consider further whether the paper is appropriate (CRD 2009; Bettany-Saltikov 2010). The search term *cry** also generated unrelated research which was excluded. To further delimit the material found, research prior to 2000, research not published in English and duplicate studies were excluded. Furthermore, research from non-Western countries was excluded due to cultural differences that exist in sleeping practices and variances in the definitions of problem behaviour. Studies from 2000 were included, as this was when the impact of neuroscience began to be recognised and papers started to also examine the impact of behavioural interventions on infant mental health and the on-going parent-child relationship. The next stage of the inclusion/exclusion strategy involved analysing the paper title and abstract against the PIO question to determine whether to exclude the study or include for further consideration (CRD 2009; Bettany-Saltikov 2010). The final stage of the inclusion/exclusion strategy was to obtain the fully published papers of the remaining studies to thoroughly analyse their relevance to the research question and determine whether to include or exclude from the final critique (CRD 2009; Bettany-Saltikov 2010).

Eleven relevant studies were retrieved through the literature search; one was qualitative methodology and ten quantitative. The studies were based in Westernised countries; Australia, Canada, New Zealand, Sweden and the United States of America. A narrative approach was used for the qualitative study; whereas the quantitative studies used a number of different experimental methods including randomised controlled trials, time series designs, one-group designs, multiple baseline design, single case studies and a survey design. Each of the eleven studies employed a range of data collection methods including interviews, sleep diaries, questionnaires, surveys and salivary samples. Each paper was critiqued using the Bluff and Cluett (2006) framework and then compared to identify themes using the Crombie (1996) framework.

Findings

The review of the literature identified six main themes in the findings and illustrated in *table 3*.

Theme	Authors
Effectiveness of controlled crying	Thünstrom 2000; Hiscock and Wake 2002; France and Blampied 2005; Wade et al 2007; Hiscock et al 2008; Matthey and Črnčec 2012
Gradual retreat	Hiscock and Wake 2002; France and Blampied 2005; Hiscock et al 2008; Matthey and Črnčec 2012
Impact of behavioural techniques	Thünstrom 2000; Noble et al 2002; Eckerburg 2004; France and Blampied 2005; Hiscock et al 2008; Blunden 2011; Matthey and Črnčec 2012
Infant cortisol levels	Middlemiss et al 2012a
Maternal mood	Hiscock and Wake 2002; Wade et al 2007; Hiscock et al 2008; Matthey and Črnčec 2012
Parental perceptions	Noble et al 2002; Loutzenhiser et al 2014

Table 3: Main themes identified in the findings

Effectiveness of controlled crying

Compared to unmodified extinction based programmes, controlled crying is an effective technique to manage infant sleep issues and is acceptable to most parents (Morgenthaler et al 2006; Sadeh et al 2011). France and Blampied (2005) argued that although controlled crying is promoted within the literature, there has been little supporting evidence to suggest that the method reduces infant distress compared to unmodified extinction based techniques (France and Blampied 2005). Conversely, from a behaviourist perspective, unmodified extinction is preferable as the nature of the brief reassurance offered undermines effectiveness of controlled crying by providing intermittent reinforcement of the undesired sleep behaviours (France and Blampied 2005; Matthey and Črnčec 2012).

Thunström (2000) found that parents of children with severe sleep problems could implement a controlled crying sleep programme leading to sustainable improvements in sleeping patterns over a two-and-a-half-year period. These findings were replicated by two RCTs (Hiscock and Wake 2002; Hiscock et al 2008); the initial

study (Hiscock and Wake 2002) compared a group offered the controlled crying or gradual retreat intervention with a group offered written guidelines regarding normal sleep patterns, whereas the second study (Hiscock et al 2008) compared children offered the behavioural intervention (controlled crying or gradual retreat) with the normal sleep advice offered by a well-child clinic. Within both RCTs the majority of families chose the controlled crying technique and a further comparison was not made regarding the effectiveness between the two programmes (Hiscock and Wake 2002; Hiscock et al 2008). Both studies found the intervention groups had improved sleeping patterns compared to the control groups, with Hiscock et al's (2008) study showing sustained change maintained over a two-year period. Wade et al (2007) conducted a small study with families from minority and/or poor socio-economic backgrounds, who accessed Head Start pre-schools in New York. This study was the only one to analyse the delivery of the controlled crying sleep intervention within a group setting, this was found to be effective at improving toddlers' sleeping patterns (Wade et al 2007).

France and Blampied (2005) undertook research to compare controlled crying with other sleep interventions and allocated children with similar baseline sleep disturbances into one of three groups; unmodified extinction, controlled crying or gradual retreat. In this study, controlled crying was found to result in episodes of less intense crying than unmodified extinction, however, the periods of crying and waking episodes were found to be less likely to resolve and it was the least effective sleep programme when compared to the extinction or gradual retreat group. These results differ from those found in the study conducted by Matthey and Črnčec (2012) who studied children receiving either a controlled crying or gradual retreat sleep programme. Both were found to be effective at resolving infant sleep issues (Matthey and Črnčec 2012). In addition, the group receiving the controlled crying technique were found to have no higher levels of distress or stress compared to the gradual retreat group (Matthey and Črnčec 2012).

Gradual retreat

Parents struggle to implement behavioural techniques that involve their child being distressed. Hiscock and Wake (2002) and Hiscock et al (2008) acknowledged the importance of providing parents with choice and an acceptable alternative to controlled crying. When compared to extinction and modified extinction, gradual

retreat was found to cause the least distress in infants and was more successful at improving sleep patterns than controlled crying (France and Blampied 2005). The success of gradual retreat as a sleep intervention was also replicated in the study by Matthey and Črnčec (2012). France and Blampied (2005) speculated that parental attention and parental action were conditioned stimuli that instil infant behaviours such as calling out. France and Blampied (2005) hypothesise that gradual retreat was likely to disrupt this behavioural process as although the parent does not respond in their 'normal' manner to the unwanted behaviour, their presence would offer comfort and the conditioning to cry would reduce.

Impact of behavioural techniques

Conflict between behavioural techniques and the potential impact on brain development was recognised as a negative factor in professional confidence to endorse, and parental willingness to implement, these programmes (Eckerburg 2004; France and Blampied 2005; Hiscock et al 2008). Critics of behavioural interventions argue that to actively promote ignoring child distress could negatively impact on attachment as the potential result on brain development is unknown (Murray and Ramchandani 2007; Blunden 2011). Advocates of behavioural techniques highlight no proven harmful effects from using these practices and unlike extinction technique, which is now rarely used, modified extinction (controlled crying) does involve parents responding to their child's distress (Price et al 2012), albeit in a modified manner.

Thunström (2000) observed the controlled crying technique and monitored the infant participant's behaviour - no anxiety was observed or reported during the study or in the two years following intervention. Conversely, Eckerburg (2004) found that children identified to be of a more anxious temperament benefitted most from the intervention. Hiscock et al's (2008) detected no differences in child mental health or parenting style between the control or intervention group, while Matthey and Črnčec (2012) found maternal stress levels reduced and positive experiences of parenting increased in both the controlled crying and gradual retreat groups. Noble et al (2002) and Blunden (2011) noted that parents struggle to implement behaviour interventions that involve the child crying, however, both studies found that behavioural interventions were overall positive. In addition, while parents recognised the intervention as stressful, controlled crying was effective in promoting sleep

patterns (Noble et al 2002). It should also be noted that when using a modified gradual retreat programme parental satisfaction increased and negative sleep associations decreased (Blunden 2011).

Cortisol levels

Although the literature supported the use of behavioural techniques and long term negative consequences on infant mental health were not reported, this was primarily determined through the observation of behavioural cues. Middlemiss et al (2012a) conducted a study examining mother-child synchrony whilst participating in an extinction based inpatient sleep programme. The study showed that on day one the mothers and their babies behavioural and physiological responses to the extinction sleep programme were synchronised, however, by day three the babies had stopped demonstrating behavioural signs of distress but their physiological response remained high, whereas the mother's behavioural and physiological response lowered causing asynchrony (Middlemiss et al 2012a). Middlemiss et al (2012a) identified that the infant's cortisol levels remained high indicating continued distress at settling time, even though they no longer exhibited behavioural cues to demonstrate this; which resulted in a mismatch between the mother and child. Middlemiss et al (2012b) specified that the study was a preliminary observation and advocate further research to determine the best practice for sleep interventions. Middlemiss et al (2012a) acknowledge that the field of physiological attachment between mother and child continues to develop and the attunement process may be fluid and repair in limiting situations such as behavioural intervention. It is important to recognise that Middlemiss et al (2012a) focused on the extinction technique, whereas Thunström (2000), Eckerburg (2004), Hiscock et al (2008), Matthey and Črnčec (2012) and Blunden (2011) focused on the effect of using controlled crying and/or gradual retreat on infant mental health. Nonetheless, Middlemiss et al's (2012a) findings are significant; highlighting behavioural cues may not fully illustrate an infant's stress levels.

Maternal mood

There is an established association between infant sleep disturbances and maternal mood (Hiscock and Wake 2002; Smart and Hiscock 2007; Črnčec et al 2009). PND is also linked to adverse risk factors such as poor maternal-infant attachment, parental relationship breakdown and negative effects on infant cognitive and

emotional development (Hiscock et al 2008; Matthey and Črnčec 2012). Whether an infant's sleep difficulties are a factor in the development of maternal low mood is difficult to pinpoint. It may be that children of mothers with PND are more likely to develop sleeping issues, the incidence of PND is higher in mothers of infants with sleep problems – 45-50% compared to 10-15% in the general population (Hiscock and Wake 2002; Smart and Hiscock 2007; Črnčec et al 2009). A significant proportion of mothers remain reluctant to seek diagnosis and support for PND, whereas tackling infant sleep disturbance may appear more acceptable and still result in similar outcomes for maternal mood. Nonetheless, high-risk parents reporting infant sleep disturbances can be targeted, and interventions can positively influence maternal mood (Hiscock and Wake 2002; Hiscock et al 2008).

Hiscock and Wake (2002) established that delivering behavioural sleep intervention programme to mothers was effective at reducing depression scores by using the Edinburgh Postnatal Depression Score (EPDS) scale and resulted in improved infant and maternal sleep patterns. Although the difference between EPDS scores in the intervention and control group were no longer significant at four months, the difference in depression scores at two months mimicked scores recorded after intensive health visiting support for PND (Hiscock and Wake 2002). Wade et al's (2007) study found that depression scores, measured on the Beck Depression Inventory-II, reduced for all five participants following delivery of the behavioural sleep intervention programme. A further study conducted by Hiscock et al (2008) found that maternal mood in the group offered a behavioural sleep intervention were better when compared to the group offered routine advice, with improvement maintained over a two-year period. Furthermore, Matthey and Črnčec (2012) found maternal mood depression scores on the EPDS improved in mothers and anxiety scores, as measured on the Hospital Anxiety and Depression Scale, reduced after using controlled crying or gradual retreat.

Parental perceptions

The evidence relating to behavioural sleep interventions within the literature is primarily from quantitative perspectives and lacks the qualitative information associated with parental perception and experiences of using these interventions (Noble et al 2002; Loutzenhiser et al 2014). Noble et al (2002) used a narrative approach to explore parental experiences of the controlled crying technique and

identified three themes; the lived experience of parents when caring for a sleep deprived child, the dilemma of using and implementing controlled crying and the outcome of using the technique. Noble et al (2002) highlighted the strain of caring for a sleep disturbed infant, the anxiety using controlled crying generated in parents and the challenges of implementing the technique. All eleven parents interviewed in the study described positive outcomes post intervention and no detrimental effects on the parent-child relationship were reported (Noble et al 2002).

Noble et al's (2002) findings were in contrast to the Internet survey conducted by Loutzenhiser et al (2014), which demonstrated strong association with parental and infant stress when using controlled crying in the community. The study found that over 50% of the survey participants were using or had previously used the technique, however, only half of these families found it successful in reducing night waking. This said, Loutzenhiser et al (2014) recognised that the term 'controlled crying' was not clearly defined which could have impacted on parental understanding of the application of a 'controlled crying' technique. The importance of professionals being aware of parents previous attempts at sleep training methods prior to seeking support was acknowledged, particularly as this may impact on both parental perceptions of behavioural sleep interventions and willingness to attempt similar techniques again, even with professional guidance (Loutzenhiser et al 2014).

Implications and recommendations

This literature review has highlighted the challenges parents face when caring for a sleep deprived child and the extensive impact of sleep disturbances for families. Effective interventions should be a public health priority for families requiring support (Hiscock et al 2008; Smart and Hiscock 2007). Within the UK, health visitors are responsible for providing a preventative family focused public health programme, delivering a range of interventions that identify risk factors to prevent ill health; supporting and empowering families to make healthy choices (Wigley 2008; DH 2009; NHS England 2015).

Although modified extinction techniques potentially offer intermittent reinforcement of unwanted infant behaviour, controlled crying and gradual retreat are successful at treating infant sleep disturbances (Thunström 2000; Hiscock and Wake 2002; France and Blampied 2005; Wade et al 2007; Hiscock et al 2008; Matthey and Črnčec

2012). Traditionally research focuses on behavioural interventions delivered in one to one settings, however these can be successfully delivered in a group setting (Wade et al 2007), which has positive implications for service delivery and on going parental peer support.

The contention between using behavioural techniques and potential impact on infant mental health was examined within the literature review and infants were not found to exhibit behavioural cues that would indicate undue distress (Thunström 2000; Eckerburg 2004; Hiscock et al 2008; Blunden 2011; Matthey and Črnčec 2012). However, when examining physiological cues in infants undergoing the extinction technique, cortisol levels continued to be elevated after behavioural cues had reduced (Middlemiss et al 2012a). Matthey and Črnčec (2012) highlighted that their study results were significant for professionals and advised that parents should be reassured that no undue harm is associated with behavioural interventions. Nonetheless, further research is needed to understand how behavioural interventions impact on infants' physiology and their attachment to their parents.

The impact of behavioural interventions for poor infant sleep on maternal mood is significant (Hiscock et al 2008). Provision of health visiting services should target high-risk groups as sleep interventions can be delivered over a shorter time period with minimal professional support compared to traditional PND interventions (Hiscock and Wake 2002; Wade et al 2007; Hiscock et al 2008). One NHS service provider has designed a toolkit to enable health visitors to provide evidence-based interventions, deliver the HCP (DH 2009) and manage the challenges of balancing finite resources with a highly vulnerable caseload (Barts Health NHS Trust 2014). One of the key areas of the toolkit is to support parents experiencing stress; infant sleep disturbances were identified locally as a contributing factor to parental stress levels (Barts Health NHS Trust 2014). Health visitors were offered specialist sleep training through the Institute of Health Visiting (iHV) (iHV 2016) tools, such as sleep diaries and 'how to' guides were developed and 'sleep champions' were tasked with developing sleep clinics. The toolkit aimed to reduce parental stress, improve parental mental health and infant sleep patterns (Barts Health NHS Trust 2014). The toolkit fits with the tiered delivery of the HCP by offering categories of sleep interventions, such as sleep being discussed at every universal contact, one-to-one support from health visitors (Universal Plus) and referral to the sleep champions for

specialist support (Universal Partnership Plus) (DH 2009; Barts Health NHS Trust 2014).

This literature review highlighted that parental perspectives regarding the use of behavioural interventions is limited and further research should expand the professional knowledge base and understanding regarding the lived experience of parenting an infant with sleep disturbances (Noble et al 2002; Loutzenhiser et al 2014). The findings indicate that a significant number of parents will have tried to implement controlled crying prior to seeking professional support, often with limited success, and this may impact parental willingness to implement further programmes (Loutzenhiser et al 2014).

Conclusions

Despite the positive findings associated with controlled crying identified by this literature review, there remains a small but significant question regarding the long-term effect of raised cortisol levels that behavioural interventions for sleep disturbance may cause (Middlemiss et al 2012a). Further research is required to clarify whether these findings are replicated when using controlled crying or gradual retreat techniques, to examine if the infant cortisol levels reduce over time as they become familiar with the process and whether synchrony between parent and child can be repaired. This review should enable health visitors to understand the evidence base for interventions when supporting parents with infant sleep problems.

Key Points:

- Sleep disorders in the under-5 age group are linked to poorer outcomes for both the child and their families. Health visitors are identified as key in supporting parents struggling with poor infant sleep.
- Behavioural interventions, such as extinction, controlled crying and gradual retreat, are the recommended treatment for behavioural insomnias.
- Concerns have been raised regarding techniques that promote parents ignoring their child's distress on neurodevelopment and attachment.
- Controlled crying and gradual retreat were found to be successful at treating infant sleep disturbances and also had a positive impact on maternal mood. This has an impact on PND that was as successful as intensive health visiting support.

- Parents often attempt behavioural interventions prior to seeking health visitor support, impacting on parental willingness to implement sleep programmes.
- The use of behavioural interventions was not found to cause a negative effect on infant mental health when examining infant behavioural cues, although infant cortisol levels were found to remain elevated after behavioural cues were extinguished, when using the extinction technique.
- Further research is required to ascertain the impact of controlled crying and gradual retreat on infant cortisol levels and whether parent and child synchrony can be repaired.

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