

# Barriers and facilitators in the usability of an integrated blended care program in patients with medically unexplained physical symptoms from the healthcare professionals' perspective; a qualitative study

Suze Adriana Johanna Toonders (✉ [s.a.j.toonders@umcutrecht.nl](mailto:s.a.j.toonders@umcutrecht.nl))

Universitair Medisch Centrum Utrecht <https://orcid.org/0000-0001-9213-744X>

Eva Y Poolman

Vrije Universiteit Amsterdam

Marianne E Nieboer

Fontys Hogescholen

Martijn Frits Pisters

Universitair Medisch Centrum Utrecht

Cindy Veenhof

Universitair Medisch Centrum Utrecht

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## Research article

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1 **Barriers and facilitators in the usability of an integrated blended care**  
2 **program in patients with medically unexplained physical symptoms**  
3 **from the healthcare professionals' perspective; a qualitative study.**  
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5 S.A.J.Toonders, Msc, PT<sup>1,2,3</sup>, E.Y. Poolman, Msc, PT<sup>4</sup>, M.E. Nieboer, Msc<sup>1</sup>, M.F. Pisters, PhD, PT<sup>1,2,3,5</sup>  
6 ,C. Veenhof, PhD, PT <sup>2,3,5,6</sup>

7 <sup>1</sup> Department of Health Innovation and Technology, Fontys University of Applied Sciences,  
8 Eindhoven, the Netherlands

9 <sup>2</sup> Center for Physical Therapy Research and Innovation in Primary Care, Leidsche Rijn Julius  
10 Health Care Centers, Utrecht, The Netherlands

11 <sup>3</sup> Physical Therapy Research Group, Department of Rehabilitation, Physical Therapy Science  
12 and Sport, Brain Center Rudolf Magnus, University Medical Center Utrecht, Utrecht, the  
13 Netherlands

14 <sup>4</sup> Department of Human Movement Sciences, Faculty of Behavioural and Movement Sciences,  
15 Vrije Universiteit Amsterdam, Amsterdam Movement Sciences, The Netherlands.

16 <sup>5</sup> Physical Therapy Sciences, program in Clinical Health Sciences, University Medical Center  
17 Utrecht, Utrecht University, the Netherlands

18 <sup>6</sup> Research Group Innovation of Human Movement Care, HU University of Applied Sciences  
19 Utrecht, The Netherlands.  
20

21 Corresponding Author:

22 Suze Adriana Johanna Toonders, MSc, PT  
23 Department of Health Innovation and Technology  
24 Fontys University of Applied Sciences  
25 Ds. Th Fliednerstraat 2  
26 Eindhoven, 5631 BN  
27 The Netherlands  
28 Phone: 0031 641621939  
29 Email: [s.a.j.toonders@umcutrecht.nl](mailto:s.a.j.toonders@umcutrecht.nl)

30  
31

32 **Abstract**

33

34 *Background:* Increasingly, healthcare policies have changed focus from cure and care to  
35 behaviour and health. Prevention is becoming more important, which requires a change in the  
36 role of healthcare professionals. Healthcare professionals' role is changing from being a  
37 therapist to taking on the role of a coach. To prevent chronicity in Medically Unexplained  
38 Physical Symptoms (MUPS), an integrated blended care program was developed. To apply this  
39 new program in daily practice, it is important to gain insight into the usability. From the  
40 healthcare professionals' point of view the concept of usability consists of performance,  
41 satisfaction and acceptability.

42 *Methods:* Data were collected from semi-structured interviews, which were recorded and  
43 transcribed. Data were analysed manually and independently by two researchers.

44 *Results:* Ten healthcare professionals (six physical therapists and four mental health nurses)  
45 were interviewed. Six core themes on usability were identified: (1) selection and motivation of  
46 patients, (2) training and doing, (3) program procedure, (4) maturity of the e-Coaching  
47 application, 5) interprofessional collaboration and (6) expectations and experiences.

48 *Conclusion:* An integrated blended care program offers the possibility to personalize treatment.  
49 This study gathered healthcare professionals' experiences with and attitudes towards  
50 integrating healthcare and offering blended care programs. Findings show attention should be  
51 given to the new responsibilities of healthcare professionals, and their role in integrated and  
52 blended care. This new approach of delivering healthcare can facilitate interprofessional  
53 collaboration. Achieving sustainable change in patients however still requires instruction and  
54 support for healthcare professionals implementing behavioural change techniques.

55 *Trail registration:* The study was approved by the Medical Ethical Committee Utrecht, by  
56 number 17/391. Registered 14 June 2017, <https://www.metc-utrecht.nl/>

57

58 **Keywords:** usability, medically unexplained physical symptoms, blended therapy, e-Coaching,  
59 healthcare professionals

60

61

62 **Background**

63 Over 75% of the Dutch population visited the general practitioner (GP) in 2018 with an average  
64 of 4.5 visits per person per year (1). About 30% of symptoms, e.g., pain, fatigue or dizziness (2)  
65 remain medically unexplained after patients visits their GP (3)(4). In most patients these  
66 symptoms disappear spontaneously after a few weeks. Nevertheless, for 2.5% of these patients,  
67 symptoms sustain and have a high impact on daily life (3)(5). These so called Medically  
68 Unexplained Physical Symptoms (MUPS) are physical complaints that last for at least a few  
69 weeks, where no somatic condition is found that explains the complaints with adequate  
70 medical examination (2).

71

72 Providing appropriate treatment for people with MUPS at an early stage has multiple  
73 advantages. MUPS can be divided into three consecutive stages, ranging from mild, to  
74 moderate to chronic stages. These stages are based on the frequency of consultations to the  
75 GP, duration of symptoms and experienced physical and/or psychological dysfunction (6). The  
76 literature shows effective outcomes on the reduction of unnecessary medical consumption,  
77 and increased job participation (7)(8). Prevention in relation to MUPS seeks to identify  
78 individuals who show early signs of MUPS (9).

79

80 In order to maintain healthcare accessibility and affordability, policy in the Netherlands has  
81 sought to change the way in which healthcare is organized. Moving from a focus on cure and  
82 care to behaviour and health (10). This change requires a shift in healthcare delivery with more  
83 focus on prevention, from a traditional expert to a patient-centred approach (11). Therefore,  
84 the role of healthcare professionals also has to change, moving from focus on being a therapist  
85 to focus on being a coach (12).

86

87 Recently, such an integrated blended care program to prevent chronicity in MUPS, the  
88 PARASOL program, has been developed in collaboration with healthcare professionals and  
89 patients (13). This specific program focuses on increasing insight into patients' perception of  
90 symptoms and modifiable prognostic risk factors for chronicity using therapeutic neuroscience  
91 education and encouraging self-management as well as an active lifestyle using a cognitive  
92 behavioural approach and graded activity (13). Blended care is the combination of online care  
93 and therapeutic guidance (14). Online care was provided using e-Coaching and therapeutic  
94 guidance through face-to-face treatments by physical therapists and mental health nurses. E-  
95 coaching is defined as 'the of technology during coaching to motivate and stimulate (groups  
96 of) people to change attitudes, behaviours, and rituals' (15)(16). E-coaching provides  
97 information modules, personalised exercises and assignments to gradually increase the  
98 physical activity in a web based application and is not a standalone, but integrated in care.  
99 Online programs can not only be supportive of usual therapeutic guidance, but can also be a  
100 substantial element of the intervention as a whole (17)(18). The combination of personal  
101 attention of a healthcare professional and the accessibility of an online tool is seen as highly  
102 promising, as it can stimulate patients to take an active role in their disease management (19).

103

104 To implement a successful innovation, attention should be given to the unique position of end-  
105 users (16). The involvement of end-users provides direction for the development of integrated  
106 blended care programs. Co-creation, the engagement of users throughout the development  
107 process, is an important strategy in order to meet the values and needs (20). In order to apply  
108 this program in the daily practice, it is important to gain insight into the concept of usability,  
109 consisting of performance, satisfaction and acceptability. Usability refers to 'the quality of a

110 system with respect to ease of learning, ease of use, user satisfaction and needs to be tested  
111 subjectively, from end-users perspective' (21). This qualitative study investigates the usability  
112 of an integrated blended care program to prevent chronicity in MUPS from the healthcare  
113 professionals' point of view, specifically with regard to the usability of the PARASOL program.

114

## 115 **Methods**

116 A qualitative design was chosen. Data were collected through semi-structured interviews with  
117 healthcare professionals recruited after participating in the clinical trial PARASOL (13).

118

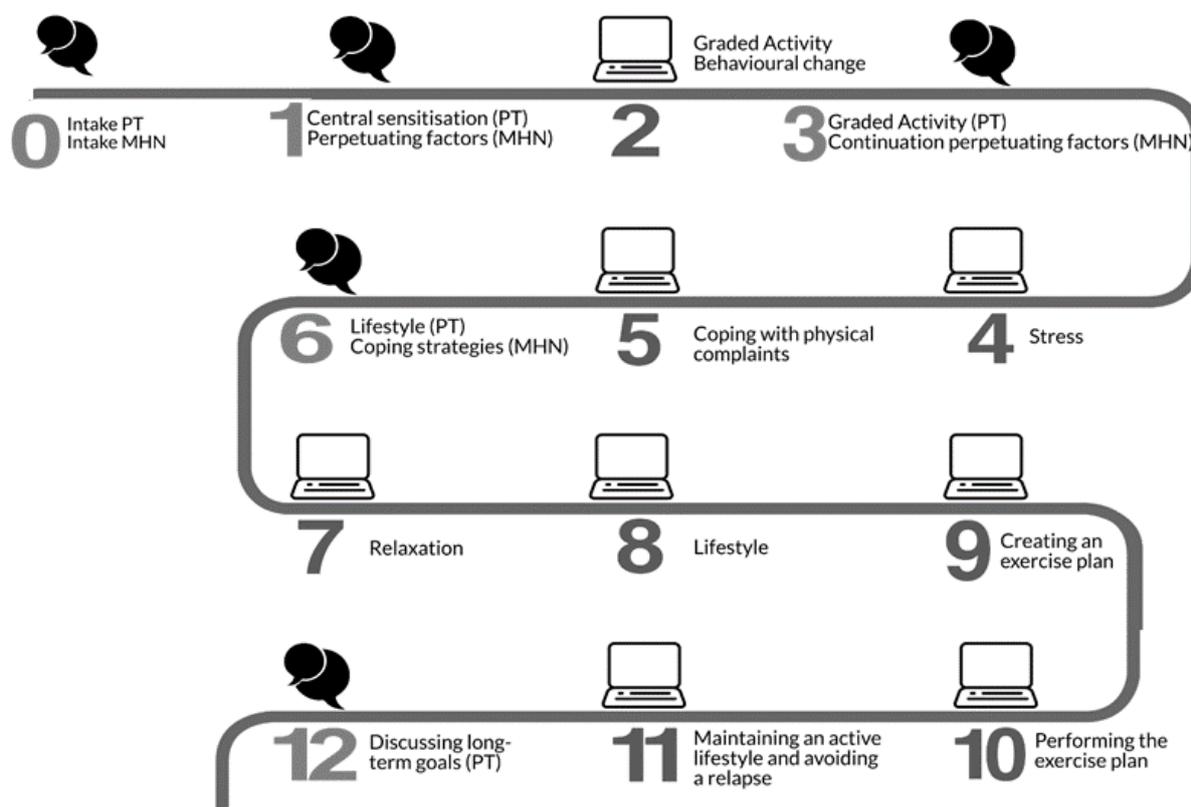
### 119 *PARASOL program*

120 The PARASOL program is a protocolled 12- weeks integrated blended care program. The  
121 program consists of five face-to-face consultations with a physical therapist and four sessions  
122 with a mental health nurse in primary care, supplemented with e-Coaching (figure 1) (13).  
123 Physical therapists and mental health nurses received instructions about the program during a  
124 two-day training session. These instructions included presentations on the study population,  
125 central sensitization, therapeutic neuroscience education, graded activity, and perpetuating  
126 factors (13). Furthermore, professionals were instructed on how to integrate E-coaching. All  
127 healthcare professionals received a protocol. Three months after the two-day training the  
128 PARASOL program started.

129 The e-Coaching modules consisted of information modules and videos on self-management  
130 and educative themes, videos and instructions on prescribed home exercises and assignments  
131 to gradually increase physical activity. Content was directed at patients' perception of  
132 symptoms, and modifiable prognostic risk factors for chronicity using therapeutic neuroscience  
133 education and encouraging self-management as well as an active lifestyle using a cognitive

134 behavioural approach and graded activity. The e-Coaching modules complemented face-to-  
 135 face treatments in order to introduce general themes, while during the contact with healthcare  
 136 professionals, treatment could be personalized. Furthermore, during face-to-face treatment  
 137 patients could pose questions to healthcare professionals. The basic functionality of e-  
 138 Coaching used is based on the blended exercise intervention for patients with hip or knee  
 139 osteoarthritis, called e-Exercise (22).

140 *Figure 1: Overview of the PARASOL program.*



141 *The text cloud indicates the face-to-face contact with a physical therapist (PT) and/or mental*  
 142 *health nurse (MHN), the computer image indicates e-Coaching. The numbers represent the*  
 143 *number of the week the related sessions were aimed.*

144  
 145 *Sample*

147 Convenience sampling was used whereby all healthcare professionals involved in the clinical  
 148 trial (seven physical therapists and six mental health nurses), were eligible to participate.  
 149 Healthcare professionals were approached by the researcher (ST). Instructions were given by

150 phone, information was sent by email and an appointment was made. Subsequently, informed  
151 consent was obtained.

152

### 153 *Data collection*

154 Semi-structured interviews were used to shed light on the usability of the integrated blended  
155 care program. Interviews were conducted by ST in a one-to-one semi-structured interview. A  
156 second researcher was present for non-verbal observation and verified if all questions were  
157 asked. The interview guide was based on the theoretic construct of De Bleser et al 2011,  
158 offering direction to the interviews (21). This construct divides criteria in objective and  
159 subjective dimensions. This study focused on the subjective dimension, containing user  
160 performance, satisfaction and acceptability (21). The interview guide was supplemented by  
161 determinants of healthcare innovation selected and developed by TNO (23). After the first  
162 interviews were conducted, the interviewer added questions based on topics that emerged  
163 from previous interviews. Besides qualitative data, demographic data of healthcare  
164 professionals was collected, specifically their age, gender, profession, work experience, number  
165 of patients treated in the PARASOL program and the System Usability Scale (SUS) score. The  
166 SUS consists of ten questions about the user satisfaction of a system, in this case about the e-  
167 Coaching of PARASOL (24). The questions were answered on a numeric rating scale with a score  
168 range of one to five. A score of one stands for 'strongly disagree' and a score of five stands for  
169 'strongly agree'. The validated classification of the SUS of <70, a score between 70-80 or a  
170 score >80 respectively represent low, medium and high user satisfaction. The SUS has a high  
171 reliability ( $\alpha=0.911$ ) (25). SUS scores were collected before the interview started and give  
172 information on the extent to which satisfaction with e-Coaching varies.

173

174 *Data analysis*

175 Interviews were recorded and transcribed verbatim and the audio interviews were checked by  
176 two researchers (ST & EP). Within one week after completing the interview, a brief summary  
177 was sent to all participants to ensure all information was interpreted correctly. Data were  
178 analysed manually and independently by two researchers (ST & EP) using constant comparison.  
179 During the initial process of open coding, transcripts were analysed line by line by the same  
180 researchers, allowing the data to be fractured, to identify emerging lower-level concepts. These  
181 codes were highlighted and labelled within the text. During the axial coding process, fragments  
182 were put together. Axial coding then allowed the data to be reassembled, whereby lower-level  
183 concepts were extracted and conceptually grouped into subcategories and then categories.  
184 These concepts were categorized according to their similarities, after which main themes  
185 emerged, which were described and discussed by the researchers (ST, EP & MN).

186

187 *Validity*

188 Validity was increased by creating a non-judgmental atmosphere during the interviews and  
189 emphasizing the need to learn from the healthcare professionals. Transcribing the interviews  
190 decreased the chance of bias. The use of researcher triangulation in all the phases of the study  
191 enhanced the validity of the interpretation. Furthermore, the interpretation of the given  
192 answers was checked by the member check.

193

194 *Ethical considerations*

195 The study was approved by the Medical Ethical Committee Utrecht, by number 17/391. The  
196 datasets used and analysed during the current study are available from the corresponding  
197 author on reasonable request.

198 **Results**

199 Among the healthcare professionals contacted (seven physical therapists and six mental health  
 200 nurses), two refused participation because they were not interested. One healthcare  
 201 professional did not respond. In total ten healthcare professionals (six physical therapists and  
 202 four mental health nurses) were interviewed. The demographics of the participants are  
 203 displayed in table 1. Of the ten participants, eight were female. Participants ranged in age from  
 204 25 to 62 years with a mean age of 35 years. Work experience ranged between 1.5 to 34 years.  
 205 SUS scores ranged from 30 to 82.5, which implies eight healthcare professionals scored a low  
 206 satisfaction, one a medium satisfaction and one healthcare professional scored a satisfaction  
 207 (25). The interviews lasted between 30 to 45 minutes.

208 *Table 1: Demographics of participating healthcare professionals*

<b>Participant</b>	<b>Age (years)</b>	<b>Gender</b>	<b>Profession</b>	<b>Work Experience (years)</b>	<b>Patients treated in Parasol program (n)</b>	<b>SUS score</b>
<b>1</b>	25	Female	PT	1.5	6	60.0
<b>2</b>	62	Female	MHN	15	11	52.5
<b>3</b>	30	Female	MHN	3.5	17	82.5
<b>4</b>	53	Male	MHN	34	11	30.0
<b>5</b>	31	Female	PT	8	8	32.5
<b>6</b>	37	Female	MHN	15	10	55.0
<b>7</b>	29	Male	PT	6	6	32.5
<b>8</b>	28	Female	PT	*	6	52.5
<b>9</b>	28	Female	PT	6.5	11	75.0
<b>10</b>	29	Female	PT	3	17	62.5

209 \* *Missing data. Physical therapist (PT), mental health nurse (MHN)*

210

211 Besides demographics, questions about previous experiences with blended care (interest in  
 212 blended care, expectations of integrated blended care programs) were asked. Most healthcare  
 213 professionals volunteered to participate in this study out of personal interest in the subject  
 214 matter. Although not everyone had previous experience with blended care, expectations of the  
 215 blended program were cited as something new that fitted them well, and seen as the future of  
 216 primary care. Although the healthcare professionals were optimistic about blended care, some  
 217 were also afraid that the online program would take over their jobs. Through questions about  
 218 usability from healthcare professionals point of view, facilitators and barriers to implement an  
 219 integrated blended care program were found. These are summarized in table 2.

220 *Table 2: Summary of facilitators and barriers linked to the core themes.*

<b>Core theme</b>	<b>Facilitator</b>	<b>Barrier</b>
<i>Selection and motivation of patients</i>	Intrinsic motivation of patients	Chronicity of complaints
<i>Training and doing</i>	The use of a protocol	Duration between training and doing
	The number of patients treated	
<i>Program procedure</i>	Achieving in depth treatment within the duration of a session	Absence of evaluation time at the end of a program
		Difficulties setting (long-term) goals
		Difficulties in delivering care remotely, like e-Coaching
<i>Maturity of the e-Coaching application</i>	Quality and structure of content	Technical issues
	Providing information interactively (text and video)	
<i>Interprofessional collaboration</i>	Holistic approach	Lack of feedback or confirmation from other disciplines
	Support of colleagues	
<i>Expectations and experiences</i>	Insight at patients' level	
	Patients' self-management skills	
	Preparedness of patients	

221

222 As seen in table 2, the analysis resulted in six core themes. The themes are presented according  
223 to the sequence of the integrated blended care program.

## 224 **1. Selection and motivation of patients**

225 In the interviews, multiple situations were reported that hindered or favoured participation of  
226 patients in this integrated blended care program. The fact that the patient population  
227 strongly varied was repeatedly mentioned. Interviewees felt this integrated blended care  
228 program was not suitable for all included patients, specifically patients suffering from MUPS  
229 for a long time. Those interviewed felt that the intrinsic motivation of patients plays an  
230 important role in successfully completing the program. When describing their motivation,  
231 interviewees divided patients into roughly two groups; those motivated and those not  
232 motivated. Expectations of the study diverged between both groups. Motivated participants  
233 were well prepared and knew that the program had a low intensity and included guidance  
234 from a distance. Interviewees felt the outcomes for those less motivated were less positive, as  
235 they did not have a goal they could or wanted to work towards. *'If patients are too*  
236 *unprepared...I won't say they're less motivated, but they see themselves less as a problem owner*  
237 *(p2)'. Although these patients were perhaps less motivated, healthcare professionals did not*  
238 *see it as a significant problem, as they expected less motivated patients to drop out at the*  
239 *start of the program. 'The people that aren't motivated, they'll drop out, they filter themselves*  
240 *out of the program (p3)'.*

## 241 **2. Training and doing**

242 Before the start of the program, healthcare professionals had to attend a two day training in  
243 order to treat patients following the protocol of PARASOL independently. Some professionals  
244 learned a lot during those days, while others felt they knew sufficient about the subject  
245 matter at hand. A downside which was expressed was the long period between the

246 introductory training and the start of the first treatment in the program. During the training  
247 days, an instruction protocol was handed out. Healthcare professionals used this protocol in  
248 different ways, as some mentioned they followed the protocol strictly. They stated they really  
249 tried to use the exact same words as in the protocol to help recognition by the patient.  
250 Others stuck less to the protocol. *'I never try to just plainly follow it, because then you lose*  
251 *contact with what is happening on the other side (p3)'*. Furthermore, the number of patients  
252 treated was mentioned as an important factor to make the program their own. Interviewees  
253 expressed that as they treated more patients, they better mastered the program. *'You can*  
254 *only make it your own if you see a lot of patients in a row (p6)'*.

### 255 **3. Program procedure**

256 This theme emphasises the experiences with the program procedure, such as the treatment  
257 duration and frequency. Overall, there was satisfaction with the session time of 25 - 30  
258 minutes. Only during intake this was experienced as too short. Interviewees suggested  
259 doubling the time during intake to gain a wider picture of the patient. Concerning the  
260 treatment frequency of the program, the main point put forward was the need for an  
261 evaluation moment at the end. Interviewees wanted to know what the program had meant  
262 for their patients. *'I just give a bunch of information to the patient, but have no clue whether it*  
263 *sticks with them (p2)'*. Especially during week 6 and 12, where there were only online  
264 modules and the treatment frequency was experienced as too low. Interviewees expressed  
265 there was a need for an additional appointment. *'Sometimes it's just taking enough time and*  
266 *repeating, after which you think, this finally makes sense (p6)'*. In some cases, patients did not  
267 have any questions for the healthcare professionals. This made it hard for them to know if  
268 there was sufficient commitment. *'It's a bit indecipherable (p4)'*. Healthcare professionals  
269 struggled to formulate long-term goals with patients. Due to the open-ended character of

270 the program for the patient, some interviewees felt goals were hard to achieve. For some  
271 patients the 12-week program was not enough to realize their goals, however healthcare  
272 professionals were happy to notice what they had achieved in such a short time.

#### 273 **4. Maturity of the e-Coaching application**

274 During the integrated blended care program, e-Coaching was used to provide online care in  
275 addition to the face-to-face contacts. In terms of content, the information modules were  
276 perceived as well written and structured. Patients were given information in different ways  
277 (reading online, watching instruction video's) causing the information to stick better, as well  
278 as stimulating self-management among patients, which reduced healthcare professionals'  
279 workload. *'Texts were written in such a way (...) that people recognize themselves in it, they  
280 don't put off people (p7)'*. Besides, *'It is important that people get to process information in  
281 different ways, as our brain doesn't work like: 'hi, let's change something'. So that's really  
282 necessary (p2).'* There were also a number of criticisms regarding the accessibility of the e-  
283 Coaching modules. They were reported as not being user-friendly and unclear. In addition, it  
284 was mentioned that there were many technical complications, such as difficulties with  
285 logging in and useless buttons. The professionals expressed doubts as to whether the e-  
286 Coaching application can offer functionality. *'... I wouldn't accept it if I couldn't log in (...) then I  
287 would really ask my money back (p2)'*. Healthcare professionals sought to deal with the  
288 technical defects as good as possible. Some printed exercises and others emailed them to the  
289 patients, enabling patients to still follow the program.

#### 290 **5. Interprofessional collaboration**

291 One of the main added values mentioned was interprofessional collaboration between  
292 physical therapists and the mental health nurses induced by the integrated blended care  
293 program. Before the start of this program, it seemed as though healthcare professionals did

294 not actively seek collaboration. *'I got to know the mental health nurse through this project*  
295 *(p8)'. Through working together in this program, professionals better found each other.*  
296 Contacts between professionals was easy to establish. Nearly all participants found the  
297 collaboration pleasant, helpful and experienced it as adding value because of the holistic  
298 approach. *'She sees things that I do not. I see things that she does not (p1)'. 'That you seek*  
299 *cooperation, but stay within your own field (p6)' 'The added value is in the coordination (p4).'*  
300 After the treatment was finished, most professionals continued to collaborate. They  
301 mentioned consulting each other more often. During the program there was little support or  
302 contact with the general practitioner (GP). This was not mentioned as being problematic, yet  
303 some interviewees indicated some feedback or confirmation by the GP would have been nice  
304 for reassurance. Support of colleagues was experienced as motivating and stimulating.

## 305 **6. Expectations and experiences**

306 The interviewed healthcare professionals were generally positive about the integrated blended  
307 care program. A positive point highlighted was the insights the program gave into patients.  
308 Patients became more self-managing of their problems. *'They really become problem owner!*  
309 *(p2)'. Healthcare professionals noticed that patients became more aware of their responsibility*  
310 *for their own health. As patients started the program at home, they found that patients were*  
311 *better prepared. This made the healthcare professionals able to get to the core of the treatment*  
312 *faster. 'Part of what is told, is already told online. The patient can see and read it himself. That*  
313 *saves time during treatment. (p3)' 'I notice patients learn a lot when they read material at home*  
314 *or watched a video (p9)'. Most healthcare professionals already used their knowledge of the*  
315 *integrated blended care program in their current treatments. Some hoped it would be*  
316 *implemented as usual care. It was a unique experience, which relieved the workload and should*

317 therefore be implemented in usual care: '*... if people return, they changed something and are*  
318 *enthusiastic and proud about that. That they reached goals they didn't expect to (p5)*'.

319

## 320 **Discussion**

321 This qualitative study was conducted to investigate the usability of an integrated blended care  
322 program from healthcare professionals' perspective. Semi-structured interviews were held, out  
323 of which six core themes emerged with accompanying facilitators and barriers.

324

325 The main facilitator in this integrated blended care program was the depth in treatments and  
326 the possibility to personalize the program. Patients received information in multiple ways and  
327 in different stages of the program. Prior to the face-to-face treatment, patients received  
328 information in text and saw instruction videos at home. Later, in face-to-face appointments  
329 with healthcare professionals, they could ask their questions or share their doubts. Patients  
330 were better prepared about what was going to happen next. Furthermore, repeating  
331 information made patients better prepared which saved time and allowed healthcare  
332 professionals to move on to the core of treatment faster. Repetition is a known behavioural  
333 change technique, as with repetition individuals better develop skills to actively self-regulate  
334 their behaviour (26). Another facilitator was the presence of two different types of healthcare  
335 professionals which led to a more holistic treatment. The two professions worked from their  
336 own vision, making the treatment as thorough as possible. After the program was finished,  
337 professionals had better gotten to know each other, and were actively seeking collaboration.  
338 It is remarkable that the collaboration picked up so fast, as literature shows interprofessional  
339 collaboration between healthcare professionals is complex (27). Professionals have their own  
340 educational background and are socialized to adopt a discipline-based vision of their patients

341 and the services they offer. Collaboration requires making changes to this paradigm (27), which  
342 apparently succeeded in this blended treatment.

343

344 An important barrier in the use of the blended care program was the selection of patients.  
345 Participating healthcare professionals did not have the feeling all patients were suited to  
346 participate in the program. This could be due to the condition of MUPS, which is hard to define  
347 and does not have clear criteria (28). Healthcare professionals could quickly tell if a patient was  
348 motivated or not, which they seemed to find a predictor of succeeding with the program or  
349 not. It seems required to first invite patients to share their motivations, personal needs and  
350 preferences before starting an integrated blended care program (14). Patients were selected  
351 through a proactive approach. An electronic screening method using data from the electronic  
352 medical record of the patients' GP was used (29). All eligible patients who were at risk for  
353 chronicity of complaints were proactively approached by their GP via an invitation letter  
354 explaining the study. By approaching patients proactively, the chance of finding patients who  
355 may be less motivated and less clear about what they want to achieve within the intervention  
356 may increase. One should therefore take motivation and personal help-request into account in  
357 future programs.

358

359 The most frequently reported barrier in the application of the integrated blended care was  
360 dealing with the autonomy regarding decisions about when and how to stick to the treatment  
361 protocol. For instance, professionals felt more time was needed during the intake, felt the need  
362 for an evaluation or booster session, and experienced the need for treating more patients  
363 following the protocol. Additionally, healthcare professionals struggled with the fact that their  
364 role changed into being more of a coach. They had difficulties seeking to formulate long terms

365 goals with their patients. The feeling was patients did not have a specific help-request. This  
366 could be due to fact patients were better prepared. Furthermore, this preventative approach  
367 was new, which was hard to get used to. More insights are necessary into how to coach  
368 professionals on behavioural change techniques and how to organize healthcare around it  
369 (30)(11)(12).

370

371 Other perceived barriers included the lack of accessibility of the e-Coaching modules, which  
372 was also reflected in by the reported SUS scores. Eighty percent of interviewees gave SUS  
373 scores below 70, which implies a low user satisfaction (24). Technical problems were  
374 experienced as hindering factor, and the need for user-friendly technical solutions has been  
375 repeatedly expressed in the literature (31)(32)(33). The successful implementation of the  
376 integrated blended care will certainly require a more sophisticated technical setup, that is free  
377 of typical starting problems. Based on the results of the current study, a new application was  
378 developed which shows promising technical support.

379

380 A limitation in this qualitative study is that all findings are based on one specific integrated  
381 blended care program (PARASOL). Certain core themes hence are directly linked to this specific  
382 program. Recommendations however are applicable when starting any integrated program  
383 with a blended approach. A further limitation is the theoretical construct chosen (Bleser et al),  
384 which contains performance, satisfaction and acceptability (21). Other theoretical constructs  
385 could also have been applied. Examples are the Unified Theory of Acceptance and Use of  
386 Technology (UTAUT) and the Technology Acceptance Model (TAM). In their core, these  
387 constructs however are comparable (34)(35). UTAUT however lays more focus on the social

388 influences in relation to behavioural intention, while TAM focuses more on the perceived  
389 usefulness and ease of use.

390

### 391 **Conclusion**

392 An integrated blended care program offers the possibility to personalize treatment. This study  
393 gathered healthcare professionals' experiences with and attitudes towards integrating  
394 healthcare and offering blended care programs. Findings show attention should be given to  
395 the new responsibilities of healthcare professionals, and their role in integrated and blended  
396 care. This new approach of delivering healthcare can facilitate interprofessional collaboration.  
397 Achieving sustainable change in patients however still requires instruction and support for  
398 healthcare professionals implementing behavioural change techniques.

399

### 400 **Abbreviations**

<b>GP</b>	General Practitioner
<b>MHN</b>	Mental Health Nurse
<b>MUPS</b>	Medically Unexplained Physical Symptoms
<b>PT</b>	Physical Therapist
<b>SUS</b>	System Usability Scale
<b>TAM</b>	Technology Acceptance Model
<b>UTAUT</b>	Unified Theory of Acceptance and Use of Technology

401

### 402 **Declarations:**

- 403 • Ethics approval and consent to participate

404 The study was approved by the Medical Ethical Committee Utrecht, by number 17/391.  
405 Informed consent was obtained from all individual participants included in the study.

- 406 • Consent for publication

407 Not applicable

- 408 • Availability of data and materials

409 The datasets used and analysed during the current study are available from the  
410 corresponding author on reasonable request.

- 411 • Competing interests
- 412 The authors declare that they have no competing interests.
- 413 • Funding
- 414 This work was supported by SIA-RAAK-public [Grant No. 2015-02-24P]
- 415 • Authors' contributions
- 416 ST, MP en CV initiated this study and contributed to the concept and design of this
- 417 study. ST organized and participated as interviewer and EP participated as observer. ST
- 418 en EP analysed and interpreted the data. MN conducted the role of qualitative expert.
- 419 All authors revised the manuscript and approved the final version for submission.
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- 422 • Authors' information (optional)
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424

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# Figures

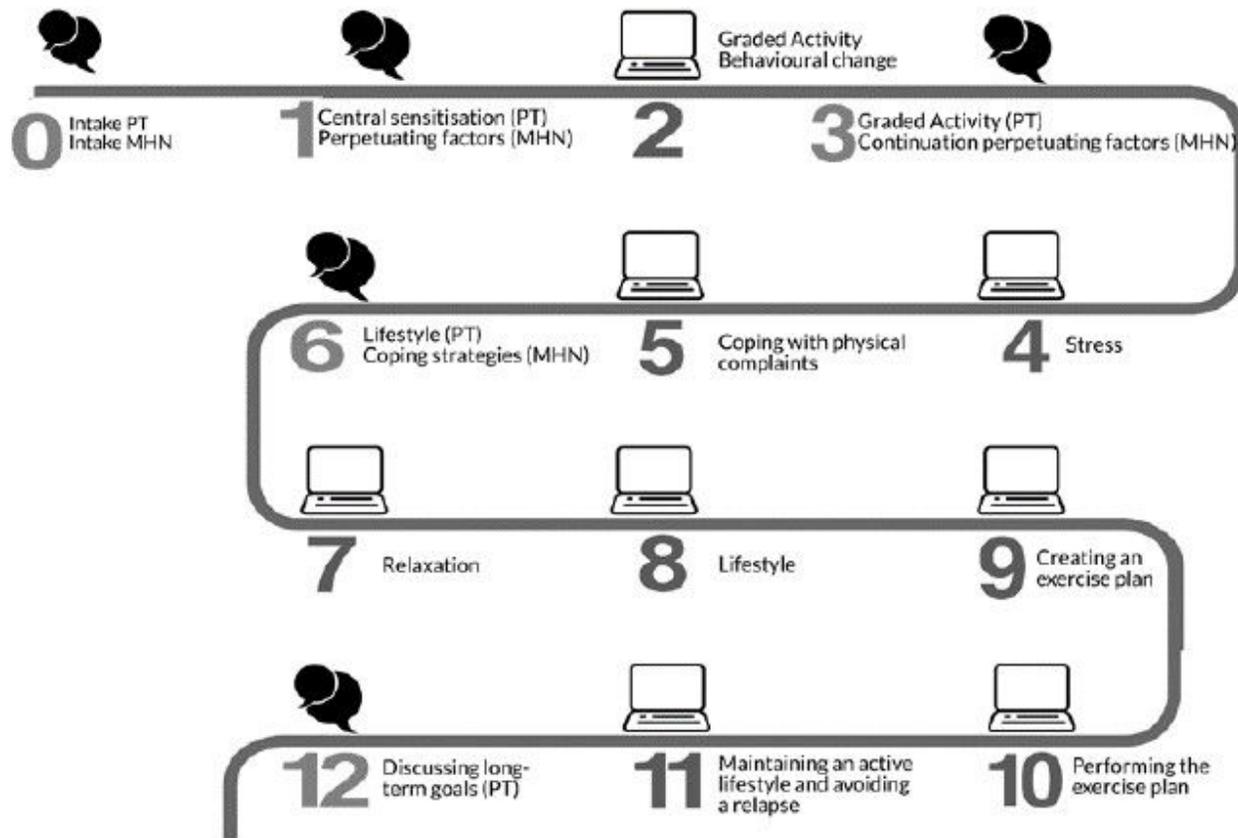


Figure 1

Flow of the PARASOL program.