This article has been accepted for publication in BMJPO following peer review.

The definitive copyedited, typeset version is available online at

10.1136/bmjpo-2024-002997

Feasibility and acceptability of the Alarm Distress Baby Scale (ADBB) in universal health visiting practice in England: a mixed-methods study using Normalisation Process Theory

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Abstract

Background: The Alarm Distress Baby Scale (ADBB) is a validated observation tool, designed for use by healthcare practitioners to identify infant social withdrawal. A modified version (m-ADBB) was later developed as a clinically useful behavioural tool. However, neither version has been tested in the UK context. This study aimed to test the feasibility and acceptability of using the ADBB and m-ABDD within universal health visiting practice in England.

Methods: A mixed methods convergent parallel design was used. Five health visitors were trained in the ADBB and 20 in the m-ADBB, from two NHS community sites in England. Quantitative data were collected from health visitors, while qualitative semi-structured interviews were conducted with health visitors and service managers, guided by Normalisation Process Theory (NPT). Thematic analysis was used to analyse the qualitative data and descriptive analysis for the quantitative data. NPT provided a framework for analysing the implementation process in routine health visitor practice.

Results: The m-ADBB was used with 225 babies (91%) and behaviour concerns were identified in 23 babies (10%). Eleven themes were identified, aligned with the four NPT constructs: 1) Coherence: perceived uniqueness of the scale, new vocabulary for articulating baby behaviour, enrichment of existing knowledge and skills; 2) Cognitive participation: commitment to the use of the ADBB/m-ADBB, consolidation of new practice; 3) Collective Action: implementation of the m-ADBB scale in routine practice, organisation and management support, existing systems and pathways for children and families; and 4) Reflexive Monitoring: perceived benefits of integrating the scales in practice, quality assurance for embedding the scales in practice, appraisal of the training and scales in practice.

Conclusions: The ADBB/m-ADBB were perceived to have enhanced the health visitors' skills and knowledge in infant observation. The m-ADBB required minimal additional time and was highly acceptable to health visitors. These findings have significant implications for health visiting practice and future research.

Keywords: Infant social withdrawal, health visitor, Alarm Distress Baby Scale, m-ADBB, infant mental health.

What is already known on this topic?

- Infants may use social withdrawal as a mechanism to control the level of social stimuli they are exposed to, which is part of normal infant behaviour.
- Sustained infant social withdrawal, however, is considered a risk factor for non-optimal development, which can lead to emotional and behavioural disorders and poorer cognitive and language development.
- Health visitors are ideally placed to identify infant social withdrawal through their routine contacts with families as part of the national Healthy Child Programme (HCP).
- The ADBB and m-ADBB is a validated observational tool designed to identify infant social withdrawal by healthcare practitioners but has not been tested in the UK context.

What this study adds?

- This study provides useful information about the feasibility and benefits of training health visitors in the ADBB/m-ADBB in the context of health visiting in England and how, once trained, health visitors can integrate their new learning into routine health visitor practice.

How this study might affect research, practice or policy?

- This is the first study to test the feasibility and acceptability of the ADBB/m-ADBB scale in the UK context.
- The study recommendations have important implications for expanding the ADBB/m-ADBB programme across the UK, conducting future wider-scale research to include parents, and influencing health visiting practice.

Background

Conception to five years is a time for rapid brain development [1], and appropriate support, particularly in the critical first 1001 days is essential for ensuring the best start in life [2]. Through close interactions with their primary caregivers, infants develop the ability to relate to the social world [3]. However, this early development, which provides the foundations for their future health and wellbeing, is highly dependent on the quality of the relationship between primary caregiver and infant, and in particular the moment-to-moment exchanges [4]. In order to regulate the flow of such exchanges, infants often use 'fleeting' withdrawal behaviours, such as looking away or closing their eyes [5, 6]. These types of behaviours are considered normal and occur regularly even in the context of a sensitive and responsive caregiving relationship. Sustained withdrawal behaviours, however, are among the first defence mechanisms infants use when faced with prolonged relational challenges, if their initial protests are not responded to [3,7] In the short term, this saves energy and is protective for the infant, but longer term, sustained social withdrawal is considered a risk factor for non-optimal development [3] and can lead to emotional and behavioural disorders [8,9], and poorer cognitive and language development [10, 11,12]. Research indicates that both prematurity and maternal symptoms of postpartum depression are positively linked to infant social withdrawal at 2-3 months [13]. In some cases, excessive social withdrawal in infants may be indicative of atypical cognitive development, seen in children with autistic spectrum disorders [3]. Sustained social withdrawal behaviours can, therefore, act as an 'early alarm signal', alerting professionals to undertake further assessment, identify emerging needs and offer appropriate support.

Health visitors in the UK are Specialist Community Public Health Nurses who play an important role is supporting infant development in the early years. Through their universal reach and mandated five contacts to families (between pregnancy and child age 2.5 years) in England [14], health visitors are ideally placed to promote optimal parent–infant interaction and identify interactional problems, enabling families to access early intervention and support. The new national Healthy Child Programme (HCP) 'Schedule of Interventions' in England requires assessments to be undertaken to understand family needs and strengths where concerns about early relationships and infant mental health and well-being are identified [15]. However, the new HCP offers no guidance on how these assessments should be conducted, particularly concerning the use of validated instruments. While health visitors are trained to observe parent-infant interactions, in the absence of national commissioning guidance or robust evidence to support the use of any specific tool to supplement their observations, this is left to local decision-making, resulting in a wide variation of health visitor practice in relation to infant observations.

The Alarm Distress Baby (ADBB) Scale, developed by Guedeney and Fermanian [16], is a validated observational tool designed to enable healthcare practitioners to identify infant social withdrawal [17,18]. The tool was designed to enable practitioners to focus on identifying signs of distress in the infant, based on naturalistic engagement, by focusing on eight distinctive areas of infant behaviour: facial expression; eye contact; general level of activity; self-stimulation gestures; vocalisations; briskness of response to stimulation; ability to initiate and maintain a relationship; and ability to generate and sustain attention [16]. There is strong evidence to suggest good transcultural validity and reliability of the ADBB scale, see original study protocol [19].

In 2013, a modified 5-item version of the ADBB, known as the m-ADBB was developed by revising the scoring method to remove items that were either very difficult in terms of establishing inter-rater agreement or were highly correlated with other items [20]. The briefer m-ADBB (which focuses on facial expression, eye contact, vocalisations, activity and relationship) with its simpler scoring system and improved inter-rater reliability was therefore considered to be a more clinically useful behavioural tool for frontline practitioners to identify infant withdrawal [20], with the full version of the tool, being tested for use with more senior health visitors as part of a targeted pathway within the HCP [15].

The ADBB and m-ADBB have the potential to support the early identification of infant social withdrawal by health visitors. This would enable health visitors to provide parents with appropriate support in terms of facilitating their child's long-term development and well-being, which is key to enabling early intervention and optimising future child health outcomes. To date, the ADBB or the m-ADBB have not been tested in the UK context and therefore this study set out to test the feasibility and acceptability of using the ADBB and m-ABDD within universal health visiting practice in England.

Aims and objectives

The aim of this study was to explore the feasibility and acceptability of using the ADBB and m-ADBB to identify infant social withdrawal as part of routine 6–8 week visits carried out by health visitors.

Research questions:

1. How acceptable and feasible are the ADBB and m-ADBB training programmes to health visitors?

2. How acceptable and feasible is the use of the ADBB and m-ADBB scale as part of routine care by health visitors in England?
3. What are the facilitators and barriers affecting the implementation of the ADBB and m-ADBB scale in health visiting practice?

Methods

Study design

A mixed methods convergent design was used, allowing the collection of both qualitative and quantitative data concurrently. Initially, a sequential design was planned, with quantitative data collection and analysis following the qualitative phase [19]. On reviewing the protocol, it was decided that the collection of both sets of data concurrently would not impact the outcome as the quantitative data analysis was not reliant on findings of the qualitative analysis. Therefore, a pragmatic decision was made to revise the study design to collect both sets of data concurrently. This was also considered appropriate to answer the research questions; the qualitative data enabled the exploration of health visitors' views and experiences, while the quantitative data provided information on scale use, identification of concerns and follow-up rates.

Study setting and participants

Health visitors from two NHS community sites, Hull and South Warwickshire, were recruited. Hull ranks as the 4th most deprived local authority in England, with 16.1% of its population from ethnic minority backgrounds [21]. South Warwickshire is largely rural, with areas of deprivation, and 10.1% of its population identifies as non-White [22]. The study sites were selected based on the health visiting workforce capacity to support the study and the availability of appropriate referral pathways to facilitate the process.

Five health visitors were trained in using the full ADBB scale and 20 health visitors in the m-ADBB scale. The full ADBB training was delivered virtually in English by the France-based company Humagogie between March and June 2023. It entailed 20 hours of synchronous teaching and 45 hours of self-directed learning. The m-ADBB training was also provided virtually by the same company in June 2023, which was a 3-hour webinar-based training.

Health visitors offer a mandated contact to families at 6-8 weeks post birth, which includes a health and wellbeing review of the infant. It was planned that health visitors trained in the m-ADBB would use the m-ADBB scale with all infants to support their observations of infant

interaction and behaviour as part of this routine 6-8 week review. A handbook was developed to support health visitors' use of the scales in practice, which also provided a pathway for the assessment (Figure – 1) and script examples to aid discussions with parents. When health visitors did not identify any concerns regarding infant behaviour, they were asked to discuss their observations with parents, highlighting specific strengths and moments of attuned interaction. They were also encouraged to share additional resources and information to enhance parent-infant interactions, ensure parents were aware of who to contact if they had further concerns (see Box 1 for an example script), and deliver the usual care in accordance with the Universal Pathway on the HCP.

Box 1: A suggested script to ensure parents' understanding of the purpose of the 6-8 week contact

"This visit gives us an opportunity to think together about how things have been since [baby] as arrived. We'll have a chat about how [you][partner if applicable] are adjusting to parenthood, what's going well and not so well. We can think about your physical wellbeing and also your emotional wellbeing and I'll offer you the opportunity to complete a questionnaire [usual explanation of PHQ-9/GAD-7 or EPDS] that we can discuss together afterwards.

It's also a chance to see how [baby] is doing so we can think about their physical development and also how they are interacting with the world around them. So as well as [weighing /measuring/discussing feeding etc] I'll watch [baby] how baby is interacting with the world around them - their expressions, their little sounds, how they are moving their body and whether or not they want to respond to me. Babies' behaviours tell us a lot about how they are feeling, what they are finding easy and also if they are finding anything difficult.

What have you noticed that your baby particularly enjoys? Or anything they don't like?"

Where possible concerns were identified, it was recommended that the health visitor discuss these with the parents, while also highlighting any observed strengths (see Box 2 for an example script) and offering a follow-up m-ADBB assessment. In cases where definite concerns were identified, health visitors were advised to first acknowledge the observed strengths, then sensitively address any unusual infant behaviours, and refer the family for further assessment by an ADBB-trained health visitor, following a Targeted or Specialist Pathway of care within the HCP.

Box 2: A suggested script for 'possible concerns' identified using the m-ADBB

"I noticed that [baby] was quieter and less active than I might expect a baby of their age to be and although they did look at me when I spoke to them it was only for a short time. Sometimes this happens when babies are tired, or feeling a bit poorly, but sometimes it's a signal that something is making them feel a bit stressed or sad. Is there anything you are aware of that [baby] might be picking up on? Has anything changed recently for [baby] or have you had any concerns?

Purposive sampling was used, and all potential participants trained in either the ADBB or m-ADBB were invited to take part in the study, along with service managers from both sites.

Inclusion criteria

- Health visitors (including specialist health visitors) who completed the ADBB and/or m-ADBB training,
- Managers and clinical leads from the two study sites with responsibility for the health visiting service.

Exclusion criteria

- Health visitors who did not complete the ADBB/m-ADBB training or those on long-term leave during the data collection period were excluded due to the tight timescales of the project.

Theoretical framework

Normalisation Process Theory (NPT) [23] which '…identifies, characterises, and explains the mechanisms that motivate and shape implementation processes' was used to theoretically frame this study [24]. NPT was selected as an appropriate implementation theory for its use within a health visiting context as it addresses the reality of healthcare provision within highly contextualised organisational environments, often operationalised under pressure, involving complex interactions and multiple competing demands [23].

NPT centres on four key constructs, with each representing different kinds of work that people 'do' as they work around a (new) set of practices or, an intervention. The four constructs are:

1. Coherence: sense-making

2. Cognitive participation: the relational process of enrolment in a new practice
3. Collective action: the enactment of the new skills
4. Reflexive monitoring: appraisal and perceived potential impacts [23].

These constructs are theorised through a further four components for each domain. The study operationalised both NPT constructs as a whole, as well as the more detailed components, to aid both the detail and the quality of analysis. The research team was familiar with using NPT as a theoretical framework and several discussions through virtual meetings, and email correspondence took place in order to come to a consensus on how the data was presented within each NPT construct/component.

Data Collection

Quantitative data were collected from the health visitors on a range of items, using a standardised data collection template. This included the number of:

- Infants eligible for a 6–8 week postnatal assessment
- 6–8 week contacts where the m-ADBB was used
- Infants for whom withdrawal concerns were identified
- Infants offered additional support, and the nature of the additional support (including use of the full ADBB).

Qualitative data were collected using semi-structured interviews and flexible topic guides that were developed based on the four NPT constructs to ensure a thorough exploration of all aspects of the implementation process [19]. Open questions with prompts were used as the responses were largely unknown and this enabled participants to express their own views, reasons and explanations. Health visitors were invited to take part in two interviews each - one after they completed the training and one 2-months after using the ADBB/m-ADBB in practice. The service managers were invited to take part in one interview each, 2-months following the implementation of the ADBB/m-ADBB in practice. Each interview lasted up to 45 minutes and was recorded via Zoom recording system. The audio files were stored, and the interviews were transcribed by The Transcription Company UK. Participant information sheets were provided, and written consent obtained prior to the interviews.

Data Analysis

Descriptive analysis was undertaken of the quantitative data to explore the number and nature of the referrals relative to usual practice.

Interview data were analysed using the six phases of thematic analysis outlined by Braun and Clarke: (1) familiarisation with the data, (2) generation of initial codes, (3) search for themes, (4) review of themes, (5) defining and naming themes, and (6) production of the report [25]. Data from the two sets of interviews were initially analysed separately and the findings were combined when mapped on to the NPT framework.

The qualitative data analysis process involved three authors (SB, MF, VG) independently reviewing two transcripts each (six different transcripts in total). They each generated a set of initial codes, which were discussed in a meeting with CM (NPT expert). CM was also provided with a sample of the transcripts. Following this, a detailed codebook was produced with consensus amongst the three authors (SB, MF, VG) to ensure uniformity of coding through the rest of the data analysis. The remaining transcripts were coded by SB and MF, using NVivo for data management. The thematic codes were mapped onto the NPT framework, coding to the level of the main constructs and accompanying 16 concepts (see an example in Appendix – A). These were further discussed by SB and MF to identity and refine the themes and ensure alignment to the four main NPT propositions. Where consensus was not reached between SB and MF, advice was sought from AM and JB, which resulted in the final themes reported.

The rigour of the study was enhanced by having two postdoctoral researchers (SB and MF) who are also health visitors working closely together on data analysis through regular email communication and meetings to facilitate peer review and ensure methodological consistency. Meetings were held with members of the larger research team throughout the analysis process to provide additional insights.

Public involvement

The study protocol was reviewed and approved by the study sponsor. Co-design involved the use of a workshop with health visitors to inform the development of the study, including consideration of the data collection methods and analysis.

Ethics

A project advisory group was formed to guide and challenge as needed to ensure the study adhered to the agreed protocol, including the stated ethical terms. Ethical approval was obtained from the Departmental Research Ethics Committee (DREC) at the University of Oxford (Ref: SPI_C1A_23_008).

Results

Participant characteristics

In total, 22 of the 25 health visitors (five trained in ADBB and 17 in m-ADBB) were recruited to the study along with two service managers. Subsequently, one health visitor was unable to participate in the second interview, resulting in 16 m-ADBB-trained health visitors taking part in the post-implementation interview. Non-participation (n=3) was due to sickness absence and workload pressures. All participants were female with varying levels of experience. Fifteen participants (68%) had over five years' experience of working as a health visitor, with six (27%) having more than 20 years' experience. Seven health visitors reported to be trained in other forms of infant observation, including Video Interaction Guidance (VIG), the Newborn Behavioural Observations (NBO) system, and the Solihull Approach.

Quantitative findings

Data were collected over a four-month period, between July 2023 to November 2023. The health visitors undertook 248 infant assessments at the 6-8-week postnatal contact during that period and the m-ADBB was used for 225 (91%) of those. Reasons for non-use included the baby sleeping, feeding or being unsettled. One of these contacts was made via telephone (rather than a face-to-face visit), making infant observation impossible.

Behavioural concerns were identified in 23 (10%) infants, where the families were offered additional support. This included follow-up visits, Emotional Wellbeing Visits and VIG (offered by health visitors), connecting with Child and Family Centres, referrals to Specialist Perinatal Mental Health teams, dietetics, orthoptics or third sector mental health support.

On four occasions, three of the m-ADBB-trained health visitors sought additional advice from ADBB-trained health visitors. They were for general advice (two occasions), referral for VIG (one occasion) and full ADBB assessment (one occasion).

Qualitative findings

Thematic findings from both sets of interviews are presented together, using the four NPT constructs (coherence, cognitive participation, collective action and reflexive monitoring) to gain an understanding of the ADBB and m-ADBB implementation in practice. The NPT provided a consistent framework with which to describe the implementation processes and highlight gaps, that might have been missed through thematic coding alone [26].

Coherence: Sense-making of the ADBB and m-ADBB training and scales

The NPT framework enabled the exploration of how health visitors made sense of the ADBB and m-ADBB training to operationalise the newly acquired infant mental health knowledge and skills within their existing practice. This included exploration of the overall coherence in terms of the value, benefits and importance that health visitors placed on the training and scale use within their current practice with infants and their families (Figure 2).

Perceived uniqueness of the scale

Both training programmes (i.e. for the ADBB and m-ADBB scales) were perceived to provide a unique focus on the infant, which allowed the health visitors to discriminate between observations of infant development, the infant-parent relationship, and the infant's interactions with the environment. The training was felt to have offered health visitors a more nuanced perspective with which to identify specific infant communication and behaviour, such as subtle cues, facial expressions, and other body language, when compared with other approaches or tool specific training. This focus on the 'infant' was perceived to be the main advantage of the ADBB and m-ADBB because, unlike other tools, it did not predominantly focus on the parents' perspective or environmental factors.

"It's just put my focus more on the baby, it's made me sort of really truly look at the baby and know really what is that baby telling me through its behaviour. So yeah it's just put that focus really truly on that baby." (P2.2 - Health Visitor, m-ADBB trained, with more than 20 years' experience, VIG trained)

"I think from what I know about those other tools, it is still looking at the mum and asking the mum questions and asking the mum does the baby like her, things like that. And this is more objective, this is more me isn't it, it's me looking and making that judgement". (P20.1 - Health Visitor, ABDD trained, with more than 20 years' experience, VIG trained)

The scales were also perceived to have provided practitioners with greater sensitivity in terms of their observation of potential attachment and bonding issues that would not have been identified without the training. This was perceived to be the result of bringing the infant 'back to the centre' of the contact, which was also reported as being key to the identification of wider problems.

"The tool is to look at those baby's interactions and to identify any withdrawal for baby. And (...) the function of it really is then to help us to identify those families that [possibly] need

that extra support (...).” (P1.1 - Health Visitor, m-ABDD trained, with 5-10 years’ experience, VIG trained)

New vocabulary for articulating baby behaviour

The ADBB and m-ADBB scale, and the associated training was described as having equipped health visitors with a new language with which to explain infant behaviour and interactions, thereby also providing them with a new vocabulary with which to identify and describe infant development and parent-infant relationships.

“it gives you that language around how babies are behaving with that parent and what the strength of that is (……) I think it gives that wonderful richness to what we talk about all the time but just on a different platform.” (P4.2 – Modern Matron/Team Lead, m-ADBB trained, with more than 20 years’ experience)

“So although I was seeing relational problems, I was seeing no eye contact, I wouldn’t have had the words to – probably wouldn’t have had the same words to express it as I could with that scale”. (P11.2- Health Visitor, m-ADBB trained, with more than 20 years’ experience)

The ADBB/m-ADBB was perceived to have enabled the health visitors to ‘truly’ listen to the infant’s voice rather than relying purely on what the parents were telling them or what health visitors described as a “gut feeling” that they had previously found more difficult to articulate. This enabled health visitors to be explicitly infant-centred, which was felt to bring something distinctive to their relationships with parents, e.g. assessing and articulating how they are engaging with their infant in ways that are developmentally explicable and predictable.

“It’s made me much more aware of what the infant is telling me (…) And this is what we’ve said from the beginning. It’s such an eye-opener. We’d be so focused normally on the relationship between the caregiver and the baby, rather than what the baby is trying to tell anyone else that’s around them. Which isn’t something we’ve ever really focused on before”. (P8.2 - Health Visitor, m-ADBB trained, with less than 2 years’ experience, NBO trained)

“Because [with] a lot of our observations, the gut feeling is used, isn’t it? But what this does is it puts a bit of a framework, and it uses language to underpin a lot of (…..) what they’re feeling and seeing as well.” (P21.2 - Specialist Health Visitor, ADBB trained, with 5-10 years’ experience)

This was also perceived to be beneficial in terms of producing clinical records and referrals to other services.

"You are able to even document in records about, so I find I've changed my documentation, I tend to now write things like the baby was observed to be vocalising and smiling and good eye contact in my record keeping." (P3.2 - Health Visitor, m-ABDD trained, with 5-10 years' experience)

Enrichment of existing knowledge and skills

The ADBB and m-ADBB training was seen by health visitors as an opportunity to develop and complement their existing skills in infant mental health, maternal mental health, as well as parent-infant relationships. The learning acquired, in terms of new knowledge and skills (i.e. observation skills), was perceived to align well with, as well as enhance, their existing practice. Specifically, health visitors described how their communication skills were the most important (existing) skill that had been enhanced in terms of how they discussed their observations using the scale on infant behaviour and interactions with parents. They also described how these discussions needed to be carried out sensitively, taking into account the parents' needs, level of understanding and the wider family and home context. This, in combination with the health visitors' comprehensive and holistic assessment of the infant, parents, family and home environment was felt to have helped the decision-making process related to possible reasons for infant social withdrawal and the support or intervention needed.

"I think it's about understanding the wider context of what's happening with the baby and the family so exploring that approach with the parents and trying to ascertain if there are any other aspects of wellbeing or factors that will potentially be having an impact on baby at that time". (P4.2 – Modern Matron/Team Lead, m-ADBB trained, more than 20 years' experience)

"I think they draw on your existing skills. And you obviously need the training, to understand the scale, but I think it draws on your general toolbox, as a health visitor, or practitioner". (P6.2 – Health Visitor, m-ADBB trained, 10-15 years' experience)

The confidence of health visitors in the application of the training and scale to identify emerging concerns appeared to have served as a motivation for integrating their newly acquired skills into practice. The ADBB/m-ADBB training was reported, for example, to be

completely integral to their daily work with families, providing them with further insights about infants who may need additional support. Health visitors were acutely aware of the impact early parent-infant relationships have on longer term infant outcomes and the difference that early intervention makes, and they felt that the learning from the ADBB/m-ADBB scales enabled effective identification of need and provision of appropriate early support, which could better support long term infant outcomes.

"I think it would be brilliant actually because I think it would help us identify those child[ren] – those babies - that will go on to develop poor health needs going forward because of the poor attachment between mother and baby". (P15.1 – Health Visitor, m-ABDD trained, with 2-5 years' experience)

"And for me, a tool that can identify as early on as possible, when there might be a problem, so that we can get intervention in there, we can provide extra support, we can try and make a difference, is really important". (P21.1 – Specialist Health Visitor, ABDD trained, with 5-10 years' experience)

Overall, every health visitor who took part in both the ADBB and m-ADBB training, reported increased confidence, knowledge and skills in infant observations, and felt that both training programmes were highly beneficial and of great importance to their practice.

"I feel like the tool (….) has put a spin onto that assessment to say, 'Actually you can look at this from this angle.' So that's not to say I couldn't assess if there was an issue. I couldn't identify an issue before. It just means that now my skillset is wider". (P14.2 –Health Visitor, m-ABDD trained, with 5-10 years' experience).

Cognitive Participation: Familiarisation with the newly acquired infant observation knowledge and skills

The Cognitive Participation NPT construct refers to the relational work that the health visitors did to engage with and commit to the training and use of the ADBB/m-ADBB scale. It helped to identify the ways in which health visitors familiarised themselves with their newly acquired infant observation knowledge and skills in practice (Figure 3).

Commitment to the use of the ADBB/m-ADBB

The interview data suggested a very clear commitment to both the training and the use of the ADBB and m-ADBB scale on the part of all health visitors and managers, as per the model proposed in the study (i.e. m-ADBB scale used at routine contacts, followed by ADBB if a further assessment was necessary).

"Because I have found it quite transformational in terms of the way I see things and think about things, conversations with colleagues around infant mental health are richer as a result of it. So I think I'm 100% committed to continuing to use it." (P22.2 - Specialist Health Visitor, ADBB trained, with 5-10 years' experience, VIG trained)

"The health visitors have been truly amazed…..You've got the most committed of the committed and if they're saying it's an improvement, then it's got to be …… It's already had an impact on the service provision." (P24 - Service manager)

Health visitors were motivated to use the tool by the way they made sense of it, i.e. its perceived role in enhancing their understanding of infant behaviour and interactions, and therefore how it potentially enabled them to make a difference to children and families through the early identification of concerns.

Consolidation of new practice

Whilst the initial commitment to the use of the scale was overwhelmingly positive, the interview data suggests that health visitors were nevertheless apprehensive about the potential risk of an increase in their workload as a result of the incorporating the m-ADBB scale in the routine 6-8 week contact. They described how their caseloads were already very demanding and that they were concerned that another task added to their responsibilities would mean more time pressure on their visits (reducing for example the time for follow-ups). They were concerned that this, along with (national and local) poor staffing levels could mean a lack of 'buy in' from their colleagues. Despite these concerns, some health visitors reflected that implementing the m-ADBB scale in practice was more manageable than they had expected, and that the more practised they became in using the scale, the less onerous its use seemed to be.

"Initially yes first of all I thought, am I going to have time for this? It's just another thing isn't it, something else that we're going to have to do, adds another job on, but yes that did quickly change once I started practising it, when I was out in practice I started using it, I

actually realised it's something that I can do quite easily". (P9.1 – Health Visitor, m-ABDD trained, with less than 2 years' experience)

As the health visitors continued to consolidate their practice, these enhanced observation skills were perceived to have become part of the health visitors' skillset, such that infant observation using the different domains of the scales was felt to have become an 'automatic' process. Even when they were not working, they said that they found themselves observing infants wherever they were, for example, in the street or supermarkets. Health visitors strongly anticipated a lasting impact of the training, meaning they would not be able to 'unlearn' this new way of seeing babies and viewed it as being a 'normalised process' that was helpful across a variety of clinical contacts.

"I think once you've learnt this information, you can't unlearn it, so I will always be looking for those things, going forward. So whether this is adopted into practice or not, I will always be looking for those things in practice". (P6.1 - Health Visitor, m-ABDD trained, with 10-15 years' experience)

"Once you've had the training, once you know it, you can't un-know it. So even watching babies in the supermarket, I am using the ADBB, because it's just there". (P21.1 – Specialist Health Visitor, ABDD trained, with 5-10 years' experience)

The health visitors reported significant congruence in terms of the requirements of the training and the implementation of the ADBB and m-ADBB scale within existing health visitor practice, largely due to the similarities with regard to the naturalistic observations health visitors make in their daily assessments of infants and their families. Health visitors saw many opportunities for the incorporation of the scale in their routine assessments, such as when weighing an infant or discussing infant wellbeing with a parent, without any noticeable extra time demands within their clinical contacts.

"You can fit it into your 6 to 8 week visit quite easily because you're weighing the baby, the baby's getting weighed and measured so it's very easy to assess facial expression, eye contact". (P17.1 - Health Visitor, m-ABDD trained, with 2-5 years' experience)

Collective Action: Integrating new baby observation knowledge, skills and scale within existing practice

The Collective Action NPT construct was used to explore the work that health visitors did to integrate the new infant observation knowledge and skills and the ADBB/m-ADBB scale

within their existing practice. This included identifying ways in which health visitors carried out their operational work in terms of implementing the expected practices when using the scale (Figure 4).

Implementation of the m-ADBB scale in routine practice

For the purpose of this study, the way in which health visitors used the m-ADBB scale in the 6-8 week postnatal visit was adapted in order to integrate it within routine health visiting practice within a UK context. Instead of using the scale to produce a score based on their observation of the infant, health visitors made mental notes of the scores in the context of their wider assessment of the infant. They then used these findings to facilitate discussions with parents about infant behaviour and interaction using strength-based approaches, highlighting observations of positive parent-infant interactions.

Health visitors reported that this way of implementing the scale enabled them to promote attachment and bonding, while also identifying infants and families in need of greater support without using terms such as 'Alarm Distress Baby Scale' or 'infant withdrawal', which were perceived as being unhelpful. Furthermore, rather than sharing a raw numerical score with families, health visitors used their existing professional judgement and communication skills to discuss their assessment of the infant using more accessible and 'softer' language with parents. Health visitors also referred to the fact that the way in which the tool was being used as part of their existing skillset, rather than being implemented as an independent screening instrument, made it acceptable not to explicitly refer to the m-ADBB scale with families during their routine assessment.

"What I'd usually do to be honest is do the observations and assess myself and then sort of try and use it as really like positive reinforcement. So saying, 'So I've just been watching baby and I've noticed that when she does this you've done that and she's really responding to you and you're responded to her' and I've sort of really used it in more positive reinforcement". (P10.2 – Health visitor, m-ADBB trained, less than 2 years' experience)

"We don't talk about relational withdrawal with parents because that's very unhelpful. We talk the way we always have about babies being born social, ready to connect and that if we noticed anything within that it would be a discussion around that rather than. Because I think that was one of our concerns right at the beginning was if you talk about the scale explicitly and talk about relation withdrawal explicitly that's going to do more harm than good. It's actually utilising the skills from that in a strength-focused way and having the conversations

with parents". (P22.2 – Specialist Health Visitor, ADBB trained, with 5-10 years' experience, VIG trained)

While health visitors were asked to use the m-ADBB scale at the 6-8 week postnatal contact, they also identified the scale's potential usefulness in earlier, as well as later visits. Some health visitors felt that the scale might be more effective at a later contact between 12 to 16 weeks, when the babies are more likely to be alert and active. However, they noted the absence of a nationally mandated contact at that time, making the 6-8 week check the most suitable option to ensure universal reach for infants. A small number of health visitors suggested that the scale should also be used at the 8-12 month review, while most health visitors felt that it could potentially be used at every contact as part of their infant observation and assessment process.

Several challenges in implementing the scale across various scenarios were identified, including situations where face-to-face contact with some families was not possible. Health visitors also observed that the scale's effectiveness was unpredictably influenced by the infant's behavioral state, such as hunger, sleep, or alertness. For example, when a baby was asleep, health visitors were unable to perform the necessary observation and engagement to assess the infant's behavior using the scale. Other implementation challenges included distractions in both the home setting, such as younger siblings or relatives, and in clinical environments, such as clinic noise, which made conducting the observations difficult. These factors were identified as the primary barriers to using the m-ADBB scale during the 6-8 week contact.

"Just if the child's sleeping, fussy, then feeding, then milk drunk, they're then winding the baby. So in those instances, it has prevented because the baby just isn't, you know, you put them on the scales, they're screaming. There's no point where they are actually happy to interact." (P3.2 - Health Visitor, m-ADBB trained, with 5-10 years' experience)

"The clinic settings and the home settings, I found they were very different. So I only actually did one of the 6-to-8 weeks in the clinic setting, and I found it very difficult, because the baby was very distracted with all the noise that was going on around in the clinic at the time, so I found that quite hard to assess." (P13 - Health Visitor, m-ABDD trained, with 2-5 years' experience)

In cases where health visitors were unable to carry out the observation at the 6-8 week contact, they reported that limited time and capacity would prevent them from returning for an additional assessment, unless other concerns had been identified for the family.

Organisation and Management Support

Health visitors reported that they had been very well supported by their managers, their colleagues in their teams and across the wider service, all of whom were felt to have collectively contributed to the work involved in implementing this new practice. The health visitors who had undertaken the m-ADBB training felt reassured by the support structures that were available to them from other professionals, including the full ADBB-trained health visitors and other perinatal mental health professionals. This included offers of joint visits to infants if there were difficulties in undertaking an observation or the circumstances around it. Having good support from managers meant that the health visitors were able to undertake the training to develop their skills further and felt empowered to use the scale in practice. The service managers were supportive of upskilling the workforce and enabling health visitors to incorporate the scale into practice. This level of organisational and managerial support to use the scale in practice appeared to have been a key enabler to the implementation process.

"Well because obviously they're [managers] on board, so you know that they're allowing you that time to do what you need to do. And I think they're excited as well to find out the results as well, so I feel empowered by them." (P3.2 - Health Visitor, m-ADBB trained, 5-10 years' experience)

"Health visitors, school nurses, are trained to a specialist level and they already have a good level of training but they don't always have that finite level of training within particular aspects of development, infant relationships and when you get into school nursing levels and things like adolescent brain development. We've recognised within our service that we do need to invest a lot more training in those areas." (P23 - Service manager)

Existing systems and pathways for children and families

Most participants reported that their existing organisational care pathways (including referrals) were adequate to meet the needs of families where they identified concerns about an infant's behaviour or potential social withdrawal. In one NHS site, a number of health visitors (both within and outside of this study) were trained in VIG and had systems in place for families to be referred to them if needed, and the use of the ADBB/m-ADBB scale, was as such felt to complement this particular health visiting pathway. Some health visitors, however, were concerned that if the use of the scale increased the number of referrals to

partner agencies, it could have an impact on the wider healthcare system (which is already under-resourced), resulting in infants/families not being seen in a timely manner.

"And so, for example, we know with CAMHS they now, in our area, won't take any children under the age of four, there's no family therapy, we used to have art therapy here at the children's centre and now there isn't any of that. So, it's more about the resources, I think the pathways are not too bad." (P5.2 - Modern Matron/ Team Lead, m-ADBB trained, with over *20 years' experience)*

"Yes there is the services, whether it fully meets the needs of our families currently I think the landscape is not always that positive is it? You know, services, wait times where we would like to see families getting support, but actually they're on books and under services but not being seen. So actually I think that's a much wider level." (P22.2 - Specialist Health Visitor, ADBB trained, with 5-10 years' experience, VIG trained)

A small number of m-ADBB-trained health visitors sought support from the full ADBB-trained health visitors, but this was mainly to discuss individual cases of concern and to seek reassurance, especially in the early days of implementation. As the health visitors became more confident in using the m-ADBB scale in practice, less support was required from the full ADBB-trained health visitors. Only one out of the five ADBB-trained health visitors received a referral for a full assessment (as stated in the quantitative data). This however had not taken place at the time of the interview (was scheduled to take place 2 weeks later).

None of the other health visitors trained in the m-ADBB scale required a further assessment of an infant by an ADBB-trained health visitor. Where concerns were identified using the m-ADBB scale, the health visitors felt sufficiently enabled to make decisions about the following course of action, which may have included additional support from the health visiting service, as well as referrals to external services.

"They were supportive. I think, as I say, once we'd kind of got our heads around it I think the support was less necessary." (P10.2 - Health Visitor, m-ADBB trained, with less than 2 years' experience)

Reflexive Monitoring: Reflecting and appraising the ADBB and m-ADBB training and scales in routine practice

The Reflexive Monitoring NPT construct was used to explore how the health visitors reflected on the explicit infant observation training in their practice, including the impact that the scale has had on their practice (Figure – 5).

Perceived benefits of integrating the scales in practice

The perceived benefits reported by the health visitors and managers for both scales were similar, and included:

- Greater health visitor knowledge of infant behaviour.
- Enhanced health visitor observation and assessment skills.
- Ability to be more 'infant focused'.
- Early identification of concerns (around 6-8 weeks).
- Ability to provide early support and intervention.
- Opportunity to raise awareness and educate parents about infant behaviour and promote positive parent-infant relationship.
- Standardised scale for public health profiling and understanding of community needs.

Once health visitors trained in the m-ADBB scale found it easy to use, enhanced their infant observation skills and practice, and had minimal impact on their workload, they recommended its use to other health visitors. Service managers involved in the study were also strongly supportive of expanding the use of the m-ADBB scale and regarded infant observational practice as a crucial aspect of health visiting.

"We were all really excited about the ADBB and I think the [health visitors] have seen the impact of it already. They [health visitors] would love to see it rolled out across the whole of health visiting and not just us…. I think they've got no choice. I think it's got to be. I feel that everywhere that's got a health visiting service in the country should be doing this." (P24 - Service manager)

Quality assurance for embedding the scales in practice

Support following training, provided in various formats such as supervision, drop-in sessions, workshops, informal colleague support, and workbooks, was seen as key to successfully embedding the ADBB/m-ADBB scale in practice. Suggestions for improving ongoing support included creating a post-training "crib sheet" and developing communities of practice with colleagues trained in the scale.

Health visitors highlighted the need for various support mechanisms to maintain their knowledge, skills, and competencies in using the ADBB/m-ADBB scale. These included ongoing training (such as regular refresher or update sessions), access to supervision from ADBB-trained colleagues or peers, availability of appropriate learning resources (e.g., handbooks or videos), and opportunities to practice using the scales in real-world settings. Additionally, seamless systems and processes for recording infant observations with the ADBB/m-ADBB scale were identified as essential.

"I think you've got to ensure that there is confidence in using the tools. It's that false positive, isn't it? I think, therefore, it's about having access to appropriate, well-trained supervision." (P4.2 - Modern Matron/ Team Lead, m-ADBB trained, with over 20 years' experience)

"I think in terms of using it during visits, just refresher training and just sort of reminders of what we're looking for and just refresher training. Probably not yearly. Probably maybe two-yearly, three-yearly, something like that." (P -10.2 - Health Visitor, m-ADBB trained, with less than 2 years' experience)

Appraisal of the training and scales in practice

As discussed earlier, health visitors reported that both the ADBB and m-ADBB training programmes enhanced their ability to interpret infant behavior and communication, enabling them to have more meaningful conversations with parents about infant mental health.

"I think it will really support kind of outcomes for children, positive outcomes for children. Because we all know that early intervention is key. And if we're recognising that this is happening it might probe us to dig deeper. So what's going on for the family, what's going on for the parents, what's going on for the baby. I only see it to be a real positive thing really." (P18.1 - Specialist Health Visitor, ABDD trained, with 2-5 years' experience, VIG trained)

While the ADBB training was reported to be more in-depth and to require a much greater time commitment (20 hours of synchronous learning plus 45 hours of self-directed learning), compared to the m-ADBB training (3-hour webinar), the latter was seen as being more manageable. Some m-ADBB trained health visitors, however, felt that their training needed to be slightly longer than the three hours.

For the full ADBB training, health visitors noted greater difficulty in completing self-directed learning outside the synchronous learning. The ongoing process to integrate the scale was initially reported to be challenging by these health visitors, they felt that they had eventually reached a 'turning point' when the training 'made sense'. This sense of feeling comfortable

with the scale, was typically experienced after five to seven weeks of the training for all ADBB trained health visitors. Some health visitors felt this was when they discussed cases with the trainer directly and were able to clarify specific baby behaviours that they had observed.

"I had a kind of, lightbulb moment when the psychologist who taught us…she said something about how is the baby letting you know that they're in the room? How are they talking to you? And that was kind of, my lightbulb moment, I've always, as a health visitor, I thought I was doing a really good job looking at mum and baby's interaction, but I'd actually been looking at mum's interaction." (P20.1 - Health Visitor, ABDD trained, with less than 20 years' experience, VIG trained)

"At the beginning, I was thinking, 'I don't like this. I'm not sure about this. The numbers don't make sense. This doesn't make sense,' but actually, it really does as you travel through the journey of the training…the trainer, kept saying to us, 'Just trust in the process. Have a little faith.' I'd come away from the training huffing and puffing and thinking, 'This doesn't make sense. It doesn't add up,' but it really does if you just go along with the process." (P22.1 - Specialist Health Visitor, ADBB trained, with 5-10 years' experience, VIG trained)

When reflecting on the two training programme requirements, one ADBB trained health visitor questioned whether it was necessary to have the full ADBB training, especially as it required such a greater time commitment. Based on the feedback received from their m-ADBB trained colleagues, many felt that the m-ADBB may be sufficient for use by health visitors to identify initial behavioural concerns in babies.

"I don't know that the ADBB training is necessary, and my colleagues who did the m-ADBB training, seemed to get so much from that. And I don't think we got much more from doing the ADBB, so I kind of wonder whether actually, if we'd just done the m-ADBB training, would've been just as good." (P- 20.2 - Health Visitor, ADBB trained, with more than 20 years' experience)

While the training sessions and materials for both the ADBB and m-ADBB were perceived to be well-structured, concerns were raised about the effectiveness of the video content within the training, which may have been due to the quality of the video recordings and the fact that they were not conducted in English settings. Some health visitors reported the training to be difficult to understand at times due to translation issues.

A number of suggestions for improving both training programmes were made by the health visitors including:

- pre-course on infant development to better engage with the scale training.
- better quality videos, preferably in English.
- videos with examples of different scenarios to demonstrate a range of social withdrawal levels in babies.
- more scenarios within English health visitor practice and settings (e.g. home, clinics).

Many health visitors felt they would have preferred to have received face-to-face training rather than online/virtual learning. This was especially the case for health visitors wanting to practice their new knowledge and skills in a simulated environment.

Discussion

As part of this study, NPT [23, 24] was used to better understand the journey that the participating health visitors took in terms of their assimilation of the ADBB/m-ADBB training and implementation of the scales within routine practice. By combining both sets of interviews, conducted at two different timepoints after the training, it was possible to demonstrate insight into the 'whole implementation process'.

Exploring health visitors' views and experiences of incorporating the m-ADBB into routine practice is important, as previous studies have shown that successful implementation of such tools is influenced by the primary care worker's attitude toward the instrument and whether it was perceived to add value to their practice [18, 27]. The findings for this study demonstrate that both training programmes for the ADBB and m-ADBB scales were highly commended by the health visitors who undertook the respective trainings, and were perceived to have provided health visitors with a new theoretical perspective, additional knowledge and skills, and a new vocabulary to explain infant observations and parent-infant interactions. The ADBB and m-ADBB training were as such felt to have provided health visitors with more precision and detail in their assessments, and to have improved their ability to provide explanations and recommendations to parents (and other professionals and colleagues). These perceived benefits of the scale positively impacted the health visitors' commitment to the use of the scale in practice.

Participating managers were perceived to be supportive of the integration of the scale into practice, and good organisational and managerial support was felt to have been key to health visitors being enabled to undertake the training, and empowered to use the scale in practice. This collective action at practitioner, managerial and organisational level were seen as key enablers to normalising the implementation of the scale in routine health visitor

practice. Similar findings were also noted in a recent Norwegian study of health visitors' acceptability of using the ADBB, where acceptability was related to the tool being included in the service's plans for development and training, as well as an available referral option [27].

During the four-month study period, 248 families had received a 6-8 week postnatal contact by a health visitor, the m-ADBB scale having been used with 225 of these families (91%); in the remaining 23 cases, health visitors were unable to use the scale due to the baby either sleeping, feeding or being unsettled during the visit. This is consistent with the qualitative findings in which health visitors identified the baby's behavioural state (such as hunger, sleep or alertness) as the main barrier to the scale's use.

The pathway (Figure 1) developed for this study encouraged m-ADBB-trained health visitors to seek consultation and guidance from fully ADBB-trained health visitors when concerns were identified. Support from ADBB-trained health visitors was sought on only four occasions for advice and reassurance, and once for a full ADBB assessment (which had not occurred at the time of data collection). On these occasions, m-ADBB-trained health visitors were able to provide the necessary support and intervention based on their assessments using the m-ADBB scale, without the need for a full ADBB assessment.

While 10% (23/225) of infants assessed using the m-ADBB scale were identified as having possible concerns related to infant social withdrawal, these infants were not followed up for this study. Therefore, it is unknown whether social withdrawal was later confirmed in any of those cases. In the absence of baseline data on infant behaviour concern rates identified by health visitors, it is also not possible to determine whether the use of the scales led to higher rates of identification.

Health visitor concerns about the use of the m-ADBB scale increasing their workload, within the context of workforce shortage of 40% [28], were not realised and this reflected the way in which the new skills were 'normalised' and used as part of their routine assessment of infants. However, while the integration of the scale into routine health visitor assessments did not negatively impact the health visiting workload, it may increase the number of potential referrals for infant social withdrawal to other services. Further research is now needed to assess the nature of any concerns that are identified using this tool and service pathway, the services involved in onward referrals, and the interventions offered.

All 24 participants (22 health visitors and 2 managers) recommended using the m-ADBB scale in routine health visiting practice, based on its ability to enhance health visitor knowledge and assessment skills, rather than as a quantitative measure or formal population

screening tool. Although the potential usefulness of the scale in routine contacts at other time points was noted, the full ADBB scale was not used during the 6-8 week contacts or following referrals from m-ADBB-trained health visitors after a 6-8 week baby assessment in this study. Therefore, its feasibility as part of wider health visiting practice cannot be assessed. While managers saw the scale as potentially valuable for public health profiling to better understand local community needs, its use for this purpose was also not evaluated in the current study.

Previous studies have reported that assessment tools can conflict with health visitors' role in supporting parents, limiting flexibility and focus. Barrett et al. noted concerns among health visitors that using the ADBB could create a conflict between their role in supporting parents and safeguarding the infant [27]. However, issues related to safeguarding was not raised by any of the health visitors in the current study and could be explored further in future research.

The findings of this study have also identified the need for further adaptation of the training for use in the UK context, which should be considered going forward.

Strengths and limitations

This was a small, short-term study, conducted with two NHS sites and findings may not be generalisable to other areas, particularly where staffing levels and service offers vary. All participants were female, which is reflective of the health visiting workforce in England, however the ethnic backgrounds of participants were not collected. Only a small number of health visitors and two managers were included, and wider stakeholder perspectives were not explored, including parents. The study did not provide an opportunity to test the feasibility of the full ADBB scale. It is also not known the extent to which the perceived benefits of the ADBB by health visitors, and its reported ease of implementation into existing practice, relied solely on the standalone ADBB/m-ADBB training, or were predicated on health visitors' pre-existing knowledge, skills and experience. A limitation of this study is the inability to report on the outcomes of infants identified with possible social withdrawal, as no follow-up data were collected for these cases.

This was, however, the first study to test the acceptability and feasibility of the ADBB and m-ADBB scale in England. NPT provided a structured and theoretically robust approach to understanding the factors that promoted and inhibited implementation. The qualitative data in the study complemented the quantitative data, as well as providing a more in-depth understanding of the implementation process, including the reasons for referrals and support

that was sought by the m-ADBB- trained health visitors from the full ADBB-trained health visitors.

Conclusion

This initial study suggests that the pilot implementation of the ADBB and m-ADBB as part of routine 6-8 week checks was received positively by health visitors. The new national 'Healthy Child Programme: Schedule of Interventions Guide', states that where concerns about early relationships and infant mental health and wellbeing are identified, an assessment should be completed to understand the family needs and strengths [14]. There is, however, no information provided within the Schedule of Interventions with regard to the methods that the health visitor might use to identify early relationship and mental health concerns or recommended validated tools to support their assessment. This study therefore provides important information about the usability of a set of validated scales in the context of health visiting in England and how, once trained, health visitors can integrate their new learning into routine health visitor practice. A number of recommendations for future research and health visiting practice have been made (Box - 3).

Box – 3: Recommendations for future research and health visiting practice

- Further research should be carried out to include:
  - Implementation of the m-ADBB across wider health visiting teams in the UK, incorporating formal scoring.
  - Comparison of the rate of concerns identified in babies at 6-8 weeks by health visitors trained in m-ADBB/ADBB with those who are not.
  - Follow-up of the outcomes for babies when concerns are identified at 6-8 weeks using the m-ADBB/ADBB.
  - Exploration of how the percentage of babies for whom there are concerns at 6-8 weeks compare to other studies of the use of the scale at the same timepoint.
  - Testing sensitivity and specificity of the ADBB/m-ADBB in the UK population context.
  - Exploration of the use of the m-ADBB/ADBB at other routine health visitor contacts (for example, with older babies).
  - Exploration of the extent to which the ADBB/m-ADBB training enhances the health visitors' skills.
  - Exploration of the acceptability of the scale to wider stakeholders including parents/families from diverse backgrounds and commissioners. This should incorporate the acceptability of the scale name (ADBB) and whether a standardised strengths-based descriptor is needed alongside the formal name to make it more user-friendly.
  - Exploration of the differences in measures of infant social withdrawal in families with other known concerns such as mental health or safeguarding concerns.
  - Exploration of how the ADBB/m-ADBB and training fits with the Department of Health and Social Care (DHSC) 'prompts for keeping parent-infant relationships in mind', developed from the Leeds Early Attachment Observation (EAO) assessment tool [29].

- Consideration of a UK-based training programme with amendments to the training to align with the UK context, incorporating the training improvement recommendations from this study. Once developed, the UK-based training and its impact in more sites across the UK as a second phase of research and evaluation should be considered.

- Support systems for health visitors should be considered if the ADBB/m-ADBB scales are adopted within health visiting practice in England, and for those already trained in the use of the ADBB/m-ADBB as part of this study. This should include ongoing Continuing Professional Development, supervision, learning resources and practice opportunities.

- Consistent and accurate data recording systems need to be set up if the ADBB/m-ADBB are adopted within health visiting practice (i.e. request SNOMED CT codes).

List of abbreviations

ADBB: Alarm Distress Baby Scale

m-ADBB: Modified Alarm Distress Baby Scale

VIG: Video Interactive Guidance

NBO: Newborn Behavioural Observations

NPT: Normalisation Process Theory

HCP: Healthy Child Programme

Author contributions: SB drafted the initial manuscript with support from MF and HB, which all authors contributed to. The initial data coding was conducted by SB, MF and VG, with SB and MF carrying out the remaining data analysis. Methodological expertise and study oversight were provided by CM, JB, VG and AM. JB acted as guarantor, and all authors reviewed and approved the final manuscript.

Acknowledgements: The authors would like to thank The Royal Foundation of The Prince and Princess of Wales for funding this study that was undertaken by the Institute of Health Visiting, in partnership with the University of Oxford. The authors would also like to acknowledge Alexandra Deprez and Jocelyne Guillon from Humagogie training centre, who were commissioned to provide the ADBB/m-ADBB training for this study.

Funding

The study was funded by a grant from The Royal Foundation of The Prince and Princess of Wales. Grant number – N/A.

Data Sharing

All data relevant to the study are included in the article or uploaded as supplementary information

Competing interests

None declared.

Figure 1: Pathway for using the m-ADBB at the 6-8 week contact

Figure 2: Key themes for health visitors' sense-making of the ADBB and m-ADBB training and scales

Figure 3: Key themes for how health visitors familiarised themselves with the newly acquired baby observation knowledge and skills in practice.

Figure 4: Key themes for how health visitors integrated the new baby observation knowledge, skills and scale use within existing health visitor practice

Figure 5: Key themes for health visitors' appraisal of the ADBB and m-ADBB training and scale use in routine practice

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