**Title**

How has the COVID-19 pandemic impacted orthotic services in the UK?

**Background:** COVID-19 has had a significant impact on the National Health Service in the United Kingdom (UK).

**Objective**: The study aimed to determine the impact of COVID-19 on orthotic services in the UK.

**Study design:** Cross sectional survey

**Methods**: An online survey was distributed to UK orthotists approximately 6 months after the first peak of COVID-19. Descriptive statistics of results, related to appointment waiting times, disruption of services, introduction of telehealth appointments and clinicians’ opinions on the impact of COVID-19 was completed.

**Results:** 77 orthotists completed the survey with many reporting their service was closed or open only to in-/urgent patients at some point during the pandemic. There was substantial variation in appointment waiting times, time allocated per appointment, and increases in lead times for orthotic products across services. Over 90% reported utilising telehealth appointments. Results were comparable to previous research showing long appointment waiting times and indicated that the pandemic has added to this issue.

**Conclusions**: The pandemic has had a significant impact on orthotic services with face-to-face appointments largely reserved for urgent patients and inpatients, and services going through stages of closing and reopening, alongside the introduction of telehealth to ensure less urgent patients could continue to access orthotic care. Future service evaluation studies are required to further assess how orthotic services have been affected by the pandemic and the effectiveness of recovery plans.

Keywords: Orthotics; COVID-19; Service delivery

**Introduction**

COVID-19 (Corona Virus Disease 2019) is caused by coronavirus and is also known as SARS-CoV-2, 2019 Novel Coronavirus, and nCoV1. The earliest report of the virus was in Wuhan, China in December 20191. In January 2020 the UK reported the first positive cases and subsequently the first deaths in March 20202. On 11th March 2020 The World Health Organisation declared a pandemic and on 13th March 2020 they declared Europe was the epi-centre of the pandemic3. Shortly afterwards the UK government declared a national lockdown resulting in the closure of all non-essential businesses, in light of rapidly escalating circumstances within UK hospitals. The focus of healthcare switched to emergency services and intensive care units, resulting in significant changes to routine clinical care via out-patient services.

Two key strategies were introduced; social distancing measures to reduce the rate of transmission and an attempt to increase the National Health Service (NHS) inpatient capacity, both of which had a significant impact on out-patient services. Orthotic services were one of many services affected, orthotists are autonomous registered Allied Health Professionals (AHPs) who provide clinical assessment and intervention utilising biomechanics and engineering-based solutions for patients with problems of the neuro, muscular and skeletal systems working in a variety of settings including hospitals (in-patient wards, outpatients, and theatre) community clinics, rehabilitation centres and special schools.

Before the pandemic, several studies highlighted concerns with the provision of orthotic services in the UK4–6, highlighting discrepancies in service provision including large variances in waiting times for appointments and lead times for orthotic products. Furthermore, orthotic services, like many other services, were not initially supplied with guidance on how to adapt services to cope with the restrictions caused by the pandemic. Guidance on carrying out virtual assessments and re-starting orthotic services was later published by the British Association of Prosthetists and Orthotists7,8.

The aim of this research was to determine the impact of COVID-19 on orthotic services in the UK.

**Methods**

In September 2020 a cross-sectional online survey was distributed to all practising UK orthotists via the British association of Prosthetists and Orthotists (BAPO) to its members and via social media and other professional networks (see Online Survey, Supplemental Digital Content 1http://links.lww.com/POI/A48). The survey was approved by the Staffordshire University Research Ethics Committee (Ref. SU20-002). Informed written consent was sought and recorded from all participants. The survey opened on 23rd September 2020 and closed on 28th October 2020, which was approximately 6 months after the first peak of COVID-19 in the UK.

The survey was administered via Microsoft Forms circulated via BAPO to all its members (n=334 orthotists); the total number of prosthetists and orthotists registered with the Health and Care Professions Council (HCPC) is 1,1129 with approximately two thirds practising as orthotists. The survey targeted orthotists working in an NHS setting only, excluding those working in private practices. 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) appointment waiting times, (3) time per appointment, (4) perceived support from the Trust/contractor. (5) manufacturer lead times and (6) the use of telehealth appointments. The objective was to capture the opinions of UK orthotists at the centre of the changes to orthotic services, caused by the impact of the COVID-19 pandemic.

Analysis of survey results utilised descriptive statistics, providing counts, percentages, ranges, and medians. This paper will focus on areas 1 to 5, with detailed analysis on the introduction of telehealth appointments within UK orthotic services to be explored separately.

**Results**

**Survey responses**

Responses were received from 77 orthotists (23% response rate) providing data from each region of the UK (see Table 1). There were 38 responses from orthotists employed by contractors and a similar number from direct NHS employees (n=35), in addition to four locum orthotists. There was a good variance amongst respondents in terms of job roles, ranging from junior orthotists to service managers (2 junior orthotists, 20 orthotists, 26 senior orthotists, 3 principal orthotists, 3 consultant orthotists, 15 orthotics service managers, and 4 locum orthotists).

**Closure of services**

22% (n=17) of respondents reported that their service closed completely to all face to face and telehealth appointments, with 16.9% (n=13) reporting that the closure lasted longer than three weeks (see Figure 1). Nine percent (n=7) of orthotists reported they had been furloughed at some point during the pandemic. Additionally, 17 respondents reported a closure of the service to all patients except in-patients and closure to all patients except urgent patients (35% n=27). Whether their face-to-face service closed (n=34) or not (n=43) (remaining open for telehealth appointments) appears to have affected the routine appointment waiting times, with median waiting times longer in those that stated that their service closed. However, the maximum waiting times were long whether they selected yes or no to service closure. The median waiting times were 8 and 6 weeks for adult and paediatric routine appointments, respectively, for those who stated service closure compared to 6 and 4 weeks for routine adult and paediatric appointments, respectively, for those who stated that their service didn’t close.

66% (n=51) reported utilising telehealth appointments whilst remaining closed to all face-to-face patients except urgent patients, with 57% (n=44) stating this was the case for more than three weeks.

**Waiting times**

There was substantial variation in the waiting times for routine adult face to face appointments across services, ranging from less than 1 week to 104 weeks (median = 8 weeks) (see Figure 2) with paediatric waiting times ranging from less than 1 week to 40 weeks (median = 5 weeks). Urgent adult face to face appointments ranged from a wait of less than 1 week to 14 weeks (median = 2 weeks) and paediatric waiting times ranging from less than 1 week to 8 weeks (median = 2 weeks). 71% (n=55) of orthotists surveyed reported that their waiting times had increased compared to pre-COVID restrictions. The median and maximum waiting times for those who reported their waiting times had increased was generally greater than for those who stated no change in their waiting times (n=7); 8/104 vs. 5/9 (median/max weeks) and 8/40 vs. 4/9 weeks for routine face to face appointment for adults and paediatrics, respectively, and 2/14 vs. 1/3 weeks for urgent adult face to face appointments.

The term “waiting time” is standard nomenclature amongst this clinical group for the length of time a patient must wait for an appointment slot.

**Time allocated per appointment**

Most respondents reported they had either 30 minutes (n=33), 40 minutes (n=24), or 60 minutes (n=19) for face-to-face appointments. With the remaining (n=20) stating a variance between 15 minutes to 120 minutes. 76.6% of respondents (n=59) reported the amount of time they now have per face-to-face appointment has increased, 23.4% (n=18) stated appointment times had remained the same, with no reports of a decrease in appointment times.

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

When asked if the hospital Trust had provided the required support to enable their service to adapt to the impact of the COVID-19 pandemic, 35 orthotists stated yes, whilst 10 stated they had not received the required support from the hospital Trust. Where employed via a contractor 8 orthotists stated the contractor had given the support required, 1 stated they had not, with 19 reporting both the hospital Trust and the contractor had given the support required and 2 stated they had not given the support required.

**Lead times for orthotic products**

44 respondents reported lead times had increased with 23 of those stating the lead times have increased by more than 1 week. 30 respondents stating their lead times had remained the same, with 3 stating lead time have decreased by less than 1 week.

**Discussion**

This survey was undertaken to gain an understanding of the impact of the COVID-19 pandemic on orthotic service provision in the UK. It provides an initial insight into the level of disruption caused by the pandemic and associated UK government response strategies on orthotic services in the UK. The results showed a major disruption to orthotic service provision, with a myriad of permutations on how orthotic services functioned, e.g., full closure to all patients, partial closure of the service with access for only urgent patients and in-patients, partial closure to all face-to-face appointments but the implementation of telehealth appointments.

Results also indicated that several services went through transitions of service access, e.g., from full closure to partial re-opening to the implementation of telehealth and highlighted the large variances across services, including appointment times and waiting times. These changes to orthotic services are similar to those experienced by other hospital services; continuing to treat urgent cases, reducing face to face appointments and implementing the use of telehealth10,11.

The large variation in waiting times is in line with reports from previous research on orthotic services in the UK4, see Figure 2. Results also highlighted the impact of the pandemic on maximum waiting times across orthotic services; in 2017 the average and maximum waiting times for adult routine appointments were 7 and 34 weeks and 5 and 20 weeks for paediatric appointments4 compared to the waiting times reported in the current survey, 8 and 104 weeks for adults and 5 and 40 weeks for paediatrics. Indicating that although the average waiting times have remained similar the maximum waiting times have doubled for paediatric patients and in the case of adult waiting times they have tripled.

Overall, the orthotists reported they felt their service had been given adequate support to adapt to the restrictions imposed by the pandemic. Whether they stated receiving support (n=64) or not (n=19) appears to have affected the appointment waiting times. In particular, the routine appointment waiting times, with median waiting times longer in those who stated that they didn’t receive support. However, the maximum waiting times were long whether they selected yes or no to receiving support. The median waiting times were 6 and 4 weeks for routine adult and paediatric appointments, respectively, for those who stated receiving support compared to 8 and 9 weeks for routine adult and paediatric appointments, respectively, for those who stated not receiving support.

Examples of poor support leading to increased waiting times was offered by respondent 5 and 48:

 *“Communication with the orthotic service provider was extremely poor despite sustained efforts from the orthotic team. The orthotic team eventually gained approval to see urgent patients in their private clinic; however the entire hospital outpatient department was closed for 5 months. The orthotic service provider repeated attempted to agree a process to see other (i.e. non-urgent) patients in a non-hospital setting (after central government stated the NHS would re-start) however this was never agreed, leading to a wait time of approx (sic) 40 weeks.”*[Respondent 5]

 *“Lack of appropriate rooms in which to see patients and lack of office staff to co-ordinate clinics let alone extra clinics”* [Respondent 48]

Waiting times were also affected by orthotic product lead times; most respondents (n=44) reported lead times had increased, with 23 of those stating the lead times have increased by more than 1 week. Combined long waiting times for appointments and lead times for orthoses means extended time before treatment is received4.

Variances in times for face-to-face appointments were also evident, ranging from 15 minutes to 120 minutes with most respondents reporting 30, 40- and 60-minute appointments. These appointment times are significantly lower than those reported for podiatrists and physiotherapists in pre-COVID clinics who were 11.0 and 13.2 times more likely, respectively, to have 45–60 min appointments12. During the COVID-19 pandemic an increase in appointment times has been advocated to allow for effective infection prevention practices to be utilised before and after each patient contact, this includes sanitising the clinical area and the donning and doffing of personal protective equipment.

76.6% of respondents reported the amount of time they had per face to face appointment had increased compared to before the pandemic, which is in line with previous research which reported orthotic appointment times were on average between 15 and 40 minutes which are below the recommended appointment times advised by BAPO4,12.

Most orthotists surveyed reported they continued to remain at work during the pandemic with only 9% (n=7) reporting they were furloughed, all of whom reported being employed by a contractor.

20.1% of orthotists reported that they had not been given the clinic space required to carry out face to face appointments whilst adhering to social distancing guidelines and infection prevention policies. Respondent 9 reported *“We have not been given adequate sized clinic rooms which allow social distancing”*. Other respondents provided comments on the issue of lack of clinic space; “*The clinic space is too small to assess patients whilst maintaining a reasonable distance. (The) Trust have taken over the big clinic room for (another) department”* [Respondent 11], *“(The) Trust took away one of our clinic rooms to repurpose during lockdown and will not let us use it again, but they now expect us to see more patients with only one clinic room. (The) Trust also are trying to move the department away from the acute hospital (to reduce footfall) but did not consult us beforehand”* [Respondent 28] and *“We have not been given the clinic space we require”* [Respondent 53].

Whether respondents stated having sufficient clinic space (n=61) or not (n=16) appears to have affected the routine appointment waiting times, with median waiting times longer in those that stated they were not given the required clinic space, however the maximum waiting times were long whether they selected yes or no to having sufficient clinic space. The median waiting times were 6 and 4 weeks for routine adult and paediatric appointments, respectively, for those who stated they have been given the required clinic space compared to 10 and 8 weeks for routine adult and paediatric appointments, respectively, for those who stated not having sufficient clinic space.

It should be noted that the comparison of waiting times between 2017 and 2020 is not a direct comparison and is therefore a potential limitation of the research, as the data was captured using different methods. While the 2020 data was captured using a survey completed by orthotists working within the NHS the data from 2017 was collected from a freedom of information act to Trusts/Health Boards providing orthotic services in the UK with responses received from 83 Trusts/Health Boards. A further limitation is the lack of detail regarding how waiting times have been calculated whether or not they included a back log of referrals yet to be processed or referrals which have been declined during the period when the service was closed and will be expected to be received once the service re-opens.

Recommendations

Follow-up service evaluation is required to gather further insight with more detailed follow-up questions to provide further information on how orthotic services have been affected by the pandemic and whether recovery plans have been effective.

**Conclusions**

The impact of the COVID-19 pandemic resulted in significant changes to the way orthotic services provided treatment in the NHS. Face to face appointments were largely reserved for urgent patients and in-patients, with services going through stages of re-opening the service to routine patients and utilising telehealth to ensure less urgent patients could still access orthotic care. The impact of COVID-19 appears to have increased the variance of appointment waiting times across the UK and although appointment times have increased, they have only increased to the same as pre-COVID appointment times for other AHPs.

**References**

1. Zhu N, Zhang D, Wang W, et al. A Novel Coronavirus from Patients with Pneumonia in China, 2019. *N Engl J Med*. 2020;382(8):727-733. doi:10.1056/nejmoa2001017

2. UK Government. Coronavirus (COVID-19) in the UK: Deaths in United Kingdom.

3. World Health Organization. Rolling updates on coronavirus disease (COVID-19).

4. Chockalingam N, Eddison N, Healy A. Cross-sectional survey of orthotic service provision in the UK: Does where you live affect the service you receive? *BMJ Open*. 2019;9(10):1-11. doi:10.1136/bmjopen-2018-028186

5. Business Solutions. *Orthotic Pathfinder: A Patient Focused Strategy and Proven Implementation Plan to Improve and Expand Access to Orthotic Care Services and Transform the Quality of Care Delivered*.; 2004. https://asymmetricleadership.com/wp-content/uploads/pdfs/orthotic\_pathfinder\_report\_july\_2004.pdf

6. NHS England. *Improving the Quality of Orthotics Services in England.*; 2015. available: https://www. england. nhs. uk/ commissioning/ wpcontent/%0Auploads/ sites/ 12/ 2015/ 11/ orthcs- final- rep. pdf [Accessed 8%0ANov 2018].

7. BAPO Clinical Guidance for re-starting Orthotic Services during the Covid-19 pandemic. The British Association of Prosthetists and Orthotists. 2020;2020(July):1-9. https://www.england.nhs.uk/coronavirus/secondary-care/prevention/personal-

8. British Association of Prosthetists and Orthotists. BAPO Guidelines for Virtual Patient Assessment.

9. Health and Care Professions Council. Registrant snapshot - 3 November 2020.

10. Rowe F, Hepworth L, Howard C, Lane S. Orthoptic Services in the UK and Ireland During the COVID-19 Pandemic. *Br Ir Orthopt J*. 2020;16(1):29. doi:10.22599/bioj.153

11. Khan H, Williamson M, Trompeter A. The impact of the COVID-19 pandemic on orthopaedic services and training in the UK. *Eur J Orthop Surg Traumatol*. 2020;(0123456789). doi:10.1007/s00590-020-02748-6

12. Nester CJ, Graham A, Martinez-Santos A et al. National profile of foot orthotic provision in the United Kingdom, part 2: podiatrist, orthotist and physiotherapy practices. J Foot Ankle Res. *J Foot Ankle Res*. (11:):1–12.

Figure captions

Figure 1: Responses to the question “Did your orthotics service close during the COVID-19 pandemic?”

Figure 2: Comparison of appointment waiting times for face-to-face appointments in January 2017\* and September/October 2020 and telephone/video appointments in September/October 2020 for (a) routine adult appointments, (b) urgent adult appointments, (c) routine paediatric appointments and (d) urgent paediatric appointments across the regions of the UK. \*Chockalingam N, Eddison N, Healy A. Survey of Orthotic Service Provision in the UK: Does where you live affect the service you receive? BMJ Open. 2019;1–11.

Table 1: Survey responses categorised by UK region. Note: eleven responders selected working in more than one UK region.