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Citation for final published version:

Hancox, Jennie E., Chaplin, Wendy J., Hilton, Charlotte, Gray, Katie, Game, Fran and Baldwin, Kavita 2023. Development of a motivation communication training programme to aid diabetes-specialist podiatrists with adherence discussions. *Health Education & Behavior*

Publishers page:

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1 **Development of a motivation communication training**
2 **programme to aid diabetes-specialist podiatrists with**
3 **adherence discussions**

4
5 Jennie E. Hancox^{1,2*} PhD, Wendy J. Chaplin¹ PhD, Charlotte Hilton¹ PhD, Katie Gray³ MA,
6 Fran Game⁴, Kavita Vedhara¹ PhD

7 ¹School of Medicine, University of Nottingham, UK.

8 ²School of Sport, Exercise and Health Sciences, Loughborough University, UK.

9 ³Derbyshire Community Health Services NHS

10 ⁴University Hospitals of Derby and Burton NHS Foundation Trust

11
12 *Corresponding author

13 Email: j.hancox@lboro.ac.uk

14 Present address: Loughborough University, School of Sport, Exercise and Health
15 Sciences, Epinal Way, Loughborough, Leicestershire, LE11 3TU, United Kingdom.

16
17 **Conflict of interest**

18 The authors have no conflict of interest to disclose in relation to this submission.

19
20 **Funding**

21 This study/project was funded by the National Institute for Health Research (NIHR)
22 School for Primary Care Research (project reference 399). The views expressed are
23 those of the author(s) and not necessarily those of the NIHR or the Department of
24 Health and Social Care.

ABSTRACT

25

26 Diabetic foot ulcers (DFUs) impact a substantial proportion of patients with diabetes, with
27 high recurrence rates, severe complications, and significant financial burden to healthcare
28 systems. Adherence to treatment advice (e.g., limiting weight-bearing activity) is low with
29 patients reporting dissatisfaction with the way in which advice is communicated. This study
30 aimed to address this problem via the systematic development of a motivation
31 communication training programme. The programme was designed to support diabetes-
32 specialist podiatrists in empowering patients' to actively engage with treatment. The
33 development process followed an intervention mapping approach. Needs assessment involved
34 observations of 24 patient-practitioner consultations within a diabetes-specialist foot clinic.
35 This informed specification of a theory of change (Self-Determination Theory) and relevant
36 evidence-based communication strategies (drawing from Motivational Interviewing). The
37 training programme was developed iteratively with changes made following feedback from 5
38 diabetic foot healthcare professionals. The resulting training programme, consisting of six
39 one-hour face-to-face sessions over an 8-week period, was delivered to a further 6 diabetes
40 specialist podiatrists, with 5 participating in post-programme telephone interviews to assess
41 acceptability. Deductive thematic analysis of interview data revealed positive aspects of the
42 training (e.g., valuable and relevant content), ideas for improvement (e.g., online resources
43 and context specific video examples), the acceptability of motivation strategies and
44 challenges putting the strategies into practice (such as time constraints and breaking old
45 communication habits). This study contributes to our understanding of integrating motivation
46 principles into routine consultations and holds potential for enhancing adherence to treatment
47 recommendations in patients living with diabetic foot ulcers.

48

49 **Keywords:** self-determination theory, communication, training, podiatrist, motivation,
50 diabetes

51 **BACKGROUND**

52 Diabetic Foot Ulcers (DFUs) are a serious complication of diabetes which can lead to lower
53 extremity amputation and premature mortality (Jupiter et al., 2016). The condition is
54 associated with high healthcare costs (Cavanagh et al., 2012; Kerr et al., 2019) and has severe
55 implications for patients' health-related quality of life (Khunkaew et al., 2019). Patients with
56 DFUs often experience limited physical and social functioning and nearly half are reported to
57 experience depression (Jiang et al., 2020).

58 Patient adherence to treatment advice in the management of DFUs has been reported to be
59 consistently low (Armstrong et al., 2003; Bus et al., 2016; Bus & van Netten, 2016; Tanharo
60 et al., 2018). Adherence to self-care behaviours (e.g., appropriate wound dressing, limiting
61 weight-bearing activity, wearing therapeutic footwear) are crucial in preventing and healing
62 ulcers, with those not adhering presenting with higher rates of ulceration (Bus & van Netten,
63 2016). Thus, interventions targeting patient adherence in this population are needed
64 (International Working Group of the Diabetic Foot, 2019).

65 A key factor influencing patient adherence is the communication style of healthcare
66 practitioners (Zolnierek & Dimattero, 2009). Coffey et al. (2019) conducted a qualitative
67 meta-synthesis focusing on the experiences of patients' with DFUs. The results revealed that
68 patients were dissatisfied with the way footcare advice was communicated to them. Patients
69 reported inconsistencies in the advice they received, a lack of rapport and emotional support,
70 and a general lack of understanding regarding how DFUs impacted their daily lives (Coffey
71 et al., 2019). Similarly, a study by Searle et al. (2008) found one-third of interviewed patients
72 felt they were not actively involved in decision-making during consultations and were
73 hesitant to ask questions. Furthermore, Searle and colleagues (2008) interviewed podiatrists
74 who expressed frustration and lack of support in their efforts to empower and establish
75 collaborative partnerships with their patients. More recent research conducted by Hancox et

76 al. (2023) interviewed patients regarding delivery of treatment advice specifically in relation
77 to limiting weight-bearing activity. Patients reported that often treatment advice is delivered
78 in a directive and generic manner and expressed preference for a more person-centred
79 approach with advice tailored to their specific needs via a process of collaborative problem-
80 solving. Consequently, there is a pressing need for interventions to support health
81 professionals in communicating with patients in a way that empowers them to actively
82 participate in their treatment and adhere to recommendations.

83 Self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2017) is a framework
84 that can be used to understand how the communication style of healthcare practitioners
85 influences patient adherence to health behaviours. Central to SDT, is the notion that
86 satisfaction of individuals' basic psychological needs for autonomy (choice and volition),
87 competence (able to perform the desired behaviour) and relatedness (sense of belonging)
88 fosters optimal motivation (Deci & Ryan, 2000). Individuals may be motivated to engage in
89 health-behaviours for more autonomous reasons (e.g., enjoyment, valuing benefits) or
90 controlled reasons (avoiding letting oneself down or pressure from significant others) (Deci
91 & Ryan, 2000). Some individuals may be amotivated (a lack of motivation) and have no
92 intention of engaging. Increases in need satisfaction and autonomous motivation (but not
93 controlled or amotivation) have been found to be associated with positive changes in health
94 behaviour (Ntoumanis et al., 2021) and long-term behaviour change (Ng et al., 2012).

95 The communication style adopted by significant others (e.g., healthcare professionals) can
96 influence the extent to which individuals' basic psychological needs are satisfied, and in turn,
97 the type of motivation underpinning engagement. An autonomy supportive communication
98 style (characterised by offering choice, rationale and empathy) has been found to satisfy
99 individuals' basic psychological needs, promote more self-determined motivations and be
100 effective at increasing adherence to a variety of health-related behaviours: physical activity,

101 tobacco cessation, medication adherence and dental hygiene (Ng et al., 2012). Despite the
102 potential for supporting adherence, no research has applied SDT in the context of DFUs.

103 Motivational Interviewing (MI) is “a collaborative conversation style for strengthening a
104 person’s own motivation and commitment to change” (Miller & Rollnick, 2012, p.12). MI
105 interventions outperform traditional patient education methods where behaviour change or
106 adherence is the desired outcome for various health behaviours (Rubak et al., 2005).

107 MI and SDT are viewed as complementary approaches, with SDT serving as a theoretical
108 framework for understanding how and why MI techniques facilitate behaviour change (Deci
109 & Ryan, 2012; Markland et al., 2005; Patrick & Williams, 2012; Vansteenkiste & Sheldon,
110 2006). Phillips and Guarnaccia (2020) conducted a systematic review of SDT- and/or MI-
111 based interventions for prevention and treatment of type 2 diabetes. The authors identified 23
112 type 2 diabetes interventions (3 SDT-based, 20 MI-based), none of which focused on
113 diabetes-specialist podiatrists. The effectiveness of the interventions were mixed, primarily
114 due to variations in quality of study design, methods, and treatment fidelity. To address these
115 limitations, Phillips and Guarnaccia (2020) recommend integration of the strong theoretical
116 foundation of SDT with MI’s practice-orientated manuals and tools for assessing treatment
117 integrity.

118 The purpose of this study therefore, was to describe the development and acceptability of an
119 SDT and MI-informed motivation communication training programme for healthcare
120 professionals (i.e., podiatrists) focussed on facilitating discussions around motivation and
121 adherence to treatment recommendations in patients with DFUs.

122

123 **METHODS AND RESULTS**

124 **Intervention design methodology**

125 Aligned with the UK Medical Research Council guidance (Skivington et al., 2021),
126 development of the training programme was a pragmatic, dynamic and iterative process
127 which involved understanding the problem and context, involvement of stakeholders,
128 drawing on existing theories and research-evidence, undertaking of primary data collection
129 (i.e., observation) and pilot testing to assess acceptability. The study was registered
130 (ClinicalTrials.gov: NCT03853941) and approved by the XXXXXX Research Ethics
131 Committee (REC Number 18/EM/0162), July 2018, and written informed consent gained
132 from all participants. The training programme was systematically planned following the first
133 5 stages of the Intervention Mapping protocol (Bartholomew, Parcel, & Kok, 1998). Table 1
134 provides an overview of the intervention development process.

135

136 [Table 1]

137

138 **Step 1: Needs assessment**

139 The aim of step 1 was to establish an understanding of what needs to be changed and the
140 specific context for the intervention. As detailed in the introduction, patient-provider
141 communication is an important factor influencing adherence in patients living with DFUs
142 (e.g., Coffey et al., 2019; Gale et al., 2008; Hancox et al., 2023; Searle et al., 2008).

143 Observation was undertaken to gain a detailed understanding of behaviour change
144 conversations in routine DFU consultations and the extent to which such discussions are
145 aligned with SDT and MI approaches.

146

147 ***Observation***

148 ***Design***

149 The observational study was conducted in a secondary care, Diabetes Foot Clinic within the
150 East Midlands. A non-participant observer (WJC, a Research Assistant trained in conducting
151 observations) live-coded the communication style of podiatrists during routine DFU
152 consultations between May and August 2019. Prior to the consultation the observer explained
153 they were a researcher interested in understanding more about patient-practitioner
154 communication and were there to observe the consultation. Patient and podiatrist participant
155 demographics (e.g., age, gender, ethnicity) were collected using a short questionnaire.

156 *Participants*

157 Opportunistic sampling was used to recruit patient participants who met the inclusion criteria
158 of adults (aged 18+ years) diagnosed with diabetes, who currently had a DFU. Eligible patients
159 were approached by a member of their usual care team who explained the nature of the study,
160 what participation would involve and provided an information sheet. Patients were given
161 minimum of 24 hours to consider their participation before providing written informed consent.

162 Podiatrists working in the specialist Diabetes Foot Clinic, aged 18 and over, with at least 6
163 months experience working within the NHS were invited to participate in the study. Eligible
164 podiatrists were provided with an information sheet which informed them of all aspects
165 pertaining to participation and given 24 hours or more before written informed consent gained.

166 Twenty-four patient consultations were observed. Participants included 18 males and 6
167 females, mean age 60.8 (SD= 10.8, range:35-81 years, 71% in their fifties or early sixties), all
168 participants were White British with English as their first language.

169 Fifteen podiatrists (12 female, 3 male, mean age = 45.7 years, SD=12.2, range:26-58 years)
170 were observed. Most podiatrist participants were observed once or twice, one was observed
171 five times. Podiatrists selected who was observed, depending on availability at the time of the
172 patients' appointment and clinical need.

173 *Observation Measures*

174 Observations were live-coded using the Behaviour Change Counselling Index (BECCI; Lane,
175 2002). The BECCI was designed to measure practitioners' use of MI-informed behaviour
176 change counselling techniques and has been found to demonstrate acceptable levels of
177 reliability and validity (Lane et al., 2005). The BECCI uses eleven items, grouped into four
178 domains, representing different MI skill competencies. Domain 1: Agenda Setting &
179 Permission Seeking (items 1 & 2, e.g., The practitioner invites the patient to talk about
180 behaviour change); Domain 2: The Why & How of Change in Behaviour (items 3-7, e.g.,
181 Practitioner uses empathic listening statements when patient talks about the topic); Domain 3:
182 Whole Consultation (items 8-10, e.g., Practitioner acknowledges challenges about behaviour
183 change that the patient faces); and Domain 4: Talk about Targets (item 11, Practitioner and
184 patient exchange ideas about how the patient could change current behaviour). Each item was
185 rated on a five-point Likert scale (0=not at all to 4=a great extent). An estimate of the ratio of
186 time spent speaking and the behaviour change topics discussed was noted.

187

188 Aligned with SDT, 3 items were used to assess the extent to which the observer perceived the
189 podiatrist to actively communicate with the patient in a need-supportive way (i.e.,
190 'practitioner actively fosters the patient's autonomy by supporting their sense of control over
191 their health behaviour', 'practitioner actively fosters the patients' feelings of competence by
192 supporting the patient's abilities and capabilities to master their health behaviour' and the
193 'practitioner actively relates to the patient with care and respect and shows an interest in
194 aspects of their lifestyle that are important to them'). Items were rated on a 5-point Likert
195 Scale (0=not at all, 1=minimally, 2=to some extent, 3=a good deal, 4=a great extent).

196

197 Consultations were live-coded, audio-recording was not possible in the busy clinic
198 environment due to concerns over privacy of nearby patients. The observer was trained in
199 SDT and MI, read literature about behaviour change in healthcare settings, for example,
200 Rollnick et al. (2008) and completed the online BMJ module ‘Motivational interviewing in
201 brief consultations’ (<https://new-learning.bmj.com/course/10051582>). The observer also
202 attended a six-hour MI training session, tailored to the context of the current study and
203 designed and delivered by a Motivational Interviewing Network of Trainers (MINT) trainer.
204 This included fidelity training, whereby BECCI was used to code six video-recordings of
205 consultations using gradually more complex MI consistent techniques. Within this context,
206 fidelity refers to the observer’s ability to recognise clinician strategies that were MI-
207 consistent and codable using BECCI. Competency in using the BECCI was assessed by inter-
208 rater reliability with two experienced coders to ensure a level of consistency (i.e., to score
209 within one point of each other), prior to clinic observations. Throughout this process and
210 during the clinic observations, the BECCI Coding Manual (Lane, 2002) was followed to
211 ensure accuracy of interpretation.

212 *Data Analysis*

213 Quantitative data was entered into SPSS software (v.24). Patient demographics (e.g., age,
214 gender) and descriptive statistics were produced (e.g., mean scores for each BECCI item).

215 ***Results: Usual Care Observation***

216 *Patient-practitioner speaking ratio*

217 The mean consultation length was 40 minutes (SD=24; range:20-130). The ratio of
218 practitioner to patient speaking is relevant because healthcare professionals are viewed as
219 having more person-centred conversations if they speak less than the patient (Lane et al.,
220 2005). In 6 consultations (25%) the practitioner spoke for more than half the time. In 16

221 consultations (67%) there was an even split in time talking between the patient and podiatrist.
222 In 2 consultations (8%) the practitioner spoke for less than half the time.

223

224 *Behaviour change topics discussed in consultations*

225 In eight consultations no behaviour change was discussed. In the remaining consultations, the
226 topics discussed most often were adherence to footwear (n=11), limiting weight-bearing
227 (n=5), medications (n=3) and dressing adherence (n=1).

228

229 *Use of MI-informed techniques in routine DFU care*

230 BECCI scores are displayed in Table 2. The techniques most used were showing sensitivity
231 to talking of other issues and talking about current behaviour. The least used were summaries,
232 encouraging talk about behaviour change, and empathetic listening statements.

233 [Table 2]

234 *Need-supportive communication*

235 Need-support from the podiatrists whilst communicating with the patient was perceived to be
236 minimal. The observer noted support for relatedness (Mean = 1.75, SD = 0.85) to be higher
237 than autonomy (Mean = 1.17, SD = 0.76) and competence (Mean = 1.21, SD = 0.88),
238 however, all scores were modest.

239

240 **Step 2: Theory of change**

241 The needs assessment in Step 1 identified opportunity for improvement in the patient-
242 provider communication style. Based on the findings of step 1, SDT (Deci & Ryan, 1985)
243 was selected as the guiding framework for developing a communication intervention to
244 promote adherence to treatment advice in patients with DFUs. See Figure 1 for a logic model
245 illustrating the theory of change.

246

247 [Figure 1]

248

249 **Step 3: Selection of theory and evidence-based communication strategies**

250 Motivation strategies, relevant to the specific context of a diabetic foot consultation (see
251 Table 3), were selected from those in previous SDT interventions (i.e., Gillison et al., 2019;
252 Ntoumanis et al., 2021). As with other applied SDT research (e.g., Coumans et al., 2020) MI
253 techniques (e.g., open questions, reflections) were included as a means of promoting
254 satisfaction of patients' basic psychological needs. Selection of theory and evidence based
255 SDT strategies and MI techniques was informed by stage 1 needs assessment findings,
256 consultation with a patient and public involvement (PPI) group, healthcare professional
257 advisory group, and guided by a proficient MI practitioner. Examples within the training
258 were focused on discussions regarding patients' limiting weight-bearing activity as this has
259 been highlighted by podiatrists (healthcare professional advisory group) and patients (Hancox
260 et al., 2023) as an area for improvement. However, the motivational strategies can be applied
261 to other adherence-related conversations.

262

263 The training content was structured using the four processes of MI: engaging, focusing,
264 evoking and planning (Miller & Rollnick, 2012) to provide podiatrists with a guide as to
265 when certain strategies may be most relevant within the consultation process. The four
266 processes are both sequential and recursive as the practitioner may need to return to prior
267 processes as needed (Miller & Rollnick, 2012). Table 3 details each SDT strategy, the way it
268 maps onto constructs of SDT and the four processes of MI and relevant MI techniques.

269

270 [Table 3]

271

272 **Step 4: Development of training programme**

273 Training content and materials were drafted. The programme covered both theoretical aspects
274 (e.g., importance of satisfying patients' basic psychological needs and promoting self-
275 determined motivation for long-term adherence) and practical need-supportive
276 communication strategies (e.g., acknowledging patients' perspectives). A mix of PowerPoint
277 slides, video examples, small group discussions and role-play activities were included.

278 The draft training programme was piloted with 5 diabetic foot healthcare professionals (3
279 podiatrists, 1 Consultant Podiatric Surgeon, 1 Specialist Registrar, mean years of experience
280 = 15.32, range = 5-30). Two researchers, one experienced in delivering SDT interventions
281 (JH) and the other experienced in delivering MI training to healthcare professionals (CH) led
282 the one-day (5-hour) training session at an NHS hospital in the East Midlands. A
283 questionnaire distributed at the end of the training revealed the healthcare professionals to
284 view the training as relevant to their job role (8.6/10) and enjoyable (9.2/10). They described
285 feeling reasonably confident with integrating the skills learned into routine consultations
286 (8.2/10), however, a few noted that they would need more practice time and reminders to
287 support integration into practice. Practical strategies, such as scaling questions to assess
288 patients' importance and/or confidence regarding changing behaviour, were described by
289 healthcare professionals as the most useful aspects of the training. Healthcare professionals
290 valued the chance to practice the communication strategies and discuss how what they say
291 could be re-phrased in a more motivationally supportive way. In terms of improvements,
292 feedback suggested it was "a lot to cover in one-day" and that multiple shorter sessions might
293 be better.

294 Following the pilot-training, researchers met with three podiatrists working within the
295 specialist diabetes unit in which the final training programme would be delivered. Views

296 were sought on practical aspects of training delivery (e.g., when, where, how long). There
297 was a preference for short training sessions delivered over multiple weeks. Thus, the final
298 intervention consisted of 6 x 1-hour face-to-face training sessions delivered 8-9am in a
299 seminar room within the hospital where the podiatrists work. The training was delivered by
300 two researchers (JH & CH) and over an 8-week period (with the first 4 sessions delivered
301 weekly, and the last 2 fortnightly) to enable podiatrists' time to practice the motivation
302 strategies between sessions. Participants were provided with a written summary of the
303 practical strategies and audio recordings of key points covered in each training session. The
304 focus of each training session is briefly outlined in Table 4.

305

306 [Table 4]

307

308 **Step 5: Acceptability of the training programme**

309 The training was delivered to 6 diabetes specialist podiatrists (1 male, 5 female; mean age =
310 35.83, SD = 11.41, all White British) working in a specialist Diabetes Foot Clinic in the East
311 Midlands, UK (a different NHS Trust to the pilot training) from August 16th-October 4th
312 2019. Inclusion criteria were aged 18 and over and having at least 6 months experience
313 working within the NHS. On average podiatrists had worked in the NHS for 9 years (range =
314 4-17 years) and had been in their current role for 5 and half years (range = 1-17 years). Three
315 podiatrists attended all six training sessions (100%). One podiatrist attended 5/6 sessions
316 (83%) and two attended 4/6 sessions (67%). Reasons for missing sessions included holidays
317 and illness. Those missing sessions were encouraged to listen to the provided audio recorded
318 summary.

319

320 Semi-structured interviews were conducted within 2 months of the end of the training to
321 explore podiatrists' views on acceptability of the training programme and motivation
322 strategies. All 6 podiatrists who took part in the training were invited to be interviewed.
323 Interviews were conducted via telephone by an independent consultant researcher not
324 involved in delivering the training programme, to reduce risk of social desirability bias.
325 An interview guide (see supplementary material A), developed by CH and JH, was used to
326 explore podiatrists' thoughts on and experiences of receiving the training, implementation of
327 strategies in practice and suggestions for improvements. Interviews lasted approximately 30
328 minutes, were audio-recorded, transcribed verbatim and anonymised. Data were analysed in
329 NVivo (version 12) using a deductive thematic analysis (Braun & Clarke, 2006) based on the
330 content of the interview guide and motivation strategies (see Table 3). Analysis was
331 conducted by JH (researcher trained in qualitative analysis). Although JH was involved in
332 delivering the training programme, when analysing the data JH took a neutral stance, taking
333 into consideration the range of opinions expressed by interview participants and using
334 supporting quotes to illustrate interpretation of the data and support confirmability. Following
335 familiarisation with the data through 'active reading' of transcripts, initial codes were
336 generated. Codes were then collated into potential themes which were discussed with all
337 authors. Detailed field notes and a clear audit trail of analytic decisions were kept to
338 maximise transparency and ensure credibility and quality.

339

340 Five out of 6 podiatrists agreed to participate in a semi-structured interview. Four main
341 themes were identified: positive aspects of the training, ideas for improvement, acceptability
342 of motivation strategies and challenges putting the strategies into practice. A brief outline of
343 each theme is provided below, further details including subthemes and illustrative quotes are
344 provided in supplementary material B.

345

346 ***Positive aspects of the training***

347 Podiatrists liked that the training was delivered over multiple sessions enabling time to
348 practice between sessions. However, it was suggested that longer sessions (e.g., 1.5 hours)
349 would be preferable. The small group format was described as supportive, enabling
350 participants to feel involved and contribute. Trainers were viewed as approachable and
351 sharing of 'real life' examples valued. Podiatrists liked the mix of activities (e.g., videos,
352 role-play) and learning resources (e.g., handouts). Those missing sessions found the audio-
353 recorded summary helpful for catching-up on the content. The podiatrists valued the
354 opportunity to reflect on their approach to motivating patients and found the specific
355 strategies helpful. Overall, the training was viewed as valuable and relevant for a wide range
356 of healthcare professionals.

357

358 ***Suggestions for improvements***

359 It was suggested that online resources for easy access would be beneficial. Podiatrists
360 explained a tailored handout for patients with a summary of what was discussed regarding
361 behaviour change, and video examples of strategies in the specific context of DFUs would
362 also be helpful.

363

364 ***Acceptability of motivation strategies***

365 The only technique that was considered as not appropriate for the patient population was the
366 'no change' version of the two possible futures strategy which invites patients to imagine
367 what their life might be like in six months' time if their ulcer did not heal. Podiatrists
368 explained that for patients who have had the ulcer for years the technique appeared to
369 reinforce their negative view that no matter what they do their ulcer will not heal. Instead,

370 asking patients the ‘change has occurred’ version of this strategy, whereby patients are
371 invited to think about what it would mean for them if their ulcer healed, was viewed more
372 favourably.

373

374 *Challenges of putting the strategies into practice*

375 Challenges experienced putting the strategies into practice included: time pressures and
376 competing demands during consultations, other healthcare professionals using a more
377 directive communication style, avoiding the righting reflex (i.e., wanting to tell the patient
378 what to do), breaking the habit of asking closed questions, confidence using the strategies and
379 perception that some patients will not change no matter what healthcare professionals say.

380

381 **DISCUSSION**

382 The aim of this study was to describe the development and acceptability of a motivation
383 communication training programme for diabetes-specialist podiatrists focussed on supporting
384 adherence discussions. The training programme was theory and evidence-based and
385 developed in a systematic way considering the specific context. Observation was undertaken
386 to gain understanding of the communication style currently used by podiatrists during routine
387 consultations. Findings suggest that whilst some MI-consistent techniques are used, there is
388 opportunity for improvement in quality and consistency. These findings reinforced the need
389 for the development of a communication training programme for this population. Observation
390 highlighted areas for improvement (e.g., use of summaries, reflective listening statements and
391 satisfaction of patients’ basic psychological needs) which informed training development.

392

393 The training programme was positively received by podiatrists. Suggestions for
394 improvements (e.g., longer sessions, online resources) will be explored and if feasible

395 incorporated in future iterations of the training programme. A particular challenge noted by
396 podiatrists was other practitioners entering the consultation and using a more directive
397 communication style. Podiatrists expressed the training would be relevant for a wide range of
398 healthcare professionals. Widening the scope of the training to include all healthcare
399 professionals within the multidisciplinary team may address support a more consistent and
400 cohesive motivational approach with patients.

401

402 The only motivation technique considered not appropriate was the ‘no change’ version of two
403 possible futures. Wagner and Ingersoll (2008) have cautioned this MI technique, which aims
404 to develop discrepancy, is consistent with a negative reinforcement model (e.g., change is
405 needed in order to escape a negative future). Such an approach may evoke introjected
406 motivations, characterised by pressure to act to resolve negative emotions (e.g., shame or
407 fear), which are not considered conducive to long-term behaviour change. Moreover,
408 podiatrists in this study noted the technique to be particularly problematic with those who had
409 been a patient for a long-time as it reinforced their already negative emotions. It has been
410 suggested (Wagner & Ingersoll, 2008; Neipp et al., 2021) that instead the focus should be on
411 moving towards a positive future state (such as is imagined in the ‘change has occurred’
412 version of the two possible futures). This approach is more aligned with SDT and promotion
413 of autonomous motivation with the emphasis on how individuals can proactively seek a better
414 future.

415

416 Time pressures and the competing demands was described by podiatrists as a further
417 challenge to integrating the strategies routinely into practice. Many of the podiatrists
418 interviewed worked in both clinic (hospital out-patient) and community settings and
419 explained strategies were easier to implement in community settings. Often community visits

420 are longer, with more consistency in which practitioner visits and less distractions. Podiatrists
421 typically engage in casual rapport-building conversation whilst treating the ulcer and
422 replacing dressings and therefore are uniquely placed with the opportunity to have all-
423 important behaviour change conversations with patients (Gabbay et al., 2011). However, they
424 typically do not receive formal training in motivation communication approaches. To address
425 this gap in training provision, future research could explore implementation of the training
426 programme within community settings.

427

428 **Strengths and Limitations**

429 A key strength of the study was the systematic and rigorous approach to intervention
430 development with a key focus on tailoring to the specific context. Observation of the current
431 motivation communication style used by podiatrists enabled identification of key areas for
432 improvement and maximised the likelihood that intervention would be relevant and enhance
433 current practice. Furthermore, involvement of stakeholders throughout the development
434 process aided refinement of content, format and delivery of the training to optimise
435 acceptability (Skivington et al., 2021).

436 A limitation of the study is acceptability of the training being tested with a small sample
437 (n=6) of podiatrists, limiting generalisability of findings to more diverse populations. The
438 observed patient sample also lacked diversity (mainly male, white ethnicity, aged over 65).
439 Although this sample is representative of the wider patient population living with DFUs
440 (Public Health England, 2022), recruitment of a more heterogeneous sample (e.g., inclusion
441 of ethnic minority patients) should be explored in future research. Another limitation of the
442 present study is the lack of exploration of patients' views on receiving care from podiatrists
443 who have undergone the training, a noteworthy avenue for future research. The present study

444 focused on healthcare communication, other barriers to patient treatment adherence (e.g., lack
445 of pain, depression; Hancox et al., 2023) could be addressed in future research.

446 A proof-of-concept study, using a non-randomised, controlled before-and-after design, to
447 assess the training's impact on podiatrists' communication and patient behaviour has been
448 submitted elsewhere (Hancox et al., forthcoming). Furthermore, we intend to address the
449 limitations identified in a larger cluster randomised controlled trial which will aim to
450 establish the feasibility and effectiveness of the intervention more widely.

451

452 **Conclusion**

453 Patient adherence to treatment recommendations is crucial in both preventing and treating
454 DFUs. However, patients encounter challenges in this regard, expressing dissatisfaction with
455 the patient-practitioner relationship and the way treatment advice is conveyed, which serves
456 as a significant barrier. To our knowledge, this is first study to test the acceptability of an
457 SDT-based and MI-informed training programme with this population. This research makes
458 an important contribution to the literature by advancing understanding of the practicalities of
459 translating motivational principles in routine consultations with patients living with DFUs.
460 Findings relating to the challenges experienced by podiatrists when integrating the motivation
461 strategies into practice can be used to improve future training.

462

463 **Disclosure Statement**

464 The authors declare no conflict of interest.

465

466 **Data Availability**

467 Data is available from the corresponding author upon reasonable request.

468

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Table 1.

Intervention development process informed by Intervention Mapping protocol (Bartholomew, Parcel, & Kok, 1998)

Step	Aims	Methods
1. Needs assessment	<ul style="list-style-type: none">• Understand the specific context in which the intervention will be delivered and what type of communication style is currently delivered by podiatrists during routine consultations	Observation of routine consultations
2. Theory of change	<ul style="list-style-type: none">• Clarify objectives (what change is needed?) and determinants (what are the mechanisms of change?)	Logic model
3. Selection of theory-based communication strategies	<ul style="list-style-type: none">• Select theoretical methods and practical applications	Review and selection of relevant SDT-based strategies and MI techniques
4. Development of training programme	<ul style="list-style-type: none">• Draft training content and materials• Pilot test of training content and materials	Stakeholder consultation (pilot test of training)
5. Evaluation of acceptability	<ul style="list-style-type: none">• Explore podiatrists' views on the acceptability of the training and motivation strategies	Semi-structured interviews with podiatrists

Table 2.*Mean scores for BECCI items*

Domain	Item	Item Score
		Mean (SD)
1. Agenda setting and permission seeking	1. The patient invites the practitioner to talk about behaviour change	0.65 (0.41)
	2. The practitioner demonstrates sensitivity to talking about other issues	1.17 (0.64)
2. The why and how of change in behaviour	3. Practitioner encourages patient to talk about current behaviour or status quo	1.17 (0.87)
	4. Practitioner encourages patient to talk about behaviour change	0.38 (0.58)
	5. Practitioner asks questions to elicit how patient thinks and feels about the topic	0.63 (0.71)
	6. Practitioner uses empathic listening statements when patient talks about the topic	0.46 (0.51)
	7. Practitioner uses summaries to bring together what the patient says about the topic	0.17 (0.48)
3. The whole conversation	8. Practitioner acknowledges challenges about behaviour change that the patient faces	1.13 (0.85)
	9. When practitioner provides information, it is sensitive to patient concerns and understanding	1.15 (0.64)
	10. Practitioner actively conveys respect for patient choice about behaviour change.	0.79 (0.78)
4. Talk about targets	11. Practitioner and patient exchange ideas about how the patient could change current behaviour	0.77 (0.53)

413 *Note.* Each item was rated on a five-point Likert scale (0=not at all to 4=a great extent)

Table 3.*Motivation strategies organised by MI process.*

MI process	Aim of process	SDT-based strategy	Description of strategy	Basic need(s) targeted
Engaging (to be maintained throughout the consult)	Develop rapport, empathy and take time to listen to and understand the patient's perspective	Use non-controlling language	Use language that emphasises the patient's right to choose and avoid the ' <i>righting reflex</i> ' (i.e., telling patients what they should do).	Autonomy
		Develop involvement by demonstrating warmth and empathy	Express a personal interest in the patient and take time to develop a rapport. Use <i>open-ended questions</i> and <i>reflective listening</i> statements.	Relatedness
		Acknowledge patient's perspectives	Take time to understand the patient's perspective and recognise their challenges. Use <i>summaries</i> and <i>affirmations</i> that acknowledge the patient's difficulties, efforts and self-worth.	Autonomy
Focusing (What?)	Establish personal context and factors relevant to the patient's experience of their DFU and limiting weight-bearing	Offer choices	Acknowledge the patient's ability for choice and self-determination. Ask about the patient's concerns and priorities and what they would like to focus on (shared <i>agenda setting</i>).	Autonomy
		Take time to understand the patient's personal context and factors relevant to the target behaviour	Invite the patient to talk about their day-to-day life and how relevant and practical limiting weight-bearing is for them. Use the <i>typical day</i> technique (e.g., "Talk me through a typical day for you but with a focus upon when you might be at your most active").	Autonomy & relatedness
Evoking (Why?)	Explore the patients' personal interest and motivation to limit activity & weight-bearing	Explore patient's reasons for changing behaviour	Explore the patient's reasons for limiting weight-bearing or not. Use <i>scaling questions to assess importance</i> (e.g., "On a scale of 1-10, how important is it for you to limit your activity and weight-bearing?" and <i>open-ended questions</i> that seek to elicit <i>change talk</i> (e.g., "Why are you a 5 and not a 3?", "What needs to happen for you to get to a 6?").	Autonomy

		Explore patient's values relating to the target behaviour	Explore patient's values and how they relate to target behaviour. Use the <i>'two possible futures'</i> technique and invite patients to imagine what their life might be like if their ulcer did or did not heal in the future and describe what that might mean for them.	Autonomy
		Support the patient with barrier identification and problem solving	Work with the patient to identify barriers to behaviour change. This may include the use of <i>scaling questions to assess confidence</i> to limit-weight-bearing (e.g., "On a scale of 1-10, how confident are you that you can limit your activity and weight-bearing?", "Why are you a 5 and not a 3?", "What needs to happen for you to get to a 6?") and problem solving.	Competence
		Provide information and rationales	Provide information and rationales relevant to the patient's needs and situation (e.g., about antecedents or health consequences of the behaviour). Use the technique <i>'Elicit-Provide-Elicit'</i> to: 1) Elicit what the patient knows or would like to know or if it's okay if you offer them information, 2) Provide the information in a neutral, non-judgmental way, and 3) Elicit the patient's interpretation/relevance for them.	Autonomy
Planning (How?)	Develop a plan to limit weight-bearing that is specific, detailed & individualised	Provide structure	Set parameters within which choice and agency can take place and provide support to initiate action. This may involve developing an appropriate individualised plan according to the patient's specific context and needs. Techniques may include: jointly agreeing SMART goals, action planning (e.g., if...then plans) and <i>summaries</i> (e.g., verbally summarise the conversation and provide a written summary for the patient to take home with them).	Autonomy & Competence

Note. MI techniques are provided in italic

Table 4.*Training content*

Session	Key content covered
1	<ul style="list-style-type: none">• MI ‘spirit’ (i.e., collaborative, person-centred approach) vs the ‘righting reflex’ (i.e., temptation to instruct people what they should or could do)• How Self Determination Theory can help us to understand motivation and behaviour (i.e., importance of satisfying patients’ basic psychological needs and promoting more self-determined motivation).
2	<ul style="list-style-type: none">• Developing rapport, empathy and taking time to listen to and understand the patient’s perspective• Practical techniques: <i>open-ended questions</i> and <i>reflective listening</i> statements
3	<ul style="list-style-type: none">• Taking time to understand the patient’s perspective and recognising their challenges.• Practical techniques: <i>summaries</i> and <i>affirmations</i>.
4	<ul style="list-style-type: none">• Establishing personal context and factors relevant to the patient’s experience of their DFU and limiting weight-bearing• Practical techniques: shared <i>agenda setting</i> and <i>typical day</i>
5	<ul style="list-style-type: none">• Exploring the patients’ personal interest and motivation to limit activity & weight-bearing• Practical techniques: <i>scaling questions</i>, <i>two possible futures</i>, <i>Elicit-Provide-Elicit</i>
6	<ul style="list-style-type: none">• Developing a plan to limit weight-bearing that is specific, detailed & individualised• Practical techniques: goal setting and <i>summaries</i>

Figure 1.

Logic model illustrating the theory of change based on self-determination theory (Deci & Ryan, 1985).

