

1 **Abstract**

2 An uncontrolled study with process evaluation was conducted in three UK community
3 maternity sites to establish the feasibility and acceptability of delivering a novel
4 breastfeeding peer-support intervention informed by Motivational Interviewing (Mam-
5 Kind). Peer-supporters were trained to deliver the Mam-Kind intervention that provided
6 intensive one-to-one peer-support, including: i) antenatal contact ii) face-to-face
7 contact within 48 hours of birth; iii) proactive (peer-supporter led) alternate day contact
8 for 2 weeks after birth, and; iv) mother-led contact for a further 6 weeks. Peer-
9 supporters completed structured diaries and audio recorded face-to-face sessions with
10 mothers. Semi-structured interviews were conducted with a purposive sample of
11 mothers, health professionals, and all peer-supporters. Interview data were analysed
12 thematically to assess intervention acceptability. Audio-recorded peer-support sessions
13 were assessed for intervention fidelity and the use of MI techniques, using the MITI 4.2
14 tool. Eight peer-supporters delivered the Mam-Kind intervention to 70 mothers in three
15 NHS maternity services. Qualitative interviews with mothers (n=28), peer-supporters
16 (n=8), and health professionals (n=12) indicated that the intervention was acceptable,
17 and health professionals felt it could be integrated with existing services. There was
18 high fidelity to intervention content; 93% of intervention objectives were met during
19 sessions. However, peer-supporters reported difficulties in adapting from an expert-by-
20 experience role to a collaborative role. We have established the feasibility and
21 acceptability of providing breastfeeding peer-support using a MI-informed approach.
22 Refinement of the intervention is needed to further develop peer-supporters' skills in
23 providing mother-centred support. The refined intervention should be tested for
24 effectiveness in a randomised controlled trial.

25

26

27 **Key words: breastfeeding, peer-support, pregnancy, infant feeding, motivational**

28 **interviewing, feasibility.**

29

30

31 **Introduction**

32 Randomised controlled trials (RCTs) of breastfeeding peer-support (BFPS)
33 interventions in low and middle-income countries have demonstrated improvements in
34 breastfeeding maintenance, reducing the risk of non-exclusive breastfeeding by up to
35 28% (Jolly, Ingram, Khan, et al., 2012). However, UK-based RCTs of BFPS
36 interventions have not been found to increase breastfeeding continuation rates (Graffy,
37 Taylor, Williams, & Eldridge, 2004; Jolly, Ingram, Freemantle, et al., 2012; Muirhead,
38 Butcher, Rankin, & Munley, 2006; Watt et al., 2009). There are several possible
39 explanations why the UK-based studies of BFPS have shown no effect. These include
40 the use of low intensity interventions (Graffy et al., 2004; Jolly, Ingram, Freemantle, et
41 al., 2012; R. J. McInnes, Love, & Stone, 2000) and a lack of contact with the mother
42 during the first few days after birth (Graffy et al., 2004; Muirhead et al., 2006; Watt et
43 al., 2009), when many women stop breastfeeding (Victora et al., 2016). Some studies
44 reported difficulties in achieving the intended number of contacts, low uptake of the
45 intervention, and low adherence to intervention protocol as possible reasons for lack of
46 effect (Graffy et al., 2004; Jolly, Ingram, Freemantle, et al., 2012; R. J. McInnes et al.,
47 2000; Scott, Pritchard, & Szatkowski, 2016).

48

49 The literature highlights the need for a proactive intensive face-to-face peer support
50 with contact in the antenatal and early post-natal period (*self-citation, removed for peer-*
51 *review*). We therefore used a systematic and user-informed approach to co-develop and
52 characterise a novel Motivational Interviewing (MI) informed peer-support
53 intervention for breastfeeding maintenance, which included increased proactive contact
54 during the early post-natal period (*self-citation, removed for peer-review*). MI is a
55 person-centred counselling approach designed to strengthen internal motivation and

56 promote behaviour change (Miller & Rollnick, 2012). MI may have a role in helping
57 women to continue breastfeeding by increasing their intrinsic motivation to breastfeed
58 and working with any ambivalent feelings they may have (Wilhelm, Flanders Stepan,
59 Hertzog, Callahan Rodehorst, & Gardner, 2006).

60 Several healthcare and public health interventions have integrated MI with peer-support
61 (Abeyapala, Chalmers, & Trute, 2014; Allicock et al., 2013; Heisler et al., 2007; Leanne
62 Kaye MPH, Johnson, Carr, Alick, & Mindy Gellin RNC, 2012). Studies indicate that
63 lay peer-supporters can achieve MI proficiency, but report challenges with the
64 development of skills such as reflective listening (see Table 1) (Allicock et al., 2013;
65 Leanne Kaye MPH et al., 2012). They also find it challenging to change their practice
66 from the expectation of first sharing one's own success stories rather than
67 understanding the needs, goals, and motivations of the participant (Allicock et al.,
68 2013). We took account of these challenges when co-designing the intervention and
69 adjusted the training to concentrate on reflective listening and how to avoid the
70 'righting reflex' (i.e. the desire to fix a situation).

71 In line with MRC guidance (Craig et al., 2008) for developing and testing complex
72 interventions, we aimed to explore the feasibility and acceptability of providing a MI
73 based BFPS intervention to mothers who were considering breastfeeding. Specifically,
74 we were interested in;

- 75 • the extent to which peer-supporters utilised MI techniques in their interactions
76 with the mothers they support
- 77 • uptake, acceptability, and adherence to Mam-Kind by mothers
- 78 • the number and duration of one-to-one contacts with peer-supporters

79 • how mothers transition to independence/other sources of support/community
80 based support at the end of the intervention.

81 • **Key messages**

The Mam-Kind intervention was acceptable and feasible to deliver within NHS maternity services and should be tested for effectiveness in a multi-centre randomised controlled trial.

The feasibility study highlighted the need to strengthen strategies for the recruitment and retention of participants.

Practice challenges associated with integration of MI in an information-rich intervention and variability in peer supporter MI skill acquisition have led to intervention refinements.

82

83 **Methods**

84 *Design*

85 The Mam-Kind study was an uncontrolled multi-site feasibility study with an
86 embedded process evaluation.

87

88 *The Mam-Kind Intervention*

89 The Mam-Kind intervention was user informed, and designed in collaboration with:
90 mothers (n=14), fathers (n=3) peer-supporters (n=15) and health professionals (n=14).

91 The Behaviour Change Wheel (Michie, Atkins, & West, 2014) framework was used as
92 a guide in developing the intervention and specifying the proposed mechanisms for
93 change. This is described in full elsewhere (*self-citation, removed for peer-review*).

94

95 The Mam-Kind intervention was characterised by antenatal face-to-face contact with a
96 peer-supporter, contact at 48 hours after birth, proactive alternate day one-to-one peer-
97 supporter led contact for 2 weeks, and mother led contact between 2 weeks and 6 weeks.
98 In our intervention, peer-supporters were provided with training in MI to equip them
99 with the skills required for MI based interventions (Miller & Rollnick, 2012), to provide
100 high quality, mother centred interactions when supporting mothers in the context of
101 infant feeding (see web appendix for training outline). These skills are described in
102 Table 1. The training also included breastfeeding information and met all local NHS
103 Trust induction policies. The peer-supporters addressed six objectives in their antenatal
104 contact with mothers and five objectives at each of the postnatal time points (see Table
105 3). They received supervision from an expert in MI and a midwife, who provided
106 breastfeeding advice.

107

108 Table 1: MI skills used by the peer-supporters (Miller WR, 2012)

109

110 **Participants**

111 *Site selection*

112 The study was conducted in three sites in Wales and England. These sites were chosen
113 because they served areas that had high levels of socio-economic deprivation (as
114 defined by English and Welsh Indices of Multiple Deprivation) and low levels of
115 community breastfeeding rates (<70% breastfeeding initiation). All mothers in these
116 areas received usual midwifery and health-visiting care, including community based
117 antenatal and postnatal care.

118

119 *Recruitment of mothers*

120 Nineteen community midwives were asked to introduce the study at routine antenatal
121 appointments from 28 weeks gestation onwards to English speaking mothers who were
122 considering breastfeeding. Mothers who were unable to provide written informed
123 consent, unable to use conversational English, who did not plan to breastfeed, had a
124 clinical reason that precluded breastfeeding, or had a planned admission to neonatal
125 unit following birth were excluded from the study. Recruitment took place between
126 September and December 2015.

127

128 *Recruitment and training of peer-supporters*

129 Six peer-supporters were recruited to work in two sites that did not have a pre-existing
130 intensive paid peer-support service. These peer supporters were employed via the
131 university due to the short duration of the study and supervised by a community
132 midwife who facilitated their integration into the NHS setting. In the third site the
133 existing BFPS service was modified and delivered by the two existing paid staff. This
134 allowed us to test the feasibility of implementing the intervention within an existing
135 service, which required a shift in the way of working to deliver Mam-Kind as specified
136 in the context of a research study.

137

138 **Data collection**

139 *Peer-supporter in-field data collection*

140 To obtain data on uptake and adherence, the peer-supporters completed a diary
141 documenting their contacts with the mothers they were supporting. The diaries provided
142 data on the timing, location, and type of contact (telephone call, text or face-to-face),
143 including who initiated the contact (see Table 3).

144

145 Peer-supporters were asked to audio record all of their face-to-face sessions with
146 mothers who had consented to being recorded. A purposive sample of these audio-
147 recordings were chosen to assess content fidelity to ensure full representation of all key
148 intervention time points (antenatal, 48 hours, 2-13 days and 2 -6 weeks). An additional
149 two sessions per peer supporter were analysed to assess MI fidelity at the beginning
150 and end of the intervention period.

151

152 *Quantitative data*

153 Baseline data included socio-demographic variables, infant feeding intentions, and
154 maternal health and well-being (Edinburgh postnatal depression scale, Generalised
155 anxiety disorder scale (GAD-2) and EQ-5D-5L).

- 156 • Telephone follow-up at 10-days post-birth, women were asked about skin-to-
157 skin contact, feeding method and breastfeeding self-efficacy (Breastfeeding
158 self-efficacy scale short form), support received, and sources of influence
159 (comprehensive list of sources of support/influence rated on a scale of 0 to 4).
- 160 • Telephone follow-up at 8-10 weeks post-birth collected data relating to the
161 duration of breastfeeding, breastfeeding attitudes, use of healthcare
162 professionals or groups, maternal and child health and well-being.
- 163 • A telephone 10-day minimum data-set questionnaire was completed at 8-10
164 weeks for participants who could not be contacted by telephone at 10 days.

165

166 *Qualitative interviews*

167 All eight peer-supporters, 12 health professionals (two midwives [one midwife who
168 was a high recruiter into the study and one midwife who was a low recruiter, as defined
169 by the supervising midwife], one health visitor and one service manager from each of

170 the three sites, and 29 mothers took part in semi-structured interviews to explore their
171 experiences of the Mam-Kind intervention. Of the 70 women who took part in the
172 study, 67 consented to take part in the interviews when they enrolled for the study.
173 From these, mothers who were invited for an interview were purposively sampled based
174 on four factors: study site; allocated peer-supporter; breastfeeding continuation status
175 at 10 days, and; level of engagement with the intervention determined by peer-supporter
176 diary records. All of those who were invited to an interview agreed to take part. The
177 semi-structured interviews were conducted via telephone by two experienced
178 qualitative researchers (LC and LM). The two qualitative researchers on this study
179 came from either a psychology or midwifery background. Both researchers were aware
180 that their backgrounds may influence their interpretation of the data especially the
181 researcher with a midwifery background, however the use of double coding aimed to
182 mitigate this potential bias. Interviews were facilitated by a topic guide, which included
183 questions on recruitment, intervention delivery and acceptability, and social support.
184 The interviews were audio-recorded and transcribed verbatim by a professional
185 transcription company. The duration of interviews ranged between 15 minutes to 75
186 minutes.

187

188 **Data analysis**

189 Descriptive summary statistics (frequencies/percentages and means/standard
190 deviations) were tabulated for the Mam-Kind diary data and the questionnaire data.

191

192 Interviews were analysed using inductive thematic analysis (Clarke & Braun, 2014).
193 An initial coding framework for the interview data was developed based on three
194 interviews with participants. The themes were further updated and refined throughout

195 the analysis until all themes were deemed to have been adequately captured. The coding
196 framework was then applied to all the interviews and independently coded by two
197 researchers using NVivo 10. The team discussed any new analytic themes that emerged;
198 these were added to the framework and previous transcripts were re-coded accordingly
199 until all the data had been coded.

200

201 One researcher used content analysis to analyse audio recordings of peer-support
202 sessions (Clarke & Braun, 2014), facilitated by NVivo 10. The coding framework
203 corresponded to time-specific objectives, as described in the intervention content guide
204 (see Table 3, first 3 rows under respective time points). Following the content coding,
205 session content was mapped against the objectives in the intervention content guide to
206 produce a matrix that indicated whether objectives had been met, and whether the
207 content of the session was appropriate to the stage of the intervention.

208

209 Fidelity to MI was assessed using the MITI 4.2 (Moyers, Rowell, Manuel, Ernst, &
210 Houck, 2016). The MITI 4.2 rating tool comprises a number of count and score
211 variables. This measure was developed and validated to measure MI practitioner's
212 skills. The MITI 4.2 requires the coder to identify the behaviour change focus within
213 the sessions (i.e. breastfeeding) and to assign ratings in relation to whether talk is about
214 the identified behaviour change. 'Global' ratings are assigned to each session and are
215 divided into 1.) technical: 'cultivating change talk', 'softening sustain talk', and 2.)
216 relational: 'partnership', 'empathy' (see Table 1 for description of MI skills). These
217 items are scored on a scale from one to five, with five indicating more skilful practice.
218 Behaviour count scores are also provided. While MITI4.2. offers some expert-led
219 guidance regarding competency thresholds, we did not expect peer supporters to reach

220 these thresholds. Rather the assessments were used to understand the extent to which
221 the peer-supporters were able to develop and use MI in their contacts with the mothers.

222

223 We modified our use of the MITI 4.2. Usually the MITI 4.2 MI skills adherence
224 assessment uses a randomly selected continuous 20-minute segment of recording for
225 coding. However, during intervention sessions peer-supporters shifted focus across a
226 number of different topic areas, which meant that there was not necessarily a continuous
227 20-minute section in which they talked about ‘feeding baby’, the identified target
228 behaviour. Therefore, following the content analysis of the audio recordings, sections
229 of audio files where the conversation focused on relevant ‘feeding baby’, content was
230 identified, and the MITI 4.2 was applied to a 20 minute collection of these segments.

231

232 **Ethical considerations**

233 Ethical approval for the study was granted by the NHS Health Research Authority,
234 Wales REC 3 Panel, in June 2015 (Reference: 15/WA/0149). All participants provided
235 written informed consent. Health professionals provided audio-recorded verbal consent
236 prior to interview and consent to use anonymised quotations in publications.

237

238 **Results**

239 *Participant Recruitment*

240 Of the 292 mothers who were assessed and met the eligibility criteria for the study,
241 39% (n=115) expressed an interest in taking part (Figure 1). The expressions of
242 interested that were collected by the introducing community midwives ranged from 1
243 to 18. The majority of mothers (94%, n=108) who expressed an interest were
244 successfully contacted by the study team. Of those contacted by the study team, 35%

245 (n=38) declined to participate. Seventy-eight out of the 149 (52%) face-to-face peer-
246 support sessions were audio recorded (range 3 - 26 sessions per peer-supporter), and a
247 sample of 21 were used in the analysis based on purposive sampling. The variation in
248 number of audio recorded sessions per peer-supporter was due to a combination of
249 factors. Some peer-supporters felt less comfortable about recording their sessions, in
250 some cases the circumstances meant it was inappropriate for the session to be recorded
251 or there were time constraints that made a recording less feasible.

252

253 Figure 1: Recruitment Flow diagram

254

255

256 *EDD=Expected delivery date*

257

258 *Peer-supporter recruitment*

259 We recruited seven peer-supporters who had previously successfully completed
260 accredited BFPS training, and one peer-supporter was new to the role who was provided
261 with BFPS training as part of the study. Five of the eight peer-supports lived in the
262 geographical area in which they were supporting participants, two lived within a 10-
263 mile radius, and one lived approximately 20 miles away. The peer-supporters ranged in
264 age from 30 to 44 years, and were all of white British origin.

265

266 *Follow-up data collection*

267 Baseline data were collected for 99% of participants (n=69). Data collection at 10
268 days follow-up by telephone was successful for 63% (n=44) of participants. Sixty
269 four per cent of participants (n=45) completed the 8-10 week telephone follow-up.
270 The interviews indicated that overall, telephone data collection at 10 days postnatal

271 was acceptable to participants, although some who had a longer stay in hospital or a
272 difficult birth expressed that 10 days felt too early to be contacted. At 8 weeks, 51.1%
273 of participants followed up were breastfeeding, with 42.2% exclusively breastfeeding.

274

275 *Uptake of the Mam-Kind intervention*

276 All mothers were offered an antenatal contact with their peer-supporter (face-to-face or
277 by telephone). The offer of antenatal contact was accepted by 66% (n=35) of
278 primiparous and 72% (n=18) of multiparous mothers. The majority of mothers engaged
279 with the intervention: 67% (n=35) of primiparous, and 68% (n=17) of multiparous
280 mothers accepted at least one antenatal and one postnatal contact. Mothers who
281 engaged with the intervention reciprocated contact from peer-supporters either by
282 texting back, answering the telephone call, or meeting the peer-supporter face-to-face.

283

284 *Contact within 48 hours of birth*

285 Seventy-three per cent of mothers (n=51) received a contact within 48 hours of birth.
286 Peer-supporters reported that the main reason for not achieving any form of contact
287 within 48 hours of birth was a lack of notification of the baby's birth by either the
288 mother or the midwife. The main reason for limited face-to-face contact at hospital sites
289 was that it was not possible for peer-supporters to acquire the required approval to work
290 on NHS sites within the time available for this study. Any delay could potentially have
291 a detrimental effect on mothers' subsequent engagement with their peer-supporter and
292 motivation to continue with breastfeeding:

293

294 *"I had the sticker on the front of the folder, but nobody (from the hospital) had actually*
295 *rung (the peer-supporter). And then it was, I think it was two, two or three days after*

296 *he'd been born, because I just completely forget really to be honest. Yeah, so then she*
297 *didn't really get a chance to come up, but then we'd switched over (onto infant formula)*
298 *in the hospital."* [Mother, PID 201]

299

300 Peer-supporters suggested that they could have visited the wards to introduce
301 themselves to the staff, engage with mothers, and increase awareness of the
302 intervention. In site 3, mothers received peer-support on the ward from a different peer-
303 support service as this was the usual care available in that site, and were transferred to
304 the care of the Mam-Kind peer-supporter when they returned home.

305

306 *Mode and timing of contact*

307 Data from the peer-supporter diaries demonstrated that the majority of contacts in sites
308 1 (n= 216, 52%) and 2 (n=373, 73%) were made via mobile phone text message. In site
309 3 the majority of contacts were made via phone call (n=144, 68%) (see Table 2).
310 Mothers reported the text message contacts were especially helpful as they could
311 express their feelings at a time appropriate for them in the knowledge that a peer-
312 supporter would reply to them as soon as they could.

313

314 *M: "I was able to do that, and even writing it down saying "This is what I'm struggling*
315 *with". Makes a big difference with how you're coping with it."* [Mother, PID109]

316

317 Table 2: Method and location of contacts between Mam-kind buddies and participating
318 mothers

319 *missing data due to incomplete data entry at site 3.

320

321 The majority of contacts averaged across all sites were initiated by the peer-supporters
322 (n=269, 74% of contacts), consistent with the requirement for pro-active contact in the
323 Mam-Kind specification. During the interviews health professionals reported that they
324 received positive feedback from mothers about the amount of contact, although some
325 of the mothers expressed that the pro-active contact was too intense for them.

326

327 *“One of the other mums had said it was too much... whereas another mum loved it, and*
328 *just lapped it up, she could have been visited 100 times and would have enjoyed it.”*

329 [Health professional 001]

330

331 *Quality and content of contact*

332 During the interviews, mothers reported that the antenatal contact helped them to feel
333 comfortable with their peer-supporter, discussing personal and sensitive information,
334 and facilitating the peer-supporter-mother relationship.

335

336 *“I think, you see beforehand I would have thought, oh, no it would have been better to*
337 *have a few meetings to get to know her before I could start giving her personal*
338 *information and looking to her for support,, but one meeting before the baby*
339 *came it all seemed to work perfectly.”* [Mother PID 102]

340 During the postnatal period, mothers reported that the peer-supporters provided
341 guidance and signposting to appropriate forms of support on problems such as thrush
342 on the nipple, mastitis or colic.

343

344 *“When I had thrush it was such a nightmare and one day I even phoned her like half*
345 *past 6 in the evening she was there to help me, you know she was always there.”*

346 [Mother, PID 103]

347

348 Participants stated that the peer-supporters pre-empted problems they thought mothers
349 might develop based on what the mothers were telling them, for example strategies
350 around cluster feeding or feeding in public. Some of the mothers reported feeling
351 listened to, and that the peer-supporter helped them to think about their breastfeeding
352 options.

353

354 *“And when you think that somebody can validate your feelings almost, it was like, well*
355 *I, I didn’t feel happy and I wasn’t comfortable, but somebody saying “No actually,*
356 *you’re allowed to feel like this” [Mother, PID 109]*

357

358 Participants reported that the peer-supporters helped to build their confidence, provided
359 reassurance and emotional support.

360

361 *Adherence to intervention content*

362 Content analysis was conducted for 21 peer-support sessions. Findings are presented in
363 Table 3, in which column headings indicate pre-specified objectives from the
364 intervention content guide, organised by time point.

365

366 Overall, peer-supporters met 109 out of 117 total objectives. Ten of the 21 sessions met
367 all objectives and included breastfeeding support that was relevant to the stage of the
368 intervention. Eight sessions did not cover one of the objectives, and five included

369 breastfeeding information that was beyond the scope of the session (time-
370 inappropriate).

371

372 Table 3: Content domain analysis: peer-supporter sessions and objective addressed at
373 time point

374 *MI skills adherence*

375 Sixteen recordings from eight peer-supporters were rated to assess how peer-supporters were
376 able to integrate MI in their conversations about breastfeeding maintenance (see web appendix
377 for inter-coder reliability). For the technical global measures we found a median 2.5 (range 2-
378 4, IQR 2.4-3.5) on a 5-point scale. Peer-supporters achieved higher scores for the softening
379 sustain talk global measure and lower scores for the cultivating change talk global measure.
380 Within the relational global scores, we found a median of 3.0 (range 1-4, IQR 1.5-3.5). Peer-
381 supporters generally had lower partnership scores compared with empathy scores.

382

383 The median ratio of reflective listening statements to questions was 1.2:1 median (range 0:1 -
384 3.5:1, IQR 0.5:1 to 2.25:1). Of the reflective listening statements used, a median of 37% (range
385 0%-75%, IQR 17%-60%) were complex compared with simple. All the peer-supporters
386 demonstrated both MI adherent (behaviours consistent with MI practice) and non-adherent
387 behaviours (behaviours not consistent with MI practice).

388

389 The peer-supporters reported that they found it challenging to use MI in the context of
390 breastfeeding.

391

392 *“Sometimes it felt a little bit uncomfortable, the way sometimes I think MI is worded because*
393 *we’re not proficient at it yet ... I felt a little bit of a pressure on us to use it ... instead of trying*
394 *to focus on what the mum was saying, it’s quite hard to explain really.” [PS1 01]*

395

396 Peer-supporters felt they needed practice to increase proficiency. They also found the concept
397 of focusing on talk about change (change talk) difficult for them, as they felt conflicted in their
398 role and did not want the participants to perceive them as having a feeding preference.

399

400 *“Because then we also were supposed to be supporting people if they’re bottle-feeding, so ...*
401 *and also just empowering mums. And if we’re empowering mums, the change talk might be*
402 *that they do decide to bottle-feed, and that they become happier... So in terms of the training*
403 *and clarity of what was ... what are we listening for, you know...” [PS1 02]*

404

405 The peer-supporters reflected that they wanted to help fix the participant’s issues by giving
406 them information. If a participant needed practical help with breastfeeding the peer-supporters
407 struggled to use MI skills taught to them to provide information or advice in a MI adherent
408 manner.

409

410 *“The main problem with breastfeeding mums is the latch, getting the positioning right and*
411 *once that’s right, the feeding tends to flow. But with that it’s less MI because you need to fix*
412 *it really and give the information.” [PS2 03]*

413

414 Although the peer-supporters did struggle with elements of MI they did express it was
415 beneficial to their practice.

416

417 *“And I think it was, you know ... beneficial then to ... to ... to the way we came across.”[PS 2*
418 *02]*

419

420 *Concluding the Mam-Kind Intervention*

421 Two weeks after birth, peer-supporters were asked to facilitate the transition of support to other
422 community support services such as breastfeeding groups. Some mothers felt they did not
423 receive a graded exit from the intervention, while others did.

424

425 *“Well I don’t know, maybe it could be phased out a bit more. Erm, maybe you know not full on*
426 *support, but just you know have a conversation...”* [Mother, PID 102]

427

428 *“And by six weeks, you’ve figured that (breastfeeding latch and routine) out. I think it’s er,*
429 *it’s a sensible time to do it, any sooner and you’re still a bit lost in the haze.”* [Mother,

430 PID109]

431 Some mothers felt supported by their peer-supporter in attending groups and described this
432 experience as helping them to normalise breastfeeding and also provided some structure to
433 their day.

434

435 *“And I think it was a good place to start feeding in public there because everybody else was*
436 *feeding as well...So it was nice to see other mums feeding and then you wasn’t as anxious to*
437 *do it yourself.”* [Mother, PID 315]

438

439 In some cases, the peer-supporter supported mothers for longer than six weeks, with some
440 mothers reporting that they received contact from their peer-supporter at eight weeks and 15
441 weeks. This was also reflected in the peer-supporters’ Mam-Kind diary data.

442

443 **Discussion**

444 This study established that it is possible to deliver most of Mam-Kind as per the intervention
445 specification, with good levels of intervention uptake and high acceptability to participating
446 mothers. There were some challenges around achieving contact between mothers and peer-
447 supporters at 48 hours post-birth, and improvement in the systems for notifying peer-supporters
448 of birth and enabling contact on the post-natal wards need to be investigated.

449

450 Peer-supporters demonstrated the use of a range of MI adherent behaviours, but also used non-
451 adherent behaviours. Refinement of the training is required to ensure that they are given
452 sufficient support in developing their person-centred communication skills.

453

454 Wide variation in uptake and adherence have been reported in previous RCTs of BFPS
455 interventions, with some describing low uptake and adherence (Muirhead et al., 2006; Watt et
456 al., 2009). Other studies have reported more success with uptake and adherence (Graffy et al.,
457 2004; Jolly, Ingram, Freemantle, et al., 2012), with antenatal contact rates of 80% and postnatal
458 contact rates of 62% respectively. Despite the challenges reported in a number of other studies,
459 our results demonstrate that uptake and engagement with Mam-Kind was high, with 75% of
460 participants having received and reciprocated antenatal and postnatal contacts.

461

462 The majority of mothers were contacted by their Mam-Kind peer-supporter within 48 hours of
463 the birth of their baby. Birth notification is an issue identified in this study and other studies
464 (Hoddinott, Craig, Maclellan, Boyers, & Vale, 2012; Rhona J McInnes & Chambers, 2008).
465 By employing peer-supporters through the existing health services this would allow them
466 access to postnatal wards and potentially allows a peer-supporter to be available 7 days a week
467 on the ward. This would provide participants with support within 24 hours of birth similar to
468 other interventions (Hoddinott et al., 2012), however there would be cost implications attached
469 to this availability.

470

471 The average number of contacts each mother received in the current study was 16, the majority
472 of which were by text (n=207, 64%), although a range of other methods were used. Our
473 qualitative interviews showed that the flexibility in method of contact was valued by mothers,

474 and was feasible for peer-supporters to provide. The peer-supporters, consistent with the
475 requirement for pro-active contact, initiated the majority of contacts. The content analysis
476 demonstrated that pre-specified objectives were met in most peer-support antenatal and
477 postnatal sessions. However, provision of a graded exit from the intervention to help
478 participant's transition to autonomy or to the use of other sources of support (e.g. breastfeeding
479 groups) could be improved.

480

481 MI informed the Mam-Kind intervention, and our fidelity assessment suggests variability
482 among peer supporters in their ability to develop MI skills. About a third of peer-supporters
483 evidenced an ability to listen, affirm, seek collaboration, emphasise autonomy and avoid
484 confrontation. However, there was also evidence of peer supporters trying to persuade mothers
485 (MI non-adherent behaviour) to breastfeed by offering opinions or advice without explicitly
486 reinforcing participants' autonomy. These results are similar to other studies that have assessed
487 MI skills adherence using the MITI (Bennett, Roberts, Vaughan, Gibbins, & Rouse, 2007;
488 Mounsey, Bovbjerg, White, & Gazewood, 2006; Tollison et al., 2008), including one peer-
489 support study (Tollison et al., 2008). In these studies practitioners demonstrated higher levels
490 of skill in relational competencies, such as empathy and collaboration, than the peer-supporters
491 in the Mam-Kind study achieved. However, peer-supporters in the Mam-Kind study
492 demonstrated higher reflections to questions ratios than in previous studies (Mounsey et al.,
493 2006; Tollison et al., 2008).

494

495 We noted two key challenges related to the integration of MI in our intervention. First, peer-
496 supporters provided information in a way that was often not MI-adherent, that is, without
497 supporting mother's autonomy and choice and without tailoring the information to the mother's
498 knowledge and need. Peer supporters developed breastfeeding expertise during training and

499 were enthusiastic to share this in their sessions. They also, at times, shared their own success
500 stories rather than understanding the needs, goals, and motivations of the mother (Allicock et
501 al., 2013). Disclosing personal details has been suggested as part of the peer-supporter's
502 approach, which can inspire trust, dispel stigma, and instill hope (Oh, 2015). Self-disclosure
503 can be consistent with MI, where people have asked for this or permission to share a reflection
504 has been sought by the person providing MI, but peers rarely self-disclose in a manner that is
505 consistent with MI (Oh, 2015). A second challenge we noted was in the peer supporter's ability
506 to ensure the conversation stayed focused on breastfeeding. In some interactions there were
507 many tangential issues that were discussed with long periods of discussion that were not
508 focused on breastfeeding. Focusing is an important phase of MI as it identifies the direction of
509 the conversation in order to cultivate change talk (Miller & Rollnick, 2012). This challenge has
510 been echoed in other research, which has found that it is difficult for practitioners to focus on
511 one risk factor in "hard-to-reach" populations as their clients may have multiple needs
512 (Velasquez et al., 2000). It is self evident that, in order to support mothers regarding
513 breastfeeding maintenance, the conversational focus should be on breastfeeding for a
514 significant period of time in order to make progress. These observations reflect underlying
515 challenges with the professionalization of the peer supporter role and have also led to re-design
516 of key aspects of the Mam-kind intervention.

517

518 *Strengths and limitations*

519 This study included a comprehensive process evaluation of the Mam-Kind intervention using
520 data from qualitative interviews, diaries and audio-recording of intervention delivery, and
521 quantitative data. The combination of data has allowed for a greater understanding of MI and
522 intensive peer-support within the context of breastfeeding as we reliably measured MI fidelity.
523 However, there are some limitations. We only interviewed one woman who disengaged with

524 the intervention resulting in a positive bias in our assessment of acceptability. The recruitment
525 of eligible mothers to the study was lower than anticipated, follow up at 8 weeks was lower
526 than expected, and these issues would need to be addressed in any further study evaluating the
527 effectiveness of the Mam-Kind intervention. In terms of the content analysis the majority of
528 contacts the peer-supporter had with the participants were via phone or text, therefore the
529 content that was coded as missing may have been provided to the mother via another medium
530 other than face-to-face.

531 *Recommendations for refinement of the Mam-Kind intervention*

532 These findings have informed our plans for future research. Given that a proportion of trainees
533 are more receptive to developing MI skills (Berg-Smith, 2014), recruitment of peer-supporters
534 could include an empathy pre-screen to aid candidate selection. Cognitive empathy has been
535 found to account for variance in treatment outcome thought to be of a clinically meaningful
536 effect (Moyers & Miller, 2013). Although it is possible to observe empathic listening during
537 an interview there is no reliable measure to assess this (Moyers & Miller, 2013). The peer-
538 supporter role description could be reframed to allow the peer-supporter to measure their
539 success based on collaboration rather than information giving. The tension between this role
540 and system drivers (e.g. the belief that more knowledge alone is the key to maintaining
541 breastfeeding) for information provision would need to be addressed during training and
542 supervision.

543 In order to aid MI integration, sessions at each of intervention time point (antenatal, postnatal,
544 and ending session) can be structured to facilitate focus and use of skill. This process may help
545 to negate the usage of the MI non-adherent behaviours that can be harmful to a motivational
546 interview (Magill et al., 2014), as manualised MI interventions have rare occurrences of MI-
547 non adherent behaviors (Magill et al., 2014). However, it has also been hypothesised that using
548 a manual may lead to some practitioners to approach talking about behaviour change plans

549 before the client is ready, leading to client resistance and poorer outcomes (Miller & Rollnick,
550 2004). The structure of the sessions must take this into account, allowing the peer-supporter to
551 be flexible, to work with the mother at her pace, in terms of thinking about behaviour change.

552 **Conclusions**

553 We have tested and established the feasibility of delivering the Mam-Kind intervention with
554 high uptake of the intervention within those that took part in the study. The mothers who were
555 not lost to follow up and engaged reported that it was acceptable, and found that the peer-
556 supporters provided them with guidance and reassurance. The combination of quantitative and
557 qualitative results have highlighted key areas for improvement in recruitment, training and
558 supervision of those delivering MI within a public health intervention. Currently, there is a lack
559 of high quality UK-based evidence of effective peer-support interventions for breastfeeding
560 maintenance. Future research needs to test the effectiveness of a refined version of the Mam-
561 Kind intervention in a randomised controlled trial.

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