The emergence of telehealth in orthotic services across the United Kingdom

Nicola Eddisona,b\*, Aoife Healya, Sian Calverta and Nachiappan Chockalingama

aCentre for Biomechanics and Rehabilitation Technologies, Staffordshire University, Stoke-on-Trent, United Kingdom; bThe Royal Wolverhampton NHS Trust, Wolverhampton, United Kingdom

\*corresponding author

Nicola Eddison

Staffordshire University,

Science Centre (R114),

Leek Road,

Stoke-on-Trent,

ST4 2DF,

United Kingdom

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COVID-19 has impacted the National Health Service provision, creating urgency for departments to adapt and adopt new ways of delivering healthcare. The purpose of this service evaluation was to determine the emergence of telehealth in orthotic services across the UK in response to COVID-19. A survey exploring telehealth use was distributed online to orthotists approximately 6 months after the first peak of COVID-19 in the UK. It gathered information on telehealth prevalence, allocated appointment length and waiting times, clinician access to technology and clinicians’ opinions on the efficacy of telehealth. The survey received 77 responses with over 90% of respondents reporting using telehealth. Most reported that they expected telehealth to remain part of the service, post COVID-19. Thematic analysis produced two main themes: the impact of COVID-19 and challenges still to overcome. Findings suggest that the pandemic has resulted in a backlog of patients waiting for an orthotic appointment, with services currently understaffed and lacking resources. For telehealth to be effective orthotists must have access to appropriate technology and training on how to use telehealth platforms, be provided with appropriate guidance on which patients are appropriate for telehealth consultations and given appropriate appointment times to enable safe and effective care.

Keywords: Emergencies and Natural Disasters; Emerging trends; Information Technology and Telecommunications; Orthotics; Service Delivery

# Introduction

COVID-19 (Corona Virus Disease 2019) is caused by coronavirus and is also known by several other abbreviations (Zhu et al., 2020). In March 2020 the United Kingdom (UK) reported the first COVID-19 related death (UK Government, 2021). On 11th March 2020 The World Health Organisation (WHO) declared a pandemic, later declaring that Europe was the epi-centre for the pandemic (World Health Organization, 2020). A national lockdown for the UK shortly followed. Substantial alterations to out-patient services were needed as healthcare systems had to concentrate on emergency services and intensive care units.

Avoiding unnecessary in-person patient evaluations became essential (Hollander JE, 2020; Smith AC, Thomas E, Snoswell CL, 2020; Uscher-Pines & L, Fischer S, 2016). As with all National Health Service (NHS) out-patient services, orthotic services were tasked with adapting to the restrictions imposed by the pandemic and asked to adopt new ways of delivering clinical care. Orthotists are registered with the Health and Care Professions Council (HCPC) and are responsible for providing external engineering solutions for patients with neurological, muscular and skeletal pathologies, working in a variety of settings including hospitals and rehabilitation centres.

Telehealth, a term used interchangeably with telemedicine, virtual appointments and telephone/video appointments, has been defined by WHO as the use of telecommunications and virtual technology to deliver health care outside of traditional health care facilities (Sutherland et al., 2020), and as the use of medical information that is exchanged from one site to another through electronic communication to improve a patient’s health (Tuckson et al., 2017). Telehealth’s potential to increase efficiency and reach patients facing access barriers was quickly realised. The use of telehealth as a mode of healthcare treatment is not new (Shigekawa E, Fix M, Corbett G, Roby D.H, 2018), however, its widespread use across NHS out-patient services is novel. In-particular, the use of video consultations to deliver orthotic treatment, has never previously been attempted in a NHS setting. Using technology for a remote medical encounter has become an efficient solution for safe patient care during the COVID-19 pandemic, allowing the patient immediate healthcare access without the need for an in-person visit(Joshi & Lewiss, 2020). Guidance on carrying out virtual orthotic assessments was published by the British Association of Prosthetists and Orthotists (British Association of Prosthetists and Orthotists, 2020). The purpose of this service evaluation was to investigate the emergence of telehealth in orthotic services across the UK.

# Methods

A cross-sectional online survey distributed via the British Association of Prosthetists and Orthotists (BAPO) to its members and via social media and orthotic networks, to UK orthotists. The survey was approved by the Staffordshire University Research Ethics Committee (Ref. SU20-002), with informed consent sought and recorded for all participants prior to completion of the survey. The survey opened on 23rd September 2020 and closed on 28th October 2020, approximately 6 months after the first peak of COVID-19 in the UK.

Microsoft Forms was utilised to administer the survey via BAPO to its 334 orthotist members; the total number of prosthetists and orthotists registered with the HCPC is 1,112 (Health and Care Professions Council, 2020) with approximately two thirds practising as orthotists. The survey consisted of 29 questions, largely closed-ended (n=27) and 2 open-ended questions (see online supplementary file 1), designed to gather information on the impact COVID-19 had on UK orthotic services, focusing on the following areas: (1) closure of services, (2) waiting times, (3) time per appointment, (4) perceived support from the Trust/contractor (5) manufacturer lead times (6) the use of telehealth. This study is part of a wider study which explored the effect of the COVID-19 pandemic on orthotic services; the impact on areas 1 – 5 will be discussed elsewhere; this paper focuses on the data captured on the emergence of telehealth in orthotics (6). The identification of the 6 areas for the focus of this study were supported by previous research on UK orthotic services (Chockalingam et al., 2019).

The open-ended questions were subjected to thematic analysis (Braun, V. & Clarke, 2006). This analysis was conducted primarily by SC, with support from AH, NE, NC, who also read the responses and provided feedback on the structure and definition of themes. Briefly, the thematic analysis involved: 1) becoming familiar with the data which included reading and re-reading the responses several times and documenting initial ideas.; 2) generating initial codes using an inductive method; 3) searching for themes which included reviewing the individual codes produced and searching for common themes; 4) reviewing themes by re-examining the responses in light of the derived codes; 5) defining and naming themes; and 6) producing the narrative and revising the themes (Braun, V. & Clarke, 2006).

# Results

***Survey responses***

Responses were received from 77 orthotists providing data from each region of the UK. There were 35 responses from direct NHS employees, 38 from orthotists employed by contractors and 4 locum orthotists.

***Telehealth appointments***

Nearly all orthotists who responded reported using video/telephone appointments (90.1%; n=70) in their service since March 2020. Most respondents (n=48) stated they used telephone/video appointments for between 1-25% of all appointments in their service, 14 respondents stated they use it for 26-50% of their appointments, with 9 respondents using this approach for 51-99% of their appointments. 73% (n=56) of orthotists reported that they believed video/telephone appointments would remain in their service post the COVID-19 pandemic.

The majority of orthotists reported using either Attend Anywhere (n=26) or AccuRx (n=12) platforms for telehealth appointments, other platforms reported were: Zoom (n=3), Skype (n=2), Whereby (n=1), WebEx (n=1), Microsoft teams (n=1) and VISIBA (n=1).

***Appointment waiting times***

The results indicated a large variance for telehealth appointments with waiting times for routine adult appointments ranging from less than 1 week to 26 weeks (median = 2 weeks), paediatrics from less than 1 week to 24 weeks (median = 2 weeks), urgent adult appointments from less than 1 week to 6 weeks (median= 1 week) and paediatrics less than 1 week to 3 (median = 1 week). The waiting times for a telehealth appointment were much lower than for a face-to-face appointment with respondents reporting a maximum waiting time of 104 weeks for routine adult face to face appointments, 40 weeks for paediatric routine appointments, 14 weeks for urgent adult appointments and 8 weeks for urgent paediatric appointments.

***Time allocated per telehealth appointment***

There was no standardised agreement on the amount of time allocated for telephone appointments, with 24 respondents reporting they had 20 minutes per telephone appointment, a further 18 stated they had 30 minutes, 3 respondents reporting 15 minutes per appointment and 14 reporting 10 minutes. 4 respondents stated they do not have any allocated time for these appointments and must fit them in to their working day. A total of 21 responders reported they had 15 minutes or less per telephone appointment. Most respondents reported they had 30 mins per video appointments (n=21), with 7 stating they have 20 minutes, 7 reporting 60 minutes and 6 reporting 40 minutes.

***Support to adapt to the impact of COVID-19***

Although most orthotists (n=44) reported they had been given all the equipment they required to utilise telehealth appointments in their service, 15 respondents reported not having adequate equipment. Of the remaining 18 responders, 11 stated they do not use telehealth and 7 did not answer the question.

***Qualitative analysis***

For the 2 open-ended questions, which were subjected to thematic analysis, 20 of the 77 responders answered the question exploring lack of support for adapting to the COVID-19 pandemic and 63 responded to the question asking for their opinions on telehealth appointments. The thematic analysis produced two main themes:1) the impact of the COVID-19 pandemic and 2) challenges still to overcome. The findings from the thematic analysis suggest that the pandemic has resulted in a backlog of patients waiting for an appointment, with current orthotics services understaffed and lacking resources. The implementation of telehealth has helped to start to reduce this backlog and assisted in reducing any further delays in treatment. Nevertheless, not all hospitals and patients have the technology to support these types of appointments and they may not be suitable for all patients.

*1) The impact of COVID-19*

The first theme discusses the difficulties faced by orthotic services and the professionals working within these services owing to the pandemic, and how virtual care is being used as a tool to address some of these issues. This theme has two sub-themes which describe how *the pandemic has presented challenges* for orthotics services and how some of these challenges are being addressed with *Telehealth: a new way of working.*

*The pandemic has presented challenges*

Orthotists discussed how, as a result of the pandemic, many services were suspended which led to facilities being repurposed, and members of staff being furloughed or being made redundant. This has contributed to orthotic services being understaffed and/or having limited facilities when services resumed, contributing to a further backlog in patients.

*“A member of staff was fired, and others furloughed, we now have a back log which is continually growing day by day and insufficient resources to combat this.” (Respondent 19)*

*“All staff were furloughed bar one, leaving insufficient staff to cover urgent appointments and no staff to conduct telephone reviews.” (Respondent 25)*

Additionally, facilities that are available for use by the orthotic service may not be adequate to follow current COVID guidelines to reduce transmission between patient and clinician: *“We have not been given adequately-sized clinic rooms which allow social distancing” (Respondent 8).* The pandemic has required orthotic departments to modify how they run their services (i.e., trying to reduce face-to-face appointments). Orthotists indicate that these changes have not been without stress, and the delay in or lack of communication between service providers and orthotists during the pandemic has played a role:

 *“In this trust (where orthotics is provided in both secondary care and community care settings) the response from the NHS management (clinical and non-clinical) has unfortunately been universally poor.” (Respondent 3).*

The delay in decision-making may be accounted for by the confusion created by the pandemic, along with or in addition to issues related to a reduction in the workforce which has meant existing staff have taken on different roles:

*“Complex, but the crisis has pulled the main NHS line manager away from usual duties and so has reduced their support and feedback to the department. There has been a lot of confusion.” (Respondent 26)*

*Telehealth: a new way of working*

Implementing telehealth has allowed services to resume and is helping to address some of the challenges faced by the orthotics service because of COVID. Communicating with patients virtually has helped to ensure patient safety: *“Has been a lifeline for patients who are shielding” (Respondent 64).* It has allowed services to start to reduce the backlog of patients and avoid delays in further treatment: *“Reducing waiting times and avoid[ing] delays in treatment” (Respondent 49)*. Interestingly, orthotists note they can see the long-term benefits of virtual care within the service:

*“They may have a place after COVID for seeing patients who otherwise would not receive orthotic intervention as they cannot attend the hospital.” (Respondent 69)*

It has not only been advantageous for the patients, but orthotists discussed how it has created some unexpected benefits for themselves. It has enabled them to see patients within their home, aiding in an enhanced understanding of patients’ circumstances: *“Useful service as we didn't provide home visit service [until] now, [but] we can effectively do this” (Respondent 75).* Additionally, it has made organising patient appointments that include several professionals less complex, and less time consuming: *“Allows other professionals to join call - joint appointments were previously time-consuming and difficult to organise” (Respondent 60).*

*2) Challenges still to overcome*

The second theme discusses the difficulties of delivering orthotic services remotely. This theme has three sub-themes which describe how *telehealth cannot treat all patients* and there can be *difficulties associated with technology* which may lead to an *increased workload*. This theme discusses how the implementation of virtual care has highlighted some challenges that still need to be overcome.

*Telehealth cannot treat all patients*

Orthotists discuss that virtual appointments are suitable for triaging and reviewing patients: *“Very useful for reviews, especially for patients who are shielding or for whom a hospital appointment is not required for the clinical outcome” (Respondent, 53).* However, they are not appropriate for every patient e.g. *“Not for complex patients” (Respondent 74),* as virtual appointments do not permit clinicians to conduct all types of assessment. *“Cannot always treat or assess patients appropriately over video call” (Respondent 71)*; as orthotists are *“unable to measure / scan / quantify course of treatment” (Respondent 68)* which may lead to information being missed:

*“Do not lend themselves to patient assessment well and this is the area of main risk, where something could be missed.” (Respondent 66)*

*Difficulties associated with technology*

Implementing telehealth within orthotic services has not been without problems, with some hospitals lacking the technology to support telehealth. *“It took a long time to get all the technology we need, and we are still short” (Respondent 64).* Even when services have the infrastructure to support virtual consultation, patients may not have the technology in place to facilitate a virtual appointment:

*“This service obviously only works for those with access to the internet/tablet/smart phone; therefore, is not appropriate for everyone.” (Respondent 41).*

Some services have started to acknowledge these obstacles and converse with patients prior to appointments to assess if they have the appropriate technology to support a virtual consultation. *“The APs* [assistant practitioners] *will be determining whether patients have the facilities to be assessed by an orthotist via video appointment” (Respondent 63)*. Nevertheless, even when patients do have the technology, clinicians suggest that some patients can find virtual appointments challenging.

*“The technology can be a challenge especially for the elderly” (Respondent 46) and “It [is] difficult to hold effective assessments on [the] phone/video with a child” (Respondent 45).*

*Increased workload*

Orthotists discussed that virtual appointments may increase the clinician’s workload as not all assessments and/or treatments can be carried out virtually, meaning patients require multiple appointments.

 *“Some of our orthotists don't like them as they feel to do anything, we would have to get the patient back in anyway, so they feel it is a wasted step.” (Respondent 62)*

*“Not possible to make any adjustments and often requires a follow-up appointment anyway.” (Respondent 64)*

Some services are trying to address these challenges by providing information to patients prior to appointments: *“Send out a demonstration video for the patients to view beforehand” (Respondent 41).* Nevertheless, orthotists may still need to assess patients both virtually and in person leading to an increase in clinician’s workload as *“more clinical time is used” (Respondent 73).*

# Discussion

The global evidence appears to support telehealth consultations as an effective, accessible, and cost-effective method of service delivery (Sutherland et al., 2020). Previous research examining the attitude of other allied health professionals (physiotherapists, occupational therapists, speech-language therapists) towards telehealth showed positive outcomes for its use and identified barriers including the need for stable reimbursement policies and secure software solutions (Rettinger et al., 2021). The results of the current survey identified that the introduction of telehealth within orthotic services has had several positive impacts on patient care. These included the ability to remain in contact and review the care of the clinically extremely vulnerable patients having to shield during the pandemic and allowing orthotists to observe patients in their home environment aiding clinical decision making.

A further benefit, identified in the current study, has been the ability to allow joint appointments with other members of the multi-disciplinary team, which without telehealth can often be difficult to arrange. Its introduction has also enabled services to continue treating patients reducing the potential backlog of patients had this mode of treatment provision not been utilised.

Although research has indicated that telehealth interventions appear generally equivalent to in-person care and telerehabilitation often yields better outcomes than in-person care (Shigekawa E, Fix M, Corbett G, Roby D.H, 2018), the orthotists who responded to the current survey have identified challenges with using this novel mode of treatment provision. These included a lack of agreement on which patients benefit from orthotic intervention via telehealth. This is unsurprising considering the rapid introduction of this mode of treatment provision; although initial guidance was provided by BAPO (British Association of Prosthetists and Orthotists, 2020) further more detailed guidance is required. WHO recommends the implementation of ‘standard operating procedures and mechanisms to ensure patient safety, privacy and traceability’ (World Health Organization, 2019) and recommends clear clinical protocols to explain what can and cannot be done via telehealth appointments (World Health Organization, 2019). Although research in other UK NHS services indicates patients and relatives have reported that telehealth appointments are “highly acceptable” and wish they had been available sooner (Sutherland et al., 2020) research exploring orthotic treatment outcomes and patient experience of using telehealth for orthotic interventions is still required.

The discordant views amongst orthotists on the success of orthotic treatment using telehealth, reported in the current study, maybe due to a disparity in training, local guidance and the clinician’s skills in using technology. Another factor may be the clinician’s concern regarding “risk” as there is a lack of guidance from BAPO and HCPC on appropriate appointment times for telehealth appointments and how current insurance indemnity cover will protect the clinician utilising telehealth platforms for orthotic treatment. The importance of regulatory and professional bodies to provide appropriate guidance has also been discussed for other services (Rowe et al., 2020). A statement has been issued by the HCPC: ‘*In highly challenging circumstances, professionals may need to depart from established procedures in order to care for patients…Our regulatory standards are designed to be flexible’* (Health and Care Professions Council. 2020., 2020; Rowe et al., 2020) providing some reassurance for orthotists utilising telehealth.

Results from the current survey appear to indicate that some services have experienced issues with the provision of the required technology to enable orthotists to effectively carry out telehealth appointments and issues with patients not having the required access to the internet and video technology. However, statistics show that 96% of UK homes have access to internet (Statista, 2020c), 95% of people in the UK have a mobile phone (Statista, 2020b) of which 88% are smart phones (Statista, 2020a); alongside this, 42% of people over 55 years of age own a tablet computer (Statista, 2020d). However, it should be noted that internet connections in households with one adult aged 65 years and over have the lowest proportion of internet connections at 80% (Office for National Statistics, 2020). These statistics indicate that access to telehealth shouldn’t be a barrier for most patients, possibly indicating reluctance from either the patient or the clinician to engage with telehealth.

However, services must not overlook people with learning disabilities, people with limited control over or access to mobile technology and people with disabilities such as sight or hearing impairment which would be disadvantaged by this mode of healthcare provision (World Health Organization, 2019). One possible reason for a lack of engagement from a patient perspective might be due to a perception that a face to face appointment is superior to a telehealth appointment although research indicates this may not be the case (Shigekawa E, Fix M, Corbett G, Roby D.H, 2018). However, if orthotists lack the training, guidance and confidence to use telehealth it is likely they will feel uncomfortable using this mode of healthcare and this perception may be inadvertently passed on to the patient.

The effect of rapid change in the workplace on staff also cannot be underestimated; theories of change management are well documented (Bridges, 2003; Lewin K., 1951). In particular the Kubler-Ross theory of change (Kübler-Ross, 1969) which indicates change occurs through the five stages she described (denial, anger, bargaining, depression and acceptance) at varying paces. Also, normalization process theory (May et al., 2009) can be used to understand the dynamics of implementing, embedding, and integrating some new technology or complex intervention. Research on change in work practice in healthcare has demonstrated the impact of such changes on staff wellbeing and performance (Shoolin J.S, 2010). It would be expected that healthcare professionals confronted with rapid and significant changes to working practices such as the implementation of telehealth appointments, would also experience the emotions described by Kubler-Ross. One must consider the impact of such change on the clinician’s perception and acceptance of telehealth in orthotics and how such perceptions affect patient acceptance of this mode of clinical care. A limitation of the current survey was the low response rate which has implications for potential nonresponse bias and may affect the external validity of the study.

Research is required to discern which factors affect the extent to which telehealth interventions substitute for or complement in-person visits. The importance of appropriate design and implementation of telehealth has already been highlighted (Rowe et al., 2020). The WHO recommends the use of telehealth under the condition that it complements, rather than replaces, face-to-face delivery of health services, warning against rapid implementation without adequate examinations of the benefits and harms (World Health Organization, 2019). Further research is also required on orthotic treatment outcomes using telehealth and patient satisfaction with this mode of treatment provision.

***Clinical Messages***

* Guidance on recommended appointment times for telehealth appointments in orthotics is required.
* Further guidance on which patient groups are suitable for orthotic intervention via telehealth is required.
* Standardised and appropriate training for orthotists using telehealth for treatment provision is required.
* A further review of how orthotic services have been supported in terms of staffing and resources is required post COVID-19 pandemic to ensure the services are able to adequately deal with the backlog of patients awaiting orthotic care.

# Conclusion

The impact of the COVID-19 pandemic has posed significant challenges for NHS orthotic services nationwide. Most services have adopted telehealth to ensure patients still have access to the orthotic care they require. The introduction of this novel way of providing orthotic intervention is still in its infancy. There is still much to learn about how effective this mode of treatment provision is, which patients are suitable for this mode of treatment provision and whether patients are satisfied with this mode of treatment provision.

The results of this survey, while limited by a low response rate, suggest that telehealth will remain within orthotic services in some capacity, going forward. For this new mode of treatment provision to be effective, the orthotists providing the treatment must have access to appropriate training on how to use telehealth platforms and appropriate guidance on which patients are appropriate for telehealth consultations. Also, appropriate appointment times should be given to enable safe and effective care.

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