1 **Understanding the impact of the Covid-19 pandemic on delivery of rehabilitation in specialist palliative care**
2 **services: An analysis of the CovPall-Rehab survey data.**
3

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Abstract

Background: Palliative rehabilitation involves multi-professional processes and interventions aimed at optimising patients' symptom self-management, independence, and social participation throughout advanced illness. Rehabilitation services were highly disrupted during the Covid-19 pandemic.

Aim: To understand rehabilitation provision in palliative care services during the Covid-19 pandemic, identifying and reflecting on adaptative and innovative practice to inform ongoing provision.

Design: Cross-sectional national online survey.

Setting/participants: Rehabilitation leads for specialist palliative care services across hospice, hospital, or community settings, conducted from 30/07/20 to 21/09/2020.

Findings: 61 completed responses (England, n=55; Scotland, n=4; Wales, n=1; and Northern Ireland, n=1) most frequently from services based in hospices (56/61, 92%) providing adult rehabilitation. Most services (55/61, 90%) reported rehabilitation provision becoming remote during Covid-19 and half reported reduced caseloads. Rehabilitation teams frequently had staff members on sick-leave with suspected/confirmed Covid-19 (27/61, 44%), redeployed to other services/organisations (25/61, 41%) or furloughed (15/61, 26%). Free text responses were constructed into four themes: (i) fluctuating shared spaces; (ii) remote and digitised rehabilitation offer; (iii) capacity to provide and participate in rehabilitation; (iv) Covid-19 as a springboard for positive change. These represent how rehabilitation services contracted, reconfigured, and were redirected to more remote modes of delivery, and how this affected the capacity of clinicians and patients to participate in rehabilitation.

Conclusion: This study demonstrates how changes in provision of rehabilitation during the pandemic could act as a springboard for positive changes. Hybrid models of rehabilitation have the potential to expand the equity of access and reach of rehabilitation within specialist palliative care.

Keywords: *Rehabilitation, Palliative Care, Hospices, Physical Therapy Modalities, Occupational Therapy, Surveys and Questionnaires, Covid-19*

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43 **Key Statements:**

44 **What is already known about the topic?**

45 • Guidelines recommend that rehabilitation targeting function, well-being, and social participation is
46 provided by specialist palliative care services.

47 • Prior to Covid-19, there was variable provision of palliative rehabilitation in the UK. This variation was
48 related to local service priorities, funding, and commissioning/procurement constraints.

49 **What this paper adds**

50 • Over time, Covid-19 related disruptions forced services to reconfigure and adapt which caused
51 fluctuations in the shared spaces in which health professionals, patients and family care givers met to
52 participate in rehabilitation.

53 • These fluctuations resulted in the adoption of digital and remote forms of care which altered health
54 professionals' and patients' capacity to participate in, and the equity of access to and reach of,
55 rehabilitation.

56 • Covid-19 has acted as a springboard for learning, with many rehabilitation services hoping to move
57 into the future by (re)gaining losses and integrating these with lessons learned during the pandemic.

58 **Implications for practice, theory or policy**

59 • Recommendations are made to support extended reach and more equitable access to rehabilitation
60 in palliative care services.

61 • We recommend mixed methods evaluations of hybrid models of in-person and online rehabilitation
62 across palliative care settings.

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64 **Background**

65 Palliative care services have made essential contributions in responding to Covid-19 through engaging in
66 advance care planning, producing guidance to manage symptoms, and caring for patients across
67 hospital, hospice and community settings.[1-5] These contributions have occurred in the context of a rapid
68 increase in demand, leading to increased activity in hospital and home-based specialist palliative care
69 teams, a shift from proactive to reactive end of life care, and wider provision of support and education for
70 other health care professionals.[2] These changes are likely to have impacted on provision of rehabilitation
71 for people receiving palliative care.
72
73 Palliative rehabilitation encompasses function-focused care across all domains of the World Health
74 Organisation International Classification of Function, Disability and Health.[6, 7] It supports people towards
75 optimal independence and participation in society throughout their disease, including during functional
76 decline towards the end of life.[8] It adopts a holistic and person-centered approach, comprising multi-
77 professional assessment and mainly non-pharmacological interventions [9, 10] such as goal directed
78 symptom management,[11] physical activity and exercise,[12-14] mindful movement [15, 16], and enablement in
79 activities of daily living.[17, 18] Rehabilitation plays a crucial role within palliative care to meet physical,
80 psychosocial, and spiritual needs of people with advanced, progressive disease.[8, 10]
81
82 Guidelines recommend specialist palliative care services provide rehabilitation,[19, 20] through
83 physiotherapists and occupational therapists as core team members, and access to dietitians and speech
84 and language therapists. However, rehabilitation in palliative care is not universally prioritised
85 internationally, with ad hoc and limited provision within specialist services.[21, 22] This may have been
86 exacerbated during the Covid-19 pandemic where rehabilitation is reported to have been the most
87 commonly disrupted health service, often being deemed non-essential.[23] Moreover, social distancing and
88 isolation policies may disrupt rehabilitation provision, as many interventions are delivered in-person,
89 involving touch, movement, groups, and interactions within the physical and social environment.
90 Understanding how rehabilitation services were affected by and adapted to Covid-19 is needed to support
91 the implementation of strategies to optimise the provision of this component of specialist palliative care in
92 the future.
93
94 **Aims:**

95 To understand rehabilitation provision in palliative care services during the Covid-19 pandemic, identifying
96 and reflecting on adaptative and innovative practice changes to inform ongoing provision.

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Methods:

Design:

A cross-sectional national online survey grounded in an interpretive paradigm. This survey is part of the CovPall study [2, 3, 5] and is reported according to the STROBE[*] and CHERRIES[*] statements. Research ethics committee approval was obtained from King's College London Research Ethics Committee (21/04/2020, Reference; LRS 19/20-18541 ISRCTN16561225). Completion of the survey indicated consent.

Participants and Setting:

Rehabilitation or therapy leads for specialist palliative care services providing rehabilitation across inpatient and out-patient palliative care in hospital or hospice, home palliative care, and nursing home settings in the UK.

Sampling and recruitment:

The invitation to participate was disseminated via palliative allied health professions and palliative care key stakeholder organisations (Hospice UK Covid-19 (Clinical) Network; Sue Ryder; The Association of Chartered Physiotherapists in Oncology and Palliative Care; Palliative Rehabilitation Facebook Group) and via social media. Eligible service leads were provided with the link to the online survey.

Data Collection:

REDCap was used to build and host the survey. Data were collected through closed and free text responses (see Supplementary files 1 and 2 for full survey and procedures). The responses provided were reflections made by rehabilitation or service leads within the service/organisation in which they worked and was open between 30/07/20-21/09/2020.

Data analysis:

Descriptive analysis using SPSS (v24) was conducted to provide contextual data to inform qualitative analysis. Free text responses were analysed in NVivo (v12) using reflexive thematic analysis.[24, 25] JB and AB familiarised themselves with the free-text data, coding inductively at a semantic level. Codes sharing similar meaning patterns were combined as categories, then similar categories were combined as themes. At this point, we recognised that our understandings of how Covid-19 impacted on rehabilitation services were resonant with the embodied-enactive clinical reasoning in physical therapy model.[26, 27] This proposes that the lived experiences, backgrounds, expectations, and expertise of patients and professionals are embodied and enacted in 'contextualized interaction' as the needs of the patient are expressed and understood. The process allows shared meanings to be created that can then guide subsequent rehabilitation interventions. We adapted the model to describe the embodied and enacted creation of shared meaning in contextualized interaction as occurring in 'intersubjective spaces' (hereafter described as 'shared spaces'). We extended the explanatory scope of the model to be able to capture any

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factors relating to functional well-being and social participation, including but not limited to movement disturbances.

Guided by this model, we revisited and reflected on the data interpretively at a latent level, organising codes into higher order themes and subthemes. Finally, central organising concepts underpinning these themes were named and overarching themes were agreed. Throughout this process, JB, AB, and MM and wider members of the CovPall team acted as 'critical friends' [28] by challenging, questioning, and contributing to the interpretation of findings. Further analysis and engagement with the data occurred throughout the writing process. We adopted a relativist approach to rigour, selecting quality criteria applicable to the study aims and methodology[29] (Table 1).

Findings:

Characteristics of services and respondents:

61 completed responses were received. Characteristics of services described are presented in Table 1.

Closed text responses:

Services were most frequently based in hospices (57/61), which in the UK are usually physical buildings in the charitable sector. Other services were based in the community or hospital. Staffing establishments were small; full time equivalents for physiotherapists were slightly higher than occupational therapists. Dietitians and speech and language therapists were accessed through external providers. Prior to Covid-19 more than three-quarters of services provided rehabilitation in hospice day therapy, hospice inpatient, and hospice outpatient settings. About two-thirds provided rehabilitation in peoples homes, and one-third in nursing/residential care homes. A large reduction in rehabilitation provision in hospice day therapy and outpatient settings occurred. Sixteen (27%) fewer services provided rehabilitation to hospice inpatients and only 3 services continued rehabilitation provision to nursing/residential care homes (Table 2).

Most services (55/61,90%) reported the Covid-19 pandemic had changed rehabilitation provision. Rehabilitation teams had staff members on sick leave with suspected or confirmed Covid-19 (27/61,44%), redeployed to other services/organisations (25/61,41%) or furloughed (15/61,26%). Other challenges included having difficulties providing rehabilitation equipment (23/61,38%), problems accessing personal protective equipment (PPE) (18/61,30%), and having no access and/or training in remote technologies (8/61,14%). Half of responding services reported a reduced number of referrals and caseload, and almost all reported a large shift from face-to-face to remote contacts (Figure 1).

Free text responses:

The analysis of free-text responses is represented by four themes and three sub-themes which outline respondents' perceptions of the impact Covid-19 had on the organisation, delivery, and provision of

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165 palliative rehabilitation. They are represented in accordance with the embodied-enactive clinical
166 reasoning in physical therapy model[26] (Figure 2).

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171 **Theme 1: Fluctuating shared spaces.**

172 The pandemic forced a shift in the shared spaces in which healthcare professionals and patients met to
173 participate in palliative rehabilitation. This was due to the dangers associated with the spreading of Covid-
174 19, thus the social and physical distancing needed to limit transmission and minimise risk. Initially, the
175 main shift observed was away from face-to-face shared spaces to an online, virtual space as buildings
176 were closed, staff were physically or socially isolating (shielding)[30] or furloughed, and home visits
177 stopped.

178 *"Adoption of telephone and videocall assessment and intervention, no outpatient appointments or*
179 *community visits offered for first 5 months of pandemic" (ID59 England)*

180 *"Reduction in OT support in own homes (with reduced staffing + shielding). Sadly, in the early*
181 *weeks, a few patients with COVID-19 and severe symptoms were unable to have Physiotherapy*
182 *due to lack of appropriate PPE" (ID19, England)*

183 Whilst for most, shared spaces shifted to virtual platforms, a small number of services reported minimal or
184 no changes to service provision from the outset of the pandemic. Instead, they commented on how health
185 professionals continued to provide routine rehabilitation services in patients' homes and inpatient units:

186 *"No change in practice however we have continued to give see and treat patients using all the*
187 *correct guidelines and PPE if the patient consents. Therefore, we have been able to give a*
188 *continuous service unlike our community colleagues who have been restricted in their service"*
189 *(ID15 England)*

190 Shifts in the shared spaces were dynamic and fluctuated throughout the pandemic as more was learned
191 about Covid-19, government alert levels were altered, and resources and risk assessment systems were
192 developed. Some services that had initially moved all rehabilitation to virtual spaces began to reintroduce
193 limited in-person rehabilitation in community and inpatient settings when deemed 'essential' following risk
194 assessments and dependent on the availability of PPE.

195 *"As Alert level decreased allowed to see patients in their own home with appropriate risk*
196 *assessment and PPE" (ID08 England)*

197 *"Initially no face to face on the in-patient unit but now that has resumed on a reduced basis" (ID03*
198 *England)*

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199 **Theme 2: Remote and digitised rehabilitation offer**

200 Integral to palliative rehabilitation was the provision of interventions in-person where embodied
201 interactions (e.g., touch, movement, group-based activities) with people and the surrounding
202 physical/social environment were fundamental. Fluctuations in shared spaces led to changes in the
203 'rehabilitation offer' (i.e., what and how interventions were delivered). Respondents highlighted how
204 closures of buildings and physical spaces resulted in shifts to long-range forms of rehabilitation. This
205 represented how the physical, embodied and enacted in-person components through which rehabilitation
206 was usually delivered was replaced by video-conferencing platforms in which patients and professionals
207 connected, and interventions, assessments, and group therapies were delivered, digitally.

208 Delivering rehabilitation through digital means required services to adapt creatively by thinking of different
209 ways they could support people with common symptoms and concerns (e.g., breathlessness, anxiety,
210 and fatigue). These adaptations were not uniform; some interventions adopted a synchronous approach
211 (e.g., providing live group-based classes via Zoom), whilst others were asynchronous (e.g., uploading
212 previously or newly produced patient facing resources to websites or YouTube).

213 *"use of AccRx on SystmOne* [clinical online virtual platforms] *for video consultations, sending out*
214 *more postal information to patients. Zoom recorded and live groups sessions" (ID09 England)*

215 *"We have been developing online versions of our groups such as Tai Chi and Fatigue and*
216 *Breathlessness, these have started running recently. Advice and exercises have been posted out*
217 *to individuals and we have also used accuRx for 1:1 video assessment and treatment as*
218 *indicated" (ID30 England)*

219 *"The wellbeing service has become a virtual service providing support calls/video consultations.*
220 *Support groups for patients through the use of zoom such as the Be in Charge programme which*
221 *provides tailored support for anxiety management/ fatigue / breathlessness etc. This involves*
222 *members of the multi-disciplinary team. Lymphoedema services completing initial patient*
223 *assessment via telephone/video consultation prior to face to face for hosiery measuring" (ID22,*
224 *England)*
225
226 Moreover, responding to Covid-19 also entailed being creative in engaging family members in the
227 rehabilitation process (i.e., through supporting occupational therapy assessments in patients' homes):

228 *"All community visits reduced and photos, relatives measuring furniture used as first line instead"*
229 *(ID45, England)*

230 **Theme 3: Capacity to provide and participate in rehabilitation**

231 Fluctuations in shared spaces and shifts to predominantly remote offers of rehabilitation had
232 consequences for the capacity for health professionals to provide, and patients to participate in,
233 rehabilitation.

234 **For patients**

235 **Sub-theme 1: Reach and access**

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236 Respondents provided varied accounts on the impact that moving towards remote/digital forms of
237 rehabilitation had on the capacity for patients to engage in rehabilitation during the pandemic. Some
238 respondents perceived that this new way of working enhanced access, meaning that rehabilitation teams
239 could expand their reach to people they had not been able to reach before (e.g., people in rural areas,
240 younger people, or those too ill/unable/unwilling to travel to the hospice building):

241 *"some have said that the effort of transferring to a car and then visiting the building can be very*
242 *demanding on them and virtual input has proved more efficient for them. Family members have*
243 *also not needed to find someone to sit with the person they care for" (ID30 England)*

244

245 *"The changes have largely enabled a very small palliative rehabilitation team to expand their*
246 *reach" (ID13, England)*

247 However, changes were not always equitable. Concerns were raised that a digital divide limited the
248 capacity of many patients to participate in rehabilitation, especially those with communication/cognitive
249 difficulties or with no access to computers/internet. Others lacked the ability to navigate these platforms or
250 did not like digital forms of care delivery:

251 *"Physical access has been reduced and transport has not been provided or restricted. Some*
252 *patients don't have the ability to access technology in order to have online appointments" (ID07,*
253 *England)*

254 *"Those with communication and or cognitive difficulties especially if don't have access to video*
255 *technology or lack or other to advocate for them are finding access hard and communication*
256 *when wearing masks difficult" (ID61, England)*

257 There were also concerns that the reach of digital forms of rehabilitation were somewhat limited because
258 certain interventions required clinicians to be physically present and use sensory cues to assess patients
259 in ways that were not possible virtually. Respondents also voiced apprehension about how the lack of
260 face-to-face services combined with a limited availability of PPE meant some patients in the community
261 could not always be seen and missed out on important rehabilitation input.:

262 *"Sadly in the early weeks, a few patients with COVID-19 and severe symptoms were unable to*
263 *have Physiotherapy due to lack of appropriate PPE" (ID19, England)*
264
265 *"Specific treatments can only be offered if seen visually otherwise general advice will be given"*
266 *(ID29, England)*

267 *"It feels as though there are a lot of patients out there in the community who are slipping through*
268 *the net at present. We know they are out there but due to shielding and changes to general*
269 *community input we are struggling to find patients not already known to the Hospice/service"*
270 *(ID08, England)*

271 ***For healthcare professionals***

272 **Sub-theme 2*:* Rapid redeployment and disrupted resources**

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273 Participants reported that, in responding to fluctuations in shared spaces, various forms of rapid
274 redeployment occurred. As the buildings/places in which they usually provided rehabilitation were closed,
275 rehabilitation staff were redeployed to support wider members of the multi-disciplinary team. In some
276 cases, staff used this as an opportunity to promote and provide rehabilitative approaches in other
277 contexts (e.g., online and in-patient units). In others it included providing input where other community
278 services had been withdrawn.

279 *"All AHP/Rehab staff furloughed. Redeployed to NHS" (ID47 Hospice, Scotland)*
280
281 *"Other community services locally no longer supporting/working in the way they usually would*
282 *and therefore workload has increased in supporting complex needs at home. Hospice at Home*
283 *service has increased and therefore required increased support from physiotherapy and*
284 *occupational therapy" (ID05 England)*
285
286 *"During the peak of the outbreak at the hospice, OT's and physios supported the provision of*
287 *essential care at the hospice, working bank holidays as health care assistants or managing*
288 *incoming telephone calls with family members" (ID37 Wales)*

289 These forms of redeployment affected health professionals' capacity to provide rehabilitation in numerous
290 ways. For some, this was attributable to varied degrees of self-confidence that staff possessed in
291 developing new models of rehabilitation with little time to train or adapt. There were also concerns about
292 the practicalities involved in supporting patients to use the technologies as well as data protection and
293 security:

294 *"Finding the optimum way of using it and the practicalities of demonstrating exercises on screen"*
295 *(ID03 England)*

296 *"Lack of understanding of GDPR* [General Data Protection Regulations] *for which ones we can*
297 *use, lack of access to technology for both patients and staff, unable to go to patients to teach*
298 *them how to use technology (particularly at the start of the pandemic") (ID07 England)*

299 Respondents voiced concerns that rapid redeployment of roles and practices undermined their perceived
300 capacity to provide effective palliative rehabilitation, particularly when delivering it digitally. This was
301 because digital/virtual approaches omitted the hands-on care and non-verbal forms of communication
302 that they considered as fundamental to rehabilitation. Moreover, not every service had been able to adapt
303 interventions in a form that could be delivered remotely:

304 *"It has been difficult to connect with patients via a screen if they are upset. Normal reliance on*
305 *nuanced body language and tone of voice has been hampered so needs to be approached*
306 *differently. In addition, telling a group that one of their members has died has been difficult*
307 *without the opportunity to approach individuals differently (sometimes in face to face we may*
308 *choose to take a group member aside to break the news). Not being able to offer comforting*
309 *touch is difficult" (ID14, England)*

310 *"Not having face to face does mean you lose something with the client, that therapeutic*
311 *connection. Hands on assessment is missing" (ID54 England)*

312 *"Do not yet have a wide range of videos or presentations to cover all usual aspects of a self-*
313 *management programme" (ID02 England)*

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314

315 Confounding the issues associated with rapid redeployment and working differently for health
316 professionals, was operating in a context of disrupted resources. Respondents sensed that palliative
317 rehabilitation was sometimes viewed as dispensable/non-essential, with constraints on timely access to
318 external equipment providers undermining their capacity to source equipment that was important for
319 patients to function independently.

320 *"We do not provide equipment but normally have good relations with local teams who provide*
321 *this. these teams are working differently and those with general rehab needs are not being seen*
322 *as they are not at a high enough priority for their current service offering"* (ID30 England)

323 *"Equipment services are not delivering non-essential equipment in the community. Wheelchair*
324 *services now have a 9-12 month wait for a review of a patient's seating/wheelchair"." We've had*
325 *to set up our own buffer store to address this" (ID56 Scotland)*

326 At times, patients were advised to avoid equipment, to go without, or the responsibility for acquiring the
327 equipment was shifted to individual patients:

328 *"Used stock from store cupboard, advised patients on strategies avoiding equipment. Some*
329 *patients purchased their own online" (ID12, England)*
330

331 **Sub-theme 3: Emotional and physical distress**

332 Health professionals' capacity to deliver palliative rehabilitation was also influenced by the emotional and
333 physical impact (e.g., fear, uncertainty, anxiety, stress, exhaustion, frustration, and burnout) of working in
334 the context of the pandemic. For some respondents, the source of emotional distress was a consequence
335 of attempting to fulfil job roles in a context of disorientation, general uncertainty, rapid changes to ways of
336 working, and fears over Covid-19:

337 *"Anxiety within team about the virus. Uncertainty due to differing local policies i.e. other*
338 *community teams, etc' (ID05, England)*
339
340 *"The exhaustion and disorientation felt in the early days where the situation was rapidly evolving*
341 *was particularly difficult and stressful for all involved" (ID37, Wales)*
342
343 For others, emotional and physical distress was directly related to the changes in rehabilitation. Covid-19
344 meant that the places and spaces in which teams could operate contracted, fracturing valued in-person
345 communication with patients, families, and team members, and disrupting integrated working between
346 teams and services:

347 *"half the team had the infection which increased team anxieties, stopped a level of patient care,*
348 *delayed some patient assessments due to sickness and isolation timescales" (ID25, England)*
349
350 *"Managing morale. Team feeling more isolated. Dealing with not being able to see patients face*
351 *to face and deliver normal service... Not being in their usual workspaces. Not seeing some*
352 *colleagues for months. Zoom fatigue, Covid fatigue and resilience" (ID03, England)*

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353 Moreover, some respondents highlighted distress associated with a lack of transparency over their own
354 and others job security. Over time, these issues disrupted capacity by leading to worsening mental health,
355 degraded morale/motivation and, in some cases, staff leaving roles.

356 *"communication from hospice to furloughed staff has been poor, frustration outpatient services is*
357 *not opening any time soon, some social media comments from public about lack of rehab service*
358 *has been noted physios are looking at other employment due to their treatment unsure if*
359 *redundancies is a possibility" (ID60, England)*

360 *"increased anxiety around job security and changes to the hospice. Tension in the team due to*
361 *disjointed and remote working. increased workload on remaining therapists" (ID36, England)*

362

363
364 **Theme 4: Covid-19 as a springboard for positive change**

365 Responding to survey questions related to innovations and the future, respondents focused on how
366 palliative rehabilitation services could use the pandemic as a springboard for positive change. This was
367 through regaining aspects of rehabilitation that patients valued but were lost due to the pandemic (e.g.,
368 face-to-face interventions), whilst simultaneously not losing the valuable forms of rehabilitation that had
369 been gained. Respondents recommended capitalising on health professionals' newfound competencies,
370 skills, and confidence in delivering rehabilitation remotely by developing hybrid approaches that could
371 reach more patients and with savvy use of health professionals' time and resources:

372 *"Virtual groups, video consultations, more satellite clinics, better use of time and physical*
373 *resources. It has given us time to reconsider how to deliver services to increase reach to more*
374 *patients but less intensive and less site based (perhaps appropriately so)" (ID61, England)*
375
376 *"We are hoping to become more integrated with day therapy services with their nurses looking at*
377 *becoming more rehabilitation focussed. The senior management team has had an opportunity to*
378 *look at space and there will be the development of a separate rehabilitation space with more*
379 *outpatients, gym groups, videoed sessions and virtual groups" (ID13, England)*
380
381 Respondents also saw value in maintaining developments in integrated team working and collaborations
382 that had been nurtured during the pandemic. For some, potential benefits were seen at a regional level in
383 continuing collaborative working across hospice teams by pooling resources and skillsets in order to
384 provide more comprehensive rehabilitative services. For others, value was seen in maintaining more local
385 collaborations to complement rehabilitation services, including drawing on community groups to support
386 rehabilitation in the community, upskilling volunteers, and involving the multi-disciplinary hospice team in
387 rehabilitation conversations/interventions:

388 *"Closer MDT working now. We're starting to do more assessments with nurses to see people*
389 *earlier rather than waiting for referral. Physio will be leading on the respite and rehab service*
390 *from mid-October"* (ID07, England)
391
392 *"The focus over the last few months has been in maintaining essential community services for*
393 *patients amidst concerns about systems being overwhelmed and staffing levels being depleted.*

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394 *This has meant a reorganising of services to a regional rather than hospice level with*
395 *collaboration of community teams across several hospices. The focus of this has not been on*
396 *rehabilitation - possibly as other hospices have a less developed rehabilitation service and*
397 *possibly because of concerns about resources during the pandemic. The result has been the*
398 *development of a reactive rather than proactive service with no focus on rehabilitation. However,*
399 *in the long term, the potential benefits of this collaborative working may be in having the ability to*
400 *provide more comprehensive rehabilitation services across several hospices by pooling*
401 *resources and this is something I hope to start discussing very soon" (ID17, England)*
402

403 **Discussion:**

404 *Main findings/results of the study*

405 This study demonstrated how Covid-19 disrupted the shared spaces in which rehabilitation in specialist
406 palliative care was conducted. The shutting of buildings and physical spaces in which rehabilitation

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usually took place, combined with policies around physical/social distancing, predominantly resulted in the adoption of remote and digitised rehabilitation processes. This had mixed impacts on the capacity of health professionals to deliver, and patients' ability to participate in, rehabilitation. Despite the disruptions and challenges that Covid-19 caused, many respondents reflected on how the pandemic could act as a springboard for positive future change through the adoption of hybrid rehabilitation approaches and the continuation of integrated /collaborative working.

What this study adds

This is the first study to collect empirical data that shows how the Covid-19 pandemic impacted the provision of rehabilitation in specialist palliative care services, alongside identifying innovative practice changes to inform future provision. It builds on previous work by the CovPall team [2, 3, 5, 31] in developing a comprehensive picture of how palliative care services responded to the Covid-19 pandemic and contributes to the literature in three ways.

First, the Covid-19 pandemic severely disrupted rehabilitation services within palliative care. The shared spaces in which rehabilitation usually took place were no longer viable, and workforce capacity was limited by staff shielding, sickness, and redeployment. Rehabilitation services contracted, reconfigured, and redirected. These findings expose the vulnerability of clinical teams providing rehabilitation in palliative care services. Teams are usually small in number and were already operating in a national context of underinvestment[32] which left little slack in the system to deal with the rapid demands imposed by Covid-19. Operating in understaffed and under-resourced services meant the capacity to provide rehabilitation was limited. This resonates with the World Health Organisation global rapid assessment of service provision for non-communicable diseases which found that rehabilitation was the most commonly disrupted healthcare service during the Covid-19 pandemic[23]. Within this disrupted context, respondents sensed that rehabilitation services were perceived as non-essential. That respondents felt the provision of rehabilitation was under prioritised and resourced during the pandemic is concerning. Increased demand is expected to continue as Covid-19 resulted in people presenting late with advanced symptomatic disease, compounded by shielding related deconditioning,[33] cancellations/delays in treatments and long-Covid.[34-36] The value of rehabilitation as part of palliative care's holistic approach should be recognised, implemented, and resourced accordingly.

Second, this work underscores the inequities regarding the ability of patients in rural/remote geographic areas, or those who are too ill to travel, to access on-site rehabilitation services in palliative care.[37, 38] This highlights how the Covid-19 pandemic compounded already-existing inequities in palliative care[39] and contributes novel insight into the ways in which it shifted inequities. That is, as rehabilitation provision moved to virtual platforms, for people who had previously struggled to attend in-person appointments and had access to/skills to use digital technologies, access to rehabilitation improved. In contrast, for those without access to/skills to use digital technologies, and/or were shielding and unable/unwilling to risk in-person appointments, access worsened. These align with previous work in palliative that has

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443 demonstrated how shifts to online/digital service delivery has the potential to improve access for some,
444 but worsen it for others,[40, 41] and exemplify how the digital divide has led to new inequities in the provision
445 of palliative rehabilitation as services moved to remote forms of provision to compensate for the Covid-19
446 pandemic.[42, 43]

447 Third, our findings highlight ways in which people working in rehabilitative palliative care services felt that
448 Covid-19 could act as a springboard for positive future change. Covid-19 created a 'forced shift' to virtual
449 working in which services and staff developed a digital confidence that, in some instances, enabled them
450 to meet increasing demand.[44] Indeed, the pandemic seemed to present numerous 'teachable moments' [45]
451 in which, despite considerable challenges, respondents recognised the potential of harnessing learning
452 through the adoption of hybrid approaches (e.g., blended face-to-face and remote provision) in future
453 care. Digital models of care that extend reach and meet increased demand are promising ventures in
454 reshaping and re-envisioning future rehabilitation towards more sustainable forms of palliative care.
455 However, it is important that research and community engagement underpin these shifts to ensure that
456 hybrid models are developed and delivered in equitable, culturally congruent, and person-centred ways
457 that do not perpetuate already existing, or create new forms of, inequities in palliative care[39]. Studies
458 should build on evidence for remote rehabilitation in cancer [46, 47] and chronic respiratory disease[48], with
459 robust and theoretically informed studies of digital health interventions in palliative care.[49, 50] The
460 pandemic provides an opportunity for palliative care services to reflect on the provision of care directed to
461 optimising function[22]. Rehabilitation should not be limited to the therapies allied health professionals
462 provide, it is a process requiring integrated multi-professional teams with rehabilitation expertise [51] as
463 exemplified by holistic breathlessness services.[11]

464 *Strengths and limitations of the study*

465 This paper has several strengths. With responses from rehabilitation leads at 61 palliative care services,
466 the findings represent the practice of hundreds of clinicians involved in the provision of palliative
467 rehabilitation and the breadth of responses is large. Our methodology was robust. Researchers, palliative
468 care clinicians and members of the public contributed to the survey development and refinement of
469 survey questions following the first CovPall Survey. Two researchers, with contributions from the wider
470 CovPall team, used robust and rigorous qualitative methods underpinned by theory. A balance was
471 achieved between closed and open responses in the survey and analysis, with space provided for people
472 to report rich data. Regarding potential limitations, it is possible the survey did not capture views of all
473 rehabilitation team members, as it was completed by team leads. This method sought to identify the
474 overarching impact of Covid-19 on rehabilitation services within palliative care. The survey did not capture
475 the impact on all the discrete palliative rehabilitation components. Most responses came from hospices
476 and it is not clear if this reflects non-responses or the absence of palliative rehabilitation from other
477 palliative care settings. We cannot ascertain from our data how our findings varied across organisations
478 according to local contractual arrangements for the provision of rehabilitation.

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480 **Conclusion**

481 This study provides evidence of the impact that Covid-19 had on rehabilitation services working in
482 palliative care within the UK. The pandemic forced shifts to remote provision and impacted the capacity of
483 health professionals and patients to deliver and participate in rehabilitation. Evidence is provided on how
484 the pandemic may act as a springboard for positive future changes through the adoption of hybrid
485 approaches to rehabilitation that integrate remote and face-to-face provision in ways that are able to
486 expand reach and improve equity. Empirical views of patients on the changes introduced have yet to be
487 obtained and patients voices should inform future research around hybrid models of rehabilitation.
488

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492 survey. JB co-ordinated data collection and distributed survey with input from MM and LF. JB, AB, MM
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