



Remote management of musculoskeletal pain: a pragmatic approach to the implementation of video and phone consultations in musculoskeletal practice

David Hohenschurz-Schmidt^{a,*}, Whitney Scott^{b,c}, Charlie Park^d, Georgios Christopoulos^e, Steven Vogel^f, Jerry Draper-Rodi^f

Abstract

Introduction: Remote consultations through phone or video are gaining in importance for the treatment of musculoskeletal pain across a range of health care providers. However, there is a plethora of technical options for practitioners to choose from, and there are various challenges in the adaptation of clinical processes as well as several special considerations regarding regulatory context and patient management. Practitioners are faced with a lack of high-quality peer-reviewed resources to guide the planning and practical implementation of remote consultations.

Objectives: This Clinical Update seeks to provide practical guidance for the planning and implementation of remote consultations for the management and treatment of people with musculoskeletal pain.

Methods: Recommendations are based on a brief overview of the relevant research regarding phone and video consultations for musculoskeletal practice and derived from the literature, relevant guidelines, and practical experience.

Results: The technical feasibility of remote consultations for musculoskeletal complaints is good, patient satisfaction is high, and a growing body of evidence supports its comparative effectiveness to in-person consultations in some circumstances for improving pain and functioning. We consider in detail practical aspects such as the choosing of hardware and software, we touch on the legal and regulatory context, and we focus on the adaptation of clinical processes and communication.

Conclusion: This Clinical Update draws together best-practice evidence in a practically applicable format, enabling therapists who are working with people with pain to directly apply this knowledge to their individual clinical settings and the requirements of their patients.

Keywords: Telehealth, Video consultation, Musculoskeletal pain, Physiotherapy, Exercise, Manual therapy, Psychology

1. Introduction

Video and telephone-based consultations provide a range of opportunities for the treatment and management of musculoskeletal

Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

^a Department, Surgery and Cancer, Imperial College London, Pain Research, Faculty of Medicine, Chelsea and Westminster Hospital Campus, London, United Kingdom,

^b Psychology Department, King's College London, Health Psychology Section, Institute of Psychiatry, Psychology and Neuroscience, London, United Kingdom, ^c INPUT Pain Management Unit, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom, ^d IPRS Triage and Remote Management Team, IPRS Health Limited, Little Blakenham, Suffolk, United Kingdom, ^e First Contact Practitioner, MSc Neuromusculoskeletal Care, BSc (Hons) Physiotherapy, HCPC CSP, Staffordshire, United Kingdom, ^f Research Centre, University College of Osteopathy, London, United Kingdom

*Corresponding author. Address: Pain Research Group Prof. Andrew Rice, Faculty of Medicine, Dept. Surgery & Cancer, Imperial College London, 4th Floor, Chelsea & Westminster Hospital, 369 Fulham Road, London SW10 9NH, United Kingdom. E-mail address: d.hohenschurz-schmidt19@imperial.ac.uk (D. Hohenschurz-Schmidt).

Copyright © 2020 The Author(s). Published by Wolters Kluwer Health, Inc. on behalf of The International Association for the Study of Pain. This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

PR9 5 (2020) e878

<http://dx.doi.org/10.1097/PR9.0000000000000878>

pain. Musculoskeletal pain encompasses any acute and chronic painful experience associated with or perceived in terms of disorders or injury of the musculoskeletal system, excluding pain of systemic, neurological, or serious local origin.^{25,51} Patients experiencing such pain are managed by a range of health care professionals, including general and speciality physicians, manual or physical therapists, and psychologists.^{9,67} However, practitioners have concerns about remote consultations that may act as obstacles to large-scale implementation. For example, clinicians worry about treatment safety and quality, legal and regulatory constraints, technical feasibility, and how to adjust their routine treatments.^{26,48,57} Fortunately, many challenges and solutions generalise across clinical modalities. This article is thus aimed at any clinician involved in the treatment and management of people experiencing musculoskeletal pain, informing clinicians' consideration, or implementation of remote consultations.

The associated pain and disability from musculoskeletal conditions can be highly distressing. Although most of these conditions are self-limiting, patients do benefit from conservative care.^{9,18,25,28} In early 2020, however, the COVID-19 pandemic put a sudden end to most in-person consultations, spurring a renewed interest in alternative options to maintain patient care. Eccleston et al.²⁸ make a compelling argument not to disrupt chronic pain management during a global pandemic and recommend remote solutions. However, practical guidance on

the transition to and implementation of such services is sparse, and there is the additional need to offer management options beyond those targeted at people with persistent pain conditions, such as acute or injury-related pain management.

This article outlines the evidence base of interpersonal video and phone consultations for musculoskeletal pain. We also provide a generalised practical guide to implement and conduct remote consultations, drawing on a range of scientific fields to enhance the safety and quality of such consultations. We highlight issues requiring special consideration compared with in-person management, such as relationship building, technical aspects, and clinical decision making. Although we focus on nonpharmacological pain management, the practical considerations regarding technical set-up, patient assessment, communication, and self-management also apply to general practitioners seeing patients in pain. General practitioner-specific guidance and considerations regarding the integration of remote consultations into health care systems can be found elsewhere.^{34,58,59,80,86}

2. Methods

Knowing that unfamiliarity with remote consultations may prevent their implementation,⁵⁷ we convened a group of experienced academics and therapists. Based on a rapid review of the literature and personal experience within the team, we created resources for practitioners to facilitate the transition to remote practice. These resources were disseminated through various social media fora and included a series of webinars in 3 languages and attended by more than 1700 clinicians. Integrating clinicians' feedback, we prepared this Clinical Update to make the information widely available, informing care for people developing or living with musculoskeletal pain, both during and beyond the COVID-19 crisis.

3. Results

3.1. Evidence base

Before discussing the current evidence base for remote patient consultations, it is noteworthy that this is a rapidly developing field, with a wide array of technological solutions, research methods, and often underpowered individual trials, making comparisons across studies difficult.⁷³ All evidence presented here was produced during times of a normally functioning health care system. Clinical processes, such as onward referrals or the possibility to resort to in-person care where needed, may require special consideration during a global pandemic.

First and foremost, patient satisfaction with remote management is high across a broad range of interventions and conditions, with patients highlighting perceived clinical benefits, ease of use, reduced travel time, lower cost, improved communication, accessibility, and enhanced self-management.^{48,54,74,77,87,88} A survey of people with chronic musculoskeletal pain found that 43% prefer remote management options over clinical visits. The percentage was even larger when telehealth meant reduced cost or less time off work.²²

Encouragingly, Cottrell et al.²³ not only reported high patient satisfaction with video physiotherapist assessment but physiotherapy assessments also showed a high level of agreement with in-person evaluations and a “near perfect” agreement in care decisions. That accurate diagnoses can be reached through telehealth has repeatedly been demonstrated for a range of

musculoskeletal conditions^{12,55,75,79,83}, and indeed, establishing a diagnosis with high certainty is a prerequisite for continued remote management.⁴⁹

In terms of informational content, a recent study in general practice indicates that although length, quality, and content of phone and video consultations compare to in-person primary care, both therapists and patients may share less information.⁴¹ However, therapists make more effort to build rapport with the patient,⁴¹ possibly highlighting an intuitive sense for the different requirements of the situation.

From existing studies, remote consultations for chronic and stable conditions, including musculoskeletal pain, are as safe as in-person management and there is little evidence to suspect worse clinical outcomes.^{13,52,86,100} Meta-analytical evidence from a heterogeneous pool of trials indicates clinical effectiveness of remote consultations for physical function, disability, and pain in various musculoskeletal conditions and comparable or even superior effectiveness to in-person control interventions.²¹ Limited quality evidence suggests that remote exercise-based telemedicine for people living with persistent pain improves pain compared with nonintervention controls (such as ongoing access to primary care and educational resources alone).¹ Although there is a need for more high-quality studies,¹ such comparisons with a reduced intervention programme are particularly relevant when considering patient populations with restricted access to primary and secondary care. The same meta-analysis found that adding telemedicine to usual care did not produce better results than usual in-person exercise alone.¹

Two recent reviews analysed the effectiveness of remote interventions for nonspecific low back pain²⁴ and osteoarthritis and spinal pain.⁷² Dario and colleagues²⁴ reviewed “telehealth” interventions comprising mainly automated educational and self-management online programmes, concluding that there was limited evidence to support a role of telehealth to manage low back pain. Contrastingly, O'Brien et al.⁷² analysed only trials of interventions that involved real-time interactions with therapists, mainly through the phone and often involving physical activity. Based on 23 studies, the authors were “moderately confident that telephone-based interventions reduce pain intensity and disability in patients with osteoarthritis and spinal pain compared with usual care” (a meta-analysis of 5 trials), albeit not being better than usual care, neither as add-on nor as stand-alone intervention.⁷² Therefore, the personal interaction rather than the mere provision of resources is likely a key feature of effective remote delivery.

Individual trials of remote physical therapy worth highlighting are, eg, the trial by Salisbury et al.,⁸⁶ the largest trial in this field to date (1506 patients, 4 national health physiotherapy centres). Patients were randomised to a phone consultation with a physiotherapist that included an initial assessment, standardised advice, and in-person follow-ups if needed, or to the waitlist for a National Health Service physiotherapy appointment. Only 3% of the experimental group required an initial personal appointment, and at 6 months, 47% had been managed entirely on the phone. There was an equivalence in outcomes between groups with regard to general health and pain-related measures as well as health care costs. No adverse events were reported.

Numerous randomised controlled trials (RCTs) demonstrate that cognitive behavioural therapies (CBTs) improve functioning and mood in people with chronic pain.^{91,101} There is also evidence that psychologically informed approaches can be effectively delivered by nonpsychologists, such as physiotherapists,^{37,53,62,90} osteopaths,¹⁶ and remotely by nurses.⁸⁵

To the authors' knowledge, there is no systematic review specifically of video/telephone-delivered cognitive behavioural

interventions for pain. However, 2 reviews of a relatively small number of trials suggest potential benefits from partially or fully automated cognitive behavioural and educational online programmes in people with chronic pain. Although brief telephone calls were used in some of these trials to provide clinician support alongside web-based materials, telephone calls were not the primary means of delivering treatment^{29,33} (also Ref. 31). Data from 2 noncontrolled observational studies suggest the potential effectiveness of telephone-delivered CBT for chronic pain.^{19,66} In addition, an RCT (n = 128) showed that acceptance and commitment therapy delivered through videoconferencing was noninferior to in-person acceptance and commitment therapy for pain interference. Notably, there was greater attrition in the video teleconferencing arm in this trial.⁴⁷ Two further RCTs (n = 66–98) found no difference between telephone-delivered CBT and telephone-delivered supportive care/education for chronic pain, although within-group improvements were observed.^{15,84}

From a therapist perspective, the main challenges of remote consultations centre around the basic technical implementation, interpersonal communication and relationship building, the patients' occasional expectation to receive "hands-on" care, and the adaptation of clinical processes.^{26,48,77} In line with this, feedback from our webinars indicated that some manual therapists find it difficult to envision what their "intervention" or "treatment" in a video or phone setting may consist of. Following on from the encouraging evidence regarding patient acceptability, clinical safety, and comparable effectiveness, this article will now provide insights on how to address some of these challenges.

3.2. Practical considerations

This section details practical elements to consider when preparing to implement phone or video consultations for the first time, as well as more detailed contextual and communication aspects before, during, and after each remote consultation. An overview of key elements is provided in **Figure 1**.

3.2.1. Hardware and software

Guidelines recommend the use of video over phone,³¹ despite the fact that there is little evidence to suggest that clinical outcomes or intervention quality differ between these media.⁴⁶ Perceived advantages of video are the ability to observe facial expressions and body language potentially facilitating empathy and a therapeutic alliance as well as allowing the visual assessment of patients presenting with musculoskeletal symptoms, such as movement limitations or indicating the site of discomfort. Having 2 devices, such as a tablet plus a desktop PC, or using a split-screen mode may help practitioners to take clinical notes during the appointment while maintaining effective online communication. Using a headset may improve the sound quality by reducing environmental noise.

As to the choice of software, there are many encrypted software products that practitioners can use to deliver remote consultations. Importantly, however, it is the practitioner and not the software provider who is responsible for ensuring that the software's privacy policies are compliant with local data protection regulations. Although this is the case for many common video tools, professional health care products may offer additional advantages such as virtual waiting rooms or the option to send a link directly to the patient without disclosing the practitioner's username, private email address, or mobile number. Apart from not being specifically designed for medical

consultations, freely available software, such as Skype, Zoom, or Facetime, may also require the patients to download software and thus reduce accessibility. Clinical teams should explore different options for their particular setting while considering ease of use and accessibility for patients as well as regulatory compliance. Ideally, remote consultation software is integrated into the overall clinic management software. For all of this, IT support may be required, staff need to familiarise themselves with the technology, and contingency plans should be implemented in case of technology failure.^{39,99}

3.2.2. Data protection

Generally, the same regional legislation for patient data handling and storage applies as in in-person appointments (such as the EU General Data Protection Regulation). Furthermore, individual insurers may impose additional requirements, such as end-to-end encryption of the communication channel. Recording video consultations is possible and may indeed be considered an advantage of remote care because it allows patients to access such recordings, eg, as a reminder of demonstrated exercises. Recording consultations poses the problem of storing data in a regulation-compliant manner. A way of accommodating legal concerns is to invite the patient to record the appointment themselves and on their own device. Recordings for whichever purpose need to be agreed on with the patient beforehand and consent documented. Furthermore, it is noteworthy that recordings, chat, text, or email communications with patients do not replace official patient notes. Finally, it is advisable to record the type and version of the media channel used as well as any technical difficulties that may have disrupted the consultation.

3.2.3. Process planning

Before delivering remote consultations, it is useful to map out all clinical, administrative, and patient processes and adapt them to a remote encounter (**Fig. 2**). This may include appointment booking, preappointment information for patients, dial-in and waiting room, provision of follow-up information and resources, sending referral letters, and processing payment. Processes and technology should be piloted before the first remote patient encounter as technical challenges are common.²⁶ Preappointment information provided to patients may include advice on suitable clothing and which environment is appropriate for a medical consultation (not in public spaces or a busy room), thus ensuring both privacy and patient comfort.

3.2.4. Consultation context and environment

The environment in which practitioners deliver remote consultations is important. Not only must privacy be maintained for all stakeholders but also unnecessary distractions are to be avoided (background TV and phone ringing) and appropriate workwear used.^{69,80} When using video technology, the light source should be above or behind the computer to maximise video quality. Professionalism standards outlined by governing bodies^{32,39} highlight requirements to maintain high standards of conduct in the workplace and apply to clinical practice through remote consultations. Equally, health and safety legislation applies to remote working. Workstation assessment and ergonomics have to be taken into account.⁴⁶ This encompasses factors such as lighting, sitting arrangements, adequate space for practical functions including exercise demonstration, and room temperature. Updated guidance to support employees and employers

Preparing for video consultations	<ul style="list-style-type: none"> • Clarify local legal and profession-specific regulations • Evaluate hard- and software options • Plan patient and admin process, including information governance and storage • Trial phase
Before each appointment	<ul style="list-style-type: none"> • Book appointment and clarify format • Provide preparatory information to patient • Assure adequate working environment and set-up • Review patient information and notes if available
During each appointment	<ul style="list-style-type: none"> • Evaluate and manage patient expectations • Receive consent at outset and establish process for ongoing consent • Establish with patient differences in case history process, triage and limitations of medium • Communicate in a medium-specific and therapeutic manner • Decide in partnership with patient on suitable intervention
Ending the appointment	<ul style="list-style-type: none"> • Review immediate outcomes • Establish plan for further evaluation • Agree follow-up arrangements • Communicate the end of the consultation

Figure 1. Summary of key practical elements to consider when planning to implement remote consultations for the first time (box 1) and before, during, and at the end of each appointment (boxes 2–4).

during prolonged episodes of home working is available.⁴⁵ It is advisable that similar precautions are taken for the patient's environment, both in terms of their privacy and for practical functions including general safety or risk of falling during practicing a movement or activity.

3.2.5. Preparing individual consultations

Before each consultation, practitioners should prepare necessary equipment (eg, exercise equipment and informational material) and review the patient notes. At the start of the consultation, it is good practice to conduct an identity check (name, date of birth, and address),⁶⁸ especially when using video with a new patient or phone. Also verify with the patient that their privacy is ensured. If a chaperone is with them, this needs to be recorded in the patient notes.

3.3. Communication

Patients need to be informed about the advantages and limitations of remote consultations before or at the beginning of the remote consultation. It should be made clear that a patient may stop the consultation at any point if so desired. During the consultation, patients should be explained about the constraints of a remote consultation with particular reference to limited visual information and examination possibilities.

3.3.1. Empathy, verbal, and nonverbal communication

In-person empathic interventions show modest positive effects on pain and anxiety and enhance patient satisfaction across a range of conditions and care settings.^{50,65} The impact of using

video and telephone consultations on empathy is mixed. Some studies show equivalence or results in favour of telemedicine,^{17,41,74,91} and some studies suggest less empathetic behaviour is delivered or possible.^{26,59} Tates and colleagues propose that clinicians compensate for a decreased availability of nonverbal language by enhancing their verbal empathetic behaviours.⁹¹ **Table 1** provides core verbal and nonverbal behaviours contextualised for video and audio consultations.

3.3.2. Shared decision making and consent

Expectations regarding consent are similar to in-person consultations: Practitioners should elicit patient concerns using active listening, open-ended questions, and summaries. They should inform them of the benefits, risks, and alternative treatment options available and what would happen in the absence of treatment. Specific to remote consultations, an initial contextualising discussion is required. This includes consultation setting and privacy (absence of video/audio recording and plans for visual patient examination, especially if the patient is in shared or nonprivate domestic space) and the higher risk of interruption.

3.4. Assessment and intervention

3.4.1. Triage

Patient safety being paramount, the limits of remote management are dictated by individual characteristics of the patient and the disease. Screening for red flags in musculoskeletal practice is largely possible by means of a clinical interview, bearing in mind that these questions may not be sensitive enough to sufficiently rule out serious pathology.²⁷ Importantly, however, remote

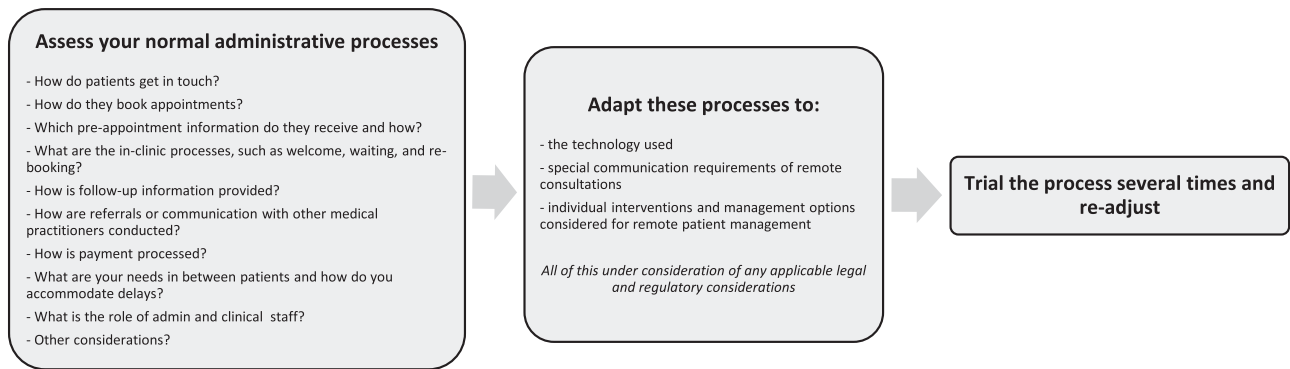


Figure 2. Proposed flowchart to design and trial the process of adapting musculoskeletal practice to video and phone consultations.

management allows practitioners to monitor symptoms over time and act on changes if needed.^{20,70}

The same triage options as in in-person practice apply: If the musculoskeletal nature of the presenting symptoms can be ascertained and conservative management is indicated, the consultation may proceed. Otherwise, the patient may require an in-person assessment, referral to a GP or specialist, or even immediate referral to emergency services.⁷⁰ The general guidelines for triaging in musculoskeletal practice are available and consulting them is advisable.^{7,9,25} To assist decision making in remote consultations, many professional regulators have issued guidelines and some recommend the establishment of a senior support network.^{4,5,35,92}

Clinical decisions need to be made in partnership with the patient. When decision making differs from what would be expected of in-person consultations or if external circumstances influence decision making, then this needs to be communicated and documented.⁷⁰

3.4.2. Case history and remote physical testing

The conversation surrounding the patient presentation does not differ from in-person practice but particularities of video or phone communication need to be considered as discussed above. For musculoskeletal assessments, clinicians cannot rely on passive physical testing; notably, however, this should not be the dominant source of clinical evidence during in-person practice either.^{14,81} Gaining a thorough understanding of a patient's condition through robust questioning underpins good assessment and can be achieved remotely.

Physical testing can be performed by the patient under clinician guidance through phone or video. Simple movements or self-palpation with feedback from the patient can provide valuable information about joint mobility and pain. Videoconference testing for joint range of motion, pain, endurance, motor control, functional tasks, and strength shows fair-to-excellent agreement with in-person testing but is likely limited for specific orthopaedic or neurodynamic tests.⁶³ Although feasible, the validity of remote neurological testing remains yet to be formally assessed in high-quality trials.⁶³ Where clinicians would rely on such testing to establish a diagnosis or inform onward referral, an initial in-person appointment may be warranted.

3.4.3. Psychologically informed interventions

The potential psychological impact of the underlying reason for a remote rather than in-person consultation needs to be

considered. Quarantine, social isolation, physical immobility, and lack of support networks have a significant psychological impact.¹¹ In turn, this may increase the rate of suffering associated with musculoskeletal symptoms. A low back pain incidence, eg, doubles with mental health comorbidity.⁴² Remote working is an opportunity to flexibly help patients engage in valued activities and physical exercises that will support their mental health and quality of life when faced with these challenges.

Open, person-centred questions⁶⁰ can elicit the experience of pain from the patient's perspective. In turn, this can help to collaboratively formulate a biopsychosocial conceptualisation and foster the therapeutic alliance through validation of the whole-person impact of pain.³⁰ Useful areas to assess with open-ended questions include perceived causes of pain, impact of pain on physical, social, and emotional functioning, and benefits and costs of pain management strategies.

Based on clinical experience, many psychologically informed pain management strategies are potentially amenable to phone or video delivery. For example, clinicians can remotely work with patients to plan specific, meaningful, achievable, realistic, and time-bound ("SMART") goals. Rather than being prescriptive about goal setting, a more person-centred approach is to explore why a specific goal is of value to a person; this can elicit motivation for behaviour change, especially when pain symptoms and contextual restrictions are a potential barrier.

Table 1

Indicative therapist actions to enhance empathy in remote consultations.

Verbal	<ul style="list-style-type: none"> Allowing time for the patient to speak uninterrupted and the use of pauses and silence to enable elaboration Use of open exploring questions Summarising and reflecting to check and/or demonstrate understanding Acknowledgement of patient distress, naming, or clarifying feelings sensitively Construction and discussion of diagnosis and intervention plans in partnership with patient
Nonverbal*	<ul style="list-style-type: none"> Eye contact through looking at the camera Interested, engaged upper-body posture—demonstrable listening Engaged responsive facial posture (expresses understanding, appropriate acknowledgement, and contextual response to patient cues) Modelling behaviour as rapport develops Use of warm and authentic tone of voice Behaviour based on a meta-cognitive awareness of patient's perspective and state

* Applicable to video consultations alone.

Patients with serious mental health problems, such as active psychosis, severe depression/post-traumatic stress disorder, or substance misuse may require referral to mental health services.⁵³ Although a discussion of screening procedures is beyond the scope of this article,^{40,43} procedures for mental health referrals and managing active psychological risk should be considered before conducting (remote) consultations. A culture of supervision around psychologically informed and remote practice is crucial to develop skill, optimise patient benefits, and mitigate risk.⁶

3.4.4. Reassurance and education

Reassurance is an integral part of pain management.⁹ In low back pain, *affective* reassurance includes empathy and rapport building and increases patient satisfaction but, on its own, may have little impact on clinical outcomes. *Cognitive* reassurance, on the other hand, is centred around education and self-management strategies and seems to improve results, also leading to fewer medical appointments. Affective reassurance may potentiate cognitive reassurance, but their relationship remains unclear.⁷⁸

Guideline-conforming advice to remain active⁹ may be supplemented by education aimed at pain reconceptualization.⁷¹ Although therapeutic effects on pain levels are questionable, such pain education can be delivered remotely, both synchronously and recorded,^{58,76,96} and has been shown to affect psychological variables and promote physical activity when delivered in person.^{61,95,98,102} Practitioners may wish to prepare educational sessions for online delivery or hardcopy posting or refer patients to high-quality online resources. Simplifying verbally delivered educational information may mitigate challenges with connection or attention that may arise in remote working.

3.4.5. Exercise and physical activity advice

Exercise and physical activity are essential components of promoting musculoskeletal health and managing pain.^{32,89} Guiding patients on the appropriate amount and type of activity can be achieved remotely, either unstructured or by means of specifically designed exercise prescription software and apps. It is preferable to use a programme that allows for exercises to be seen in video format or to resort to freely available exercise videos so that technique can be translated accurately. Mobile apps for patients can facilitate patient engagement, allow for ease of access, and can improve adherence.^{8,56} To ensure equality, software ought to enable the printing of exercise programmes so that these can be mailed to patients without technology access.

3.4.6. Ending the consultation

At the end of an appointment, it is useful to ask the patient to confirm the outcomes of the consultation, reserving time to provide clarification if needed and allowing for further questions. Practitioners then need to confirm how the patient would like to be contacted after this consultation, describe explicitly if further consultations are advised and which form these might take (purpose, media used, duration, and cost). Verify that each party has the correct contact details.

At the end of the consultation, being explicit about ending the call is important as it may be perceived unfavourably if performed abruptly.³⁸ In the absence of direct physical or subjective outcomes, such as a transient pain reduction after manual therapy, one may wish to agree a brief follow-up phone call to assess symptom evolution and

functioning, appropriateness of the management plan, and any difficulties with the advice provided.

3.5. Legal and regulatory considerations

In many countries, professional regulators have issued guidelines regarding remote consultations^{2-5,35,92} and many were updated during the COVID-19 pandemic.³⁴ Clinicians should always consult their current national and profession-specific guidelines. In general, however, these guidelines tend to enable the flexible use of technology while emphasising the need to uphold respective professional standards in the light of altered circumstances and the need for professional judgement in the risk assessment of each individual case. Often, this includes recognising the limits of remote technology and communicating these clearly to the patient to enable informed decision making.

Indemnity arrangements should be in place to cover the planned consultation, including consideration of the type of consultation (individual vs group), media channel, and geographic location of patient and practitioner. If in doubt, therapists should contact their insurer directly.

3.6. Community

For many clinicians, remote consultations are a new skill to acquire. Although this is rarely covered in undergraduate training, online seminars are now widely available (see <https://www.uco.ac.uk/free-remote-consultation-training-osteopaths>). Paralleling in-person practice, we encourage the formation of professional peer-support groups to help with professional development and to enhance care. As one option, we have created “The MSK telephone & video consultation group” on Facebook that readers are welcome to join.

4. Discussion

Remote consultations for musculoskeletal pain are feasible and generally acceptable, with some evidence for comparable effectiveness to in-person provision of care. **Table 2** contrasts pertinent challenges with noteworthy benefits of remote consultations. Apart from general scenarios where conservative patient management is contraindicated, an important limitation of remote health care consultations is the potential for inequality of access based on the availability of devices and clinician and patient media competence. In such cases, we recommend using telephone consultations or making use of the patient’s social network, if available, to set-up the technology. As with most clinical interventions, it is also likely that other individual patient characteristics will influence the feasibility and effectiveness of remote pain management. To date, however, there has been no research in this area.

In this article, we aimed to facilitate the practical implementation of remote consultations, highlighting the need for thoughtful planning and testing and special considerations, including relationship building, remote assessment, and “interventional” approaches. A unifying theme of this article is the need for deliberate and patient-centred communication. In harnessing technology to manage patients remotely and investing time into developing the required communication skills, practitioners acquire and develop skills that are directly transferable to their in-person clinical practice. At the same time, embracing remote consultations facilitates easy access to general and highly specialised care, providing benefits for patient populations otherwise excluded from such care.

Table 2**Benefits and challenges of delivering care through phone or video in musculoskeletal care.**

Benefits	Drawbacks
Remote triage and MSK patient management is feasible, acceptable, likely safe, and often effective	
High patient satisfaction	Difficult to predict who will and will not engage in this delivery format
Widely and highly accessible, including provision of services to remote and rural communities	Requires technology access and media competence for patients and practitioners as well as provision of training opportunities for therapists
	Potential for privacy issues
Multiple platforms and channels available	Technical difficulties possible
	Not all media regulation compliant
Technical feasibility is good	Admin and clinical processes require adaptation and piloting
Easily integrated with remote exercise and self-management software	
Amenable to a wide range of therapeutic modalities and consultations formats	No physical contact possible, opportunities for physical examination and applied clinical methods limited
	Patients may expect "hands-on" MSK practice
Widely supported by regulators and professional bodies	Indemnity insurance needs to be in place
Therapist flexibility, including working from home	Requires appropriate environment and sufficient space for both therapists and patients; boundaries of work and personal life become less defined for therapists working from home
Potentially more cost-effective	Lack of agreement on pricing models in private practice
	Occasionally not reimbursement by insurance companies (depending on profession, insurer, and country)

Disclosures

J. Draper-Rodi: Head of Continuing Professional Development at the University College of Osteopathy where the remote consultation webinar video is hosted and accessible for free. S. Vogel: Deputy Vice Chancellor (Research) at the University College of Osteopathy where the remote consultation webinar video is hosted and accessible for free. C. Park, D. Hohenschurz-Schmidt, and J. Draper-Rodi: provide remote consultations to patients in the private sector, either as employees or self-employed physical and/or manual therapists. The remaining authors have no conflicts of interest to declare.

Acknowledgments

The authors thank Nicky Butler, Andrew Terry, and Lucas Bohlen for their help in the preparation and presentation of the webinar series, Dr Joe Wherton from the IRIHS team at the University of Oxford who contributed to the development of the webinar drawing on findings from their VOCAL study on video consultations, as well as the attendees of the live webinars for their interest and feedback. In small parts, the present content was presented in a series of webinars. Recordings of the webinars are freely available through the link provided in the supplementary material.

Article history:

Received 20 May 2020

Received in revised form 24 August 2020

Accepted 2 November 2020

Available online 15 December 2020

References

- [1] Adamse C, Dekker-Van Weering MG, van Etten-Jamaludin FS, Stuiver MM. The effectiveness of exercise-based telemedicine on pain, physical activity and quality of life in the treatment of chronic pain: a systematic review. *J Telemed Telecare* 2018;24:511–26.
- [2] American Physical Therapy Association. Telehealth state regulations and legislation. APTA. Available at: <https://www.apta.org/your-practice/practice-models-and-settings/telehealth-practice/state-regulations>. Accessed August 14, 2020.
- [3] American Psychological Association. Telehealth guidance by state during COVID-19. Available at: <https://www.apaservices.org/practice/clinic/covid-19-telehealth-state-summary>. Accessed August 14, 2020.
- [4] American Telehealth Association. Practice guidelines archives. Available at: https://www.americantelemed.org/resource_categories/practice-guidelines/. Accessed August 14, 2020.
- [5] Australasian Telehealth Society. Guidelines for developing telehealth services. Available at: <https://www.aths.org.au/resources/guidelines/>. Accessed August 14, 2020.
- [6] BABCP. Tips related to remote therapy provision. Available at: <https://www.babcp.com/Therapists/Remote-Therapy-Provision.aspx>. Accessed May 5, 2020.
- [7] Bardin LD, King P, Maher CG. Diagnostic triage for low back pain: a practical approach for primary care. *Med J Aust* 2017;206:268–73.
- [8] Bennell KL, Marshall CJ, Dobson F, Kasza J, Lonsdale C, Hinman RS. Does a web-based exercise programming system improve home exercise adherence for people with musculoskeletal conditions? a randomized controlled trial. *Am J Phys Med Rehabil* 2019;98:850–8.
- [9] Bernstein IA, Malik Q, Carville S, Ward S. Low back pain and sciatica: summary of NICE guidance. *BMJ* 2017;356:i6748.
- [10] Berryhill MB, Culmer N, Williams N, Halli-Tierney A, Betancourt A, Roberts H, King M. Videoconferencing psychotherapy and depression: a systematic review. *Telemed e-Health* 2018;25:435–46.
- [11] Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, Rubin GJ. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet* 2020;395:912–20.
- [12] Buhrman M, Gordh T, Andersson G. Internet interventions for chronic pain including headache: a systematic review. *Internet Interventions* 2016;4:17–34.
- [13] Campbell JL, Fletcher E, Britten N, Green C, Holt TA, Lattimer V, Richards DA, Richards SH, Salisbury C, Calitri R, Bowyer V, Chaplin K, Kandiyali R, Murdoch J, Roscoe J, Varley A, Warren FC, Taylor RS. Telephone triage for management of same-day consultation requests in general practice (the ESTEEM trial): a cluster-randomised controlled trial and cost-consequence analysis. *The Lancet* 2014;384:1859–68.
- [14] Carlsson H, Rasmussen-Barr E. Clinical screening tests for assessing movement control in non-specific low-back pain. A systematic review of intra- and inter-observer reliability studies. *Man Ther* 2013;18:103–10.
- [15] Carmody TP, Duncan CL, Huggins J, Solkowitz SN, Lee SK, Reyes N, Mozgai S, Simon JA. Telephone-delivered cognitive-behavioral therapy for pain management among older military veterans: a randomized trial. *Psychol Serv* 2013;10:265–75.
- [16] Cames D, Mars T, Plunkett A, Nanke L, Abbey H. A mixed methods evaluation of a third wave cognitive behavioural therapy and osteopathic treatment programme for chronic pain in primary care (OsteoMAP). *Int J Osteopathic Med* 2017;24:12–17.
- [17] Cheshire WP, Barrett KM, Eidelman BH, Mauricio EA, Huang JF, Freeman WD, Robinson MT, Salomon GR, Ball CT, Gamble DM, Melton VS, Meschia JF. Patient perception of physician empathy in stroke telemedicine. *J Telemed Telecare* 2020;0:1357633X19899237.
- [18] Cimmino MA, Ferrone C, Cutolo M. Epidemiology of chronic musculoskeletal pain. *Best Pract Res Clin Rheumatol* 2011;25:173–83.
- [19] Connolly KS, Vanderploeg PS, Kerns RD, Grant C, Sellinger J, Godleski L. Nationwide implementation and outcomes of cognitive behavioral therapy for chronic pain over clinical video teleconferencing. *J Technol Behav Sci* 2018;3:26–31.
- [20] Cook CE, George SZ, Reiman MP. Red flag screening for low back pain: nothing to see here, move along: a narrative review. *Br J Sports Med* 2018;52:493–6.

- [21] Cottrell MA, Galea OA, O'Leary SP, Hill AJ, Russell TG. Real-time telerehabilitation for the treatment of musculoskeletal conditions is effective and comparable to standard practice: a systematic review and meta-analysis. *Clin Rehabil* 2017;31:625–38.
- [22] Cottrell MA, Hill AJ, O'Leary SP, Raymer ME, Russell TG. Patients are willing to use telehealth for the multidisciplinary management of chronic musculoskeletal conditions: a cross-sectional survey. *J Telemed Telecare* 2018;24:445–52.
- [23] Cottrell MA, O'Leary SP, Swete-Kelly P, Elwell B, Hess S, Litchfield M-A, McLoughlin I, Tweedy R, Raymer M, Hill AJ, Russell TG. Agreement between telehealth and in-person assessment of patients with chronic musculoskeletal conditions presenting to an advanced-practice physiotherapy screening clinic. *Musculoskelet Sci Pract* 2018;38:99–105.
- [24] Dario AB, Cabral AM, Almeida L, Ferreira ML, Refshauge K, Simic M, Pappas E, Ferreira PH. Effectiveness of telehealth-based interventions in the management of non-specific low back pain: a systematic review with meta-analysis. *Spine J* 2017;17:1342–51.
- [25] Dieppe P. Chronic musculoskeletal pain. *BMJ* 2013;346:f3146.
- [26] Donaghy E, Atherton H, Hammersley V, McNeilly H, Bikker A, Robbins L, Campbell J, McKinstry B. Acceptability, benefits, and challenges of video consulting: a qualitative study in primary care. *Br J Gen Pract* 2019;69:e586–94.
- [27] Downie A, Williams CM, Henschke N, Hancock MJ, Ostelo RWJG, de Vet HCW, Macaskill P, Irwig L, van Tulder MW, Koes BW, Maher CG. Red flags to screen for malignancy and fracture in patients with low back pain: systematic review. *BMJ* 2013;347:f7095.
- [28] Eccleston C, Blyth FM, Dear BF, Fisher EA, Keefe FJ, Lynch ME, Palermo TM, Reid MC, Williams ACdeC. Managing patients with chronic pain during the Covid-19 outbreak: considerations for the rapid introduction of remotely supported (e-health) pain management services. *PAIN* 2020;161:889–93.
- [29] Eccleston C, Fisher E, Brown R, Craig L, Duggan GB, Rosser BA, Keogh E. Psychological therapies (Internet-delivered) for the management of chronic pain in adults. *Cochrane Database Syst Rev* 2014:CD010152.
- [30] Edmond SN, Keefe FJ. Validating pain communication: current state of the science. *PAIN* 2015;156:215–19.
- [31] Friesen LN, Hadjistavropoulos HD, Schneider LH, Alberts NM, Titov N, Dear BF. Examination of an internet-delivered cognitive behavioural pain management course for adults with fibromyalgia: a randomized controlled trial. *PAIN* 2017;158:593–604.
- [32] Garber CE, Blissmer B, Deschenes MR, Franklin BA, Lamonte MJ, Lee I-M, Nieman DC, Swain DP. Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: guidance for prescribing exercise. *Med Sci Sports Exerc* 2011;43:1334–59.
- [33] Garg S, Garg D, Turin TC, Chowdhury MFU. Web-Based interventions for chronic back pain: a systematic review. *J Med Internet Res* 2016;18:e139.
- [34] General Medical Council. How we will continue to regulate in light of novel coronavirus (Covid-19). Available at: <https://www.gmc-uk.org/news/news-archive/how-we-will-continue-to-regulate-in-light-of-novel-coronavirus>. Accessed 20 May 2020.
- [35] General Medical Council. Remote consultations. Available at: <https://www.gmc-uk.org/ethical-guidance/ethical-hub/remote-consultations>. Accessed March 18, 2020.
- [36] General Osteopathic Council. Standards of practice. 2018. Available at: <https://www.osteopathy.org.uk/standards/osteopathic-practice/>. Accessed April 20, 2020.
- [37] Godfrey E, Wileman V, Galea Holmes M, McCracken LM, Norton S, Moss-Morris R, Noonan S, Barcellona M, Critchley D. Physical therapy informed by acceptance and commitment therapy (PACT) versus usual care physical therapy for adults with chronic low back pain: a randomized controlled trial. *J Pain* 2020;21:71–81.
- [38] Greenhalgh T. Video consultations: A guide for practice. 2020. Available at: <https://bjplife.com/wp-content/uploads/2020/03/Video-consultations-a-guide-for-practice.pdf>. Accessed May 6, 2020.
- [39] Greenhalgh T, Wherton J, Shaw S, Morrison C. Video consultations for covid-19. *BMJ* 2020;368:m998.
- [40] Haddad M. Depression in adults with a chronic physical health problem: treatment and management. *Int J Nurs Stud* 2009;46:1411–14.
- [41] Hammersley V, Donaghy E, Parker R, McNeilly H, Atherton H, Bikker A, Campbell J, McKinstry B. Comparing the content and quality of video, telephone, and face-to-face consultations: a non-randomised, quasi-experimental, exploratory study in UK primary care. *Br J Gen Pract* 2019;69:e595–604.
- [42] Harris B, Duggan M, Batterham P, Bartlem K, Clinton-McHarg T, Dunbar J, Fehily C, Lawrence D, Morgan M, Rosenbaum S. Australia's mental and physical health tracker: Background paper. Melbourne: Australian Health Policy Collaboration, 2018; issues paper no. 2018-02.
- [43] Härter M, Woll S, Wunsch A, Bengel J, Reuter K. Screening for mental disorders in cancer, cardiovascular and musculoskeletal diseases. *Soc Psychiat Epidemiol* 2006;41:56–62.
- [44] Health & Care Professions Council. Standards of proficiency. 2018. Available at: <https://www.hcpc-uk.org/standards/standards-of-proficiency/>. Accessed April 20, 2020.
- [45] Health and Safety Executive. Protect home workers. 2020. Available at: <https://www.hse.gov.uk/toolbox/workers/home.htm>. Accessed April 20, 2020.
- [46] Health and Safety Executive. RR262—health and safety of homeworkers: Good practice case. Available at: <https://www.hse.gov.uk/research/rrhtm/rr262.htm>. Accessed April 20, 2020.
- [47] Herbert MS, Afari N, Liu L, Heppner P, Rutledge T, Williams K, Eraly S, VanBuskirk K, Nguyen C, Bondi M, Atkinson JH, Golshan S, Wetherell JL. Telehealth versus in-person acceptance and commitment therapy for chronic pain: a randomized noninferiority trial. *J Pain* 2017;18:200–11.
- [48] Hinman RS, Nelligan RK, Bennell KL, Delany C. “Sounds a bit crazy, but it was almost more personal:” A qualitative study of patient and clinician experiences of physical therapist-prescribed exercise for knee osteoarthritis via skype. *Arthritis Care Res (Hoboken)* 2017;69:1834–44.
- [49] Howard IM, Kaufman MS. Telehealth applications for outpatients with neuromuscular or musculoskeletal disorders. *Muscle Nerve* 2018;58:475–85.
- [50] Howick J, Moscrop A, Mebius A, Fanshawe TR, Lewith G, Bishop FL, Mistiaen P, Roberts NW, Dieninytė E, Hu XY, Aveyard P, Onakpoya IJ. Effects of empathic and positive communication in healthcare consultations: a systematic review and meta-analysis. *J R Soc Med* 2018;111:240–52.
- [51] IASP. Musculoskeletal pain fact sheets—international association for the study of pain. 2009. Available at: <https://www.iasp-pain.org/Advocacy/Content.aspx?ItemNumber=1101>. Accessed August 13, 2020.
- [52] Ignatowicz A, Atherton H, Bernstein CJ, Bryce C, Court R, Sturt J, Griffiths F. Internet videoconferencing for patient–clinician consultations in long-term conditions: a review of reviews and applications in line with guidelines and recommendations. *Digital Health* 2019;5:1–27.
- [53] Keefe FJ, Main CJ, George SZ. Advancing psychologically informed practice for patients with persistent musculoskeletal pain: promise, pitfalls, and solutions. *Phys Ther* 2018;98:398–407.
- [54] Kruse CS, Krowski N, Rodriguez B, Tran L, Vela J, Brooks M. Telehealth and patient satisfaction: a systematic review and narrative analysis. *BMJ Open* 2017;7:e016242.
- [55] Lade H, McKenzie S, Steele L, Russell TG. Validity and reliability of the assessment and diagnosis of musculoskeletal elbow disorders using telerehabilitation. *J Telemed Telecare* 2012;18:413–18.
- [56] Lambert TE, Harvey LA, Avdalis C, Chen LW, Jeyalingam S, Pratt CA, Tatum HJ, Bowden JL, Lucas BR. An app with remote support achieves better adherence to home exercise programs than paper handouts in people with musculoskeletal conditions: a randomised trial. *J Physiother* 2017;63:161–7.
- [57] Lawford BJ, Bennell KL, Kasza J, Hinman RS. Physical therapists' perceptions of telephone- and internet video-mediated service models for exercise management of people with osteoarthritis. *Arthritis Care Res* 2018;70:398–408.
- [58] Li Y, Tse MYM. An online pain education program for working adults: pilot randomized controlled trial. *J Med Internet Res* 2020;22:e15071.
- [59] Liu X, Sawada Y, Takizawa T, Sato H, Sato M, Sakamoto H, Utsugi T, Sato K, Sumino H, Okamura S, Sakamaki T. Doctor-Patient communication: a comparison between Telemedicine consultation and face-to-face consultation. *Intern Med* 2007;46:227–32.
- [60] Magill M, Apodaca TR, Borsari B, Gaume J, Hoadley A, Gordon REF, Tonigan JS, Moyers T. A meta-analysis of motivational interviewing process: technical, relational, and conditional process models of change. *J Consult Clin Psychol* 2018;86:140–57.
- [61] Main CJ, Foster N, Buchbinder R. How important are back pain beliefs and expectations for satisfactory recovery from back pain? *Best Pract Res Clin Rheumatol* 2010;24:205–17.
- [62] Main CJ, George SZ. Psychologically informed practice for management of low back pain: future directions in practice and research. *Phys Ther* 2011;91:820–4.
- [63] Mani S, Sharma S, Omar B, Paungmali A, Joseph L. Validity and reliability of Internet-based physiotherapy assessment for musculoskeletal disorders: a systematic review. *J Telemed Telecare* 2017;23:379–91.

- [64] McGeary DD, McGeary CA, Gatchel RJ. A comprehensive review of telehealth for pain management: where we are and the way ahead. *Pain Pract* 2012;12:570–7.
- [65] Mistiaen P, van Osch M, van Vliet L, Howick J, Bishop FL, Blasi ZD, Bensing J, van Dulmen S. The effect of patient–practitioner communication on pain: a systematic review. *Eur J PAIN* 2016;20:675–88.
- [66] Mochari-Greenberger H, Andreopoulos E, Peters A, Pande RL. Clinical and workplace outcomes from a virtually delivered cognitive behavioral therapy program for pain. *Pain Pract* 2020;20:387–95.
- [67] National Institute for Health and Care Excellence. Osteoarthritis: Care and management in adults. 2014. Available at: <https://www.nice.org.uk/guidance/cg177>. Accessed August 13, 2020.
- [68] NHS Digital. Identity verification and authentication standard for digital health and care services version 2.0—specification and implementation guidance. 2020. Available at: <https://digital.nhs.uk/binaries/content/assets/website-assets/isce/dcb3051/305172020spec.pdf>. Accessed April 27, 2020.
- [69] NHS England. NHS England » using online consultations in primary care: Implementation toolkit. 2019. Available at: <https://www.england.nhs.uk/publication/using-online-consultations-in-primary-care-implementation-toolkit/>. Accessed April 20, 2020.
- [70] NHS England. Specialty guides for patient management during the coronavirus pandemic: Urgent and emergency musculoskeletal conditions requiring onward referral. 2020. Available at: <https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/urgent-emergency-msk-conditions-requiring-onward-referral-23-march-2020-updated.pdf>. Accessed March 27, 2020.
- [71] Nijs J, Clark J, Malfliet A, Ickmans K, Voogt L, Don S. In the spine or in the brain? Recent advances in pain neuroscience applied in the intervention for low back pain. *Clin Exp Rheumatol* 2017;S108–15.
- [72] O'Brien KM, Hodder RK, Wiggers J, Williams A, Campbell E, Wolfenden L, Yoong SL, Tzelepis F, Kamper SJ, Williams CM. Effectiveness of telephone-based interventions for managing osteoarthritis and spinal pain: a systematic review and meta-analysis. *PeerJ* 2018;6:e5846.
- [73] O'Cathail M, Sivanandan MA, Diver C, Patel P, Christian J. The use of patient-facing teleconsultations in the national health service: scoping review. *JMIR Med Inform* 2020;8:e15380.
- [74] Orlando JF, Beard M, Kumar S. Systematic review of patient and caregivers' satisfaction with telehealth videoconferencing as a mode of service delivery in managing patients' health. *PLoS One* 2019;14:e0221848.
- [75] Owusu-Akyaw KA, Hutyra CA, Evanson RJ, Cook CE, Reiman M, Mather RC. Concurrent validity of a patient self-administered examination and a clinical examination for femoroacetabular impingement syndrome. *BMJ Open Sport Exerc Med* 2019;5:e000574.
- [76] Palfai TP, Saitz R, Kratzer MPL, Taylor JL, Otis JD, Bernstein JA. An integrated videoconferencing intervention for chronic pain and heavy drinking among patients in HIV-care: a proof-of-concept study. *AIDS Care* 2020;0:1–8.
- [77] Pearson J, Richardson J, Calnan M, Salisbury C, Foster NE. The acceptability to patients of PhysioDirect telephone assessment and advice services; a qualitative interview study. *BMC Health Serv Res* 2016;16:104.
- [78] Pincus T, Holt N, Vogel S, Underwood M, Savage R, Walsh DA, Taylor SJC. Cognitive and affective reassurance and patient outcomes in primary care: a systematic review. *PAIN* 2013;154:2407–16.
- [79] Richardson BR, Truter P, Blumke R, Russell TG. Physiotherapy assessment and diagnosis of musculoskeletal disorders of the knee via telerehabilitation. *J Telemed Telecare* 2016;23:88–95.
- [80] Royal Australian College of General Practitioners. RACGP—implementation guidelines for video consultations in general practice. 2014. Available at: <https://www.racgp.org.au/archived-pages/guidelines-and-standards/implementation-guidelines-for-video-consultations>. Accessed April 20, 2020.
- [81] Rubinstein SM, van Tulder M. A best-evidence review of diagnostic procedures for neck and low-back pain. *Best Pract Res Clin Rheumatol* 2008;22:471–82.
- [82] Rush KL, Hatt L, Janke R, Burton L, Ferrier M, Tetrault M. The efficacy of telehealth delivered educational approaches for patients with chronic diseases: a systematic review. *Patient Educ Couns* 2018;101:1310–21.
- [83] Russell T, Truter P, Blumke R, Richardson B. The diagnostic accuracy of telerehabilitation for nonarticular lower-limb musculoskeletal disorders. *Telemed e-Health* 2010;16:585–94.
- [84] Rutledge T, Atkinson JH, Chircop-Rollick T, D'Andrea J, Garfin S, Patel S, Penzien DB, Wallace M, Weickgenant AL, Slater M. Randomized controlled trial of telephone-delivered cognitive behavioral therapy versus supportive care for chronic back pain. *Clin J Pain* 2018;34:322–7.
- [85] Rutledge T, Atkinson JH, Holloway R, Chircop-Rollick T, D'Andrea J, Garfin SR, Patel S, Penzien DB, Wallace M, Weickgenant AL, Slater M. Randomized controlled trial of nurse-delivered cognitive-behavioral therapy versus supportive psychotherapy telehealth interventions for chronic back pain. *J Pain* 2018;19:1033–9.
- [86] Salisbury C, Foster NE, Hopper C, Bishop A, Hollinghurst S, Coast J, Kaur S, Pearson J, Franchini A, Hall J, Grove S, Calnan M, Busby J, Montgomery AA. A pragmatic randomised controlled trial of the effectiveness and cost-effectiveness of “PhysioDirect” telephone assessment and advice services for physiotherapy. *Health Technol Assess* 2013;17:1–vi.
- [87] Sandford FM, Sanders TAB, Lewis JS. Exploring experiences, barriers, and enablers to home- and class-based exercise in rotator cuff tendinopathy: a qualitative study. *J Hand Ther* 2017;30:193–9.
- [88] Shukla H, Nair SR, Thakker D. Role of telerehabilitation in patients following total knee arthroplasty: evidence from a systematic literature review and meta-analysis. *J Telemed Telecare* 2017;23:339–46.
- [89] Skelly AC, Chou R, Dettori JR, Turner JA, Friedly JL, Rundell SD, Fu R, Brodt ED, Wasson N, Kantner S, Ferguson AJR. Noninvasive nonpharmacological treatment for chronic pain: A systematic review update. Rockville: Agency for Healthcare Research and Quality (AHRQ), 2020.
- [90] Sullivan MJL, Adams H, Ellis T. A psychosocial risk-targeted intervention to reduce work disability: development, evolution, and implementation challenges. *Psychol Inj L* 2013;6:250–7.
- [91] Tates K, Antheunis ML, Kanters S, Nieboer TE, Gerritse MB. The effect of screen-to-screen versus face-to-face consultation on doctor-patient communication: an experimental study with simulated patients. *J Med Internet Res* 2017;19:e421.
- [92] The Chartered Society of Physiotherapy. Telephone guidance for musculoskeletal practice. The Chartered Society of Physiotherapy. Available at: <https://www.csp.org.uk/news/coronavirus/remote-service-delivery-options/telephone-guidance-msk-practice>. Accessed April 8, 2020.
- [93] Thornton J. Covid-19: how coronavirus will change the face of general practice forever. *BMJ* 2020;368:m1279.
- [94] Totten AM, Womack DM, Eden KB, McDonagh MS, Griffin JC, Grusing S, Hersh WR. Telehealth: Mapping the evidence for patient outcomes from systematic reviews. Rockville: Agency for Healthcare Research and Quality (US), 2016. Available at: <http://www.ncbi.nlm.nih.gov/books/NBK379320/>. Accessed 17 Mar 2020.
- [95] Traeger AC, Lee H, Hubscher M, Skinner IW, Moseley GL, Nicholas MK, Henschke N, Refshauge KM, Blyth FM, Main CJ, Hush JM, Lo S, McAuley JH. Effect of intensive patient education vs placebo patient education on outcomes in patients with acute low back pain: a randomized clinical trial. *JAMA Neurol* 2019;76:161–9.
- [96] Tse MMY, Tang A, Budnick A, Ng SSM, Yeung SSY. Pain and pain management among university students: online survey and web-based education. *Cyberpsychol Behav Soc Netw* 2017;20:305–13.
- [97] Veehof MM, Trompetter HR, Bohlmeijer ET, Schreurs KMG. Acceptance- and mindfulness-based interventions for the treatment of chronic pain: a meta-analytic review. *Cogn Behav Ther* 2016;45:5–31.
- [98] Watson JA, Ryan CG, Cooper L, Ellington D, Whittle R, Lavender M, Dixon J, Atkinson G, Cooper K, Martin DJ. Pain neuroscience education for adults with chronic musculoskeletal pain: a mixed-methods systematic review and meta-analysis. *J Pain* 2019;20:P1140.e1–1140.e2.
- [99] Wherton J, Shaw S, Papoutsis C, Seuren L, Greenhalgh T. Guidance on the introduction and use of video consultations during COVID-19: important lessons from qualitative research. *BMJ Leader* 2020;0:1–5.
- [100] Williams A, Wiggers J, O'Brien KM, Wolfenden L, Yoong SL, Hodder RK, Lee H, Robson EK, McAuley JH, Haskins R, Kamper SJ, Rissel C, Williams CM. Effectiveness of a healthy lifestyle intervention for chronic low back pain: a randomised controlled trial. *PAIN* 2018;159:1137–46.
- [101] Williams ACdC, Eccleston C, Morley S. Psychological therapies for the management of chronic pain (excluding headache) in adults. *Cochrane Database Syst Rev* 2012:CD007407.
- [102] Wood L, Hendrick PA. A systematic review and meta-analysis of pain neuroscience education for chronic low back pain: short-and long-term outcomes of pain and disability. *Eur J Pain* 2019;23:234–49.