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Digital health education: the need for a digitally ready workforce

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ABSTRACT

Digital health education develops an understanding of the pragmatic use of digital technologies, including health apps, artificial intelligence and wearables, in the National Health Service (NHS). Staff should feel confident accessing up-to-date, quality-assured digital health solutions.

Digital health is a high priority in government, NHS organisations and Royal Colleges. However, there is a gap between what is expected and the education of staff or medical students to enable implementation.

Digital health education needs to be up to date and universally included within training, continuing professional development activities and medical school curriculums.

During COVID-19, more families across the UK became digitally enabled with school, council, charities and governments providing access to devices, WiFi and mobile data for those that needed it. Improved digital access brings equalities in access to health information and healthcare professionals. Health app use sharply rose during COVID-19, as patients self-managed and took control of their conditions, but most health apps do not reach NHS standards.

Paediatricians are well positioned to advise on appropriate health app use and advocate for improved patient access to solutions.

Many paediatricians adopted remote video consultations during the COVID-19 pandemic but could soon adopt more digital health strategies to remotely track, monitor and manage conditions remotely.

Patient management now includes remote consultations and digital health solutions; therefore, medical histories should capture digital access, environments and literacy.

This article explains the importance of digital health education, lists accessible resources and provides examples of health apps that can be recommended.

WHAT IS DIGITAL HEALTH EDUCATION?

Digital health education aims to equip students and staff to be part of a digital-ready workforce to work within digitally literate healthcare organisations as expected and outlined by the NHS long-term plan,[1] government[2], Royal Colleges,[3] and as outlined in the Topol[2] review 2019 and Wachter[4] report 2016.

Digital health education is needed to help learners develop an understanding of the pragmatic use of digital technologies, including applications (apps), artificial intelligence and wearables in the NHS. Staff should feel confident accessing up-to-date quality assured digital health solutions.

WHY IS DIGITAL HEALTH EDUCATION IMPORTANT?

Patients are already accessing thousands of health apps, with a sharp rise during the COVID-19 pandemic but very few reach NHS quality standards. Children are digital natives (figure 1) who frequently walk into clinics holding devices and at home their parents are likely to be modelling to their child the use of one or two health apps. Families need direction towards quality, safe, trusted health apps appropriate to the age of their child, level of understanding and health condition. Paediatricians with digital literacy skills are able to maximise digital care potential,[3] improve patient options and quality of care using apps, particularly when services have long waiting times or gaps in service delivery. Digital health education includes sensors and wearables that are often connected to apps that transcend local computer systems and can therefore be equitable across area boundaries.

During what can now be seen as a transformational period in healthcare during the COVID-19 pandemic, we have experienced, by necessity, the advantages of digital health systems. The emergence of non-face-to-face engagement has been enhanced by validated health apps supporting patient care. There is early evidence of the use of automated systems through machine learning and imminently,

Figure 1 Children using digital health solutions.

artificial intelligence, to enhance diagnostic and safe clinical practice. The emergent integrated care systems recognise the importance of such systems and the need for digital literacy in the workforce to enable the rapid adoption of validated digital tools.

WHAT IS THE ROLE OF A PAEDIATRICIAN WITHIN DIGITAL HEALTH?

Accessing appropriate digital health education could benefit patient care. Teaching is not usually based solely on individual experience and anecdote, but local data show that a third of healthcare students interested in paediatrics have watched another healthcare professional (HCP) recommend a health app to a patient (the range of apps covered mental health, meditation, relaxation, sleep problems, diabetes, glue ear, pregnancy, menstruation trackers and monitoring atrial fibrillation) without understanding where they would find or how to 'prescribe' a health app themselves and without robust digital health education being offered within their curriculum. Trying to find their own solutions, healthcare students often searched health apps for themselves on app stores, often with non-evidence based, non-NHS-supported criteria such as star ratings (equating to user experience rather than evidence base) and friend recommendations. This risks HCPs resorting to experiential and anecdotal use of digital health rather than National Institute of Health and Care Excellence (NICE) standards frameworks, data and evidence-based medicine.

Surveys of senior HCPs also indicated the majority were uncertain about how to find a trusted health app, often looking to a Royal College or local hospital for guidance.

Without training or a framework to safely recommend health apps, HCPs may make mistakes when choosing or recommending apps, potentially falling into medicolegal difficulties if clinical safety, usability, accessibility, technical assurance or data protection is compromised. Harm can be caused by apps miscalculating or mistiming medication doses, an app failing to detect a malignant lesion on an uploaded photograph or an app falsely reassuring a patient. Of course, errors happen in healthcare, but apps can be used by hundreds of patients at a time.

Due to the vast number of unregulated health apps available on app stores, with only a small number of safe and regulated health apps among them (examples in table 1), the current landscape of health apps has been paralleled with the 'wild west'.

Table 1 Examples of health apps that have been assessed as being safe for children and young people

Paediatric health app	Age range in years	What does the app do?	Clinician behind the app	Cost
Little journey	3–12 years	Home preparation for children aged 3–12 years to prepare and understand a hospital visit, with checklists for parents. A support tool before, during and after a healthcare procedure.	Anaesthetist	Free NHS Trusts can pay for bespoke local app.
MeeToo	11–25 years	A forum for young people needing emotional, self-esteem and mental health support with crisis support services, third-party support, specialist helplines and peer support.	Psychologist	Free
Teddy Time Fitness	2–5 years	Provides physical fitness activities and education to young children: preventative care for fitness, active lifestyle and weight management.	Physician and teacher	Free with in-app purchases. Free access to YouTube channel during COVID-19.
Brush DJ	3+ years	Age-specific information on best oral hygiene and a timer and links to favourite song when brushing teeth.	Dentist	Free
Hear Glue Ear	2–8 years	Listening skill, auditory processing, speech and language support for children aged 2–8 years with glue ear, with a home hearing test and a care plan to help parents manage this recurring and fluctuating condition between home and school.	Paediatrician	Free
NHS, National Health Service.				

One risk is patients relying on an app that is discontinued on the App Store without warning. The Organisation for the Review of Care and Health apps (ORCHA) mitigate this by holding the responsibility of app prescribing in much in the same way as the British National Formulary (BNF) provides guidance about prescribing a medicine. For NHS Trusts, using systems such as ORCHA, there is also an online system that tracks which apps the clinician has prescribed to which patient and alerts the clinician to any app changes.

PERSONAL EXPERIENCE

Of course there are huge benefits of safe app use: preparing, supporting, educating, rehabilitating or monitoring patients between appointments on waiting lists or on virtual wards.

The author's personal experience of developing an app in 2018 (pre-COVID-19 pandemic) to improve patient care was that despite reassurances around the app such as certificates, awards, research and safety scores, professionals were reluctant to recommend an app to patients without any training or experience of using digital health solutions. During the COVID-19 pandemic, app use increased among patients[5] but digital health education and training had not yet been fully established for HCPs.

The importance of keeping a diverse group of children and families involved at each stage of the app design prevented constant iterations and provided the most user friendly design.

Since 2018, NHS guidelines on digital health technologies have become more robust, and in 2021, the Digital Technology Assessment Criteria (DTAC) was introduced as a national baseline criteria providing both staff and patients (and also those creating apps) with confidence in an app's clinical safety, technical security, data protection, interoperability, usability and accessibility standards. Significant additional funding is needed by companies to have their app assessed to this new standard. Assessments, medical device certification, server costs to hold patient data securely and App Store updates make apps expensive to maintain. How much apps should charge and how many apps should be free at the point of care is debated.

WHO SHOULD TEACH DIGITAL HEALTH EDUCATION?

In 2019, the Topol review[2] recommendations were made regarding how the NHS workforce could prepare for a digital future. It noted that 'all staff will need digital literacy[2]' : healthcare students due to qualify imminently into postpandemic NHS services need skills to navigate cost-effective digital health solutions, recommend safe and appropriate health apps to patients or redirect patients following inappropriate apps.

The Topol review[2] additionally noted that in order to provide a healthcare workforce for the future 'education providers must ensure that students gain an appropriate level of digital literacy at the outset of their study… Lifelong training should be available… with emphasis on continuing support in this rapidly evolving field, including access to dynamic 'just-in-time' digital updates'.[2] By teaching even a small amount of digital health education, a few will be 'inspired and activated to drive real change, either within their organisation and communities'.[6]

Digital health is a high priority in government, NHS organisations and Royal Colleges. However, there is a gap between what is expected and the education of healthcare staff or students to enable implementation.

ADVOCATING FOR DIGITAL HEALTH ACCESS, DIGITAL HEALTH EDUCATION AND EQUALITY FOR PAEDIATRIC POPULATIONS

Improved digital access improves better healthcare access and equality: prior to the COVID-19 pandemic, United Nations experts reported more people had access to cellphones than flushing toilets. During COVID-19 pandemic imposed online education, initially children were reporting sharing phones and running out of monthly data allowances when trying to access online education. UK foundations, charities and campaigns (eg, BBC 'give a laptop') supplied computers and devices to children. Mobile networks provided dongles, sims and unlimited data allowances. Schools and council initiatives provided WiFi assistance.

Public libraries have been bridging the digital divide[7] at a local community level for many years. The Arts Council England produced a document in 2020 addressing the evolving services to meet local need at libraries during the pandemic, where it stated that 'Libraries are a vital prevention and support service yet cost an average of just 0.6% of council spending'.[8] Many paediatricians support 'library first' council commissioning for continuing provision of 'physical spaces to tackle digital exclusion, inequality and isolation'.[8] It could be possible that libraries will be an access point for families needing access to computers and digital solutions to support their health.

SHOULD DIGITAL HEALTH EDUCATION BE PART OF THE EDUCATIONAL CURRICULUM WITHIN SCHOOLS?

Paediatricians could potentially advocate for digital health education within schools so that children grow up knowing how to access healthcare, self-manage 'minor' conditions and how to access or manage their digital health records (including understanding their rights and who they can grant access to). Children and young people will need to know what conversations and decisions they will face with healthcare providers and the implications of those decisions. Children already learn about social media safety at school and will be the ones to benefit the most from digital

health integration in their care, if their education helps them to navigate their way through online healthcare records, health apps and virtual wards.

With widely available digital access comes improved equality in healthcare, especially for families finding it difficult to travel to attend appointments, access health information, self-manage conditions and reach HCPs. Those that struggle to access digital health must not be left behind.

When taking a medical history, paediatricians need to consider digital access, digital literacy and digital environment to enable the management plan to include remote digital health solutions and remote consultations.

HOW CAN PAEDIATRICIANS IMPROVE THEIR DIGITAL LITERACY?

► Royal College of Paediatrics and Child Health documents such as p2040 (https://paediatrics2040.rcpch.ac.uk/) and online continuing professional development modules in digital health.
► The TITCH network (https://www.titch.org.uk) formed in 2014 aiming to transform child healthcare through innovation and technology design specifically for children and young people.
► Digital health conferences: the first Child Health Technology conference launched in 2021 and continues annually (https://cypmedtech.nihr.ac.uk/child-health-technology/)
► Digital Health Academy is a freely available, educational tool available from March 2022, with bite-size foundation level modules (available on the Health Education England NHS Learning hub learning.nhs.uk/Catalogue/ORCHA or orcha-academy.com).
► Join local and online digital health clinical interest groups and networks.
► Distance learning Digital Health MSC such as https://www.uclan.ac.uk/postgraduate/courses/digital-health-msc.

WHAT DIGITAL HEALTH RESOURCES ARE AVAILABLE TO ASSIST PAEDIATRICIANS?

► Note that the NHS App Library (https://www.nhs.uk/apps-library/) has been decommissioned. Instead, DTAC[9] aims to provide healthcare organisations, staff and patients with confidence in digital health tools, often found within condition specific pages of NHS.uk.
► ORCHA App Library (https://appfinder.orcha.co.uk/) will identify trusted apps, but many Clinical Commissioning Groups, NHS trusts and Royal Colleges now fund their own bespoke app libraries for professionals, providing clinically approved and quality-assured apps that clinicians are supported to 'prescribe'. This protects members from holding risks and responsibilities related to app prescribing and maintains a record of apps recommended to each patient.
► Advocating for digital health education in schools (https://orchahealth.com/digital-healthy-schools/) and

'libraries first' commissioning within councils (info@librariesconnected.org.uk) can be part of reducing digital health inequalities.

Examples of five health apps that paediatricians could recommend to their patients are documented in table 1.

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