An Evaluation of the Peppy Baby Programme in Manchester University Foundation Trust

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1. Executive Summary

1.1. Context

In Autumn 2020, Swansea University, in partnership with Bournemouth University, were commissioned to undertake an evaluation of a new pilot programme for new parents called 'Peppy Baby' that was delivered during the COVID-19 pandemic. This programme was funded by the NHS and MHCLG 'TechForce 19' programme as an innovative intervention to meet the needs of those who were particularly vulnerable or isolated as a result of the COVID-19 pandemic and subsequent lockdowns and social distancing.

With this funding the Peppy Health team designed a support package for new mothers based around a mobile phone app. The programme covered core topics such as infant feeding support, mental health, pelvic floor care and broader support in adapting to new parenthood. Support was delivered via the app which connected parents with perinatal practitioners, and services such as group chats, live broadcasts and referrals to specialist services if needed. Women took part from late pregnancy to eight weeks postpartum.

This evaluation sought to explore the impact of the programme upon infant feeding, mental health, pelvic floor care and parenting confidence, alongside the perceived usability, acceptability and effectiveness of the programme and app. Finally, perceptions of integration of the programme with existing local services and impact upon workload were examined. The views of mothers who took part in the programme, local health professionals and local commissioners were included to shape and conduct the evaluation.

1.2. Background

The 'first 1001 days' covering pregnancy and the first two years of life are recognised by the government as a key time for investment and support due to the impact upon infant development and parental mental health (DHSC, 2021). Policies such as Public Health England's 'Healthy Child Programme' seek to ensure parents have the support they need during pre-conception, pregnancy and the postnatal period, particularly in relation to infant feeding, mental health and maternal physical recovery (PHE, 2021).

Supporting new parents with infant feeding is a key area of investment because of the significant body of research illustrating how breastfeeding protects both infant and maternal health (Victora et al, 2106). However, the UK has some of the lowest breastfeeding rates in the world, due to complex physiological, psychosocial and cultural barriers to women initiating and continuing breastfeeding (Rollins et al, 2016). This means that investing in consistent and evidence-based support for breastfeeding is important and has been shown to have a significant impact on breastfeeding duration (McFadden et al, 2017).

A second core area of strategic investment is maternal mental health. The perinatal period is a time of great change particularly for first time parents transitioning into a new role. It is recognised that parents need support during this time, both in learning how to practically care for a baby and support in adapting to parenthood (Winson, 2017). For some parents the stress of this transition can contribute to postnatal depression impacting on parental mood, physical health and functioning (Milgrom et al, 2008). Postnatal programmes that help support parental wellbeing, provide a sense of reassurance, and develop a feeling of community are vital to supporting new parents (Gilmer et al, 2016).

A third area of importance is maternal pelvic floor health during pregnancy and post birth. Pelvic floor dysfunction issues after childbirth such as urinary incontinence, pain, and discomfort during sex affect around a third of new mothers with considerable physical and psychological impact (Hay-Smith et al, 2008). Pelvic floor strengthening exercises have been shown to be effective in reducing a range of pelvic floor issues (Boyle et al, 2014). However, many women do not receive sufficient information during pregnancy about this, in part because midwives lack time or sometimes training to convey messages (Terry et al, 2020).

Unfortunately, despite the recognised importance of investment in these areas, UK maternity, health visiting and specialist perinatal health services have faced significant shortfalls in terms of staffing and services over the last few years, meaning that many new parents do not get the support they deserve (IHV, 2021). This has been exacerbated by the COVID-19 pandemic which has left many new parents feeling isolated and lacking in support (Babies in lockdown, 2020). It is recognised that now, more than ever, investment is needed for programmes that can support the needs of parents and babies through the perinatal

period, particularly those which are innovative and harness new technologies in an effective way (NHS Digital, 2021).

The aim of this evaluation was therefore to evaluate the impact of the programme upon the key areas of infant feeding, mental health and pelvic floor care, alongside programme acceptability and feasibility, and integration of the support into existing perinatal care.

1.4. Methodology

The methodology for the evaluation consisted of:

- Part One: A longitudinal online questionnaire, collected over four time points for all mothers who took part in the programme
- Part Two: Online interviews with a group of mothers who took part in the programme
- Part Three: An online questionnaire for local health professionals
- Part Four: An online questionnaire for local commissioners

1.4. Key findings

The programme was valued by mothers and local health professionals. It was considered an effective and acceptable way of delivering support especially during the COVID-19 pandemic. Mothers felt that it helped them feel more confident, informed and supported, and health professionals recognised how well it fitted the ethos of perinatal support. Overwhelmingly both mothers and health professionals would like to see the programme expanded and continued outside of a pandemic context.

Specific highlights included:

Value of 1 – 2 – 1 support from Peppy practitioners:

- The Peppy practitioners were highly valued by mothers. The 1 – 2 – 1 support generated a feeling that the Peppy service was trustworthy and individually tailored rather than a generic service. Support was seen as proactive with regular practitioner led check-ups.
- The continuity of one-to-one support enabled the development of a relationship between practitioner and mother, which particularly helped when mothers were experiencing any difficulties.

- The delivery of the programme via the app rather than face to face appointments and events played a role in helping mothers connect with the support, especially during the pandemic. The convenience and ease of the texts and video calls were emphasised.

Value of Group chat

- Group chats, where a practitioner brought together a group of mothers for a live social chat, were valued as providing a supportive community.
- Group chats were reassuring as they helped mothers recognise normal and common baby behaviour and new parenting struggles that other mothers were having too. This helped women feel less isolated and anxious.
- Group chats were especially valued within the context of routine face-to-face support groups for pregnant women being paused during COVID lockdowns.

Impact upon infant feeding

- Breastfeeding rates were high amongst participants compared to local and national rates. Almost 90% of mothers were breastfeeding during the first week and 80% at eight weeks, including almost two thirds doing so exclusively. A higher proportion of mothers from BAME groups were breastfeeding compared to White mothers.
- Although the sample might represent mothers who are older and more motivated to breastfeed, evaluation of breastfeeding support given suggested the programme further supported breastfeeding. Over 90% of mothers felt that Peppy helped them feel more knowledgeable and confident about breastfeeding.
- The programme also provided positive bottle-feeding support. Over 90% of mothers who received support with bottle feeding felt more confident and knowledgeable about safely and responsively bottle feeding their baby.

Impact upon mental health

- Mental health significantly improved during the programme. At enrolment 30% of women were considered as having symptoms of possible depression as measured by the Short Warwick-Edinburgh Mental Wellbeing Scale. At eight weeks postpartum just 10% of women were considered to have possible depression.

- Women from BAME groups were three times more likely to be classed as having high mental wellbeing (28%) compared to White women (11%) at eight weeks.
- Mothers felt that the practical and emotional support given during the programme helped increase confidence around infant care and reduce relationship tensions during the transition to parenthood. Support with other aspects such as infant feeding and pelvic health also increased wellbeing.

Pelvic health support

- Pelvic floor support sessions were viewed as useful in helping raise awareness of the importance of care.
- Mothers who accessed pelvic health support attributed it to supporting them to have a more straightforward birth.
- Awareness and access of pelvic floor support through the programme was lower than for other areas, with few women discussing complications with their practitioners.

Impact upon parenting confidence and self-efficacy

- Over 80% of mothers accredited the programme as leaving them feeling more confident and less anxious about caring for their baby, and more relaxed as a new parent.
- A core part of this increase in self-efficacy related to being able to have their questions answered promptly from an expert source. The feeling of being able to ask small questions on a regular basis helped mothers feel more confident.
- Others felt reassured by knowing that other mothers were going through similar challenges too and that how they were feeling was ‘normal’.

Use of other NHS services

- Over 40% of mothers reported that they reduced contact with their midwife or health visitor due to support from Peppy practitioners. Typically, mothers directed smaller everyday queries to practitioners, supported by the ease of using the app.
- However, the programme also encouraged necessary contacts; 40% of mothers contacted their midwife or health visitor with an issue after speaking to their practitioner. Others were referred for specialist infant feeding or mental health support.

- Two thirds of mothers reported that the programme helped prepare them for their six-week check, through increased awareness of what to expect at the appointment.

Perceptions of local health professionals

- Health professionals recognised the value that the programme offered mothers, describing how mothers felt supported and more confident from having additional layers of support. This felt reassuring, as they knew mothers had another avenue of support to turn to when they were busy or could not immediately return calls.
- Health professionals could see that mothers were accessing support from the programme, but that this didn't feel as if it impacted upon their day-to-day load, most likely due to small numbers of their caseload taking part.
- Over 95% of health professionals felt that the project worked well alongside existing support and would like to see it continue, but wanted clarification upon the impact on their future job security and workloads. Professionals emphasised the need for the programme alongside existing support rather than instead of.

Overall perceptions

- The majority of mothers who took part in the programme were highly likely to recommend it to a friend
- Over 85% of mothers perceived the programme as non-judgemental, helping them to feel more confident, and supportive in helping them make decisions.
- Mothers from BAME backgrounds perceived the programme slightly more positively and would be more likely to recommend the programme compared to women from White backgrounds.

Ideas for improvement

- *Clarity on timing and content:* Some mothers also talked about missing out on some support because they were unsure what was available. Some health professionals mentioned women missing out on the programme as they did not realise it was available.

- *Timing and recording of live sessions:* A broader variety of live session timings to enable more partners to take part. Recording would allow parents to watch back later
- *A longer duration:* Many mothers and professionals viewed a need for the programme to last longer, albeit at a lower intensity, to cover stages such as introducing solids or returning to work
- *Gentler ending and support maintaining connections*: Mothers wanted support in maintaining connections, perhaps through a post programme support group.
- *Inclusion of partners:* More sessions and support aimed at partners

1.5. Key conclusions

The programme was perceived by mothers as supportive, non-judgemental, and easy to use, with positive impacts seen upon core areas of infant feeding, maternal mental health, and pelvic floor health.

Although the number of women taking part was small in terms of the birth rate in the area, the evaluation highlighted a likely positive reduction in pressure upon local midwifery, health visiting and GP services and was seen as an acceptable and supportive programme by health professionals working in the Trust.

It was particularly timely during the COVID-19 pandemic, providing connection and support to new parents at a time of significant stress. Although there were some suggestions for improvement of the programme, many of the women involved wished to see it continue and would recommend it to a friend.

2. Background

Pregnancy and the postnatal period are a critical time in terms of our population health and wellbeing. Indeed, the 'first 1001 days' covering pregnancy and the first two years of life are now recognised by the government as a key time for investment and support (DHSC, 2021). Experiences during this time can affect a baby's cognitive, emotional and physical development and have lasting impacts on the physical and emotional health of women and families (WHO, 2015). NICE postnatal care guidance focuses on the importance of supporting new parents with core issues including maternal physical recovery, infant feeding, infant care, and mental health (NICE, 2021). Understanding what works, how and for who is key to supporting new parents through the transition to parenthood.

2.1. The importance of supportive perinatal care

An established body of research shows that perinatal care from pre-conception through the postnatal period is vital to ensuring the best outcomes for mother and baby. In terms of what this care looks like, both content and delivery are important. Care must include practical information and guidance, but also be supportive. Women should be treated with dignity and respect and involved in decisions around care. Women should have sufficient information to make informed choices around pregnancy, birth and caring for their baby (NICE, 2008). Continuity of care from staff, allowing opportunity to develop a relationship over time has been shown to improve birth and postnatal outcomes (Sandall et al, 2016).

Policies such as Public Health England's 'Healthy Child Programme' seek to ensure parents have the support they need during pre-conception, pregnancy, and the postnatal period (PHE, 2021). Areas of particularly 'high impact' include:

- supporting transition to parenthood and the early weeks
- supporting maternal and infant mental health
- supporting breastfeeding (initiation and duration)
- supporting healthy weight and healthy nutrition
- improving health literacy; reducing accidents and minor illnesses
- supporting health, wellbeing, and development.

From an antenatal perspective, strategies such as NHS England's 'Better Births' seek to ensure that women receive personalised, kinder, and woman-centred care that supports her in making informed decisions about her pregnancy, birth and baby (NHS England 2017). These priorities are also echoed by the Maternity Transformation Programme which focuses on improving personalised care, improving prevention, and improving access to perinatal mental health services. Investing in staffing, training and digital investment are key to both policies (NHS England, 2017).

However, although changes are being made and policy is clear in what is important, UK maternity, health visiting and specialist perinatal health services have faced significant shortfalls in terms of staffing and services over the last few years, meaning that many new parents do not get the support they deserve (IHV, 2021). Cuts to the public health budget have led in part to a drop in health visitor staffing numbers by almost a third in the last five years (IHV, 2020). This issue has been exacerbated by the COVID-19 pandemic and the implications that had for staffing, redeployment and mode of care given (Boddy, 2021). Critical investment is therefore needed into programmes and services that can support the needs of parents and babies through the perinatal period, particularly those which are innovative and harness new technologies in an effective way to reach new parents (NHS Digital, 2021).

2.2. Supporting healthy infant feeding decisions

Support with breastfeeding is a core area of investment across maternity policies. Breastfeeding protects both maternal and infant health. It is associated with a reduction in respiratory, gastrointestinal and ear infections in the infant, alongside impacts upon allergies, obesity cognitive development. Mothers who breastfeed have greater protection against reproductive cancers, heart disease and diabetes, with protection increasing as duration of breastfeeding accumulates (Victora et al, 2106). At a population level this protective effect leads to a reduction in pressure on NHS services including GP appointments and hospital admissions (Renfrew et al, 2012). The UK Department of Health and Social Care therefore encourages exclusive breastfeeding for the first six months

postpartum followed by continued breastfeeding for the first year and beyond (SACN, 2018).

Support for breastfeeding is important for breastfeeding initiation and continuation. The best outcomes are associated with consistent, regular and timely support from trained professionals. Women value both practical guidance i.e. with latch and positioning, and emotional support i.e. reassurance and validation. Further elements that support breastfeeding include useful antenatal education, peer support from other women who have breastfed, and feeling like part of a supportive community (McFadden et al, 2017).

However, unfortunately many women struggle to receive quality support which contributes to the UK having some of the lowest breastfeeding rates in the world. Although around four out of five mothers initiate breastfeeding after birth, rates of both exclusive and partial breastfeeding drop steeply in the early weeks. By six weeks only half of babies are receiving any breastmilk at all, dropping to a third at six months (McAndrew et al, 2012).

The reasons for this are complex and are affected by numerous physiological, psycho-social, and cultural barriers. At the simplest level many women fail to receive the support they need: from health professionals, family, the workplace, and wider society. Many women describe having little support with breastfeeding after birth or at home in the community, especially if they are experiencing complications. Incorrect information about breastfeeding is unfortunately common, including that received from health professionals, friends, and family and the wider public. Others do not value breastfeeding and may push to feed the baby or are openly critical of breastfeeding in public. Women can feel isolated and let down, which ultimately impacts on their decision to continue breastfeeding (Brown, 2017).

Conversely, women also report that when they make the decision to formula feed, or formula feed alongside breastfeeding, they feel that there is a lack of support and information to assist them. It is often assumed that they will know what to do, with little guidance around which milks to choose, how to safely prepare feeds or how much milk to give. This can leave women feeling unsure, reliant on formula companies for information, and ultimately judged in their infant feeding decision (Appleton et al, 2018; Fallon et al,

2017). Overall, interventions that support families with both breast and formula feeding, including accurate information and emotional support are vital.

2.3. Supporting parental mental health

A second core area of investment is mental health. The perinatal period is a time of great change particularly for first time parents transitioning into a new role. It is recognised that parents need support during this time, both in learning how to practically care for a baby and support in adapting to parenthood. The intense needs of babies particularly in the newborn period can leave many new parents exhausted (Winson, 2017).

However, in countries such as the UK many new parents are coping with the transition to parenthood without the support of a connected community around them (Lee et al, 2019). Many new parents live a considerable distance from family and are juggling dual careers alongside parenting (Feng & Savani, 2020). In addition, knowledge, and experience of the realities of caring for babies is often low (Huppatz et al, 2018). As a society we are delaying the average age of giving birth to a first baby and having fewer babies overall. Misconceptions about normal baby behaviour, such as how often babies wake and feed, are common and can lead to anxiety that something is wrong (Harries & Brown, 2017).

Taken together this can affect parental wellbeing (Henderson et al, 2016). Although maternal mental health is more widely discussed, both parents can experience postnatal depression and anxiety. Here, parents often feel high levels of anxiety, tearfulness and guilt with sleep and eating often affected (Milgrom et al, 2008). Some evidence suggests that men experiencing postnatal mental health issues may be more likely to experience feelings of rage and/or disconnection from those around them (Parfitt & Ayers, 2012). However, the topic of maternal postnatal rage is now receiving more attention too (Ou & Hall, 2018).

There is some evidence that at its most severe postnatal depression can impact upon the development and wellbeing of infants due to reduced interactions and engagement with their depressed parent (Tsivos et al, 2015). However, most of the impact of depression falls upon the parent and their relationship. Many parents with postnatal depression care for

their baby extremely well, likely fuelled by anxieties around not being a 'good enough' parent. Instead, it is the parent who struggles, with symptoms often affecting their wider functioning, health, and wellbeing (Leahy-Warren et al, 2012; Myers & John, 2018). However, not every parent who struggles with the transition to parenthood is experiencing postnatal depression. Feelings of being overwhelmed, anxiety and even regret are common and normal reactions to the significant change and transition that parents experience. Many parents feel that they need to keep these feelings secret for fear of being judged as a poor or incompetent parent (Don et al, 2014; Nelson et al, 2014). Postnatal programmes that help support parental wellbeing, providing a sense of reassurance and community are therefore valued by new parents (Gilmer et al, 2016).

2.4. Pelvic floor health

Pelvic floor dysfunction issues after childbirth include issues such as urinary or faecal incontinence, bladder issues, pain, discomfort during sex, and pelvic organ prolapse. Although vaginal delivery increases the risk of dysfunction, problems can occur after a caesarean birth too due to changes during pregnancy and the weight of the baby. During a vaginal birth however, stretching and pressure can damage the connective tissue, nerves and muscle leading to long term issues (Lukacz et al, 2006). Around a third of mothers will have some degree of pelvic floor weakness after birth, most commonly around urine leakage (Hay-Smith et al, 2008), with some studies suggesting over half of women have some degree of lasting pain or discomfort (Dasiakn et al, 2020).

A key issue is that women, especially first-time mothers, do not feel prepared for any degree or pelvic floor dysfunction after birth. When they do experience issues, many report feeling powerless to make any changes, believing it is just a normal part of having a baby (Buurman et al, 2013). Others feel too embarrassed or ashamed to share their experiences with health professionals, believing it to be stigmatising. Guilt is also a common emotion (Van der Woude et al, 2015). Associated discomfort can impact a woman physically, in her everyday life and sexual relationships (Mendes et al, 2017).

Information and exercises that strengthen and train the pelvic floor during the antenatal and postnatal period have been shown to be effective in reducing a range of pelvic floor issues (Boyle et al, 2014). Unfortunately, many women do not receive sufficient information during pregnancy about this, in part because midwives lack sufficient time or sometimes training to convey messages (Terry et al, 2020). However, NICE guidelines state that women should receive information about pelvic floor muscle training to assist with strengthening and relaxation of muscles. These are important in both preventing issues occurring in those without symptoms and supporting the recovery of those already experiencing issues (NICE, 2019). Evidence shows that training can improve the physical and emotional of pelvic floor issues, subsequently improving quality of life (Woodley & Hay-Smith, 2021). Pelvic floor health should therefore be a key component of perinatal care.

2.5. The COVID-19 pandemic and perinatal care

The COVID-19 pandemic and subsequent lockdowns and social distancing have had a significant impact upon the delivery of care to families throughout pregnancy, birth and the postnatal period. Social distancing guidelines prevented much of antenatal and postnatal education and support from being delivered face to face, with health professionals and other organisations that support families turning to phone and online virtual delivery.

Growing evidence suggests that many new families have struggled during the COVID-19 pandemic. Although some have found aspects of the experience beneficial, such as increased time and space at home with their baby and fewer visitors, many others have experienced challenges. The reasons for this centre around experiences with healthcare services, difficulty accessing support, and a feeling of isolation (Brown & Shenker, 2020).

The Babies in Lockdown report which explore the experiences of over 5000 expectant and new parents during the first COVID-19 lockdown found that many women experienced changes to services during pregnancy and birth distressing. Fewer face to face appointments made it feel more challenging to raise issues around mental health or general concerns, leaving women feeling unsupported and as if they had not built a relationship with their health professionals. Regulations that treated partners as ‘visitors’ during birth and postnatal care meant many women had to be induced alone, could not have their partner

stay with them until active labour, and partners were sent home shortly after birth, sometimes with restrictions on visiting the postnatal ward at all. Unsurprisingly women found this distressing, especially if they were experiencing complications, with partners feeling excluded from the process.

With regard to accessing support, some families found using telephone and video calls challenging. Some felt telephone calls from their health professional, especially postnatally were impersonal and shorter. This made conversations around postnatal depression or wider wellbeing less likely to happen as a relationship was not established. Others were unaware of available online support, especially from charities and other organisations, meaning they missed out on support for issues such as breastfeeding challenges.

Finally, many new mothers in particular reported feeling isolated and cut off from social support especially during lockdown. They felt a lack of connection to other mothers with a baby of a similar age. Many missed the support of close family and friends who were restricted from visiting during the strictest lockdown regulations.

Taken together it is unsurprising that research is already showing that rates of postnatal depression and birth trauma rose during the pandemic, alongside wellbeing concerns such as increased anxiety, reduced parenting confidence and breastfeeding challenges (Brown & Shenker, 2020; Vazquez-Vasquez et al, 2021). Based on this the wellbeing of new parents throughout pregnancy, birth and the postnatal period has been highlighted by numerous birth and parenting organisations as being a key concern and area for investment (First 1001 Days Movement, 2020). It was this emerging data that led to the funding and development of the Peppy app and support programme for new parents.

2.6. The Peppy programme

The Peppy programme for new parents was first funded in March 2020 by the NHS and MHCLG 'TechForce 19' programme. This funding was designed to support the development of innovative digitally enabled interventions to meet the needs of those who were particularly vulnerable or isolated as a result of the COVID-19 pandemic and subsequent lockdown and social distancing. With this funding the Peppy Health team designed a

support package for new parents based around a mobile phone app. Participants could access live broadcasts, one to one support with a practitioner and receive referrals to specialist services if needed.

The programme was delivered as a two-week pilot during the first COVID-19 lockdown in May 2020, reaching 1,075 new mothers across England. Parental mental wellbeing was the primary focus of the pilot study, with a significant reduction seen in mental health difficulties over the two weeks. Data showed that at the beginning of the intervention 66% of mothers had a wellbeing score indicative of possible depression or anxiety. However, by the end of the two weeks, only 34% were considered in this category.

In autumn 2020 the Peppy programme was selected for further funding to implement and evaluate the impact of the support for expectant parents living in the Greater Manchester area. The GMEC Local Maternity System sent in an expression of interest, specifically from one of their providers, Saint Mary's Hospital Manchester. An enhanced version of the programme was developed recruiting mothers into the programme at around 36 – 37 weeks of pregnancy through until when their baby is eight weeks old. Support given through the programme broadly covers the perinatal period, with a specific focus upon infant feeding, mental health and pelvic health. It covers aspects such as:

- Infant feeding: Education, feeding support and signposting for additional support. Support covers both breast and bottle feeding in including mixed feeding.
- Mental health: Supporting mental wellbeing and sleep, education and normalising the experience of parenthood, and signposting for additional support.
- Pelvic health: Education, preventative measures, understanding what is normal and what needs additional support, rehabilitation and signposting for clinical assessment.

Support offered across the programme takes a number of formats including:

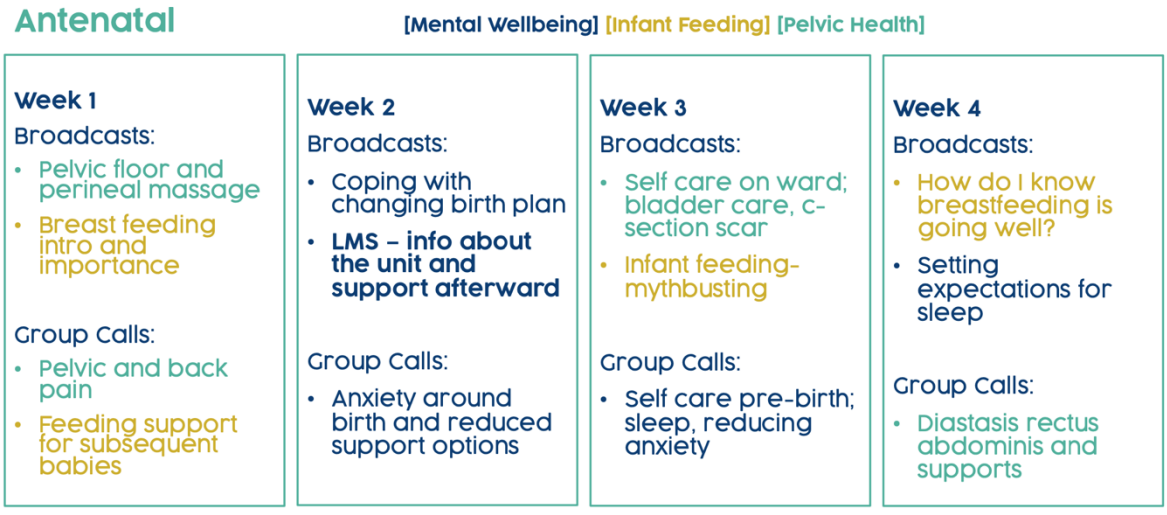
- One-to-one chats with a designated perinatal practitioner (contacted via an app)
- Small group chats with other parents facilitated by the perinatal practitioner including mental wellbeing and infant feeding support
- Live group session 'broadcasts' (webinars) by experts on relevant topics including pelvic floor care, mental health and infant feeding
- Relevant resources such as videos and articles

If further support is needed a referral can be made for support:

- Referral for one-to-one chats with a mental health practitioner via the app
- Referral for one-to-one lactation consultant support via the app

All practitioners have qualified in their specialism and include NCT practitioners, Lactation consultants, BACP/UKCP registered counsellors / psychotherapists, and pelvic and obstetric specialist physiotherapists. The programme is not designed to be diagnostic, to offer medical advice or to give treatment. Where further support needs are identified, parents are signposted to relevant organisations and healthcare professionals.

The Peppy programme offers a series of live workshops across the focus of breastfeeding, mental health, and pelvic floor care. These themes are carried through into relevant resources sent from the one-to-one practitioner (i.e. videos, articles etc) and in the one to one and group chat support. Although the focus is predominantly on the mother, support sessions are available for partners such as the 'Dad's call – bonding and relationships'. The timetable for support via broadcasts and group calls is shown below:



2.7. Aims of the evaluation

The aims of this evaluation were to explore the impact of the Peppy Baby programme upon new families, those who support them and how the programme integrates into wider service delivery in the region. Specifically, it explored:

1. Feasibility of delivering the programme e.g., uptake, maintenance and drop out
2. Impact of the intervention upon mental health, parenting self-efficacy, infant feeding, and pelvic health
3. Maternal experience of taking part in the programme
4. Perceptions of the programme amongst local health visitors and midwives
5. Impact of the programme upon health system activity e.g., referrals to specialist services, reductions in avoidable contacts and perceptions of workload

3. Methodology

3.1 Design

The study collected data over four parts to triangulate perspectives of mothers who took part in the programme, local health professionals, and local commissioners.

- Part One: A longitudinal online questionnaire, collected over four time points for all mothers who took part in the programme
- Part Two: Online interviews with a group of mothers who took part in the programme
- Part Three: An online questionnaire for local health professionals
- Part Four: An online questionnaire for local commissioners

Data were collected between December 2020 and June 2021. This coincided with the COVID-19 lockdown and social distancing regulations requiring that all data was collected remotely. The implications of this approach are considered in the discussion. Approval for this study was granted by Swansea University College of Human and Health Sciences Research Ethics Committee. All participants gave informed consent.

3.2 Participants

In part one, all mothers who met eligibility criteria for the Peppy programme and signed up to participate were invited to participate in the longitudinal questionnaire as part of the programme. Eligibility criteria for the programme included aged 18+, living in Central or South Manchester, being able to join the app between 36 – 37 weeks of pregnancy, and booked to have their baby at Saint Mary's Hospital @Wythenshawe or Saint Mary's Hospital Oxford Road Campus. Participants also needed to own a smart phone and own mobile phone number and be able to communicate in the English language. Exclusion criteria included being under the care of the specialist perinatal mental health team, or the foetal medicine unit, or have a baby that was to have a planned admission to the neonatal unit.

In part two, all mothers who participated in the programme were asked in the final questionnaire whether they would be happy to be potentially contacted to take part in a longer interview about their experiences of the programme. Thirty-nine women gave

permission for contact and all were offered opportunity to take part. Twelve women at this stage confirmed and all were interviewed.

In part three, an email invite was sent to a range of healthcare professionals and parenting organisations working in either Manchester University Foundation Trust (specifically the Saint Mary's Oxford Road Campus and Saint Mary's @Wythenshawe sites) or working within Manchester, Salford or Trafford, to complete an online questionnaire about their views of the programme.

In part four an email was sent to all local commissioners working across Manchester, Salford and Trafford to complete a questionnaire about their views of the programme.

3.3 Measures

In part one data was collected via the Peppy programme website and app over four different time points. Once registered onto the programme via the website, birth date was used to send out further questionnaires along a personalised to infant age timeline via a link on the Peppy app. This included:

- Stage one [33 - 36 weeks of pregnancy]: Demographic data including age, highest education level, and ethnicity. Data was also included on planned feeding preferences (breast, formula, or mixed feeding), previous pregnancies, maternity unit and due date.

  Mothers also completed a copy of the Short version of the Warwick – Edinburgh Mental Wellbeing Scales [SWEMWBS]. This questionnaire measures mental wellbeing through seven positively worded questions exploring current thoughts and feelings. Participants respond via a five-point scale as to how often they have been feeling emotions over the past two weeks such as being optimistic, relaxed, useful and close to others with options from 'none of the time' (a score of 1) to 'all of the time' (a score of 5). Scores for each question are totalled, with a higher score indicating greater wellbeing. Scores can also be categorised into probable depression, possible depression, average mental wellbeing, and high mental wellbeing. Research has shown that the SWEMWBS is a valid short tool in measuring clinically meaningful wellbeing (Ng et al 2017).

- Stage two [one week after birth]: Breastfeeding initiation and any formula use, and birth mode (including forceps, ventouse, caesarean-section and tearing).

- Stage three [five weeks after birth]: This questionnaire was designed to be conducted pre 6-week GP check, to support mothers in thinking about what questions to ask the GP. Items included breastfeeding continuation and any formula use and pelvic health questionnaire, alongside the brief Whooley questions to measure mental wellbeing.

  The Whooley questions include: *'During the past month, have you often been bothered by feeling down, depressed or hopeless?'* and *'During the past month, have you often been bothered by little interest or pleasure in doing things?'* Agreement with either or both statements indicates possible depression. Research has shown that these two short questions are as useful as longer questionnaires in identifying possible depression that may require benefit from further investigation and support. For this reason, these questions were included to provide a brief measure of wellbeing for data collection purposes but also to support mothers in opening up a conversation about mental health with their GP at their six-week check if needed (Whooley et al, 1997).

- Stage four [eight weeks after birth]: Breastfeeding continuation and any formula use, SWEMWBS and PROMS for stress urinary incontinence. Evaluation of participation in the programme and the impact upon infant feeding, mental health, and parenting confidence. Self-reported uptake of statutory services including use of everyday support from midwife / health visitor and specialist services such as those for mental health or infant feeding support. Evaluation and service use questions consisted of both closed tick box and open-ended questions designed to allow participants to expand on reflections of the programme.

In part two, mothers took part in an online semi structure interview using zoom. At the start of the interview basic demographic details were confirmed including maternal age, ethnicity, and parity. Questions in the interview schedule are shown in Table One:

Table One: Maternal interview questions

Introduction

1. What led you to take part in the Peppy programme?
2. What support did you access?
3. What were the most useful forms of support you accessed and why?
4. Are there any aspects of support you didn't enjoy so much or would like to see added?

Feeding

5. Did you access any feeding support? What?

- Do you feel the support helped you to feed your baby? How?
- Did it help with practical issues?
- Did it help you feel more confident? How?

Maternal wellbeing

6. Do you feel that taking part in the programme affected your wellbeing? How?
7. Did you access any specific support to support your wellbeing or mental health?
8. How did that support make you feel?

Pelvic health

9. Did you access any support with pelvic health? If yes…
    - Did it help you practically?
    - Did it help you with feeling more confident?

Caring for your baby

10. Do you think the support had any impact on how you cared for your baby? How?
11. Did it help you feel more confident as a parent?
12. Did it help you bond with your baby?

Partner support (if relevant)

13. Did your partner access any of the support or sessions?
14. Did you share any of the information that you accessed with your partner?
15. Do you feel Peppy helped them too? How?
16. Do you think taking part in Peppy had any impact on your relationship with your partner or your connection together as parents?

Experiences of taking part in Peppy

17. How did you feel about having 'online' rather than face to face support? During the pandemic it was a necessity, but how would you feel about this format of support in future?
18. Do you feel that taking part in Peppy affected how you accessed other services? For example, not needing to contact a health professional for a smaller query, or alternatively being put in touch with services that you needed that you might not have known about?
19. During Peppy you could also access all usual support from your midwife and health visitor and other services. Do you think the Peppy programme complements this support well?
20. Was Peppy easy to use and take part in?
21. Do you think the Peppy programme runs for long enough?
22. Would you take part in Peppy again if you had the opportunity?
23. Would you recommend Peppy to others?
24. Is there anything else you would like to add?

In part three, health professionals completed an online questionnaire hosted via Qualtrics. Participants provided details of their job and years of practice experience before responding to a series of open-ended questions exploring their knowledge and perceptions of the Peppy programme (Table Two). Health professionals responded to a series of items via a 5 point Likert scale (strongly agree – strongly disagree) about their perceptions of the programme.

Table Two: Health care professional open-ended questions

1. Thinking about the Peppy Baby project, when did you first hear about the programme?
2. What were your first thoughts on the project?
3. Do you feel that you have enough information on the programme? For example, how it is delivered and what support pregnant women and new mothers can access?
4. Are you aware of how mothers have been using the Peppy programme? What aspects of the programme were they using? And how did they feel about it?
5. Have women you have supported benefitted from the Peppy programme? How?
6. Do you see any benefits of the Peppy programme for yourself and/or colleagues? What?
7. Have pregnant women / new mothers you have supported encountered any challenges or negative feelings from using the programme? What?
8. Has the programme led to any challenges or negative feelings for you or your colleagues?
9. Do you feel that parents using the programme have interacted with you any differently such as contacting you more or less, or with different queries? Has it affected your workload at all?
10. Have you seen any changes in referrals to specialist services that have resulted from use of the programme? For example, more referrals for mental health support or tongue tie?
11. Do you feel that the programme worked well alongside existing perinatal services?
12. Do you have any ideas about how you might like to see the programme be adapted such as additional / fewer services or duration/ timing of it being offered?
13. Do you have anything else you would like to add about the programme?

In part four, local commissioners responded to a series of questions via email (Table Three). Their comments and feedback are woven into shaping the evaluation presentation (i.e. considering issues such as impact upon service use), in part into the results, and in part in consideration of the evaluation in the discussion.

Table Three: Commissioner open-ended questions

1. As a commissioner, what were you interested in finding out from this pilot?
2. What do you see as the potential benefits of Peppy Baby/Peppy Baby Pilot?
4. What do you think needs to be considered if the programme was to be extended?
5. Do you feel there are any challenges of this running alongside existing services?
6. What would affect the likelihood of commissioning the Peppy Baby programme?

3.4 Procedure

For part one, data was collected by the Peppy programme team. Mothers who had seen an advert for the programme completed the initial screening and background questions via the Peppy website. Once registered on the programme, further questionnaires were sent out via their Peppy app, personalised to be received when their baby reached a certain age.

For part two, all mothers were asked in their end of programme questionnaire whether they would consent to be contacted for an in-depth individual interview about their experiences of taking part in the programme. Of those who consented, a range of mothers by demographic background and cohort were invited for interview. Participants were sent a text message and email inviting them to participate. Those who expressed an interest in participating were sent a study information sheet and consent form describing the procedure for the interviews and ethical standards such as confidentiality and right to withdraw. For those who still wished to take part, a convenient time was arranged for an interview to take place via Zoom video call. Interviews took place during April – May 2021.

At the start of the interview the researcher read through the information sheet again with the participant, offering opportunity for further questions. As it can be difficult to complete a consent form on a mobile device, verbal consent was sought before the interview began, as agreed with the Swansea University ethics committee. Permission was sought to record the interview with participants being offered opportunity to turn off their camera if they preferred, although no participant chose to do this. Zoom captures a transcript of the calls which was saved to support transcription. At the end of the interview participants were given a short debrief with information about the study and given opportunity to ask any further questions or provide further detail about their experience.

For part three, the study was originally designed to collect data via online interviews with healthcare professionals. However, the complexities of arranging a suitable interview time during the additional workload challenges of the COVID-19 pandemic led to the decision to convert the questions into an online questionnaire for participants to complete in their own time. Details of the study and inclusion criteria alongside an invite to participate were sent out to all midwives and health visitors in the trust via email.

Invitations to take part were sent by email to 600 midwives, nine team lead/area managers (Health Visitors) for Salford, Trafford and Manchester (who cascaded the invite to health visitors in their teams) and seven infant feeding contacts across Manchester, Salford, Trafford including the hospital infant feeding contacts at Saint Mary's @Wythenshawe Hospital and Saint Mary's Oxford Road Campus sites. Email invites were also sent to physiotherapy and pelvic floor services and to a further 11 organisations including Home Start, Dad Matters, and perinatal and infant mental health teams. It should be noted that only a proportion of these potential participants were expected to have experience of a mother they cared for taking part in the programme. Emails were sent by a project officer at the Greater Manchester and Eastern Cheshire Strategic Clinical Network, supported by a consultant midwife with a role as lead research champion for Manchester University NHS Foundation Trust. Four reminder emails were sent over the course of a month during May – June 2021.

Professionals who were interested in completing the survey clicked on a link in the email to take them to the online survey hosted by Qualtrics. The link loaded the study information sheet which explained the aims of the study, inclusion criteria, and study procedures, including researcher contact details for further questions. A series of consent questions were presented, and the remainder of the questionnaire only loaded once consent items were completed. Researcher contact details and a link to the Peppy programme website loaded at the end of the questionnaire if further information was required.

For part four, the most effective means of collecting data from the local commissioners was considered to be via email. Questions were sent out by the project officer at the Greater

Manchester and Eastern Cheshire Strategic Clinical Network and responses collated and sent back anonymously to the research team.

3.5 Data analysis

Quantitative data were analysed using SPSS version 27. The SWEMWBS was scored as per instructions for overall scores and category of wellbeing. This involved calculating an overall score by adding the score for each item and using a provided conversion table to compute a metric score from the raw score. This transformation of score is computed to allow comparison to the main WEMWBS scale and other similar scales in research (Tennant et al, 2007). The categories for SWEMWBS are 17 or less for probable depression, 18-20 for possible depression, 21-27 for average mental wellbeing and 28-35 high mental wellbeing. Again, as per instructions, mothers were categorised as indicative of depression or not based on one of more positive responses to the Whooley questions.

In terms of the survey data, for ethical reasons participation was voluntary for all women and was not a requirement for them taking part in the programme. Additionally, for ethical and sensitivity reasons all responses in the survey were optional, if preferred mothers could skip a question. Although survey questions were designed to be as short and non-intrusive as possible, collecting data during this time period is clearly challenging due to maternal exhaustion, recovery from birth and infant care. This mean that there was a high level of missing data for some questions or time points (particularly if cross tabulating between items i.e. ethnicity and mental health score). The decision was made to present data as a percentage of those who completed the survey rather than the full programme participation sample, giving completed sample size details in each table. The limitations of this are considered in the discussion.

Maternal interview data was transcribed verbatim by the researcher who conducted the interviews, using the zoom transcripts as a guide. Health professional survey data was downloaded. Both were analysed using a thematic analysis to identify pre-determined themes and sub themes that participants presented in the data (Miles, Huberman & Saldana, 2014).

4. Results

4.1. Participants

One hundred and fifty-nine mothers took part in the Peppy programme and completed survey data. Demographic details for these participants are shown in table four and five below. As a significant number of participants did not provide demographic detail for each measure, both tables show the sample % including and excluding missing data.

Table Four: Maternal age and education for survey participants

Category	Sub-category	N	% of all participants	% who provided a response
Maternal age	18-19	1	0.6	0.8
	20-24	5	3.1	3.8
	25-29	21	13.2	15.8
	30-34	59	37.1	44.4
	35-39	41	25.8	30.8
	40-44	6	3.8	4.5
	Question not answered	26	16.4	-
Education	No formal qualifications	1	0.6	0.8
	GCSE or equivalent	5	3.1	3.9
	A level or equivalent	11	6.9	8.7
	Degree or equivalent	55	34.6	43.3
	Postgraduate qualification or equivalent	55	34.6	43.3
	Question not answered	32	20.1	-

Table Five: Maternal ethnicity for survey participants

Ethnicity	n	% of all participants	% who provided a response
White British and Irish	88	53.5	66.7
Any other White	16	10.1	12.1
Black/African/Caribbean: African	2	1.3	1.5
Black/African/Caribbean: Caribbean	1	0.6	0.8
Any other Black	1	0.6	0.8
Asian: Chinese	4	2.5	3.0
Asian: Pakistani	2	1.3	1.5
Asian: Indian	8	5.0	6.1
Asian: Bangladeshi	1	0.6	0.8
Any other Asian	3	1.9	2.3
Mixed / multiple: White and Asian	2	1.3	1.5
Any other mixed/multiple	1	0.6	0.8
Other	1	0.6	0.8
I'd rather not say	1	0.6	0.8
Question not answered/missing data	27	17	

Participants who selected 'any other' or 'other' were asked to describe their ethnicity and responses included 'Arab' (n=1), Norwegian (n=2), Dutch (n=1), 'Hispanic – Latin American'(n=1), 'Northern European' (n=1), Japanese (n=1), Italian (n=2), 'Caucasian/Japanese/Korean' (n=1), 'Danish/Colombian' (n=1) and Hungarian (n=1).

Twelve of the mothers who completed the survey also took part in the extended interviews. Demographic details of interview participants alongside the forms of programme support they accessed are shown in Table six.

Table Six: Demographic background of interview participants (mothers)

Pseudonym	Age group	Ethnicity	First time mother	Education	Support Accessed
Marie	25-29	Black-African/ Caribbean	Yes	A-level or equivalent	Live broadcasts or group calls, 1-2-1 chat with a mental wellbeing practitioner, 1-2-1 chat with perinatal practitioner
Sally	25-29	White British	Yes	Postgraduate degree or equivalent	1-2-1 chat with perinatal practitioner, Live broadcasts or group calls, 1-2-1 video lactation consultation
Kelly	35-39	White British	No (4th)	GCSE or equivalent	1-2-1 chat with perinatal practitioner, Group chat with perinatal practitioner, 1-2-1 chat with a mental wellbeing practitioner
Anna	35-39	Hispanic-Latin American	Yes	Postgraduate degree or equivalent	1-2-1 chat with a mental wellbeing practitioner, Live broadcasts or group calls, Group chat with perinatal practitioner
Ruth	35-39	White British	Yes	Undergraduate degree or equivalent	1-2-1 chat with perinatal practitioner, Live broadcasts or group calls
Hannah	35-39	Mixed – White and Asian	Yes	Undergraduate degree or equivalent	1-2-1 chat with perinatal practitioner, Group chat with perinatal practitioner, 1-2-1 video lactation consultation, Live broadcasts or group calls
Becky	35-39	Asian-Pakistani	No (2nd)	A-level or equivalent	1-2-1 chat with perinatal practitioner
Carly	35-39	White British	Yes	Postgraduate degree or equivalent	Live broadcasts or group calls, 1-2-1 video lactation consultation, 1-2-1 chat with perinatal practitioner
Liz	30-34	White British	Yes	Undergraduate degree or equivalent	1-2-1 chat with perinatal practitioner, Live broadcasts or group calls
Laura	35-39	White British	Yes	Undergraduate degree or equivalent	Group chat with perinatal practitioner, Live broadcasts or group calls, 1-2-1 chat with perinatal practitioner
Sam	Missing	White British	No (2nd)	Missing	1-2-1 chat with perinatal practitioner, Live broadcasts or group calls, 1-2-1 video lactation consultation
Nicola	Missing	White British	Yes	Missing	1-2-1 chat with perinatal practitioner, Live broadcasts or group calls

In addition, fourteen health care professionals working in the trust completed the online open-ended questionnaire. Professionals were from a range of backgrounds including midwives (n = 8), health visitors (n = 4), an infant feeding co-ordinator (n = 1) and a physiotherapist (n = 1). Health care professionals had an average of 9.6 years experience in their role with a range from 4 – 19 years.

4.2. Access and awareness of the Peppy programme

Both mothers and health care professionals were asked about their experiences of how they first became aware of the Peppy programme. In the interviews, mothers were asked where they heard of the programme and why they made the decision to sign up. Overall, there was not one single route into joining the service; participants found out about the service due to Facebook groups, including those run by the NHS maternity service, posters and leaflets left in hospital waiting rooms, via midwives, and one from her NCT advisor.

Decisions to use the service ranged from considering any additional help to be broadly useful to high levels of anxiety around the perceived lack of support available, including from NHS services:

> *'I think maternity services in the NHS aren't that great. My experiences of support from the midwives, I was having a different midwife each time so I didn't form a relationship with anyone really from standardized care on the NHS so that was a pull (towards Peppy) as well, that there would be a consistent person…' (Carly)*

Healthcare professionals found out about the service predominantly from the Trust, Managers or colleagues. The majority (12/14) felt that they had sufficient information about the project. Some felt that more detail was needed, although often blamed themselves for not having opportunity to fully read information given.

> *'Sort of but I am very busy and don't always have time to fully take these things in' (midwife)*

Others noted that they felt they would usually naturally know more about the project over time if it were a longer-term addition to the services offered in the local area.

> *'I think so, although as it was a new project I could always know more. These things take time to bed down, and we usually learn about them through women talking to us as well as more formal routes'. (Health visitor)*

Some of the health care professionals noted that although they were aware of the programme, they were unclear which families were taking part or only knew about inclusion of families if the family decided to tell them. Others were aware of parents they were supporting taking part but felt that they did not really have a full picture of everything the programme could offer.

> *'I wasn't fully aware of it to start but looked into it more when a mum I was supporting told me all about it and asked some questions' (Midwife)*

Finally, some professionals noted that their information was second hand as such, coming from other colleagues who were supporting families involved in the programme

> *'I found out some information from talking to colleagues rather than being directly informed but in part that is probably due to me not being fully aware of the programme and information about it as we were so busy'. (Midwife)*

In terms of health care professionals first perspectives on hearing about the programme, all professionals responded positively, feeling that it sounded like a useful, important and much needed service.

> *'It sounded like an interesting project that ticked all the boxes for what new mothers need' (Midwife)*

Many commented that it was timely and relevant, particularly in its use of technology and being delivered through an app:

> *'I thought it sounded interesting, much needed and very modern. With all the technology we have these days, we should be offering parents this type of support'. (Health visitor).*

This was particularly true given the timing of the programme during the COVID-19 pandemic and second major period of lockdown. The timeliness of the intervention was recognised and valued by commissioners and health professionals:

> *'I thought it sounded like a useful and supportive project to give mums to be more intensive support, especially given everything has so much tougher for new mums during the last year and lockdown.' (Midwife)*

Some however had questions about its delivery and how it would be funded. Some queried the benefit of a short-term service that might not be continued.

> *'I thought it sounded like a great project that parents would really value. I did wonder how it would be paid for and whether it would continue'. (Health visitor)*

Finally, although overall positive about the programme, some professionals did raise questions about its novelty, emphasising that this is the support that new families should automatically be receiving:

> *'I thought it sounded interesting, important but nothing new. This is the care women should be receiving through pregnancy, birth and caring for their baby'. (midwife)*

4.3. What forms of support did mothers access through the programme?

The Peppy programme consists of a number of different formats of support including private 1 – 2 – 1 chats with a perinatal practitioner (and specialist mental health or lactation support if needed), group chats with other mothers and experts, live sessions, one to one video consultations with lactation consultants, and online reading material. The number of different formats of support mothers accessed is shown in Table Seven.

Table Seven: Number of mothers who accessed different forms of Peppy support (n = 118)

Support format	**n**	**%**
1-2-1 chat with a perinatal practitioner	116	98.3
Live broadcast (webinar) by experts and group video calls	89	75.4
1-2-1 video consultation with lactation consultant	41	34.7

In the health professional survey, when asked if they knew how mothers were using the Peppy programme most professionals focussed on the one-to-one support offered particularly around infant feeding and to some extent mental health support. Some mentioned wider group chats and information sessions.

> *'Mothers seem to use it most to access more breastfeeding support and to ask quick questions of the practitioners. I think different women are using different parts of it according to what they need'. (midwife)*

> *'Some of the parents I have spoken to have used it for additional support with breastfeeding and I think a few have accessed some information sessions online about other things'. (Health visitor)*

Typically, professionals referred to the content of support rather than the delivery method i.e. highlighting infant feeding support rather than 'live broadcasts' for example. Based on this, infant feeding support appeared to be the core aspect that mothers reported back to health care professionals. Other support was accessed but appeared based on individual need whereas feeding support was more universal. In the interview data mothers reflected on their experiences of using each of the different formats of support:

- ***1-2-1 Private chat with allocated practitioners for support via chat and video call, who refer to an expert when needed***

As part of the programme, mothers could request one to one support from practitioners via text chat and video call, with an option to be referred directly to a lactation consultant if needed. The Peppy practitioners were highly valued by interview participants. They were described as "*amazing with me…really, really helpful*" (Anna); "*a lovely lady*" (Becky); and "*(the practitioner) really like went above and beyond*" (Kelly).

The format of one-to-one support was considered novel. Whilst participants could access support such as newsletters or webinars from other sources such as organisations or social media, one to one personalised support was not available 'for free' elsewhere. This generated a feeling that the Peppy service was trustworthy and individually tailored. Peppy felt like a service that was shaped to fit around an individuals' needs rather than a generic service.

It also helped mothers feel that practitioners were "*listening*" to them (Becky), which helped them feel heard and supported. This continuity of one-to-one support also enabled the development of a relationship between practitioner and mother, which particularly helped when mothers were experiencing any difficulties. As Sally explained:

> *'(My practitioner) was absolutely lovely and just was in contact with me pretty much every day, just checking in, saying: "how are you?"… (the Peppy practitioner) was brilliant in terms of trying to support me as a person, as opposed to just me as a mum if that makes sense?' (Sally)*

However, this personalisation or closeness did feel a bit awkward to two participants. It was a different approach to other health professionals they interacted with, although one mother noted that they understood why this approach was taken:

> *'I find the way, the practitioner, they are really friendly. Yeah, they really sometimes they just chatting for some family stuff. Somehow I feel is kind of how they want us to feel (laughs) But I guess is necessary in a way that we open up ourselves isn't it'. (Hannah)*

Mothers also talked about the way in which practitioners interacted with them. They felt that they gave regular and *proactive* support, with regular practitioner led check-ups as to how they were doing. Whilst supportive, mothers were the ones to reach out to health professionals rather than feeling someone was reaching out to them.

> *'But you know she checked in on me every day 'how are you doing?' 'are you doing okay?' 'how's the baby' 'have you got..' you know just constant kind of 'I'm here if you need me'… the practitioner…she was just honestly, she was just the best'. (Sam).*

The delivery of the programme via the app rather than face to face appointments and events played a role in helping mothers connect with the support, especially during the pandemic, and was valued by all mothers who were interviewed, particularly in the first few weeks post-birth. The convenience and ease of the texts and video calls were emphasised:

> *'Actually trying to get the baby up and out and go somewhere, you know, obviously home visits are brilliant but it's just not practical so if you're having to get out go somewhere and it's just…for me, I had a few hospital appointments for in the first couple weeks, and the fact that I had to get her changed and get her out for certain time and get myself out and change for certain time it was horrific and it caused more stress than, you know'. (Sally)*

The online nature and accessibility of the programme was a key benefit recognised by health care professionals, again particularly during lockdown. The fact that support was accessible via their phone, and as a consequence often speedy, was a central part of this:

> *'Yes, I think they have appreciated having that access to support online. It's how everyone communicates these days, particularly for that age range, and having that support on their phone is accessible for them.' (Health visitor)*

However, some participants (Laura, Liz) did say that, lock-down allowing, they would prefer to access parts of Peppy face-to-face to supplement the digital relationship, while still retaining online access:

> *'I definitely would have wanted to do it face to face. I would have rather done and… it's just it's what you do isn't it it's how you meet mum friends, it's how you kind of build that mum social like network, I guess, for when you baby's born you're on maternity leave and you've got other people on maternity leave and it's that kind of social and friendship side of it as well, which I think it's not Peppy's fault is it that COVID's happened (laughs) but yes for me face to face would have been more preferable definitely'. (Laura)*

Additionally, mothers had the opportunity for further specialist one to one support via chat and video if needed for infant feeding, pelvic health and mental health. By far the most commonly accessed expert one to one support was for infant feeding, although support was also received for mental health and pelvic floor health. The ease and speed of these referrals and connections were valued by mothers:

> *'It was really, really helpful…(my practitioner) just sent me a link to book on to the lactation consultant and get an appointment there, which just happened so quickly. And from experiences of other mums I know in this area to get that kind of support, you have to wait for it.' (Carly)*

A number of health care professionals also talked about the benefits of this quick and simple access to specialist support.

> *'From my understanding they have a mixture of support including online chats and presentations and then one to one support with the experts that they might need. From what I have heard mums found it really useful and an important source of support'. (midwife)*

- ***Group chat for Mums for peer-to-peer support moderated by practitioner***

Another form of support was the group chat, where a practitioner brought together a group of mothers for a live social chat. Chat sessions were appreciated by the mothers who made use of them, as providing a supportive community, even by those who tended to observe rather than contribute like Kelly:

> *'Just sort of knowing that like there's a bit of support there and then like people were posting on the group chat pictures of their babies, you know and sort of just if they if they had a problem you could post it with other members'. (Kelly)*

This was particularly valued within the context of routine face-to-face support groups for pregnant women being paused during COVID lockdowns:

> *'Just you know small things that are really important when you have the baby like people even was chatting when, the day of the babies were born like 'Hello I'm in the hospital and everything went okay.' That was really good to see and that generates you a little bit of you know, good feeling like Oh, there is a sense of community, of course, you know, given the circumstances that we cannot see each other but people were in touch sending messages, sending pictures of their babies, of them in the hospital and that was really good to see'. (Anna)*

This connection with other mothers was picked up by health care professionals. The programme was not just seen as a source of information and professional support but a format that brought women together, giving them the feeling of being part of a group of other women who were going through the same things at the same time:

> *'Women have commented to me that they use it for connection with others who are going through the same thing as them, especially due to lockdown meaning they had less opportunity for in person antenatal groups.' (Health visitor)*

However, some participants (Kelly, Anna) found the format of the group chats a little overwhelming. Although they found the connection helpful, they felt overwhelmed at times by the volume of content that came through the chats.

> *'I think it was really useful the group chat… (but) I didn't cope with it so and yeah I stayed a little bit (quiet) because people I could see that people were very, very active so sometimes I just picked up my phone and I had like 30 messages there'. (Anna)*

- ***Specialist vetted and evidence-based articles library & weekly newsletters***

Another aspect of support was the newsletters and links practitioners sent to mothers. Mothers valued having this trusted evidence-based information sent to them, in particular because they could save the resources and refer back to them at times when needed:

> *'(The) 'this week, your baby should be doing this' (newsletters)… were also very good information because sometimes maybe I don't read them for two weeks or even longer. But then, once I got the time and then I look through it again and found them helpful. Yeah that's quite nice to have some additional information, where I might not aware or didn't read some from some other resources, so it was great'. (Hannah)*

The reliability and quality of the information being sent by practitioners was contrasted with an overwhelming quantity of poor-quality information the internet:

> *'So I was really looking for information, but because there's loads of thing on the Internet, you somehow finding it a bit overload somehow so you really want some resource which is kind of like…a trust one, a more reliable resource which is yeah from the practitioner'. (Hannah)*

- ***Topic specific live events – broadcast and group calls***

A series of live events for different topics were also made available to participants. These were viewed positively by those who watched them. One of the most positive reports came from first time mum Carly who stated that she watched several live events around topics that she wouldn't have proactively sought information:

> *'I really liked the broadcasts, I thought they were great and they were very, very tailored to kind of the things that you need to know but probably didn't know you needed to know. So I wouldn't have ordinarily gone searching for some of those things so that was really great and really reassuring as well, preparing you for the birth and extra things that you would need to think about during and after'. (Carly)*

More generally the live broadcasts and group calls were experienced as helpful, answered questions and provided advice in advance of participants needing that information:

> *'I feel like being a first time mum some things I'm not sure if I'm doing right or how to do, or if this is it normal, the baby's doing this or that. Like even having other people asking in the broadcasts or, although I didn't participate that much in the group chat, just if someone asked the same question. Or even before it happened to me like when it happened, I already knew that it was normal' (Maria)*

Broadcasts also allowed mothers to receive information and feel connected without having to actively participate or be visibly present. This was particularly valued if they were feeling stressed, tired or struggling with their mental health.

> *'It helped having it after (birth) and, like the workshops and really helpful like I would I just say I wouldn't put my camera on or anything I'd just like listening, listening to them and so yeah that definitely helped when things were like a bit like like mentally I was a bit down. That helped'. (Liz)*

4.4. The impact of the Peppy programme upon infant feeding

One of the core aims of the Peppy programme was to help support women in feeding their baby. This included helping them to breastfeed for longer and to receive evidence-based information on formula feeding if needed. Participants were asked how they were feeding their baby in the days after birth and again at the end of the programme at eight weeks. Table Eight shows the proportion who were exclusively breastfeeding, mixed feeding or exclusively formula feeding. Overall, 80% of participants who responded were giving some breastmilk at eight weeks with almost two thirds doing so exclusively.

Table Eight: Feeding method during weeks one and eight

Feeding method	**First week (n = 99)**		**Eight weeks (n = 110)**	
	n	%	n	%
Breast feeding	73	73.7	67	60.9
Formula feeding	10	10.1	22	20.0
Mixed feeding	16	16.2	21	19.1

Table Nine again explores feeding method comparing White and BAME ethnicities. It shows that although White mothers are a little more likely to be exclusively breastfeeding compared to mothers from BAME groups at both time points, overall mothers from BAME groups are more likely to be giving any breastmilk at all. Overall, during the first week, 100% of BAME mothers who provided data were giving any breastmilk at all compared to 89.9% of White mothers. At eight weeks 93.9% of BAME mothers were giving any breastmilk compared to 82.7% of White mothers.

Table Nine: Feeding type at one and eight weeks by ethnic group

	First week (n = 85)				Eight weeks (n = 89)			
Feeding method	**White**		**BAME**		**White**		**BAME**	
	n	%	n	%	n	%	n	%
Breast feeding	51	73.9	11	68.8	46	61.3	8	57.1
Formula feeding	7	10.1	0	0.0	13	17.3	1	7.1
Mixed feeding	11	15.9	5	31.1	16	21.3	21	35.7

Participants were asked a further series of questions around their experiences of feeding their baby in the first few days. Overall, 81 (81.8%) said that they were feeding their babies as planned. For those for whom it had not gone to plan, women, open ended qualitative boxes explored why. Common issues such as worries about milk supply and needing to top up with formula were given, for example:

> *'I had planned to breastfeed jut we are having to top up with formula due her weight dropping and my milk not being fully in' (age 35-40, White British/Irish)*

> *'Have had to use formula to top up due to difficulties with breastfeeding. This wasn't planned but I wasn't against using formula.' (age 35-40, White British/Irish)*

Other issues such as lack of sleep and wanting partners to help with night feeds also prompted using additional formula feeds which may not have been initially planned.

> *'I was hoping to breastfeed but remained open to bottle feeding. Due to lack of sleep, my midwife advised to feed formula at night for a month or so.' (age 40-44, White British/Irish)*

Mothers were asked what support they had received from Peppy around feeding their baby. Of those who provided data, 86 (78.2%) mothers received support, mostly for breastfeeding. Mothers who had accessed support for breastfeeding were asked about their perceptions of that support. Table Ten shows the number who agreed / strongly agreed with each statement

Table Ten: Impact of Peppy on breastfeeding experiences

	All (n = 79)		White (n = 55)		BAME (n = 12)	
	n	%	n	%	n	%
Peppy helped me to feel more knowledgeable about breastfeeding.	75	94.9	53	96.3	12	100
Peppy helped me spot the signs of something being wrong e.g., pain	60	75.9	41	74.5	12	100
Peppy helped me to know where to go for more support if I needed it	72	91.1	52	94.6	10	83.3
Peppy helped me to feel more confident about breastfeeding	72	91.1	48	87.3	12	100
Peppy helped me to breastfeed for longer	43	54.4	28	50.9	10	56.7

Mothers were also asked whether as a result of being supported by a Peppy practitioner they sought further additional expert breastfeeding support. Overall, 33 mothers responded that they sought support from different sources including peer support groups, health care professionals or were referred for a tongue-tie assessment.

In the interviews mothers reflected on their experiences of breastfeeding their baby and how the Peppy programme supported this. Support was given in different forms. Some mothers viewed webinars in the antenatal period [*'I definitely did a couple of the online like course-y things that were offered. I think I did a breastfeeding one' (Laura]* but mothers accessed the majority of infant feeding support via text message from their practitioner, which supplemented the live broadcasts and one-to-one expert support. The Peppy practitioners were viewed as providing high-quality and timely infant feeding support, promoting feelings of confidence:

> *'She (the practitioner) sent me some videos before the baby was here and then she sent me some videos and information after the baby was here as well. I did end up stopping eventually but it still helped me in the like sort of the early days of doing it and I did like a breastfeeding call before baby was here as well which just gave me a bit more information which was good'. (Nicola)*

Support for breastfeeding was perceived as being seamless and joined up across the Peppy service. Where mothers needed further support and contacted their practitioner, they were quickly put in contact with different avenues of support, each of which complemented each other. This not only helped practically but was reassuring:

> *'I was really anxious about breastfeeding. I really wanted to breastfeed and there was lots of great broadcasts and group calls about that, and how to prepare and what to do things go wrong, and I struggled, I say the hospital few days longer the night I would have ordinarily done because of breastfeeding challenges and (Peppy practitioner) hooked me up with a lactation consultant via Peppy and I found that really helpful as well and more for reassurance, I think I was doing things right, I just didn't think I was. That was really great as well, and the group chat as well that was really helpful to even if you weren't having some of the issues that were discussed, you might have and it kind of normalised things as well, so you don't feel like so alone in some of the issues'. (Carly)*

Mothers who were experiencing challenges feeding valued the range of support available from Peppy. Two mothers suspected that their babies had a tongue tie. Their Peppy practitioners facilitated a review with a lactation consultant, with one leading to a hospital appointment for correction. Sam talked about how reassuring receiving this additional support was, attributing Peppy as the reason that she continued breastfeeding:

> *'I was having trouble with breastfeeding, because she turned out to have a quite severe tongue tie… (my Peppy practitioner) really helped me with that in terms of like looking at different ways of latching and put me in contact with one-to one consultation (with an IBCLC)... So just things like that was really helpful.' (Sally)*

Infant feeding support did not just focus on breastfeeding. Fifteen (9.4%) women received support from Peppy around formula feeding. Mothers who had accessed this support were asked about their perceptions of it. Table Eleven shows the number who agreed / strongly agreed with each statement. The responses are broken down by ethnic group but caution should be applied due to the small sample.

Table Eleven: Impact of Peppy on experiences of formula feeding.

Statement	All (n = 15)		White (n = 10)		BAME (n = 3)	
	n	%	n	%	n	%
Being involved in Peppy helped me to feel more knowledgeable about formula feeding.	15	100	10	100	3	100
Being involved in Peppy helped me to know where to go for more support with formula feeding if I needed it	12	80	7	70.0	3	100
Being involved in Peppy helped me to feel more confident about formula feeding	14	93.3	9	90.0	3	100

In the interviews mothers also talked about formula feeding their infants. There did not appear to be as much *proactive* support available, in contrast to breastfeeding support:

> *'A lot of it was more around breastfeeding, but if I did have any queries on bottle feeding, I could just text the person that I have the personal chat link to'. (Kelly)*

However, Becky noted that she received emotional support with bottle feeding, which was viewed as valuable:

> *'How we were coping and how we were finding it kind of thing than things like how to make a bottle or…what to do'. (Becky)*

Notably, having support from practitioners who offered support across different modes of feeding, may have encouraged one mother to consider breastfeeding next time. Ruth, who did not breastfeed her baby reflected that if she could use Peppy again and have the support, she may decide to breastfeed as she knew the support would be there:

> *'If and when I have another baby I probably would (use Peppy again) because I think I might try breastfeeding, because this this time I didn't actually really try it just because I wanted to enjoy the baby. My first baby, and I think adding breastfeeding to not knowing on earth what you're doing. It does seem really stressful so I just took that decision to take myself out of that … I did find the one to one really helpful, so I imagine, I will have challenges with breastfeeding when I do do it so for me personally, I would'. (Ruth)*

Health care professionals frequently mentioned the value of the infant feeding support that the programme delivered. Indeed, twelve out of fourteen professionals (85.7%) agreed with the statement that 'The Peppy programme helped mothers breastfeed for longer', with the remaining participants unsure. In the open-ended boxes exploring how professionals believed parents benefitted from the programme, infant feeding was often a key benefit particularly in terms of the speed and ease with which support was delivered.

> *'I've supported a family which were in the programme and they really valued the additional support. Mum mentioned to me a few times that she had used it to access breastfeeding support and how quick and easy it was'. (midwife)*

4.5. The impact of the programme upon mental health

The Peppy programme supported mental health in two ways; broadly through practitioner and group chat support and specifically through connection with an expert practitioner for those who felt that their mental health was a concern.

To measure the impact of the programme upon mental health, mothers completed the Short Warwick-Edinburgh Mental Wellbeing Scale (SWEMBS) at the start and end of the programme. A higher score indicates higher wellbeing. Overall, the mean SWEMWBS score at the start of the programme was 24.75 (SD: 4.36) and 26.88 (SD: 3.55) at the end, showing an improvement in mental wellbeing. SWEMWBS score was then categorised into high mental wellbeing, normal/ moderate wellbeing and possible depression. The proportion of mothers in each category at the programme start and end is shown in Table Twelve.

Table Twelve: Maternal wellbeing scores at the beginning and end of the programme

	Start (n = 158)		**End (n = 108)**	
Category	n	%	n	%
High mental wellbeing	15	9.5	14	13.0
Normal/moderate wellbeing	95	60.1	83	76.9
Possible depression	48	30.4	11	10.2

Wellbeing was further compared for those from White and BAME groups (Table Thirteen). Although caution should be applied due to a small BAME group, wellbeing rose for both groups over the course of the programme. Possible depression rates reduced in both groups but to a greater extent in the White group. However, a major shift was seen in terms of the proportion of BAME mothers moving into the high mental wellbeing category.

Table Thirteen: Maternal wellbeing scores by ethnicity

	Start (n = 130)				**End (n = 85)**			
	White		**BAME**		**White**		**BAME**	
Category	N	%	N	%	N	%	N	%
High mental wellbeing	11	10.7	3	11.1	8	11.0	4	28.6
Normal/moderate wellbeing	60	58.3	15	55.6	58	79.5	7	50.0
Possible depression	32	31.1	9	33.3	7	9.6	3	21.4

Mothers talked about how the programme impacted upon their mental health throughout the interviews. For example, in terms of broad support, different aspects of the programme were discussed as helping promote and support wellbeing. Becky described her concerns related to having had a caesarean-section and another physical health problem with her Peppy Practitioner, and reported it being a combination of reassurance and practical advice, which she wound very valuable:

> *'There was all these concerns and worries and things and whilst I were talking to the lady she were like giving me advice and things saying like which way would be the best way to go like to seek more help… sometimes when you have in your own mind It just seems like a big problem and once you've shared with someone you actually do think you know, is it really that bad?' (Becky)*

Being supported with other aspects of health and caring for their baby through the programme also impacted upon wellbeing. For example, Hannah felt that infant feeding support from Peppy "really contributed a lot" to stabilising her mental health:

'Um so I feel like, for the first two months, my mental health wasn't very stable, to be honest, but it wasn't very serious. Um, most of the time it's because, like lack of sleep, feeding not going well, feeling nipple pain and then the pressure of whether the baby having enough weight gain. All this like make up all the like mental health issue. That I sometime cried. Um, but I feel like because the feeding is sorted like after weeks and time and my mood generally just feel more relaxed, and yeah and thanks to Peppy really. I think it's really contributed a lot'. (Hannah)

The rapid support from trusted practitioners was also recognised as helping to reduce anxiety. This was particularly important during COVID-19 lockdown as many mothers felt generally more anxious:

'I'd maybe having an irrational panic about something, but it would like just calm me down, you know rather than just like Googling, which is the devil but ummm, yeah so it really helped kind of chill my mind out, and you know she did it constantly kind of, say, oh talk to your health visitor or something but if there was a particular issue which she felt needed further investigation.' (Ruth).

Mothers also reflected on how useful this support was during the challenging early weeks of caring for a new baby. Participants talked about tensions within their relationship with their partner being high due to lack of sleep and anxiety associated with caring for a new baby. However, taking part in Peppy helped reduce this through reassurance that this was all normal and the added layers of support and connection that mothers felt:

'I think it's mostly because of the tiredness, my partner, we don't really argue, I think we just disagree, and then we talked about it and everything is fine, but now I felt that the started to really argue and have like really different opinions without reaching like a common point. I mentioned it to the practitioner and also they sent like a video. It was helpful, I didn't really remember about the video but I remember like while I was watching it, I was just thinking about like strategies just to approach my partner again, like in different way. (Maria)

For participants who felt that their mental health was a concern, referrals to a specialist mental health practitioner for one to one chat via the app could be made. This was reassuring even for participants who did not need it:

I didn't get any specific support around (my mental health) through the program I know that was available and thankfully I didn't need it (Carly)

One participant (Anna) discussed being referred to specialist support. She was given details of a live event presented by a perinatal psychiatrist but as she was the only person who attended, she ended up receiving one to one tailored advice. Anna found this immensely helpful and reassuring:

> *'She was amazing she was really reassuring because I had a miscarriage before so obviously the miscarriage affected, like all the pregnancy, I was feeling, really, really stressed about it….I was very worried about postnatal depression. And that was my biggest worry, by that time and yeah she put me, she talked to me about a couple of organizations and she was just telling me how they they're working during the pandemic so she told me don't be scared that you know, even in the lockdown they are able to you know, get in touch with you, and if you need it, someone will come and visit you in your place so don't be scared about it…' (Anna)*

Ensuring referrals happen when necessary may need greater consideration for consistency across practitioners. One mother, Ruth, didn't realise a referral was initially possible but was put in touch with specialist mental health support (which she later chose not to access). Liz did not receive a referral via Peppy for expert mental health support when she was struggling with self-diagnosed postnatal depression:

> *Liz: I definitely had like the baby blues for like longer than. They were like after two weeks it's gone and it definitely was longer than two weeks…*
>
> *Sara: Did you access any specific support regarding how you were feeling did they put you in touch with any other services?*
>
> *Liz: Peppy didn't but my like health visitor and midwife did that so kind of like complemented each other.*

Mental health support was also identified as a key part of the programme by health care professionals. Overall, 13 out of 14 (92.8%) agreed with the statement that '*The Peppy project improved mothers' emotional wellbeing'*, with the remaining participant unsure.

> *'From knowledge, they have received support with feeding and mental health support if needed. I know from conversations that it has helped mums feel better supported and like they have someone additional to turn to if they need it. I think that it came just at the right time during lockdown when everyone was a bit deprived of social contact, particularly new parents. It let them connect with others and feel like additional services were there to support them.' (Health visitor)*

4.6. The impact of the programme upon pelvic health support

Mothers also had access to information, support, and referrals around pelvic health. Table Fourteen shows the number of women who reported experiencing symptoms of pelvic floor dysfunction. It should be noted that this question asked participants whether they experienced a symptom (tick box for yes) and therefore the difference between no and missing data cannot be distinguished.

Table Fourteen: The number of women experiencing pelvic floor dysfunction symptoms

Symptom	**N**	**%**
Fear of having sex	30	35.3
Difficulty controlling bowel movements or wind	20	23.5
Bowel leakage of any amount at any time	5	5.9
Urinary leakage of any amount at any time	33	38.8
Changes In your bladder function	6	7.1
Difficulty emptying your bowels	34	40
Heaviness or a lump in your vagina	10	11.8
Any gap in your tummy muscles that isn't improving	12	14.1
Pain/reduced sensitivity	16	18.8

Within the interviews, only three mothers mentioned accessing pelvic health support, primarily through a single live event they attended. Carly, who attended a live event at 36 weeks, felt it taught her the important things she needed to know relation to pelvic health, including perineal massage techniques which she credits with her straightforward birth:

> *'I feel like based on that particular broadcast and (the pelvic health physio)'s great support that my birth probably went a lot more smoothly than it would have done anyway. I haven't had really many issues. I really put that down to her, she was such a great presenter, really down to earth, but just had some great advice which I followed and thankfully it worked out for me'. (Carly, first time mum).*

In terms of further specialist support, only Sally was referred for additional support, but she found this very helpful due to lack of time to consider pelvic health prior to birth:

> *'I went on a one-to-one call with one of the practitioners, and that was really helpful because I think it's one of those things, I had no idea I was doing to be completely honest like'. (Sally)*

Unfortunately, those not aware of the topic of pelvic health in the antenatal period, such as Laura, were less likely to attend, not realising its potential importance. Meanwhile, Maria, who has English as a secondary language, a lack of understanding of what '*pelvic health'* meant resulted in her not understanding the importance of the live event.

In contrast to infant feeding support, where participants discussed their concerns freely with their Peppy practitioner, interviewees did not report discussing pelvic health or post-natal bodily concerns with their practitioner, with the exception of Sam and Sally.

Only Sally reported receiving 1-1 specialist pelvic support, which she found valuable:

> *'I went on a one to one call with one of the practitioners, and that was really helpful because I think it's one of those things, I had no idea I was doing to be completely honest like.' (Sally)*

Pelvic floor support was mentioned by some of the health care professionals in their survey but not in significant detail. When asked whether they felt that the '*Peppy programme had a positive impact upon new mothers' physical health e.g., pelvic floor health'*, eight out of fourteen were unsure (57.1%). However, the remaining six participants (42.9%) positively agreed that it did. In the open-ended responses, the most detailed response was provided by a physiotherapist who considered the programme to be offering '*access to good quality information regarding pelvic floor care*' and noted that they *'welcome good information and support for women throughout their pregnancies and beyond'.*

Where pelvic floor health was discussed, feedback to health care professionals was positive. One midwife noted how a mother had fed back to her that she was receiving additional useful support with issues:

> *'The women I know have used the programme in different ways. One mentioned she had found some really useful information around pelvic floor health that helped her understand things much better'… basically I think it's helping women access more of the information they need, which they don't really realise that they might need or be able to access'. (midwife)*

4.7. Impact of the programme upon parenting confidence and self-efficacy

Although the Peppy programme has three core elements of support (infant feeding, mental health, pelvic health), a broader aim of the programme is to seek to support parents in how confident they feel in caring for their baby and being a new parent. This impact was measured through a series of survey questions around how mothers felt that the programme supported them in caring for their babies. The number who agreed / strongly agreed with each statement is shown in Table Fifteen, split by ethnic group.

Table Fifteen: Perceived impact of the Peppy programme upon caring for baby

	All (n = 159)		White (n = 104)		BAME (n = 27)	
	n	%	n	%	n	%
More confident caring for my baby	144	90.5	92	88.5	26	96.3
Less anxious about caring for my baby	131	82.3	83	79.8	24	88.9
More relaxed as a new parent	135	84.9	87	83.6	24	88.9

This aim was certainly achieved through reflections in the interviews. A number of mothers reported that they felt much more confident after taking part in the programme. A core part of this increase in self-efficacy related to being able to have their questions relating to infant feeding and childcare answered promptly from an expert source. For example:

> *'I just think it was a huge support, and I mean…just having that almost instantaneous support was just really, really helpful. It made me feel so much more relieved and so much more calm about things that it, even if it was something that felt, obviously really insurmountable to me and actually reflecting on it now is probably really stupid little thing but being able to just have that quick conversation about it, it would literally the space of about two or three texts and it'd be fine'. (Sally)*

Indeed, the feeling of being able to ask small questions on a regular basis was a commonly reported factor in increasing participants' feeling that they were parenting in a way that was safe for their baby, as Nicola explained:

'I feel like yeah if you phoned the health visitor you might feel like you're bothering them with a small thing. So one of the things I asked her was like, he never settles, he only settles on us in the day and at night he's happy to go down in the crib um and she was like, sent me loads of information like that's completely normal but I wouldn't have bothered the health visitor with that question because I would have felt like it's not, it's not a serious question…I just don't know if I'd have known if we were doing the right thing. So it's just a bit more reassuring for her to come back and say that's completely normal and give me some facts behind why it I's. (Nicola)

This support was more important to first time mothers than those who had already raised a child, and came from live events and the group chat, in addition to Peppy Practitioners:

'I feel like being a first-time mum some things I'm not sure if I'm doing right or how to do, or if this is it normal, the baby's doing this or that. Like even having other people asking in the broadcasts or, although I didn't participate that much in the group chat, just if someone asked the same question.' (Maria)

4.8. Impact of the service for fathers / partners

The Peppy programme was predominantly designed for mothers, although some sessions were available aimed at fathers / partners. Partners were also welcome at live events alongside the mother. Overall, fathers engagement in the Peppy service was very low. At the highest end, a participants' partner watched a live event with her and another *may* have engaged with a Peppy event directed at fathers. That said, the mothers interviewed regularly shared information provided to them by their Peppy practitioner, and it was felt in general that this had a positive relationship on their parenting relationship.

'I think there was something that my partner used but I can't remember if it was Peppy, I'm like 99% sure it was and he accessed it through Peppy and it was like…I think it was just like support and advice for new dads and he joined that and found it really useful'. (Liz)

Another interviewee noted that they had joined one of the live events with their partner, but that their partner did not want to join the event targeted towards dads:

'I showed him some of the things (including)… listening to one of the broadcasts… and I remember it was like a broadcast for daddy's, but he didn't want to'. (Maria)

On the whole fathers and partners were not *directly* engaged in Peppy. In the majority of cases, it was because of a lack of interest in taking part, or awareness of targeted support:

> *'I'm not saying that for all dad's but personally for him it's not no it's not something he would have used'. (Kelly)*

However, Carly noted that her partner was very keen to be involved in content targeted towards Dads, but that the only content they identified was around mental health, which he already felt equipped to deal with:

> *'My partner has felt a little aggrieved that there was a lack of support for him as a new dad. And especially given that he wasn't able to come to any scans and all the antenatal appointments because of COVID'. (Carly)*

Information was shared indirectly with partners, through mothers conversations. Some mothers found that being able to ask their Peppy practitioner questions – and receiving responses quickly – resulted in information sharing with their partners. This included an agreed plan of action going forward with their baby's care, which could otherwise have led to stress and disagreements, or even negative impacts on the mother's mental health:

> *'If there were some issues or questions I wanted to ask, I used to like put it through to the lady. So I used to just tell him when I used to get like Oh, 'this is what it is', and 'this is this' so yeah it was like even though he didn't have that main involvement, he was like involved with getting all the information through me. (Becky)*

In addition to individual tailored advice, the newsletters sent to mothers were sometimes shared with fathers:

> *'Stuff that they sent sort of just out to everybody so those facts and things like what you can expect from baby at that particular week. I did, I shared that with him and I shared the advice that I got about feeding'. (Nicola)*

4.9. Does taking part in the Peppy programme affect use of other NHS services?

A central aim of this evaluation was to explore how providing a service such as the Peppy programme affected engagement with NHS services. This was a question of particular interest to commissioners who were interested in how the programme might increase important referrals and engagement with services (e.g. specialist mental health) and also how it might potentially ease the day to day workload of midwives and health visitors.

In the end of programme survey, mothers were asked if being involved in Peppy had led to a reduction in contacts with any of the usual health and social care services they might use. Table Sixteen shows the number of women who stated that they had avoided needing to contact with an NHS service due to being supported by Peppy.

Table Sixteen: Avoidance of contact with NHS services

	All (n = 110)		White (n = 75)		BAME (n = 14)	
Service	**n**	**%**	**n**	**%**	**n**	**%**
Midwife	45	40.9	32	42.7	5	35.7
Health visitor	44	40.0	28	37.3	9	64.3
GP	31	28.2	20	26.6	4	28.5
NHS 111	20	18.2	16	21.3	3	21.4
Accident & Emergency	10	9.1	8	10.7	1	7.1
Urgent Care Centre	10	9.1	8	10.7	1	7.1

Conversely, women were then asked if they had accessed any health services because a practitioner advised them to i.e., it was needed but the mother had not considered it:

Table Seventeen: Referred contact to NHS services by a Peppy practitioner

	All (n = 110)		White (n = 75)		BAME (n = 14)	
Service	**n**	**%**	**n**	**%**	**n**	**%**
Midwife	10	9.1	4	5.3	2	14.3
Health visitor	19	17.3	11	14.5	3	21.4
GP	9	8.2	4	5.3	3	21.4
NHS 111	5	4.6	3	4.0	0	0.0
Accident & Emergency	3	2.7	2	2.7	0	0.0
Urgent Care Centre	3	2.7	1	1.3	1	7.1

Another key question explored was whether the programme helped prepare mothers for their six-week check. The programme specifically aims to check in with mothers before this check, encouraging them to think about core issues such as mental health. Overall, 68 women (64.8%) reported that being involved with Peppy helped them feel more prepared for their six-week check appointment with their GP so that they could use the appointment to ask relevant questions and make better use of the time. When exploring this by ethnicity, 63.9% of women from White backgrounds said it helped them feel more prepared whilst 71.4% of those from BAME backgrounds felt the same.

This impact was explored in the interviews with mothers. It was clear that Peppy was easing the load of 'everyday' questions that mothers might seek support from their midwife or health visitor with. When mothers had a question, mostly relating to their child's feeding or small concerns about their wellbeing they often reached out to their Peppy practitioner via message, rather than NHS services. When this was explored further, mothers discussed several reasons for doing this including feeling that they would get a prompt response from an individual who knew them, they could message rather than making a telephone call, and feeling that it was best not to "bother" professionals with small questions.

> *'I mean, obviously, I have the health visitor involved … you can ring up and you can speak to people if you need to you don't necessarily get through to the people that you need to straight away so just having that sort of almost instantaneous support was just really, really helpful. (Sally)*

This was particularly pertinent for questions that mothers wanted to direct to their GP. Several mothers talked about not wanting to bother their GP or thinking it would be difficult to get an appointment or the right support so instead they asked their Peppy practitioner.

> *'You know the GP isn't going to see you. When you can actually get someone answer you quicker and at the time that's convenient to you it's better, for me, because for me to see or to talk with the GP I need to phone them between 830 to 930 otherwise they're not going to call me back and sometimes even if I did make my way to call them on the queue for them to call me back I a lost of time I could miss the call, or it just didn't match the time where yeah the routine is and it's created a lot of issue like I don't know I just don't find it very friendly, just finding the GP to talk to…' (Hannah)*

Although participants described using their Peppy practitioner to ask small questions that they felt they should not "bother" their midwife or health visitor for, not all of these issues were small (including untreated diastasis recti). Often it appeared that the Peppy practitioner validated the mothers' concerns and told them to contact their midwife, health visitor or GP if they were worried that they or their child were unwell. Hannah talked about having thrush and having been discharged with the Midwife who had initially got her a GP appointment, she wasn't sure what to do. However, the practitioner supported her:

> *'The practitioner asked me to phone the GP again and just insist to chat with them. Although at the end they don't actually see me again'. (Hannah)*

Health care professionals were detailed in their reflections of the impacts of the programme upon the support families were receiving. In terms of whether the Peppy programme reduced their workload, eight out of fourteen participants (57.1%) agreed with the statement '*The Peppy programme had a positive impact on my workload'*, with the remainder unsure.

Clarifying this in the open-ended questions, most felt that they could see that clearly mothers in the programme were turning to Peppy with small questions but that this didn't feel as if it impacted upon their day-to-day load. Some believed this was because only a small number of women were taking part, with some connected to just one or two families in the programme.

> *'I think from speaking to our women they've used it when they have a small question or want to know an answer quickly so I think it reduces our work a little bit there. I don't think there have been enough women that I know of involved to see a large impact.' (Health visitor)*

Others felt that there was so much day to day demand for support that as soon as time was freed up, it was filled by the need of another family.

> *'I wouldn't say my workload has suddenly lessened overnight! But I would say that I know mums have directed some queries to Peppy that would usually go to me so logically it must somehow be less, just it doesn't feel that way right now!' (Health visitor)*

However, many of the professionals valued having some of their workload eased slightly through the programme. They felt that women had additional trusted people they could contact if they needed to, which felt reassuring and like it reduced some pressure on them

> *I feel like it took the pressure off us slightly in knowing that mothers were being 'topped up' with further support. (Midwife)*

Several participants noted that this was particularly valuable during lockdown, where restrictions were often placed on face-to-face contact

> *'I valued being able to see that some families I worked with were able to access that additional layer of support. I feel that not enough is done to support new families and this has been particularly tough during lockdown'. (Midwife)*

This was also a particular relief for those who felt the pressure of not being continually available for women they supported. They knew that in their absence someone else could often quickly pick up a query.

> *'It is reassuring to know that the support is there if we're not. It's nice to hear that a woman has had an issue say on a day you were off and you come back and it's been sorted really quickly'. (Midwife)*

An important point to emphasise in terms of workload is that it was clear that professionals wanted this to exist as an *additional* service, offering extra support and *not in replacement* of anything. This issue is picked up on later in this section.

> *'I think it's potentially really useful in easing some of our workload in a way we can trust. I think I would need to see it rolled out to more women to really get a feeling on how it would affect us longer term. I don't want it used as a way of cutting staff but if it was there in addition to us that would be amazing'. (Midwife)*

Alongside reducing pressure on day-to-day services, the programme was also designed to signpost those who did need additional support to specialist services when necessary e.g. tongue tie or mental health referrals. The Infant Feeding Co-ordinator referenced receiving a tongue tie referral, whilst three other professionals also described knowing of a mother who was referred. However, it was unclear whether these were all individual women, or awareness that referrals were occurring:

> *'I know one mother I care for ended up accessing specialist infant feeding support in the area after talking to one of the practitioners'. (Health visitor)*

Other professionals noted that women in their care had been referred for specialist mental health or pelvic care support. The physiotherapist reflected that they were not aware of any direct referrals due to the programme but that given it was a large service, this may be a case of being unaware rather than referrals not occurring:

> *'Not to physio, but we have a large referral rate, so would be very difficult to extrapolate'. (Physiotherapist)*

Finally, some felt that referrals may have eventually occurred anyway but participation in the Peppy programme sped up the progress

> *'One woman was put in touch with tongue tie support. I think this would have happened anyway I hope but it was nice to see it done probably quicker and more easily for her' (Midwife)*

4.10. Does the programme fit well with existing services?

Health care professionals were asked how they felt that the programme fitted with existing services on offer for parents in the region. Overall, 13 out of 14 participants (95.8%) agreed with the statement that '*The Peppy project worked well alongside existing support*', with the remaining participant unsure. In the open-ended questions, although one participant felt that they could not comment on this aspect, all other participants responded positively. They felt that the programme ran well alongside midwifery and health visiting support, providing much needed additional care which mothers valued.

> *'Yes I think it did, mums certainly seemed to appreciate having support from both us and the programme.' (midwife)*

Some however clarified this, feeling that they needed to see how it would work across a larger group of mothers to really understand what delivery would look like.

> *'Yes I do, although I think we'd need to see what happened with a bigger roll out'. (Midwife)*

Another felt that delivery outside of the pandemic needed to be explored, to better understand how parents use digital support when more face to face support was possible.

> *'Yes, I think so but we're all so busy and overwhelmed now that it would be good to see what it looks like when we hopefully return to normal.' (Health visitor)*

However, although the overall perceptions of delivery were positive, a common reaction amongst professionals was one of concern and some confusion around the intentions of such a programme. Many were unsure of how the programme differed from the remit of existing midwives and health visitors and why a different programme was being invested in:

> *'Yes although I think there might be tensions that need to be talked through if it were to continue such as why invest in this and not in more of us. I'm not saying it has to be us but I would like to know what the reasons are. Maybe it's cost or specialist skills but I'd like to know. And also whether I could apply!' (Midwife)*

Others felt that practitioners were able to do more of the 'desirable' aspects of the role of caring for women and having that one-to-one connection:

> *'As I say, a bit of almost jealousy of the connection and work that the practitioners were doing while I was doing paperwork! But seeing how much the family I have supported enjoyed using it, and being positive that it is here as an addition not a replacement, I think it's great.' (Midwife)*

Many expressed the view that they were concerned that investment might replace them, putting jobs at risk or pushing towards more online delivery of support:

> *'I think we're always a bit wary about new things and what it will mean for our own work. If someone else is providing this support, will it be taken away from our role? What will replace it or might we even not be needed?'. (Health visitor)*

Related to this, some perceived the programme as 'private health care' and were worried about a creep of services being contracted out or outsourced to external service providers:

> *'It feels very similar to what we do or want to be doing but run separately. There is an anxiety around creep of private health care services that needs addressing'. (Midwife)*

However, many of the health care professionals added that if details of delivery were clearer and they were reassured regarding roles, they would welcome the programmes continuation:

> *'I think there is the general worry about where this is heading and whether it could potentially replace any of us. If it runs alongside us then great, it feels like an additional layer of support for us too as well as the women!' (Health visitor)*

One professional added that this must be clarified not only for the sake of health care professionals but to enable new families to feel comfortable using the service, rather than feeling disloyal to their professional:

> *' One mother I talked to felt a bit unsure about the difference between our care and the further support. I think sometimes she felt a bit guilty even asking one of the practitioners for support rather than me.' (Midwife)*

Fit with local services was a key area of interest for all local commissioners. In particular, commissioners raised questions around the impact upon the relationship with existing health professionals. If mothers were relying on practitioners for day to day support, would this reduce any relationship building and trust with midwives or health visitors? What would this mean when the programme ends at eight weeks postpartum – might women have formed less of a relationship with their health professional? And what would this mean for overall awareness of issues within families? Might reduced contact with health professionals mean a lower likelihood of spotting any vulnerabilities or problems emerging?

4.11. How is the Peppy programme perceived overall?

At the end of programme mothers were asked about their experiences of being involved and their perceptions of the programme. On a scale of 1 – 10 (with 10 being the most likely), mothers were asked how likely they would be to recommend the Peppy programme to a friend.

Overall, 81.8% responded with a likelihood of 8+, with 60% choosing the strongest likelihood of 10. Notably, when split by available ethnicity data, 92.9% of those from BAME backgrounds selected a score at 9+ indicating a strong recommendation. Comparatively, 69.3% of mothers from White backgrounds gave a recommendation likelihood of 8+.

Participants then responded to a series of statements about the programme. Table Eighteen shows the number of women who strongly agreed/agree with the following statements:

Table Eighteen: Mothers experiences of being involved in the programme

	All (n = 110)		White (n = 75)		BAME (n = 14)	
Statement	**n**	**%**	**n**	**%**	**n**	**%**
Peppy is non-judgemental	103	93.6	72	92.0	11	92.9
Being involved in Peppy helped me to make decisions	85	85.0	58	77.3	13	92.9
Being involved in Peppy helped me to feel more confident	100	90.9	69	92.0	13	92.9
Peppy is simple to use	102	92.7	61	94.6	14	100.0
Peppy offered enough support and information	92	83.6	63	84.0	12	85.7
Peppy fits well with the support available from local health professionals	89	80.9	61	77.0	11	78.6

Likewise, professionals were asked some final questions about their perceptions of the programme. Table Nineteen shows the number of participants who strongly agreed/agree with the following statements.

Table Nineteen: Health professionals' perceptions of the Peppy programme

Statement	**n**	**%**
Mothers valued the Peppy programme	12	85.7
The Peppy programme helped mothers access additional support	13	92.8
I would like to see the Peppy programme continue	13	92.8

4.12. How could the service be improved?

The majority of mothers felt that their needs were met well by the Peppy service, with health care professionals predominantly positive about its content, and delivery alongside existing services. However, a number of ideas for development or improvement of the programme were proposed. These included:

- ***Clarity on timing***

*F*ive of the twelve interview participants noted that they appeared to have started the intervention at the wrong time, receiving information after the point at which it would have been relevant, such as preparing for birth and eight week baby checks. For example:

> *'…the stuff that started kind of coming through was covering like you know preparing for actually going to have the birth and preparing for the first days and I'd kind of missed that already, and so, the stuff that I did was good in terms of I tried to apply what I could from it. But I think in hindsight, if I could have got it just a little bit before I'd had her and it would have been a little bit more helpful because I kind of… definitely that first week, I was absolutely harassing my midwife through Peppy! (laughs). Just like 'what's this?', 'what's that?' (Sally)*

This was reflected to a larger extent in the interviews with the health care professionals who were aware of women who had not realised the programme was available and wished they had been involved:

> *'The only negative comment I had was from a mother who hadn't heard about it and missed out but knew about it from the support her friend was receiving!' (midwife)*

Linked to this, broader advertising of the scheme may have been useful. One participant noted that she was only aware of the programme by chance having spotted a poster

> *'I'm so glad I spotted that poster to be fair!'* (Sally).

- ***Clearer information about available support***

Some mothers also talked about missing out on some elements of support because they were unsure what was available. For example, three mothers were not aware that there was a group chat element to the service. Ruth commented that she would have liked to have received support from other mothers who had given birth at the same time, inadvertently describing the chat support that had been on offer:

> *'It'd be quite nice to have a support network of people who had given birth like within that week or something as babies are likely to be going through a very similar thing. So that could be a nice thing to have as like a support network there. Yeah there wasn't like a community, I know I don't even know whether there was a functionality for that, and if there was then I'm not really aware of it, so if that's what they want, and they had, then it wasn't particularly clear.' (Ruth)*

- ***Timing and recording of live sessions***

A number of comments for ideas for improvement were based around the need for considering the timing and recording of live sessions. One mother commented that she would have liked to have seen more live sessions earlier on, before her baby was born because she found fitting around scheduled sessions more challenging once they were born.

> *'I didn't really go to any of the zoom kind of call ones after the baby was here. Because I thought I don't know if I'm going to be able to sit on a zoom call for however long without them crying. I know you can go off the call or what if they were crying and do what you need to do but at least before you're uninterrupted so'. (Nicola)*

Linked to this, one frequently reported issue was being unable to attend live events and not being able to watch them at a later date; several mothers recommended that live events or related video content was made available in an archive, as Becky articulated:

> *'Like when you've got kids are you just had a baby and things like that you don't actually have fixed times. Yeah like you could probably help with this week, you don't have fixed times, something comes along and you can't really sit there for an hour on end to like listen and join in and be part of it. There was like a lot of things that I missed out on because I did sign on to a couple of them, but it was just the timings were always bad. And I was hoping, maybe that there should have been a link or something to say, something for us to play back on maybe that you know if you missed it. This is the useful information or this is what's come out of it'. (Becky)*

Others commented that it would be great to have this recorded information longer term to refer back on even when the programme had ended. Circumstances might change meaning new aspects would become relevant, or mothers might have forgotten key details. Being able to revisit in the future would have added additional support.

> *"it would be good to be able to still access everything you could access afterwards, fair enough you can't, they can't have loads of people being trying to join zoom calls and stuff like that, but if things could be recorded and then left available to people that have been part of it." (Laura)*

- ***Gentler ending and support maintain connections***

In addition, some participants who had used, and valued, the group chat function lost access to the support networks that they had developed, as the women had not previously needed

to exchange alternative contact details. The strong relationship between the participants and practitioners felt at odds with this abrupt ending too: "*I was quite sad to sort of like say goodbye to her…*" (Kelly), although participants understood that the intensive support had to end. Linked to this, several participants noted that they were not aware when the service would begin or end, and that the withdrawal of service could feel abrupt:

> *'I… just remember being maybe like I think I said to her a couple of times 'I've not had any feedback from that Peppy thing' and then all of a sudden, it did all kick in so whether the….I would have read an email if I'd have got one but that might be something to feed back that you just say to people, this will start when you are x months pregnant. I didn't realize as well, it stops after you after your baby's born seven week later, as well, so yeah I may have been told it but…'(Laura)*

- ***Have clearer sessions and more detail for partners***

As discussed in a previous section around partner engagement, one suggestion made my mothers was that there could be more sessions and support aimed at partners to help them feel more supported and engaged with caring for their baby.

> *'I don't think there was kind of anything that was almost explicit for dads and I think that will be something that's quite helpful because some of the other sort of like online baby groups and stuff they have like um once a month session just for dads, they do like baby massage and things like that'. (Sally)*

- ***Offer the service for longer***

Finally, both mothers and professionals recommended that ideally the service would last for longer, supporting women through stages such as introducing solids and return to work.

> *Yeah it should have gone on for a bit little bit longer. Just like to get you through to like the first three months mark. For new moms I think first time mums, I think it should have gone on quite a lot longer because there's so much that you go through and but that changes and everything and I feel you do need that extra help. Whether it was just a message during the day, like I were getting'. (Becky)*

This was also reflected in feedback from the health care professionals :

> *'I think some may have wanted it to carry on for longer because it came to an end just as they were getting into the swing of things'. (Midwife)*

Bringing the findings to a close, it was clear that the programme was valued by mothers and health professionals. At the centre of this was the close relationship with Peppy practitioners, the ease of contact, and feeling supported through lots of different formats. This led to women feeling more supported with infant feeding and infant care, likely playing a role in the higher breastfeeding rates and increased wellbeing seen amongst programme participants. Health professionals were keen to see the programme continue but wanted clarity around how it fitted with their role.

5. Discussion

This evaluation explored the impact of the Peppy Baby programme upon the experiences of a group of expectant and new mothers in Manchester University Foundation Trust. Conducted and evaluated during the COVID-19 pandemic and lockdown, the programme was seen as supportive, non-judgemental, and easy to use, with positive impacts seen upon core areas of infant feeding, maternal mental health and pelvic floor health. Although the number of women taking part was small in terms of the birth rate in the area, the evaluation highlighted a likely positive reduction in pressure upon local midwifery, health visiting and GP services and was seen as an acceptable and supportive programme by health professionals working in the Trust. It was particularly timely during the COVID-19 pandemic, providing connection and support to new parents at a time of significant stress. Although there were some suggestions for improvement of the programme, many of the women involved wished to see it continue and would recommend it to a friend. This final discussion section considers the implications of these findings for future service provision, both in Manchester and more broadly.

a. Accessibility and use of the programme

The programme was designed as a pilot within a local area. The Peppy programme team placed a series of adverts advertising the start of the programme and asking for participants, including through midwifery teams, clinics and social media. In terms of who took part in the programme, participants did have a higher average age and level of education compared to the general population. Overall, 86.6% had a degree level qualification or above, which is considerably higher than the population average of around 40 – 50% of this age cohort (Universities UK 2010). There were also a higher proportion of mothers in the cohort aged over 30 [81%] compared to population norms [55%] (ONS, 2019). In terms of ethnicity, approximately 78% were from White backgrounds and 22% from BAME – a BAME figure higher than the UK average but lower than the BAME proportion of residents in Manchester which stands at approximately one third (CoDE, 2013).

This is typical of the demographic background of uptake of many health-related intervention programmes, especially those that are novel (Chiu, 2008). It was a concern held by some of the commissioners who responded that the programme might disproportionately reach only women from certain, more privileged backgrounds, rather than being a programme that could be targeted at more deprived communities who historically have been in need of greater investment during the perinatal period (Melhuish & Hall (2007). This common issue with recruitment can also be problematic as it can skew the findings of impact of different programme outcomes such as infant feeding decisions, as older and more educated mothers have an increased likelihood of breastfeeding for longer (McAndrew et al, 2012) [which is discussed in the next section]. However, it should be noted that women from more deprived backgrounds who did access the programme experienced as positive outcomes from the service, even if participation or access rates were lower. This should not prevent such a programme from being delivered in more deprived communities but further consideration is needed as to how to improve reach.

Understanding why take up of the programme was skewed towards certain groups would be a useful question to ask. Did it need greater awareness? Was it viewed as suitable? Or might aspects such as needing to use a mobile phone affect take up? Poverty can be a barrier to mobile phone use in interventions due to issues with data and connection (Thornloe et al, 2020). Further research is needed. Another issue may have been accessibility through language. The programme was rapidly designed in response to need due to the COVID-19 pandemic. Based on this and due to the relatively small scale of the intervention, 'officially' support was only available through the English language. This was raised as a possible limitation by commissioners in appealing to a diverse community where many languages may be spoken, and has been highlighted as a potential barrier in other app based health research (Hughson et al, 2018).

However, from another perspective, it is often older and more educated mothers who face a greater struggle with adapting to new motherhood and risk of postnatal depression. It has been hypothesised that greater expectations, changes and assumption that they are able to cope well increases feelings of shock, regret and anxiety (Hannan, 2016). Indeed, many older mothers find the unpredictable and intense behaviour of newborns particularly more

challenging when compared to younger mothers (Arnott & Brown, 2013). Older mothers are also at a greater risk of pelvic floor and birth complications (Rahmanou et al, 2016). Not all mothers who are in need of support interventions are vulnerable in terms of poverty, low education or maternal age.

5.2. Impact upon infant feeding experiences

Considering the impact of the programme upon the core elements of infant feeding, wellbeing, and pelvic health, clear benefits were seen for mothers. Taking infant feeding first, very high levels of breastfeeding were seen across the cohort. Almost 90% of those who provided data in the first week were breastfeeding, with 74% doing so exclusively. At eight weeks 80% were still breastfeeding, with two thirds doing so exclusively. These figures are much higher than population level rates for breastfeeding. The last UK wide infant feeding survey which was conducted in 2010 found that although 81% of women initiated breastfeeding at birth, fewer than half of babies were exclusively breastfed by the end of the first week. At six weeks 55% of babies were breastfed but just 23% exclusively (McAndrews et al, 2012). Comparing this to locally collected data (which is often more comprehensive as does not rely on women participating in research but rather data collected by the Trust), initiation rates across GMEC are approximately 68% with 59% giving any breastmilk at all at around 6 – 8 weeks.

These significantly higher rates could be occurring for two reasons. It is possible that women who are more motivated to take care of their health, interested in perinatal support or just generally more aware and able to access services made up a greater percentage of the Peppy cohort than average. As noted, mothers in the programme were older and with a higher level of education than average. Older age and higher education are both significantly associated with a longer breastfeeding duration (McAndrew et al, 2010) and therefore higher breastfeeding rates than average could simply be about who chose to participate in Peppy and provide data.

However, this is not the full picture. First, women who participated in the Peppy baby programme had even higher levels of breastfeeding that the population averages even

when accounting for their background. But more importantly was the contextual data reported around infant feeding. Almost all women reported that they felt more knowledgeable and confident about breastfeeding and more able to spot signs of something being wrong. These are key factors associated with continued breastfeeding and their absence are reasons why even very motivated, older women with a higher level of education frequently stop breastfeeding before they are ready (Brown, 2021).

Exploring how aspects of infant feeding support within Peppy may have supported women to breastfeed for longer, many of them match closely to what established research has identified as the core components of high-quality breastfeeding support. The support was given by those with sufficient training, was consistent, prompt and was delivered continuously from the late antenatal period through the early postnatal weeks (McFadden et al, 2017). Importantly it covered both practical and emotional support which are known to work in tandem to enable mothers to breastfeed for longer (McFadden et al, 2019). In both the surveys and interviews mothers felt that they were being listened to and supported as well as receiving trusted and accurate information; something which is increasingly recognised as a critical part of breastfeeding support (Myers et al, 2021).

In addition, group chats and live sessions enabled mothers to feel part of a supportive community of other women who were breastfeeding. Again, this is an integral part of continued breastfeeding, particularly amongst mothers who may not have a supportive family or community at home. Connection with other women, reassurance about normal baby behaviour, and normalising of breastfeeding all help women to breastfeed for longer (Brown, Raynor & Lee, 2011; Regan & Brown, 2019). Overall, it is unsurprising that over half of women in the surveys felt that the support they received through Peppy helped them to breastfeed for longer.

A further important aspect was the accessibility to referral to specialist support when needed. In the interviews, tongue tie referrals were relatively common, with two mothers bringing up the need for additional support. Inefficient referral pathways for specialist support during the perinatal period are a significant issue in the UK, either through a lack of clear service provision or misconceptions amongst some health professionals as to the need.

Tongue tie referral in particular has been highlighted as a 'postcode lottery' (Fox et al, 2016). Complications such as tongue tie are time critical, with delay to further support increasing maternal pain, infant feeding difficulties and ultimately breastfeeding cessation (Donati-Bourne et al, 2015).

Although we have considerable research around what works in enabling breastfeeding, investment into providing high quality, intensive and consistent breastfeeding support is patchy across the UK (Grant et al, 2018), with many services having received cuts in recent years which has led in part to women seeking out support from informal sources such as social media groups (Morse & Brown, 2021). COVID-19 has exacerbated this issue, with many women felt that breastfeeding support during this time was reduced in quantity or quality (Brown & Shenker, 2020). With Peppy, mothers emphasised how easy the app was to use and how timely and responsive the Peppy practitioners were in providing support. Practitioners were trusted, reducing the likelihood of mothers 'googling' for an answer, which has been shown to commonly lead to inaccurate information (Castro-Blanco et al, 2020).

This speed is important. Newborn breastfed infants feed frequently due to the easy digestion of breastmilk and small stomach. Issues with breastfeeding such as pain, a baby not latching or concerns about milk supply can be urgent. Parents often quickly turn to formula milk, even if they see it as just short-term solution, because they are worried about their baby. However, this can exacerbate feeding difficulties as it may impact negatively upon breastmilk supply or an infant might prefer the ease at which they can feed from a bottle (Wagner et al, 2013). Parents could of course contact their midwife or health visitor with feeding concerns. However, workload pressures may mean a delay in response, or parents may worry about contacting their health professional with 'silly' or 'small' issues (Hoddinott, Britton & Pill, 2010). In the interviews mothers talked about how reassuring it was to be able to contact someone with any concern, when they might have thought twice about contacting their health professionals.

Indeed, a number of interventions have considered how text or app-based delivery may support breastfeeding. Various interventions ranging from as little as one automated text a

week (Gallegos et al, 2014) to individualised, responsive two-way texting (Harari et al, 2018) increases breastfeeding duration particularly in relation to exclusivity. This format of support has been show to be effective in delivering practical and social / emotional support (Martinez – Brockman, 2020) and is associated with an increase in maternal confidence and motivation to persevere through issues (Demirci et al, 2020). Notably, duration is important with one study finding an increase in frequency of texts between 4 to 6 weeks postpartum with mothers wanting support to continue past 8 weeks - a finding echoed in our data here (Demirci et al, 2020).

Importantly, infant feeding support also encompassed support with bottle feeding and mixed feeding. Increasingly women are reporting that they feel that there is little support for moving to bottle feeding or combining breast and formula feeding (Appleton et al, 2018). Indeed, in one recent survey of mothers in the UK who used formula milk, over half lacked confidence to some extent around choosing infant milks, preparing feeds and how much to give (Brown et al, 2020). This can exacerbate feelings of shame or guilt amongst mothers who are choosing or feeling that they need to use formula milk, which can significantly affect maternal mental health (Fallon et al, 2017). However, Peppy practitioners were sensitive and skilled in also supporting bottle feeding; almost all mothers who bottle fed reported feeling more confident and knowledgeable as a result of the support given.

5.3. Impact upon mental health

Considering the impact upon maternal mental health, both survey and interview data highlighted how valued and beneficial the programme was perceived by new mothers. It helped mothers more broadly both in their adaptation to the common stressors of new motherhood and when experiencing more complex mental health issues. This impact was attributed to practical information given, the development of a trusting relationship with the Peppy practitioner, a feeling of community with other mothers, and a referral pathway for specialist support if needed.

Starting with the survey data, mothers completed a copy of the Short Warwick-Edinburgh Mental Wellbeing Scale at enrolment and again at the end of the programme. The change in

the percentage of mothers who gave responses indicative of possible depression was stark; antenatally one third of mothers were classed as having possible depression but at eight weeks this was just 10% - a decrease of two thirds. Research that has examined how symptoms of depression and anxiety change between the late antenatal and postpartum period often indicate either stability or an increase (Anniverno et al, 2013). Therefore, a sharp decline is particularly significant, especially as it falls below population estimates of around 20% of women experiencing raised levels of depression and anxiety in the postpartum period (Russell et al, 2017).

This is especially notable given the timing of the programme through COVID-19. Numerous studies have now been published highlighting increased rates of postnatal and anxiety amongst new mothers during lockdown (Fallon et al, 2021; Perzow et al, 2021; Davenport et al, 2020). It is unsurprising rates have increased. Many mothers have felt isolated from family, peers and health professionals. They report feeling unable to discuss mental health issues over the phone with a health professional, feeling awkward and having a lack of connection (Babies in Lockdown report 2020). The opportunity to connect and chat with other mothers with babies of the same age was also important to women, particularly in helping them feel reassured that their baby and their own feelings were 'normal', especially when they have others telling them that something is wrong or unusual (Harries & Brown, 2017).

A number of different aspects of the programme were identified by mothers as helping support their mental health. As with infant feeding support, the close connection and relationship with the Peppy practitioner helped mothers to feel that they were being listened to. Sometimes just someone responding and listening made all the difference to the mother. Indeed, research has shown that when conducted well, 'listening visits' for postnatal depression where a health professional simply talks and supports a new mother can have a significant protective effect for mental health (McCabe et al, 2021). A core part of this is consistency and the development of a trusting relationship between mother and listener – something identified as so valuable by Peppy participants (Shakespeare, Blake & Garcia, 2006).

The format of a number of different elements of the programme promoted this. In the interviews mothers frequently commented that being able to just pick up a phone and text, or join a live session with their camera off helped them make that connection when they were feeling low. They didn't need to worry about formulating a sentence or their appearance. Text messaging has been shown to help reduce symptoms of depression and anxiety in new mothers in a number of studies (Chan et al, 2019; Shorey et al, 2019). Providing support and screening via such formats is perceived as accessible and convenient especially in the postnatal period when face to face or scheduled appointments may feel more challenging (Broom et al, 2015). Notably the proactive nature of Peppy practitioners checking in via text with mothers (rather than mothers always reaching out for support) likely played a role. In a study in the USA, postnatal women found regular texts about their mental health and wellbeing 'uplifting' and like someone cared about how they felt (La Porte et al, 2019).

Finally, the concept of how different elements of the programme worked together was raised in the issues. We know that breastfeeding and mental health are closely tied (Brown, 2018). When breastfeeding is going well it can be protective of maternal mental health but complications and stopping before she is ready can be a trigger of symptoms of postnatal depression. In particular women who feel they have to stop due to pain, complications or a lack of professional support are at increased risk of postnatal depression and grief (Brown, Rance & Bennett, 2016; Brown, 2019). The support received for breastfeeding from Peppy, especially when complications arose was also felt to protect maternal mental health and shows the importance of a connected programme that targets wellbeing across the postnatal period.

5.4. Impact upon pelvic health

Fewer mothers overall utilised pelvic health support through Peppy including being less likely to chat about it to their Peppy practitioner or access specialist sessions. Potentially this could be due to women feeling that they did not need that form of support but when asked about their symptoms over a third of women reported having issues with urinary leakage or

a fear of having sex, which is in line with similar proportions in other studies (Hay-Smith et al, 2008; Dasiakn et al, 2020).

One issue was that some of the mothers appeared not to be aware of pelvic floor support in the programme, or did not consider it something they might have needed postnatally. This fits with previous research that often women don't know about the importance of pelvic floor support until it's too late (Buurman et al, 2013). However, when they did access support it was highly rated. Given the growing evidence that pelvic floor training during pregnancy (and after birth postnatally) can help avoid or reduce pelvic floor complications (Boyle et al, 2014), and time pressures on midwives meaning this topic isn't always covered in depth (Terry et al, 2020), programmes such as Peppy could work more proactively in earlier pregnancy to communicate key information. It is possible that starting the Peppy programme at 36 weeks is too close to the birth for mothers to be fully thinking about techniques such as pelvic floor exercises.

It was notable that mothers didn't appear to chat to their Peppy practitioner so often about pelvic floor issues. It could be that the need was not there but given the established literature that women can feel embarrassed or ashamed to bring up issues (Van der Woude et al, 2015), perhaps it is something the programme could work towards helping solve. Proactive information shared from practitioners may help ease how mothers feel, and introduce the topic for those who are less aware or believe it is something they simply have to put up with (Buurman et al, 2013).

5.5. Impact on parenting confidence.

Finally, in terms of broader parenting confidence around caring for their baby, almost all mothers reported that taking part in the Peppy programme helped them feel more confident and relaxed, whilst also feeling less anxious. This was echoed in the interviews with mothers talking broadly about how different elements of the programme just helped them feel reassured that they were doing a 'good job'. Again, it would be difficult to disentangle this confidence from experiences with infant feeding and mental health – mothers who feel more confident with breastfeeding and feeding their baby, or who have

better postnatal mental health, are also more likely to feel more confident around caring for their baby (Leahy-Warren et al, 2012).

As with infant feeding and mental health support it was clear that different elements of the programme worked together in combination to support maternal confidence. Rapid support via text was raised again, as was the close supportive relationship with the Peppy practitioner. Mothers benefitted from being able to engage with and learn from other mothers, particularly around seeing what was normal and common for others at the same stage of motherhood. Realising that others were struggling with feeling unsure, or with changes to their relationship was reassuring. Indeed, growing research is highlighting how many online groups for new parents are seen to improve confidence through reassurance around what is 'normal' (Lupton, 2016; Regan & Brown, 2019).

5.6. Differences in experience between ethnic groups

Within the analysis we wanted to explore whether the Peppy programme worked effectively for mothers from different ethnic groups. Due to issues with incomplete survey data our analysis was not as in depth as we intended. We had to group all mothers from BAME populations together and although this allowed for comparison from a numerical perspective, we recognise that it is a reductionist approach which ignores significant differences between different population groups. Nonetheless, this allowed us to start to explore whether the programme was meeting the needs of women from across different groups. This is important because established research has highlighted that women from BAME groups in the research are at greater risk of complications around birth and the perinatal period (Knight et al, 2020) yet often do not access perinatal services to the same level as White women. This has been attributed to difficulty accessing services, a lack of cultural sensitivity, overt and covert issues of racism and a perceived lack of relevance to individual needs (Chitongo et al, 2021; Smith et al, 2019; Germain et al, 2020).

It appears that overall, the Peppy programme met the needs of mothers across ethnic groups. Around one third of mothers in the interviews were from BAME backgrounds, with no difference seen in experience when contrasted to those from White backgrounds.

Looking at survey data, impact of the programme appeared similar across both groups although there were a number of notable differences to highlight.

First, breastfeeding rates in terms of giving any breastmilk at all were higher amongst BAME mothers. As noted in the results, during the first week, 100% of BAME mothers who provided data were giving any breastmilk at all compared to 89.9% of White mothers. At eight weeks 93.9% of BAME mothers were giving any breastmilk compared to 82.7% of White mothers. Given not all mothers responded to infant feeding questions, it could be predicted that there might be a slightly lower proportion of breastfeeding across the whole sample, as we know that stopping breastfeeding can be associated with feelings of grief, guilt and shame, which might reduce likelihood of response (Brown, 2019). As above, maternal education, age and motivation could have affected this but the key element for comparison is the difference between ethnic groups.

Although in the UK women from BAME populations do have higher breastfeeding initiation and continuation rates (McAndrews et al, 2012), BAME women in the Peppy programme have much higher rates again. This may be due to their perceptions of breastfeeding support offered. Although the sample size was small, women from BAME groups rated the impact of Peppy upon their breastfeeding experience more positively than women from White groups, with all who responded viewing Peppy as helping them feel more knowledgeable, confident, and able to spot the signs of something being wrong. Given in recent research women from BAME backgrounds felt they received poorer breastfeeding support during COVID-19 than women from White backgrounds (Brown & Shenker, 2021), this is significant. Whereas research has highlighted that women from BAME backgrounds often don't find breastfeeding support to be culturally relevant or sensitive, or targeted towards and led by White communities (Ingram et al, 2008; Cook et al, 2021), clearly something about the Peppy programme is more broadly supportive across groups.

Likewise, a notable impact was seen for mental health. Whilst a third of mothers from BAME groups were considered at risk of depression at the start, this dropped to 21% at the end of the programme. Although a larger decrease was seen for women from White backgrounds in that category, it was notable that a significant shift was seen across the sample into the

high wellbeing group with over a quarter of BAME mothers categorised as this at the end of the programme. Conversely, just 11% of women from White backgrounds were. Although this again could be affected by small numbers and potential response bias, any intervention that potentially supports the mental health of BAME women postnatally is of value. Postnatal mental health complications are more common amongst BAME groups in the UK (Khan, 2021), in part due to a lack of tailored support services alongside the systemic issues around racism and bias discussed previously (Vahdaninia et al, 2020).

Again, understanding why and how Peppy is working so well for mothers from BAME communities is important. Reflecting on other aspects of the evaluation, those who responded from BAME backgrounds rated Peppy a little more positively than women from White backgrounds for impact on parenting confidence and anxiety . Notably over two thirds of those from BAME groups reported a reduction in contact with health visitors (compared to a third of women from White backgrounds), yet were also more likely to be encouraged to contact a health visitor or midwife by a Peppy practitioner. Potentially the programme is working in an effective way to help mothers from BAME backgrounds communicate about concerns (i.e. via text to a trusted practitioner) but also increasing accessibility where needed. Given the discussion above around a lack of cultural sensitivity, acceptance and accessibility issues for BAME women in perinatal services, the format of Peppy may help overcome some of this. It would be interesting to conduct a more in depth analysis of this across a wider population.

5.7. Impact and integration into local services

A core element of the evaluation was to explore how it fitted into existing local service provision in terms of integration and how support from Peppy might reduce pressure on other services. Overall, mothers were almost unanimous in feeling it complemented existing services and very much valued having additional avenues of support. Women adapted to the innovation with little friction and welcomed the flexibility, availability, and every day of the support available. Indeed, having this additional support was considered by many as helping to support breastfeeding and positive mental health. It also helped them feel more

prepared to make the most of other services such as the 6-week GP check, enabling them to get the most out of their care in an efficient and effective way.

The Peppy programme was viewed as positive overall across most responses from local health professionals, although some concerns were held. It also appeared to have a positive effect in reducing workloads of healthcare professionals, but this effect was inconsistent and probably related to limited total numbers of caseloads recruited to the programme. Healthcare professionals saw benefits in mothers being able to access an additional level of support but perceived in the context of high workloads that the effect for them as a professional was minimal, as new demand would quickly fill any space created. Some reserved judgement on the programme wanting instead to see it operate at scale. From mothers responses it was clear that they were reducing contact with midwives and health visitors in particular, with over 40% of mothers reporting a reduction for contacts. However, a larger roll out would be needed for an individual health professional to see the benefit.

To fully understand the impact of the programme, not only would a broader rollout be needed, but a more complex analysis of impact on services and subsequent savings be conducted. This was an area of particular interest for the commissioners. With infant and maternal health, the success of any intervention can be measured both in terms of what we do *and* don't see. For example, support around mental health and infant feeding decreases the likelihood of mothers needing to go on to access more complex care. An analysis of how increasing breastfeeding rates in the UK to just 45% of mothers exclusively breastfeeding for 4 months estimated a reduction in 9201 fewer babies admitted to hospital and 42,090 fewer GP consultations for gastroenteritis, respiratory and ear infections, saving over £40 million in NHS costs for these illnesses alone – the true cost savings of increasing breastfeeding rates being in excess of one billion pounds per year. (Renfrew et al, 2012). Likewise, it has been estimated that perinatal depression, anxiety and psychosis carry a long-term cost to society of around £8.1 billion each year (Bauer et al, 2014).

However, as the Royal College of Midwives 'Pressure points' report (RCM, 2014) and the National Maternity Review (2016) Better Births strategy both highlight, postnatal care in the UK is currently underfunded, causing issues particularly around mental health and infant

feeding. A programme like Peppy clearly works *in addition* rather than *instead of* existing services. This is also important in terms of staff concerns around the security of their roles. Some were fearful of being replaced by the innovation. Reassurance is needed in terms of this adding to services delivered and not placing them at risk.

Service provision demands are increasing across all healthcare settings and set to worsen as vacancy rates rise in all healthcare professions thus limiting the ability of organisations to respond to demands. Alongside underfunding of postnatal services, there is a particular crisis in midwifery and health visiting regarding staff overload and burnout (Cull et al, 2020). A programme such as Peppy is as much about protecting the workforce as it is new parents and the benefits (rather than perceived threat) to staff must be made clear. We know that for innovation in health systems to be successful it must have stakeholder support and be seen to be effective. Innovations that have clear unambiguous advantages in effectiveness are more easily adopted and implemented, but if potential users see no advantage, or threat, they will not consider the innovation further (Greenhalgh et al, 2004: 594).

Making changes in service provision can be challenging, especially when a new way of working is introduced. Changes to working practices, the rise of new technologies and changing relationships all present issues to be carefully managed (Plsek and Greenhalgh, 2001). It can be especially difficult in times of 'chaos' such as the environment caused by the COVID-19 pandemic (Marlow et al, 2020). There is no one 'correct way' of managing this change and what works in one situation may not work in another (Hannigan and Coffey, 2011). Attention needs to be paid to the process of integration into existing systems as much as to the new service (Greenhalgh et al, 2004).

There are some common features of innovation that appear to be linked with successful adoption (Greenhalgh et al, 2004). These include that the innovation is seen to be effective, fits with existing ways of practice and needs, is simple to use, can be experimented with to improve fit, benefits are visible to users and can be modified or adapted to suit the context of use. If there is uncertainty or risk to individuals or lack of relevance to work performance, then this reduces adoption. Last, knowledge on the innovation needs to be easily

transferred between settings and training and back-up support available to enable easy adoption.

In terms of process of integration, there are a number of factors that positively influence implementation of new services in health (Nolte, 2018):

- Leadership and management that support and commit to change
- Early involvement of stakeholders especially staff and people using the services.
- Sustainable resources, including funding, staff, infrastructure and time.
- Effective communication.
- Adaptation to the local context.
- Monitoring and timely feedback about progress.
- Evaluation and demonstration of the (cost-)effectiveness and health benefits.

Throughout the introduction and delivery of the programme, these aspects were all considered by the Peppy team and NHS Trust with regular meetings for staff and stakeholders. These meetings are likely to have in part influenced positive views of the service amongst health professionals, and indeed mothers through smooth delivery of the programme. However, potentially communication around the programme not being a replacement of people's roles may not have reached all of those working on the ground to support mothers.

One connected issue to this was also the envy, or in some cases jealousy or resentment, from health professionals of Peppy practitioners. The practitioners were viewed as having more time to spend with individual women, to be able to connect with them personally via text and video call and to be able to focus on caring for women. Many professionals 'joked' that they would prefer to have such a role to their current one. Returning here to the issue of burnout in midwifery and health visiting services (Cull et al, 2020), a common challenge for health professionals is the volume of paperwork and legislation that they must follow, which many perceive prevents them from providing the level of care and forming the relationship they would like with women. This may be a case of not fully understanding Peppy practitioners roles and intensity, or perceiving the 'grass as greener' but tensions

between different roles in maternity care such as between midwives and doulas are already common (Lucas & Wright, 2019). Fuller conversations are needed before moving forward.

5.8. Improving the programme

In terms of improving the programme going forward, most suggestions made by mothers were positive. Women wanted more of the programme: more content, more opportunities and for a longer duration of time. Although the programme covers the challenging first weeks of adapting to new parenthood there are of course further challenges in later stages as parents return to work or introduce solids to their baby. It is unlikely that such an intense service is needed but parents do find these stages challenging and perceive a lack of support (Spiteri & Xureb, 2012; Cooke et al, 2013). Therefore, potentially the programme could offer this content over specified periods as babies get older. This would certainly be feasible from a service delivery stand point, but would be reliant on commissioning decisions which are of course based on finite resources.

Another core area for improvement was around the inclusion of fathers and partners in the programme. Very few fathers / partners accessed the service. It is unclear whether this is due to a lack of awareness, it not being feasible due to timing, or a perception that the programme was for mothers. Research confirms that fathers find it difficult to engage with programmes typically designed for mothers (Kowlessar et al, 2015; Deave & Johnson, 2008). Brooks and Hodkinson (2020) found that fathers often see postnatal check-ups as being more focused on their partners' needs rather than their own. Qualitative research shows that fathers often feel overlooked by health professionals throughout the perinatal period (Daniels, Arden-Close & Mayers, 2020; Mayers, Hambidge, Bryant & Arden-Close, 2020; Hambidge, Cowell, Arden-Close & Mayers, 2021).

One factor that may represent a barrier for fathers accessing perinatal support surrounds perceptions of masculinity (Hodkinson & Das, 2021). Traditional norms of 'tough guy' and maintaining independence often drive men to find their methods of support than to seek help (Primack et al, 2010). Another barrier relates to how well fathers can access services, given some of the limitations they have around work commitments. Fathers often return to

work earlier than their partners. This is perhaps why further opportunities need to be explored about the use of digital communication and flexibility of services to work around fathers' working hours (Hodkinson & Das, 2021).

Fathers may also fail to engage with postnatal support services because they were simply not aware that might even need support in the first place. This might relate to how fathers' expectations are managed in the antenatal period. Research shows that some fathers had no idea that they might need support for their own mental health (Hambidge et al, 2021) or would need resources to help their partner should she need support (Mayers et al, 2020). If those fathers are better prepared for the possibility of the need for support, they might engage in existing support services more readily.

It is not just mothers who experience challenges in the transition to parenthood and postnatal period. Increasing research is showing that fathers can experience mental health challenges and also need support. One systematic showed that fathers experience increased stress around the time that their new baby is born (Philpott, Leahy-Warren, FitzGerald & Savage, 2017). More specifically, evidence suggests that fathers can experience mental health problems during the perinatal period (Cameron, Sedov & Tomfohr-Madsen, 2016). Some fathers show symptoms of depression following the birth. Whether this can strictly be defined as "postnatal depression" is open to debate, but research suggests that around 10% of new fathers experience depression, compared to less than 5% for males who are not fathers (Paulson & Bazemore, 2010). However, these estimates may be prone to under-reporting, possibly die to perceptions of stigma and masculinity (Stadtlander, 2015). Some evidence suggests that only 3.2% of fathers seek help for their depression (Isacco, Hofscher & Molloy, 2016), compared to 13.6% of mothers (Fonseca, Gorayeb & Canavarro, 2015).

These factors may help influence how the programme could be adapted for fathers and partners. The results showed that fathers' engagement with the Peppy service was low. This might have been partly due to the fact that much of the service was not directly aimed at fathers. Where fathers did engage, this more likely to be with his partner. Fathers were more likely to take part where something was specifically targeted towards them. The fact that this focus was limited aligns with previously stated evidence on how other NHS and

third sector services tend to be maternally focused (Kowlessar et al, 2015; Deave & Johnson, 2008; Brooks and Hodkinson, 2020). Future applications of the Peppy programme should explore extending the content for fathers.

However, additional content is likely to be ineffective if the availability and benefit of that service is not communicated to fathers. Hodkinson and Das (2021) made a number of recommendation about improving paternal support, including better management of fathers' expectations in the antenatal period, including fathers openly rather than silently and marginally, improvements in website and other promotions sources. Training programmes for those who facilitate support should be revised to provide a better understanding of what support fathers may need and the barriers they face in seeking and accepting support.

The results indicated that one father expressed concern that the only event specifically for fathers was scheduled for a single occasion. Given the challenges on a father's time, future programmes could consider a more flexible approach. Among the recommendations suggested by Hodkinson and Das (2021) for fathers' mental health support were that early-years services should offer this at a time that accommodates fathers' patterns of working and caring. Another consideration might be adapting some elements of the programme to be delivered online or through other digital media (such as apps targeted at fathers).

5.9. Limitations of the evaluation

There are a number of limitations to the evaluation. First, it was designed as an evaluation of a service being rapidly integrated into healthcare as a response to the COVID-19 pandemic. Longitudinal data was collected throughout the programme but the design was observational and did not have a comparative group. Setting up a full trial would not have been feasible from a time perspective but also potentially not particularly ethical to ask women to participate in a control arm at a time that many were experiencing increasing stress and isolation during the pandemic. It allowed a rapid, cost-effective analysis which will be of use to the Trust.

This does mean however, as noted earlier in this discussion, that trying to compare outcomes such as breastfeeding or postnatal depression rates is tricky. We can compare them to population norms but know that the mothers who chose to take part in Peppy might represent a more motivated sample. We know that as a cohort they had a higher level of education and age than average, which may have skewed data such as breastfeeding rates. However, as elaborated on earlier, although this may have played a role, we can certainly recognise that the programme improved mothers postnatal experiences, directly supporting them with breastfeeding and more broadly in offering them the support they needed during their transition to motherhood. Also reflecting on data that has highlighted specific breastfeeding and mental health challenges during COVID-19, this raises the question as to what data we would be comparing to. If mothers are thriving during the pandemic, this is an even greater improvement than data comparison might suggest.

There was also an issue with incomplete survey data. For ethical reasons mothers were not required to complete surveys to continue in the programme. This meant that the busyness of life particularly with a new baby may have led to mothers not completing all surveys despite them being relatively short. This made it challenging to conduct cross tabulated analyses (e.g. for service use and ethnicity) but did allow a cautious picture to be explored. Future research may wish to explore the impact of the programme in a larger sample.

5.10. Conclusions

Overall, the Peppy programme was an effective and acceptable means of delivering support to new mothers during the perinatal period. The technology used was accessible and easy to use and was particularly helpful for delivering care during the COVID-19 pandemic and subsequent lockdowns and social distancing.

Different aspects of the programme such as one to one support, group chats and live webinars worked together to provide mothers with a comprehensive and supportive programme of care over a period of 12 weeks. The programme helped mothers to feel more informed, knowledgeable, and confident in caring for their babies, and had a positive impact upon breastfeeding experience, mental health and for some women, pelvic health care.

At the heart of this was the concept of the Peppy practitioner. This one to one, easy to access and consistent care from the same trained individual helped mothers feel like they were receiving individualised care from someone who knew and understood them. The development of a trusting relationship with someone viewed as an expert helped mothers navigate different aspects of the transition to motherhood and caring for their baby.

Both mothers and health professionals viewed the programme positively, feeling it fitted well with existing services. Professionals would welcome its continuation, feeling supported knowing that mothers had another source of support to turn to, particularly with smaller queries. However, many wanted clarification that any future investment in the programme would be alongside and not in place of their current roles.

In terms of improving the programme, all ideas were based around ensuring participants had clear information about all aspects of support available, better inclusion of partners, easing the transition at the end of the programme, and ideally offering the programme for longer to cover other key points such as return to work and introducing solids. However, overall, almost all mothers would recommend the programme to a friend and both mothers and health professionals would like to see the programme continue.

Taken together the findings of the evaluation show that the programme had a positive impact on the physical and emotional wellbeing of mothers. Although there are some limitations with the data as noted, the overwhelming message coming from all stakeholders in this evaluation was that it was valued, accessible and effective. Further exploration into understanding why uptake of the programme was skewed towards older, White mothers with a higher level of education than average would be useful to understand a) whether perceptions of the programme are affecting participation and b) whether any barriers such as mobile phone use exist to participation. However overall, lessons from this evaluation can clearly be applied to further development of the programme and perinatal mental health support more broadly.

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