Routledge
Taylor & Francis Group

Journal of Reproductive and Infant Psychology

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/cjri20

Video feedback for young babies and maternal perinatal mental illness: intervention adaptation, feasibility and acceptability

Kirsten Barnicot, Eloise Stevens, Fiona Robinson, Sarah Labovitch, Rajinder Ballman, Maddalena Miele, Tara Lawn, Sushma Sundaresh & Jane Iles

To cite this article: Kirsten Barnicot, Eloise Stevens, Fiona Robinson, Sarah Labovitch, Rajinder Ballman, Maddalena Miele, Tara Lawn, Sushma Sundaresh & Jane Iles (05 Mar 2024): Video feedback for young babies and maternal perinatal mental illness: intervention adaptation, feasibility and acceptability, Journal of Reproductive and Infant Psychology, DOI: 10.1080/02646838.2024.2322636

To link to this article: https://doi.org/10.1080/02646838.2024.2322636

JOURNAL OF REPRODUCTIVE AND INFANT PSYCHOLOGY
https://doi.org/10.1080/02646838.2024.2322636

Routledge
Taylor & Francis Group

Video feedback for young babies and maternal perinatal mental illness: intervention adaptation, feasibility and acceptability

Kirsten Barnicot[a,c], Eloise Stevens[a], Fiona Robinson[a], Sarah Labovitch[a,b], Rajinder Ballman[c], Maddalena Miele[c], Tara Lawn[d], Sushma Sundaresh[e] and Jane Iles[f]

[a]Department of Health Services Research and Management, City University of London, London, UK; [b]Research and Development, West London NHS Trust, London, UK; [c]Perinatal Mental Health Service, Central & North West London NHS Foundation Trust, London, UK; [d]Perinatal Mental Health Service, East London NHS Foundation Trust, London, UK; [e]Perinatal Mental Health Service, Oxleas NHS Foundation Trust, London, UK; [f]Department of Psychological Interventions, University of Surrey, Guildford, UK

ABSTRACT

Aims/Background: We aimed to adapt, pilot and explore experiences of receiving and delivering the video feedback intervention for positive parenting (VIPP) for 2 to 6 month old babies, mothers experiencing moderate to severe perinatal mental health difficulties and perinatal mental health clinicians.

Design/Methods: The VIPP intervention was adapted to include developmentally appropriate activities and developmental psychoeducation for 2 to 6 month olds, alongside psychoeducation on emotion regulation, and then piloted in 14 mothers experiencing moderate to severe perinatal mental health difficulties (registration ISRCTN64237883). Observational and self-reported pre-post outcome data on parenting and parent-infant mental health was collected, and post-intervention qualitative interviews were conducted with participating mothers and clinicians.

Results: Consent (67%), intervention completion (79%) and follow-up rates (93%) were high. Effect sizes on pre-post outcome measures indicated large improvements in parenting confidence and perceptions of the parent-infant relationship, and a medium-size improvement in maternal sensitivity. In qualitative interviews, clinicians and mothers described how mothers' initial anxieties about being filmed were allayed through receiving positive and strengths-focussed feedback, boosting their self-confidence, and that the video feedback facilitated identification of young babies' subtle behavioural cues and moments of mother-infant connection. Streamlining the information provided on maternal emotion regulation, and allowing increased use of clinical judgement to tailor intervention delivery, were suggested to optimise intervention feasibility and acceptability.

ARTICLE HISTORY
Received 2 June 2023
Accepted 18 February 2024

KEYWORDS
Infant mental health; parent-infant intervention; perinatal mental health; Video feedback; Sensitivity

CONTACT Kirsten Barnicot Kirsten.Barnicot@city.ac.uk Department of Health Services Research and Management, City University of London, Myddleton Building, 1 Myddleton Street, EC1R 1UW, UK
Supplemental data for this article can be accessed online at https://doi.org/10.1080/02646838.2024.2322636

Conclusion: It is feasible and acceptable to implement VIPP with very young babies and their mothers experiencing perinatal mental health difficulties. A fully powered randomised controlled trial is required to establish intervention efficacy.

Introduction

Up to 20% of mothers will experience perinatal mental health difficulties, including bipolar disorder, personality disorders, psychosis, severe anxiety or depressive disorders (Howard et al., 2014; Jones et al., 2014; National Health Service, 2019). Maternal perinatal mental illness increases the risk of future child mental health and behaviour problems, due partly to an increased risk of early difficulties in parent-infant relationships (Stein et al., 2014). A key modifiable intervention target is maternal sensitivity, i.e. a mother's ability to notice, interpret and respond sensitively to infant communication. Maternal sensitivity is more likely to be challenging for mothers experiencing perinatal mental health difficulties and predicts the likelihood of subsequent problems in children's socioemotional development (Aktar et al., 2019; Howard & Khalifeh, 2020).

Meta-analysis has shown that the most effective interventions for improving parental sensitivity incorporate direct feedback to the parent, through recording and playing back videos of parent-infant interaction (Bakermans-Kranenburg et al., 2003). Trials in other at-risk groups – mothers with bulimia nervosa, insecure attachment or low sensitivity, and infants with behavioural problems – have shown that the video feedback intervention for positive parenting (VIPP) is effective in improving parental sensitivity and child mental health (Juffer et al., 2017; O'Farrelly et al., 2021). VIPP was developed in the Netherlands based on attachment theory and Mary Ainworth's work on maternal sensitivity (Juffer et al., 2015). Over seven sessions, clinicians video the parent and child engaging in play and in everyday activities such as feeding. The clinician analyses the videos after the session, and then watches the videos back with the parent in the subsequent session and gives feedback on the child's interactive and play behaviour from the child's perspective, highlighting the child's attachment and exploratory behaviours and reinforcing parents' sensitive responses. When viewing moments where a parent responded less sensitively or missed the child's cue, the clinician gives tips for alternative ways of responding and flags moments of more optimal parental responsiveness elsewhere in the interaction.

Perinatal mental health services in the United Kingdom treat women with moderate to severe or complex perinatal mental illness, involving significant levels of distress, risk to self, difficulties in the parent-infant relationship and/or impact on maternal functioning. They are therefore ideally placed to offer VIPP to at-risk mother-infant dyads. We previously adapted and trialled VIPP for mothers who were using perinatal mental health services (VIPP-PMH), by adding additional material to help mothers manage any worries about being judged and/or self-critical feelings whilst being filmed interacting with their babies (Barnicot et al., 2022, 2023). The adaptation comprised psychoeducation on difficult thoughts and feelings arising from being videoed and receiving feedback, an emphasis on the non-judgemental and child-focussed nature of the intervention, and an opportunity to debrief about any difficult

thoughts and feelings at the end of each session.The trial demonstrated feasibility, acceptability, and potential large positive effects of VIPP-PMH on parental sensitivity (Barnicot et al., 2022, 2023), but highlighted that two further adaptations could be beneficial to increase the utility of the intervention for women being cared for by perinatal mental health services. Firstly, the intervention should be adapted for babies aged under 6 months. Whilst VIPP was originally developed for children aged 6 months and above, neurobiological and health economic evidence suggests that earlier intervention can accelerate a positive trajectory in child development (Heckman & Masterov, 2007; Shonkoff & Philips, 2000), and being able to offer VIPP-PMH to younger babies would increase its availability for women using community perinatal mental health services, who are frequently referred during pregnancy or soon after giving birth (Barnicot et al., 2023). The standard VIPP intervention contains elements that may be unsuitable for very young babies, such as parents building towers of blocks with their children, and therefore requires adaptation for this age range. Further, babies' range of behavioural cues is more limited in the first months of life. It is not known whether clinicians will be able to identify a sufficiently rich range of infant cues to feed back to mothers, nor whether mothers will find such feedback helpful at this early stage of their child's development. Secondly, mothers using perinatal mental health services may benefit from the addition of psychoeducation on emotion regulation in the context of parent-infant interaction. Regulating one's emotions during stressful parent-infant interactions can sometimes be difficult for any parent, and particularly for parents experiencing mental health difficulties (Reijman et al., 2016). Emotional dysregulation is a transdiagnostic feature of mental health problems (Sloan et al., 2017), associated with parent-infant relationship problems, poor parental sensitivity, child behaviour problems and adolescent emotional dysregulation (Buckholdt et al., 2014; Carreras et al., 2019). The feasibility and acceptability of these proposed adaptations is currently unknown.

The present research therefore aimed to:

(1) Adapt and pilot the VIPP-PMH intervention for mothers experiencing moderate to severe perinatal mental health difficulties and their 2 to 6 month old infants, and explore its feasibility and acceptability for mothers and for perinatal mental health clinicians delivering the intervention
(2) Establish pre-post effect sizes for maternal sensitivity, parenting stress, parental self-confidence, the parent-child bond, and emotional dysregulation.

Methods

Trial registration

ISRCTN 64,237,883 https://doi.org/10.1186/ISRCTN64237883

Ethics approval

Ethical approval was obtained from the Health Research Authority and the East of England – Cambridge South Research Ethics Committee on 29th June 2021 (ref 21/EE/0139).

Table 1. Inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
1. Women/birthing persons	1. A sibling or co-parent is participating in the trial
2. Experiencing moderate to severe and/or complex perinatal mental health difficulties (as indexed by being under the care of specialist community perinatal mental health services)	2. The eligible child has a clinical diagnosis of a learning difficulty, developmental disorder or sensory impairment
3. A primary caregiver of a child aged 2 to 3 months old at intervention initiation	3. The eligible parent has English language or learning difficulties that are sufficiently severe to prevent them completing study measures even with assistance
4. Age 16 to 65 years old	
5. Capable of giving informed consent	

Procedure

Inclusion and exclusion criteria can be found in Table 1. We aimed to recruit 10 to 15 mothers, following typical case series design (Abu-Zidan et al., 2012). Participants were recruited from three community perinatal mental health services in London, United Kingdom. Eligible mothers were approached by the clinical team, given brief verbal information about the study, and asked for verbal consent to pass their contact details on to the study researcher. The researcher met with interested mothers in their homes to obtain written informed consent to participate, and administered the baseline measures. Subsequently, the mothers took part in VIPP-PMH sessions, followed by a final research visit at 5 months post-baseline including a qualitative feedback interview. Participant flow through the study and the study timeline are shown in Figure 1.

Intervention adaptation

We further optimised the VIPP-PMH intervention for women experiencing perinatal mental illness r by including age-appropriate activities for babies aged 2 to 6 months, based on activities used when VIPP is delivered with 6 to 12 month olds (VIPP Training and Research Centre, 2015), some earlier preliminary work conducted by the intervention developers to adapt VIPP for young babies (Bakermans-Kranenburg pers. comm.), existing resources on recommended activities for this age range (e.g. National Childhood Trust, 2019; Stoppard, 2014), and a survey of 42 mothers about the activities they most and least enjoyed doing with their 2 to 6 month old babies (see Online Supplementary Information). We included both activities which were likely to be enjoyable, and activities which were likely to be more challenging, since mothers in our previous trial felt it beneficial to receive video feedback on these scenarios (Barnicot et al., 2023). Further, based on a review of existing resources (e.g. What to Expect, 2021; Zero to Three, 2016), we developed additional developmental psychoeducation to be shared with parents at each session on infant communication and play, along the following themes: non-verbal communication (session 1), crying as communication (session 2), mirroring (session 3) sensory play and physical touch (session 4), with sessions 5 and 6 allowing for repetition of previous themes as needed. Finally, psychoeducation on emotion regulation strategies for parent-infant interaction was developed based on existing resources on coping with crying/early parenthood (e.g. Cry-sis, 2021; National Society for the Prevention of Cruelty to Children, 2021), emotion regulation strategies recommended in dialectical behaviour therapy and mentalisation

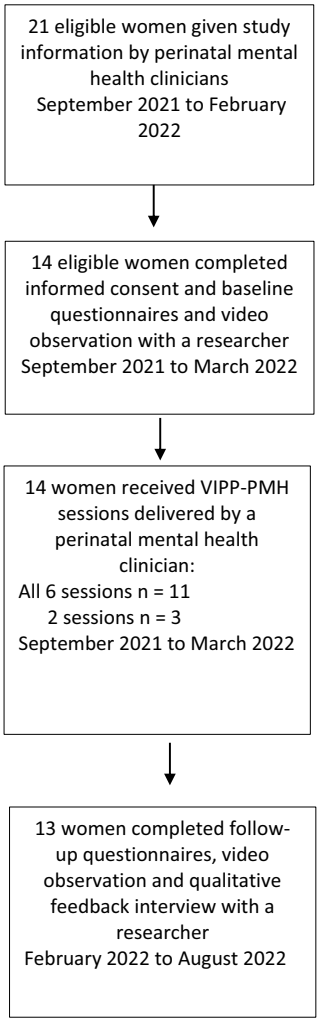

Figure 1. Participant flow through the study.

based therapy (Bateman & Fonagy, 2006; Linehan, 1993), and the results of the adaptation study survey (see Online Supplementary Information).

Intervention training and delivery

Fourteen clinicians from the three participating perinatal mental health teams, including five clinical psychologists, six nursery nurses, two occupational therapists, and a mental health nurse, attended a seven day online training in VIPP with sensitive discipline (VIPP-SD, the standard intervention for older children) and the adaptations for VIPP-PMH in May and June 2021, delivered by two accredited VIPP-SD trainers, and completed supervised practice sessions with a non-clinical family, followed by a VIPP-PMH case. Training content was designed by the VIPP Training and Research Centre at the University of Leiden and covered the theoretical background, goal and main principles of the intervention and

Theme 1. Doing VIPP-PMH with young babies	Theme 2. Doing VIPP-PMH with mothers experiencing perinatal mental health difficulties
1.1 Working around baby	2.1 Mothers' anxieties and fears about being filmed
1.2 Adapting the filming	2.2 Boosting mothers' confidence in themselves and their bond with baby
1.3 Recognising baby's cues	2.3 Talking about feelings and emotion regulation
1.4 Information on infant communication and play	2.4 Who is VIPP-PMH for?

Figure 2. Themes and sub-themes from qualitative feedback interviews with mothers and clinicians.

guided practice through case examples and exercises. Clinicians received supervision from an accredited VIPP supervisor prior to delivery of each intervention session. The adapted VIPP-PMH intervention was delivered as described in the Introduction, with the exception that during the baseline research visit the researcher captured the video footage ordinarily captured by the clinician in the first VIPP-PMH session, and then passed it securely to the clinician for analysis and preparation of feedback, allowing the clinician to omit VIPP-PMH session 1 and deliver only sessions 2 to 7. Sessions were 90 minutes in duration and delivered every two weeks, primarily in participant homes, with clinic-based or video-conferencing virtual delivery available if desired.

Baseline and follow-up measures

The self-report measures administered at baseline and follow-up are described in Table 3 below. Additionally, maternal sensitivity was rated by a trained researcher using the Parent Infant Interaction Observation Scale at both timepoints (Svanberg et al., 2013), based on 3 minute clips of mothers interacting with their baby, with the instruction to 'be with your baby however you normally would. You can do anything you like'.

Qualitative interviews

During the 5-month follow-up home visit mothers were asked to take part in a qualitative interview with the researcher about their experiences of the intervention and of the study. The interview schedules are provided in the Supplementary Online Information. Interviews ranged from 20 to 40 minutes in duration and asked about parents' expectations and experiences of the intervention, its appropriateness for their child's stage of development, what they found helpful or less helpful, and any suggestions for improvement. Clinicians delivering the intervention were also interviewed about their experiences and opinions on feasibility and acceptability, after intervention delivery. The interviews were audio recorded for subsequent transcription.

Analysis

Pre-post effect sizes were calculated as Hedge's g coefficients, using the average of standard deviations and the pre-post correlation coefficient (Uanhoro, 2021). Qualitative interviews with mothers and clinicians were analysed together using reflexive thematic analysis (Braun & Clarke, 2019), by Authors 3 and 4, and reviewed by Author 1. Following line-by-line coding of all data in NVivo software (Version 12, QSR, 2018), themes and sub-themes were inductively created to capture the in-depth data on experiences of VIPP-PMH.

Reflexivity

Author 1's interpretations of the data were framed by her previous experiences of researching and delivering VIPP; Author 3 by her relationship with participants formed through research visits; and Author 4 by her own positive and negative experiences of receiving perinatal mental health services. Where interpretations of the data differed, each analyst questioned their own stance and considered the others' perspectives, arriving at a mutually agreed coding through reflexive dialogue (Olmos-Vega et al., 2022).

Results

Participants

Of 21 eligible women approached by clinicians, 14 agreed to participate (consent rate 67%), of whom 11 completed all 6 VIPP-PMH sessions (completion rate 79%). Ten women received the intervention at home, two in the perinatal mental health clinic, and two received a mix of home-based delivery and virtual delivery via video conferencing. One discontinued as she stopped responding to researcher and clinician contact; another two women were unable to complete the intervention due to clinician ill health. Thirteen mothers completed the month-5 follow-up and took part in a qualitative feedback interview (follow-up rate 93%). Twelve clinicians were also interviewed (two could not be reached due to ill health). Participant characteristics are shown in Table 2. The sample was generally highly educated and ethnically diverse.

Pre-post effect sizes

Mothers' average scores on all measures improved between pre- and post-intervention, as shown in Table 3.

Experiences of the intervention

As shown in Figure 2, thematic analysis of the interviews with the mothers and clinicians identified two themes. Theme 1 focussed on feasibility and acceptability of VIPP-PMH with young babies, with sub-themes covering how sessions were adapted to young babies' unpredictable schedules, developmental capacities, and subtle communication cues, and

Table 2. Participant characteristics.

Age (years)	34 (4.3)
Ethnicity	2 (14%)
Arabic	2 (14%)
Black	2 (14%)
Hispanic	1 (7%)
South Asian	7 (50%)
White	
Highest education level	1 (7%)
A-levels	5 (36%)
Undergraduate degree	8 (57%)
Postgraduate degree	
Relationship status	7 (50%)
Married	7 (50%)
In an unmarried relationship	
Primary psychiatric diagnosis	1
Adjustment disorder	5
Anxiety and/or depression	2
Bipolar affective disorder	1
Childhood onset emotional disorder	3
Emotionally unstable personality disorder	2
Post-traumatic stress disorder	
Average time since first contact with psychiatric services (years) M(sd)	9.0 (6.6)
Previous psychiatric emergency department visit	5 (36%)
Previous self-harm	8 (57%)
Scoring above threshold on the McLean BPD Screen	5 (36%)

opinions on the added psychoeducation around infant communication and play. Theme 2 focussed on acceptability for mothers experiencing moderate to severe perinatal mental health difficulties, with sub-themes covering the impact of mothers' anxieties about being filmed, how the intervention boosted mothers' self-confidence, mother and clinician views on the added psychoeducation around emotion regulation, and the most appropriate target group for the intervention

Theme 1. Doing VIPP-PMH with young babies.

Sub-theme 1.1 Working around baby. Seven clinicians and five mothers explained how the clinicians' efforts to fit the sessions around the baby's timings, and to rearrange sessions as needed, had helped them work around the additional challenges posed by young babies' unpredictable sleeping and feeding routines, as well as the increased likelihood of their becoming unsettled during the session.

> "A couple of times we had to just change the timing a little bit because she was having a long nap . . . .[Clinician]'d say 'No it's ok to give it half an hour and then you can wake her up'. Then I'd text [Clinician] again and say 'OK I'm ready now'". [P111]

Sub-theme 1.2 Adapting the filming. Two mothers and one clinician agreed that, for young babies, short filming clips were appropriate due to baby's more limited interactional repertoire and the increased likelihood of them becoming upset. Further, five clinicians mentioned that filming was easier with younger babies since they were less mobile. The filmed tasks were generally agreed to be developmentally appropriate and mothers mentioned gaining new ideas from them about ways to play with their baby.

> 'It gave me ideas as well of things, like I didn't know she would be at that age yet . . . so like, we played with bubbles, you know . . . .it meant that I could go away and do that with her'. [P104]

Table 3. Pre-post outcome measures.

Measure	Construct	Interpretation	Pre-intervention (mean, s.d.)	Post-intervention (mean, s.d.)	Change from pre-post intervention (mean, s.d.)	Pre-post effect size (Hedge's g)
Parent Infant Interaction Observation Scale *Svanberg et al. (2013)*	Parental sensitivity	Lower scores indicate better maternal sensitive responsivity during mother-infant interaction	9.9 (8.1)	6.3 (5.2)	−3.0 (7.7)	0.41
Karitane Parenting Confidence *Črnčec et al. (2008)*	Parenting confidence	Higher scores indicate higher maternal parenting confidence	35.2 (5.1)	39.2 (3.6)	+4.2 (4.8)	0.87
Parental Stress Scale *Berry & Jones (1995)*	Parenting stress	Lower scores indicate lower maternal parenting stress	43.4 (11.5)	39.2 (10.2)	−4.1 (5.0)	0.34
Maternal Object Relations Scale Short Form – Warmth Oates & Gervai (2019)	Warmth in the parent-infant relationship	Higher scores indicate mothers' perceptions of a warmer relationship between herself and her infant	23.0 (5.8)	28.4 (4.4)	+6.0 (3.7)	1.13
Maternal Object Relations Scale Short Form – Invasion Oates & Gervai (2019)	Invasion in the parent-infant relationship	Lower scores indicate mothers' perceptions of feeling less invaded by her infant	9.5 (6.8)	8.2 (5.9)	−1.3 (5.8)	0.19
Ages & Stages Questionnaire -Social Emotional v. 2 *Squires et al. (2002)*[a]	Infant socioemotional difficulties	Lower scores indicate mothers' perception of fewer socioemotional difficulties in their infants	27.1 (23.0)	22.7 (14.1)	−5.0 (17.8)	0.24
Difficulties in Emotion Regulation Scale – 16 *Bjureberg et al. (2016)*	Maternal emotional dysregulation	Lower scores indicated lower maternal emotional dysregulation	42.8 (13.1)	38.1 (11.0)	−3.0 (7.7)	0.24

[a]The 1 to 3 months version was used at pre-intervention, and the 3 to 8 months version at post-intervention.
[b]Svanberg et al. (2013); [b]Črnčec et al. (2008); [c]Berry and Jones (1995); [d]Oates and Gervai (2019); [e]Squires et al. (2002), the 1 to 3 months version was used at pre-intervention, and the 3 to 8 months version at post-intervention; [f]Bjureberg et al. (2016).

However, two clinicians mentioned that a task including a toy for the infant to grasp had been too difficult for the younger babies.

Sub-theme 1.3 Developing a more practiced eye: clinicians and mothers developing skills in recognising baby's cues. Six clinicians mentioned that, because young baby's cues are more subtle and their behaviour is more repetitive, it could be challenging to pick out varied moments in the interaction to feed back on. This was felt to particularly be the case when filming feeding, as this was quite a repetitive interactional sequence. However, with

experience and with support from their VIPP supervisor, they became more adept at spotting baby's subtle cues and finding a variety of moments and behaviours in the interaction to comment on.

> 'Especially at the beginning, when we're starting with a two-month-old the communication is very subtle sometimes, so you're looking just for their eyes, if they're looking, slight movements of the body . . . . sometimes I'd watch back and think "Ok, I'm not sure what I'm going to comment on here", and then I'd watch it again and then maybe find a few things, and then when I'd go to supervision we'd find lots of things . . . I think it kind of takes a more practiced eye sometimes to see'. [Clinician of P112]

Eleven mothers and nine clinicians expressed how the video feedback had helped mothers pick up on their baby's cues and understand more about how and what their baby was communicating to them. For mothers, the most powerful aspect was to see the moments that their baby was responding to them and trying to connect with them, often in subtle ways that they had not previously noticed. This helped mothers to see how important they were to their baby and to see the bond between them.

> 'I learnt how to read those slightly smaller, more subtle signals that she gives . . . .like if she was playing with something and then she quickly looked at me and made eye contact with me, something that I maybe wouldn't necessarily picked up on before'. [P102]

Five mothers and five clinicians spoke about mothers learning to step back in the interaction and let their baby direct it, slowing down the pace to give the baby more time to process the world around them.

> 'I think the biggest thing that I learnt from it was probably giving [Baby] the space to explore things and not feel like I have to intervene all the time'. [P102]

Both mothers and clinicians remarked that initiating the intervention at two to three months old worked well, as it allowed mothers to recover from childbirth and begin to establish a routine, whilst also enabling mothers to observe a huge development in their children by the time the intervention finished at around six months old.

Sub-theme 1.4 Information on infant communication and play. Clinician, but not mothers, were asked in the interviews what they had thought about the additional information on infant communication and play developed for the VIPP-PMH. Eight clinicians felt that this information had been helpful for mothers as it helped them to think about the ways young babies communicate and to see crying as a form of communication, as well as helping them to think about sensory play.

> "I found it was quite a nice thing to add in there. Especially for a parent that, you know, struggling with play or communicating. And even crying, 'cause a lot of our mums really do struggle with crying. Just to explain, you know, that is really is their main way of communicating". [Clinician of P111]

However, one clinician felt that the mother they were working with was already well-versed in this information and did not need to receive it.

Theme 2. Doing VIPP-PMH with mothers experiencing perinatal mental health difficulties

Sub-theme 2.1 Mothers' anxieties and fears about being filmed. Twelve mothers and nine clinicians expressed that, exacerbated by their perinatal mental health difficulties, mothers experienced various anxieties about being filmed interacting with their babies. Anxieties ranged from being self-conscious about their appearance, to worrying that the clinician would be judging their parenting. Four mothers also mentioned experiencing self-critical thoughts when watching themselves back on video. However, six mothers and four clinicians explained that mothers felt more comfortable over time as they realised their fears were unfounded.

> "At first, very nerve-wracking, very self-conscious. I had a negative narrative going on for the whole time, like … '.I don't look a natural mum, we must look like we don't have a great relationship' … . but then I watched it back and I was like 'Oh you look fine. We look great, [baby's] the star". [P101]

Seven mothers mentioned that they struggled to be themselves and interact naturally with their baby on camera, as they were very aware of being observed. A few also mentioned feeling like they had to stick the activities suggested by the clinician, and consequently acting differently or being less responsive to their baby than they otherwise would be. Mothers mentioned this getting easier over time and with reassurance from the clinician.

> 'I felt like I needed to perform while we're taking the videos, and she was good at catching that. She kept telling me, "You don't have to do anything, you just need to be 100% yourself, because whatever you're doing, it's whatever your baby needs"'. [P110]

Sub-theme 2.2 Boosting mothers' confidence in themselves and their bond with baby. All 13 interviewed mothers described the clinicians delivering VIPP as kind, caring, non-judgemental, reassuring and making them feel comfortable, which helped to ameliorate their anxieties about being filmed. The focus of the feedback on the baby, and on highlighting positive features of the interaction, also greatly reduced their anxiety.

> 'She was just so reassuring. Just really lovely and she would always draw me back to "Look how happy [Baby] is. Look at what a happy little baby she is, look at the interaction" … She was just so positive … made me feel very at ease'. [P111]

Mothers and clinicians described this positive feedback as boosting mothers' confidence in themselves as parents and helping them to overcome their negative feelings and doubts:

> 'I'm frustrated inside because at the time, I'm talking to her and I feel like I'm not really getting there and I'm not really understanding her, but then when I was watching the videos … actually, I was doing great! Actually she did this particular hand movement and I knew exactly what she needed at the moment'. [P110]

Conversely, because they were very aware of mothers' anxieties about themselves as parents, some clinicians struggled with the requirement in later sessions to point out one instance per session where the mother had responded less sensitively to her baby. The clinicians spoke about trying very hard to word their feedback on these moments gently and sensitively, with support from their supervisor. They found identifying and feeding back on these moments particularly challenging when mothers were generally responding very sensitively to their

baby. Three clinicians expressed that they would prefer to use their clinical judgement to determine mothers for whom flagging points for improvement would not be helpful.

> 'Because she lacked so much confidence anyway, I didn't want to criticise . . . she is really good and really receptive, and responsive to the baby. I found those a bit uncomfortable to say'. [Clinician of P111]

Sub-theme 2.3 Talking about feelings and emotion regulation. Seven mothers described sharing their anxieties and worries about the filming, the feedback, and their parenting, with the clinician. They described clinicians as responding with reassurance and empathy, normalising their feelings and helping them to let go of some of their anxieties.

> 'I remember we did a clip like about getting her dressed. She hates getting dressed! And she was just kind of normalising that, and then sort of reassuring me, because at the time I was really funny about her crying'. [P109]

However, three mothers felt that their clinician could have been more proactive in checking in on how they were feeling throughout the session, and would have liked more space in the sessions to explore more generally how they were feeling about their relationship with the baby. Four mothers mentioned holding back on expressing all of their thoughts and feelings about the filming and feedback to the clinician; conversely, three clinicians mentioned that the mothers they were working with did not express any self-critical thoughts or anxieties and so the clinician had not continued to ask about these in every session.

Nine clinicians described finding the maternal emotion regulation tips a helpful addition to the intervention, particularly the advice on accepting emotions, taking a break when things felt overwhelming, and connecting with baby's feelings to help them manage their own. Three mothers also described the tips as helpful; however, six mothers could not recall the clinician sharing tips about emotion regulation with them. One clinician felt the mother she was working with did not need any tips on emotion regulation and so she did not include them; another two clinicians observed that the additional material on emotion regulation meant that there was a lot to cover in each session. More generally, clinicians described preferring to move away from reading information out from the intervention manual, instead drawing on their clinical experience to put information in their own words and to tailor their conversations to the needs of the specific mother they were working with.

Sub-theme 2.4 Who is VIPP-PMH for? Five clinicians felt that, for future wider delivery within perinatal mental health services, VIPP-PMH would be best targeted at mothers who are lacking confidence in themselves as parents or worried about the bond with the baby, and should be available across the wider age range seen by the service (up to 12 months).

> 'I think it would be really helpful directed towards a targeted group . . . . a mum that's really struggling with the bonding . . . think about the flexibility of [baby's] age'. [Clinician of P103]

Discussion

Main findings

Consent, intervention completion and follow-up rates were high in this first smallscale evaluation of VIPP optimised for mothers experiencing perinatal mental health difficulties and their young babies. Effect sizes on pre-post outcome measures suggested large improvements in parenting confidence and perceptions of the parent-infant relationship, and a medium-size improvement in maternal sensitivity. In qualitative interviews, clinicians and mothers described how mothers' initial anxieties about being filmed were allayed through receiving positive and strengths-focussed feedback, boosting their self-confidence, and that the video feedback facilitated identification of young babies' subtle behavioural cues and moments of mother-infant connection.

Feasibility and acceptability of VIPP-PMH with young babies

This was the first time the VIPP intervention has been adapted specifically for babies aged under 6 months. Overall, VIPP-PMH was viewed by mothers and clinicians as working well with 2 to 6 month old babies. The adapted filming tasks were considered developmentally appropriate; however, the task requiring baby to hold a toy on their own may require further adaptation. The additional psychoeducation on infant communication was found to be helpful.

Although babies' cues at this age were observed to be subtler than with older babies, with practise and supervisory support, clinicians were able to draw out many moments of connection and communication from the interaction. Mothers described being surprised and gladdened by the richness of their baby's communication and responsivity to them. Both mothers and clinicians felt the intervention helped mothers to better notice their baby's cues and respond sensitively. In line with this, the pre-post effect size for observer ratings of mother-infant interaction indicated a medium-sized increase in sensitive responsivity to their child. However, with no control condition this improvement cannot necessarily be attributed to VIPP-PMH. Mother-infant interactional quality has previously been shown to increase between 3 and 6 months old, potentially as infants' cues become more obvious and mothers have gotten to know their baby better (O'Brien et al., 1989). Nonetheless, the findings align with our feasibility trial in older infants (age 6 to 36 months) whose mothers were experiencing perinatal mental health difficulties, in which sensitivity increased over time in mothers receiving VIPP-PMH but decreased over time in mothers receiving usual care alone (Barnicot et al., 2022). Further, trials in other populations have shown VIPP to be effective in improving maternal sensitivity (Bakermans-Kranenburg et al., 2003; Juffer et al., 2017).

Feasibility and acceptability of VIPP-PMH with mothers experiencing moderate to severe perinatal mental health difficulties

As in our previous study (Barnicot et al., 2023), mothers experiencing moderate to severe perinatal mental health difficulties described considerable anxieties about being filmed interacting with their baby. However, with reassurance and support from the clinician, and through receiving positive feedback on the interaction focussed on understanding the baby's cues and communication, mothers' anxieties were largely allayed. Further,

mothers described feeling more confident in themselves as parents and developing a more positive perspective on their relationship with their child. In line with this, outcome data suggested that mothers' parenting confidence and their perception of a warm relationship with their child improved from pre- to post-intervention with a large effect size, alongside a small improvement in parenting stress.

Most mothers appreciated the opportunity to discuss any difficult feelings with their clinician; however, further thought could be paid to checking in more often with mothers who are known to be particularly anxious. Additionally, whilst clinicians found the emotion regulation tips to be a helpful addition to the intervention in this population, the fact that mothers could largely not remember them, and that clinicians described struggling to fit all the material into the session, suggests that this content requires further consideration. VIPP is an intervention designed primarily for parent-infant interaction, rather than for maternal mental health. Potentially the emotion regulation material could be omitted or presented more briefly, and clinicians could adapt the amount of time spent on this topic according to each mother's need. Similarly, since clinicians described feedback on instances of less sensitive mother-infant interaction to be potentially unhelpful where a mother was already generally highly sensitive and/or felt judged by this, clinicians could be facilitated to use their clinical judgement in deciding whether to feed back on these less sensitive moments.

Strengths and limitations

Following a robust intervention adaptation process, this study evaluated the feasibility and acceptability of VIPP-PMH under ecologically valid conditions: the sample was ethnically diverse, with a range of mental health diagnoses, and was recruited across three different perinatal mental health services. Further, VIPP-PMH was delivered by perinatal mental health clinicians in the context of their everyday job role, as it would be if the intervention is rolled out in the future.

The findings are limited by the small sample and lack of control condition, due to the aim of the study to assess intervention feasibility and acceptability rather than effectiveness, meaning that pre-post change in outcomes cannot necessarily be attributed to VIPP-PMH. Inter-rater reliability for the observation of maternal sensitivity was not assessed. Further, the sample were highly educated, which does not represent all women using perinatal mental health services (Howard et al., 2022). It is unclear whether there was any selection bias in the women approached to participate by clinicians or in the women consenting to participate. Three mothers did not complete all six VIPP-PMH sessions and therefore could not feedback on the full intervention.

Conclusion and implications for further research

The findings suggest that our adaptation of VIPP-PMH is feasible, acceptable and potentially helpful for mothers experiencing moderate to severe and/or complex perinatal mental health difficulties and their 2 to 6 month old infants. Additionally, it can be delivered within perinatal mental health service contexts, provided staff are supported to have the correct training, supervision and protected time for delivery. The feedback has

suggested further minor adaptations to increase acceptability and feasibility. Further work is required to test the effectiveness of VIPP-PMH in a definitive randomised controlled trial.

Acknowledgments

With enormous thanks to the mothers, children and clinicians who took part, and particular thanks to Catherine Furlonge, Charlotte Akinyemi, Daniela Laterza, Emily Hodgson, Karen Baptiste, Karis Dennison, Kirsty Carmichael, Miriam Ahmad, Rachel McGeehin, Savanna Folie, Sue Winslade, Veronica Matjele, Vicky Kavadi-Roach, and Zoe Wood who delivered the intervention sessions. We wish also to thank Camilla Rosan and Marian Bakermans-Kranenburg for their advice on adapting VIPP for younger babies.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

The research was funded by a Barts Charity grant [MGU0585] to KB, MM and TL and a Central and North West London NHS Foundation Trust Research Starter Grant to KB and MM. The views expressed are those of the author(s) and not necessarily those of the Barts Charity or Central and North West London NHS Foundation Trust.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

References

Abu-Zidan, F. M., Abbas, A. K., & Hefny, A. I. (2012). Clinical "case series": A concept analysis. *African Health Sciences*, *12*(4), 557–562. https://doi.org/10.4314/ahs.v12i4.25

Aktar, E., Qu, J., Lawrence, P. J., Tollenaar, M. S., Elzinga, B. M., & Bögels, S. M. (2019). Fetal and infant outcomes in the offspring of parents with perinatal mental disorders: Earliest influences. *Frontiers in Psychiatry*, *10*, 391. https://doi.org/10.3389/fpsyt.2019.00391

Bakermans-Kranenburg, M. J. (pers. comm). Filming activities planned for VIPP with 1 to 7 month old babies. *Communication by Email on 06 April 2020*.

Bakermans-Kranenburg, M. J., van Ijzendoorn, M. H., & Juffer, F. (2003). Less is more: Meta-analyses of sensitivity and attachment interventions in early childhood. *Psychological Bulletin*, *129*(2), 195–215. https://doi.org/10.1037/0033-2909.129.2.195

Barnicot, K., Parker, J., Kalwarowsky, S., Stevens, E., Iles, J., Ramchandani, P., & Crawford, M. (2023). Mother and clinician experiences of a trial of a video feedback parent-infant intervention for mothers experiencing difficulties consistent with "personality disorder": A qualitative interview study. *Psychotherapy: Theory, Research & Practice*, *96*(2), 480–503. https://doi.org/10.1111/papt.12453

Barnicot, K., Welsh, M., Kalwarowsky, S., Stevens, E., Iles, J., Parker, J., Miele, M., Lawn, T., O'Hanlon, L., Sundaresh, S., Ajala, O., Bassett, P., Jones, C., Ramchandani, P. , and Crawford, M. (2022). Video feedback parent-infant intervention for mothers experiencing enduring difficulties in managing

emotions and relationships: A randomised controlled feasibility trial. *British Journal of Clinical Psychology*, *61*(4), 1188–1210. https://doi.org/10.1111/bjc.12388

Bateman, A., & Fonagy, P. (2006). *Mentalization-based treatment for borderline personality disorder: A practical guide*. Oxford University Press.

Berry, J. O., & Jones, W. H. (1995). The parental stress scale: Initial psychometric evidence. *Journal of Social and Personal Relationships*, *12*(3), 463–472. https://doi.org/10.1177/0265407595123009

Bjureberg, J., Ljótsson, B., Tull, M. T., Hedman, E., Sahlin, H., Lundh, L. G., Bjärehed, J., DiLillo, D., Messman-Moore, T., Gumpert, C. H., & Gratz, K. L. (2016). Development and validation of a brief version of the difficulties in emotion regulation scale: The DERS-16. *Journal of Psychopathology and Behavioral Assessment*, *38*(2), 284–296. https://doi.org/10.1007/s10862-015-9514-x

Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, *11*(4), 589–597. https://doi.org/10.1080/2159676X.2019.1628806

Buckholdt, K. E., Parra, G. R., & Jobe-Shields, L. (2014). Intergenerational transmission of emotion dysregulation through parental invalidation of emotions: Implications for adolescent internalizing and externalizing behaviors. *Journal of Child and Family Studies*, *23*(2), 324–332. https://doi.org/10.1007/s10826-013-9768-4

Carreras, J., Carter, A. S., Heberle, A., Forbes, D., & Gray, S. A. (2019). Emotion regulation and parent distress: Getting at the heart of sensitive parenting among parents of preschool children experiencing high sociodemographic risk. *Journal of Child and Family Studies*, *28*(11), 2953–2962. https://doi.org/10.1007/s10826-019-01471-z

Črnčec, R., Barnett, B., & Matthey, S. (2008). Development of an instrument to assess perceived self-efficacy in the parents of infants. *Research in Nursing & Health*, *31*(5), 442–453. https://doi.org/10.1002/nur.20271

Cry-sis. (2021). *Help for 0-3 month old babies with crying and sleep problems: An in-depth guide*. Retrieved April 19th, from https://www.cry-sis.org.uk/help-with-young-babies-guide

Heckman, J. J., & Masterov, D. V. (2007). The productivity argument for investing in young children. *Review of Agricultural Economics, American Agricultural Economics Association*, *29*(3), 446–493. https://doi.org/10.1111/j.1467-9353.2007.00359.x

Howard, L. M., Abel, K. M., Atmore, K. H., Bick, D., Bye, A., Byford, S., Carson, L. E., Dolman, C., Heslin, M., Hunter, M., Jennings, S., Johnson, S., Jones, I., Taylor, B. L., McDonald, R., Milgrom, J., Morant, N., Nath, S., Pawlby, S., & Wieck, A.. . . Pickles, A. (2022). Perinatal mental health services in pregnancy and the year after birth: The ESMI research programme including RCT. *Programme Grants for Applied Research*, *10*(5), 1–142. https://doi.org/10.3310/CCHT9881

Howard, L. M., & Khalifeh, H. (2020). Perinatal mental health: A review of progress and challenges. *World Psychiatry*, *19*(3), 313–327. https://doi.org/10.1002/wps.20769

Howard, L. M., Molyneaux, E., Dennis, C. L., Rochat, T., Stein, A., & Milgrom, J. (2014). Non-psychotic mental disorders in the perinatal period. *The Lancet*, *384*(9956), 1775–1788. https://doi.org/10.1016/S0140-6736(14)61276-9

Jones, I., Chandra, P. S., Dazzan, P., & Howard, L. M. (2014). Bipolar disorder, affective psychosis, and schizophrenia in pregnancy and the post-partum period. *The Lancet*, *384*(9956), 1789–1799. https://doi.org/10.1016/S0140-6736(14)61278-2

Juffer, F., Bakermans-Kranenburg, M. J., & Van IJzendoorn, M. H. (2015). *Manual VIPP-SD. Video-feedback intervention to promote positive parenting and sensitive discipline (VIPP-SD). Version 3.0*. Centre for Child and Family Studies, Leiden University.

Juffer, F., Bakermans-Kranenburg, M. J., & Van IJzendoorn, M. H. (2017). Video-feedback Intervention to promote positive parenting and sensitive discipline (VIPP-SD): Development and meta-analytical evidence of its effectiveness. In Steele, H., & Steele, M. (Eds.), Handbook of Attachment-Based Interventions (pp. 1–26). Guildford Press.

Linehan, M. M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. Guilford Press.

National Childhood Trust. (2019). *Games and play for development: 0-6 months*. Retrieved April 19th, 2023 from https://www.nct.org.uk/baby-toddler/games-and-play/games-and-play-for-development-0-6-months

National Health Service. (2019). *NHS mental health implementation plan 2019/20 – 2023/24*. NHS England. Retrieved April 18th, 2023 from https://www.longtermplan.nhs.uk/wp-content/uploads/2019/07/nhs-mental-health-implementation-plan-2019-20-2023-24.pdf

National Society for the Prevention of Cruelty to Children. (2021). *Baby parenting tips*. Retrieved April 19th, 2023 from https://www.nspcc.org.uk/keeping-children-safe/support-for-parents/baby-parenting/

Oates, J., & Gervai, J. (2019). Mothers' perceptions of their infants. *Journal of Prenatal & Perinatal Psychology and Health*, *33*(4), 282–300.

O'Brien, M., Johnson, J. M., & Anderson-Goetz, D. (1989). Evaluating quality in mother-infant interaction: Situational effects. *Infant Behavior and Development*, *12*(4), 451–464. https://doi.org/10.1016/0163-6383(89)90026-X

O'Farrelly, C., Watt, H., Babalis, D., Bakermans-Kranenburg, M. J., Barker, B., Byford, S., Ganguli, P., Grimas, E., Iles, J., Mattock, H., McGinley, J., Phillips, C., Ryan, R., Scott, S., Smith, J., Stein, A., Stevens, E., van IJzendoorn, M. H., Warwick, J., & Ramchandani, P. G. (2021). A brief home-based parenting intervention to reduce behavior problems in young children: A pragmatic randomized clinical trial. *JAMA Pediatrics*, *175*(6), 567–576. https://doi.org/10.1001/jamapediatrics.2020.6834

Olmos-Vega, F. M., Stalmeijer, R. E., Varpio, L., & Kahlke, R. (2022). A practical guide to reflexivity in qualitative research. *Autonomous Mapping Exploration and Evasion Guide No 149, Medical Teacher*, *45*(3), 241–251. https://doi.org/10.1080/0142159X.2022.2057287

Reijman, S., Bakermans-Kranenburg, M. J., Hiraoka, R., Crouch, J. L., Milner, J. S., Alink, L. R., & van IJzendoorn, M. H. (2016). Baseline functioning and stress reactivity in maltreating parents and at-risk adults: Review and meta-analyses of autonomic nervous system studies. *Child Maltreatment*, *21*(4), 327–342. https://doi.org/10.1177/1077559516659937

Shonkoff, J. P., & Philips, D. A. (2000). Committee on integrating the science of early childhood development. In Shonkoff, J.P., & Philips, D.A. (Eds.), *From neurons to neighbourhoods: The science of early childhood development*. U.S.A. National Academies Press.

Sloan, E., Hall, K., Moulding, R., Bryce, S., Mildred, H., & Staiger, P. K. (2017). Emotion regulation as a transdiagnostic treatment construct across anxiety, depression, substance, eating and borderline personality disorders: A systematic review. *Clinical Psychology Review*, *57*, 141–163. https://doi.org/10.1016/j.cpr.2017.09.002

Squires, J., Bricker, D., Twombly, E., Yockelson, S., Davis, M. S., & Kim, Y. (2002). *Ages & stages questionnaires: Social-emotional (ASQ: SE): A parent-completed, child-monitoring system for social-emotional behaviors*. Paul H. Brookes Publishing Company.

Stein, A., Pearson, R. M., Goodman, S. H., Rapa, E., Rahman, A., McCallum, M., Howard, L. M., & Pariante, C. M. (2014). Effects of perinatal mental disorders on the fetus and child. *The Lancet*, *384* (9956), 1800–1819. https://doi.org/10.1016/S0140-6736(14)61277-0

Stoppard, M. (2014). *Baby's first skills: Help your baby learn through creative play*. Dorling Kindersley.

Svanberg, P. O., Barlow, J., & Tigbe, W. (2013). The parent–infant interaction observation scale: Reliability and validity of a screening tool. *Journal of Reproductive and Infant Psychology*, *31*(1), 5–14. https://doi.org/10.1080/02646838.2012.751586

Uanhoro, J. (2021). *Effect size calculators*. Retrieved April 19th, 2023 from https://effect-size-calculator.herokuapp.com/

VIPP Training and Research Centre. (2015). *Table of videos to be recorded for VIPP (for infants 6-12 months)*. Centre for Child and Family Studies, Leiden University.

What to Expect. (2021). *Sensory play activities for babies and toddlers*. Retrieved April 19th, 2023 from https://www.whattoexpect.com/first-year/play-and-activities/sensory-play-activities-babies-toddlers

Zero to Three. (2016). *How to support your child's communication skills*. Retrieved April 19th, 2023 from https://www.zerotothree.org/resource/how-to-support-your-childs-communication-skills/