Novel Smartphone Intervention for Breastfeeding: Usability and Acceptability testing

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WHO Recommendation:

All babies should be **exclusively breastfed for the first 6 months**, with continued breastfeeding alongside complementary feeding **for 2 years or beyond**.
Despite high breastfeeding initiation of breastfeeding, by 6 weeks
• about 50% of babies are still receiving any breastmilk,
• only 23% are being breastfed exclusively
Breastfeeding Problems

UK Infant Feeding Surveys 2005 & 2010

Breastfeeding Problems were the reasons given for stopping breastfeeding.

Most commonly:

- milk supply
- difficulty with attachment
- breast pain
- nipple pain
- frequent feeding
- return to work
Breastfeeding problems can be prevented or resolved

- WHO: “Virtually all mothers can breastfeed, provided they have accurate information, and the support of their family, the health care system and society at large.”

- Problems associated with hospital practices i.e. not skin to skin contact, introduction of formula milk

- UNICEF BFI recommend two key skills:
  - Positioning and Attachment (P&A)
  - Hand Expression

- Strains on maternity services
Smartphone Apps

Potential to deliver health psychology interventions that are:

• Easily accessible
• Low cost
• Private
• Available at critical moments 24/7
• Tailored to individual need
Intervention Design

Key skills

- Baby always hungry
- Swollen Breasts
- Damaged Nipples
- Difficulty at the breast
- Not enough milk
- Return to work

Personal Mastery
Vicarious Experience
Persuasion
Emotional Arousal
Prototype App

Main Wheel addresses common problems; including explanation of what is common, how to manage problems and when to seek further help. Links to relevant key skills.

Key Skills for managing breastfeeding; positioning and attachment; hand expression; signs of effective feeding. Videos and step-by-step guides

Diary: reinforces existing success; users can ‘rate’ feeds for comfort; set goals; video themselves feeding; record notes

Time for you; explain link between relaxation and breastfeeding; 5 minute audio exercises

Why Breastfeed
Aims

1. Test that the app was usable by mothers and health professionals
2. Check the app was acceptable to both mothers and health professionals
3. Inform revisions to the app for version 2 – iOS and Android
Method

Study 1: ‘Think Aloud’
Mothers (n=5) experienced with iPhones were presented with the app and asked to work through the content, ‘thinking aloud’ as they did so. They were told they were not expected to comment on the content, unless they wanted to.

Study 2: Acceptability Interview
Mothers (n=6) downloaded the app onto their own iPhone or iPad and were asked to go through the content for at least 20 minutes, then as much as they wished. 2-3 weeks later took part in an interview to feedback.

Study 3: Telephone Interviews with Health Professionals
Health visitors and midwives (n=7) with an iPhone or iPad they were willing to use for work, downloaded the app. Followed similar procedure to mothers in study 2.
Recruitment

Mothers:
  Staff noticeboards
  Social media
  Breastfeeding groups at local children’s centres

Health Professionals:
  Contacts in local services – UHCW and SWFT
Analysis

Phase 1:
Simple content analysis to identify key issues / bugs / suggestions for improvement in inform revisions.

Phase 2:
Deeper thematic analysis to identify how the app could be used, its advantages, disadvantages, and potential acceptability to wider group.
Results: Usability

• Mothers and HPs found the app instinctive;
  • They could access information very quickly
  • In study 1 many mothers commented in depth on the content
• Some bugs (links not working etc)
• Some confusion about wheel vs toolbar initially
• Difficulty downloading the app using redemption code
Acceptability: Mothers

Reassurance

Normalising problems

Level of information

Appropriate amount for an app
Convenience
Easily readable

Visual Information

Particular advantage of app was use of pictures and videos and wanted more of these

Suggestions for improvement

Personalisation or tailoring of content
Especially... it can be quite lonely, breastfeeding in the middle of the night... and the baby is crying, and you know there is a lot of information on the internet and on the phone. But at two o clock in the morning it’s not really the time or the place to be using them. But something like this, I could be sat in bed, and been like ‘right ok, so I’ve got some pain’ and I click, and I think that would have been really reassuring for me.

I like the way it’s not too much to read because you wouldn’t have, this needs to be quick to use... else you probably wouldn’t use it.

That is really useful to have a video showing what an incorrect latch looks like, because again i've never seen that, and it's helpful because you can clearly see that that is different. I was almost flinching, imagining that that would really hurt.
Acceptability: Health Professionals

More critical of content – but basics were covered

Use in consultation
  Videos help provide explanation
  Barriers such as having access to smartphone for work

Wanted to recommend the app
  Some concern about whether this was ‘allowed’

Learning aid
  For mothers antenatally
  For students

Stressed that it was an ‘additional tool’
I showed attachment at the breast [video] and, a bit of a lightbulb moment. ‘Oh now I understand why you were explaining this to me cos I can see how far the, the nipple’... so even as I was explaining to her, you know, you put your finger right at the back of the throat and explain the where the soft palate is... so even when I was showing her the leaflet visually, to actually see the process of milk transfer for this mum was really helpful.

...can be used, I think probably by mums but also by health visitors who need a bit of a refresher, or who need to maybe just remind themselves when they’re talking to a mum or umm, just update their information.
Controversy over Diary

Mothers and Health Professionals had different views about the role of the diary function.

Mothers were surprised it did not record times and indicated this would be useful.

HPs were concerned about anything that might encourage mothers to focus on timing feeds rather than infant cues. Some seemed unwilling to consider our ‘compromise’.
...maybe you could have the option to have ‘add a feed, and say how long it was...So it’ll tell you how long, like ten minutes, twenty minutes.

R: *do you think that its a useful thing to be able to monitor?*

I think it’s useful in the early days when you don’t really know how long, or if you’re not sure that they have been feeding for long enough. Or if they have been feeding for too long, you know especially if they are cluster feeding or something, you might have the whole evening, you feel like you’re breastfeeding the whole night, but it would be half an hour, or twenty minutes there.... It would be useful to have the time on there though. Perhaps it would be most useful to us in the middle of the night, when you’re half asleep, and by the morning you don’t know how long you fed for.
...sometimes mums can get entrenched in, you go there ...and they’ve got out this – they’ve spent hours almost writing when they fed, the times, what breast, all the rest of it...and I just think no no, just go with your baby, go with you...and I think when you start to throw other things in possibly it just complicates it for them, and then they start to think about oh well baby’s only had a five minute feed. But actually, as long at the baby had been attached well, its been comfortable and had a good feed then five minutes might be fine for that baby. Its not necessarily about the length of feeds its about how good the attachment is, how good the milk transfer is, and how comfortable it is for mums.
Conclusions

• App easy to navigate
• Provided reassurance for mothers
• Accessibility of video and picture content a huge advantage for mothers and HPs
• Diary function is controversial
• Changes to V2 App include:
  • Fixed bugs
  • Added ‘instructions’ which vary for user type
  • Added more videos and pictures throughout, including mother’s experiences videos
  • Personalisation function
  • Facebook group link
Future Work

• Similar testing of android app
• Collect quantitative data on
  • acceptability
  • usage of app
• Evaluate the app’s effectiveness for increasing self efficacy, breastfeeding intentions and breastfeeding rates at 6-8 weeks
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