THE ROLE AND IMPACT OF USER EXPERIENCE IN UK HEALTHCARE SERVICES.

By Courtney Robinson | B00690856

DO WE RISK LEAVING A LARGE COHORT OF PEOPLE BEHIND WITH THE RISING USE OF DIGITAL TECHNOLOGY IN HEALTHCARE SYSTEMS?

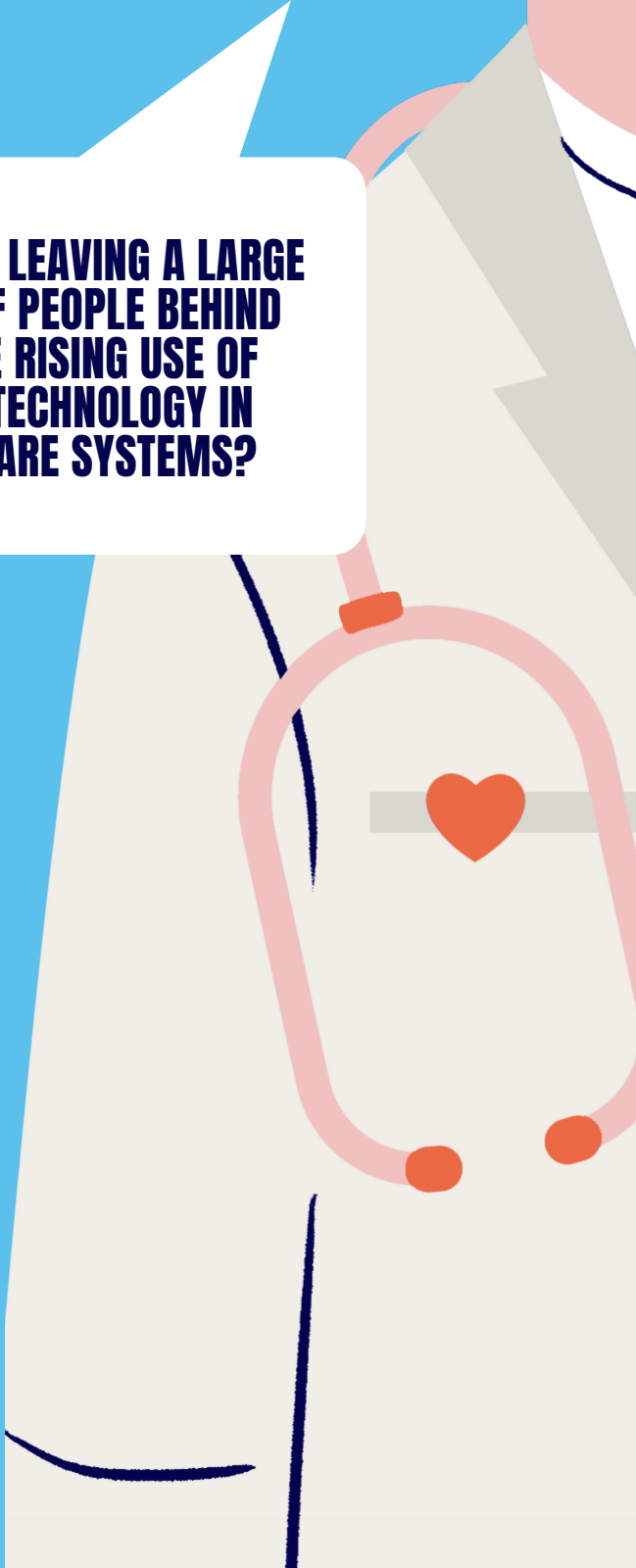


TABLE OF CONTENTS

INTRODUCTION

Due to factors such as the global pandemic of COVID-19, the digital divide is getting much harder to ignore within the healthcare sector with many services having to move online forcing many users to resort to digital means, in order to access critical services while the UK went into lockdown. *"For many people, lockdown will leave a lasting legacy of improved online access and better digital understanding. But for a significant minority of adults and children, it's only served to intensify the digital divide,"* said Yih-Choung, Ofcom's strategy and research group director. [1] Advances in technology are empowering all kinds of new solutions within healthcare services but what about the users who maybe aren't so technologically inclined?

User experience is currently put into practice in our healthcare's digital systems by guideance of the NHS service standards and design systems. These are put in place in order for designers to build consistent, accessible interfaces by following design principles that make NHS services accessible for everyone. But why is user experience so important in UK healthcare services? By understanding the importance we can then consider those who are feeling left behind due to the digital progression in healthcare systems.

When we consider the existing friction between people and technology, we begin to understand how improved UX could better the patient experience. Through inclusive design, areas such as usability, accessibility, disability and cognitive load help us to understand the patient experience.

"The NHS is confusing the public by using 'gobbledygook'." [2]

In recent years, the NHS has been at the receiving end of criticism for over complicating the messaging they put out to their users. In healthcare, a bad user experience and clunky design could lead to serious effects on the quality of care patients receive. This could explain why there's been a reluctance from patients to adopt the newfound ways of digital technology within healthcare. Through analysing the quality of care provided by our main UK healthcare provider, the NHS, we can then discuss how user experience being improved impacts the patient experience.

The NHS relies on a vast amount of IT systems to deliver healthcare services, many of which are years old. Digital transformation is the steps taken to improve existing operations and services through the use of digital technology.

Over the last number of years, factors such as COVID-19 have led to a more urgent need for addressing the existing issues in order to help manage the rising demand for our healthcare professionals. Digital services can enable healthcare services to be delivered flexibly and remotely. However, what about the users who before now didn't need to be concerned about the digital progression happening in healthcare services?

Innovative design is transforming the way in which we receive healthcare, with the future of digital healthcare seemingly reliant on the unique role UX. As healthcare evolves, areas such as telemedicine, wearable technology and the implementation of AI chatbots are becoming more common. Over time more patients should be able to access medical information and advice without needing face-to-face contact. However, is the innovative progression of digital healthcare leaving some of our most vulnerable patients behind? How can we reassure patients that they will still receive the same quality of care?

WHAT IS USER EXPERIENCE AND WHY IS IT IMPORTANT IN OUR HEALTHCARE SERVICES?

Defining User Experience

"The Broad Definition - User experience design is the creation and synchronisation of the elements that affects users' experience with a particular company, with the intent of influencing their perceptions and behaviours." [3]

In simpler terms, user experience is the experience people have when engaging with a product or service. The focal point is understanding the requirements expected and needed by the user, with the intent of improving the overall quality of the interaction.

User experience, commonly referred to as UX, is a field that is ever evolving and therefore very much still being defined. In order to provide good UX, the designer must have a deep understanding of the intended users values, abilities and limitations in order to produce a product or service that has value to its intended user group. Peter Morville best describes this through his *"User Experience Honeycomb"*[4] diagram, which demonstrates the 6 most important qualities to consider for a user to have a *"meaningful and valuable experience; useful, usable, desirable, findable, accessible and credible in order for it to be valuable."* [4]

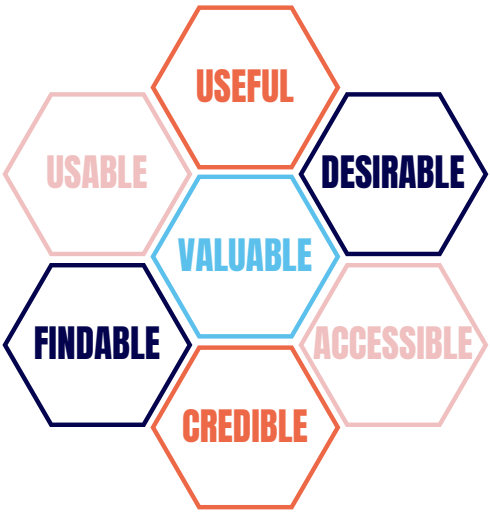


Fig. 1 The User Experience Honeycomb

Therefore when we consider the importance of UX within our healthcare services, we quickly realise the level of impact it has in all areas. We cannot control the experience someone has within the healthcare environment as this is influenced by their own personal knowledge and past experiences. However, we can influence their experience through design.

UX in Healthcare Services

The health-tech sector is among the fastest growing in the world today with investments in healthcare AI software, hardware and service market said to reach *"$34 Billion Worldwide by 2025"* according to Tractica. [5] In order for modern technology in healthcare systems to work, the technology needs to be user friendly and this is were UX in healthcare comes into play.

If we look at the NHS, it has a digital service manual which has been created to assist designers in building *"consistent, usable services that put people first."* [6] The NHS service standard is made up of 14 points which are guidelines from the GOV.UK service standard and an extra 3 points specific to health and social care. These service standards discuss areas such as understanding the intended users' needs in regard to healthcare, solving a problem for users by keeping things simple so everyone can use it and ultimately respecting and protecting users' confidentiality and privacy.

The principle of these service standards is to put people at the heart of everything by designing with compassion, inclusivity and reliability. The foundation of good UX is empathy for the intended users which coincides with the heart and drive behind healthcare, which is patient welfare. *"Caring is the core business of the NHS."* [6] Which leads to the topic of why it's so important to consider UX in healthcare services.

Why Is UX in Healthcare Services Important?

“In the UK, almost 1 in 5 people have a disability of some kind. Many more have temporary or situational disabilities, like an illness or injury.”[6]

Accessibility is the process of making sure a service or product can be used by as many users as possible without issue. It is therefore a very important element when considering UX. The concept of accessibility is to make sure no user group feels excluded whether they have different needs or different circumstances. *“Users can be virtually anyone; clinically trained professionals, non-clinical professionals, specific patient groups, or anyone in the general public.”* [7] A user's disability could be visual, hearing, motor or even cognitive. However when designing any digital service we must keep in mind that a user's location, health and equipment also has an impact on their experience.

The NHS digital service manual, accessible information standard and design principles are some of the tools available to ensure NHS digital services are designed using a specific, consistent approach. These ensure their digital services are accessible to all, and can be seen in case studies such as Bridgewater Community Healthcare Trust and Guys and St Thomas’ NHS Foundation Trust, which demonstrate how organisations within the NHS are using assistive software in order to make their digital services more accessible to its users.

Digital inclusion can transform lives as users get online and learn new digital skills which help build confidence in those who maybe aren’t digitally literate. The consideration of UX in healthcare services is therefore extremely important in order to build confidence in their patients as healthcare in itself is a profession which relies on trust and reliability.

THE FRICTION BETWEEN PEOPLE AND TECHNOLOGY

Understanding How the Process Works

As previously mentioned, in recent years the NHS has been at the receiving end of criticism for over complicating the messaging they put out to their users. Using vocabulary that sounds and looks intelligent may seem professional, but for the intended users it only causes confusion and therefore impacts their experience which leads to frustration. Large organisations such as the NHS are made up of executives, managers and staff who have been within the industry a long time and therefore develop an inward looking culture. This inside knowledge of how the process works, makes it difficult for them to empathise with the users and their frustration points as someone using the process for the first time.

"Empathy is the key to good design." [2]

With more industries becoming reliant on mobile and software systems, implementation of a good user experience has become the predominant consideration. By addressing the existing frustrations between users and technology, designers can help ensure that both the needs of the user and staff are being met within the healthcare sector.

"Humans unanimously benefit from knowing where they are in a process and how a process works," says UX consultant Gareth Dunlop as he explained why process and guiding the users through, is important to the user experience. [13] An example of this can be seen in a 2011 project which explored if incidents of aggression in A&E facilities reduced as a result of better patient experience. Through this research, it was identified that clinical confusion, frustration, intoxication, anger, isolation and distress were the six main characteristics found in patients who responded negatively within the healthcare environment. By explaining and guiding patients through the process and introducing a transparency between patients and staff, this 2011 project was able to reduce the number of aggression incidents by 50%.

As highlighted in Steve Krug's book, *"Don't Make Me Think,"* [14] user frustration doesn't stem from the number of steps needed to complete a process, frustration stems from the amount of cognitive effort required to complete each step. Small inefficiencies may seem insignificant however, when you consider the grand scale of the NHS and the millions of users impacted by these inefficiencies, it quickly becomes clear the importance of UX.

How Is UX Improving the Patient Experience?

When we tear apart the idea that things are done a certain way because they've always been done that way, we quickly see an improvement in user experience, which in turn saves time and money. A user-centred design approach would bring together patients, staff, families and communities by improving existing services and designing strategic change as a way to explore innovative improvements to healthcare delivery.

When the NHS was set up more than 60 years ago, things were very different. Nowadays our ageing population often suffers from multiple health issues rather than just one which results in patients usually needing access to more than one department within the NHS. They also may need to rely on friends, family, charities or other organisations to aid with their health problems. However the one element that remains the same is the doctor-patient relationship built, giving patients faith in the advice and treatments provided by their doctors.

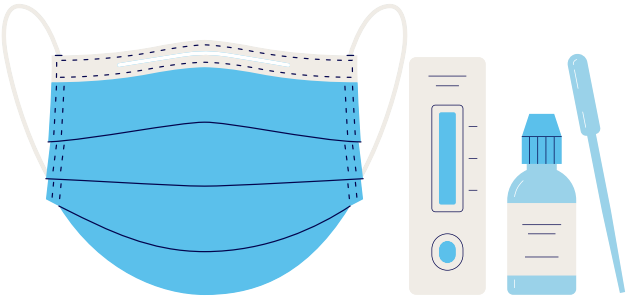
> **"To establish trust, technology should augment rather than replace patient-provider relationships." [15]**

Every patient experience is going to be unique to them, so it's important to understand the personal process of healthcare. Inclusive design takes into consideration all user types, from those with low digital literacy to those with a permanent, temporary or situational disability. An example of situational disability is a user who has become a new parent. In an online article by *Hampus Sethfors*, [16] he discusses the commonly considered motor inabilities of a new parent when it comes to user experience. However, he also highlights further impairments such as sleep deprivation, swollen hands, 'a ticking baby bomb' and hearing loss at night which all emphasise how parent friendly design is accessible design.

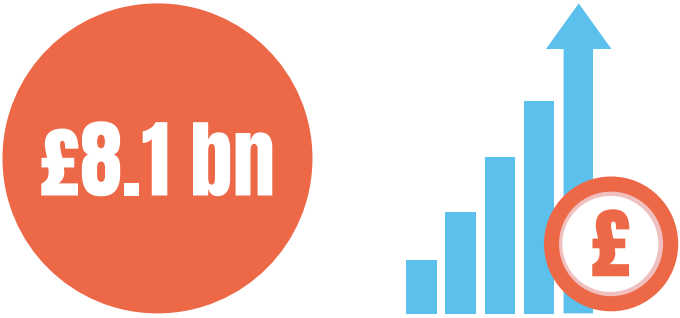
Healthcare UX is all about the patient experience and accessibility plays a large role in it. The introduction of health apps has meant that patients can access care wherever and whenever they need it. With more efficient communication of information, personalisation of healthcare deliverance and data protection taken into consideration, patients are more willing to learn and adopt these new digital services. *"Empowering patients to make use of these tools gives them more personalised access to care, and leads to fewer clinic visits and better health overall."* [17] That is why the improvement of UX in healthcare will be led by patient response as good UX has the ability to better lives and create a healthier future.

DIGITAL TRANSFORMATION IN THE NHS

COVID-19



In July 2019, the Department of Health & Social Care, NHS England and NHS Improvement updated their digital transformation strategy by creating a new unit, NHSX, to lead the transformation. The intention of the NHSX is to allow healthcare services and providers more freedom in their approach to digital transformation as long as they keep to the national standards currently in place when implementing updates to their IT systems.



It's estimated that a further £8.1 billion is required for the updated digital transformation strategy set to be spent between 2019 to 2024. [9] Therefore the digital transformation of the NHS comes with many challenges and hurdles due to its large scale and the sensitivity of its user information.

When the COVID-19 pandemic reached the UK in January of 2020, a rapid change in approach to the deliverance of healthcare was necessary. With the introduction of national lockdowns, social distancing and stay at home orders, healthcare professionals and patients were unable to follow normal procedures and therefore had to adapt as more and more services had to move online in order to reduce the infection rates. However, the digital transformation of the NHS was already under consideration as the government was focusing on better use of digital equipment throughout our healthcare services. The rise of COVID-19 merely increased the urgency for the implementation of these suggested changes.

Through the use of technology, the NHS has been able to manage elements of the pandemic. For example, the NHS 111 online service provided relief for call handlers by supplying coronavirus advice on a larger, wider scale for people as well as working alongside *"companies such as Google and Twitter to direct people to the correct advice and counter misinformation".* [10] They also introduced text message updates to notify registered track and trace or NHS COVID-19 app users of their test results, updates on the risk of coronavirus in their area and informing them if they've been in contact or exposed to someone who has tested positive with the virus.

The response from the NHS in regards to the pandemic highlights how quickly and effectively they can adapt and transform their means of service when it becomes a necessity. In many ways, this demonstrates the abilities technology has when a clear problem is identified and people are given the support to make innovative progress. Over time, more patients should be able to access medical information and advice without needing face-to-face contact and therefore help manage the raised demand on our healthcare professionals and minimise the risk of infection.

The Impact of Digital Progression

The digital transformation of the NHS affects all areas whether it be our hospitals or GP surgeries. However, it also impacts the experience of many user groups, from front-line staff to general patients. At a time of high pressure on our healthcare professionals and services, digital progression enables NHS workers to focus on the things that matter by providing them with relevant technology that makes their workload that bit easier. In a podcast from *Digital Health Unplugged*, they discuss the importance of user experience when designing digital health tools and how they could ultimately save nurses five weeks of time per year using technology solutions. [11] Due to COVID-19, the pace at which technology progressed as a necessity meant that some technology models had to be introduced with limited or no feedback from the intended users. While remote options provide convenience there is no 'one size fits all'.

For some users with limited digital skills, the pandemic was motivation to change as it forced them to embrace new digital progression whilst gaining confidence online. However, people may have accepted these changes due to having no other options at this time, but it does not prove that this is their preferred way of receiving these types of services. Whilst there are obvious benefits to remote alternatives, some patients may be missing out on the benefits that came from the social interactions linked to these types of services such as meeting or interacting with those going through a similar situation.

“For example, the Royal College of General Practitioners has highlighted the importance of face-to-face contact in supporting people with mental health problems, alongside concerns about what the future impact of limited access to face-to-face support might be.” [10]

In regards to the potential impact on healthcare services, there is the risk of the quality of care received by patients as factors could easily be missed during a remote consultation that would otherwise be noticed. In some cases, such as a victim of domestic violence, attending confidential appointments with a GP could be a patient’s only opportunity to ask for help. There’s also the concern for inequality as providing remote services assumes that a user has the means or understanding to access these digital alternatives. Evaluation of the introduced digital technologies within healthcare will be essential in the coming years in order to address underlying challenges that have arisen during the pandemic.

Even though there have been many benefits to the digital progression, such as freeing up physical space within hospitals in avoidance of becoming overwhelmed in response to the pandemic, there have also been many negatives. Recent research shows GP consultants leaving the line of industry as a result of being overworked. With the use of remote services, GP’s now have to manage and balance appointments virtually and in person which makes a work life balance difficult to maintain. Careful analysis of the unexpected developments of the last few years will be essential for any digital transformation of the NHS moving forward.

CONCLUSION

The Future of Healthcare

The top 5 trends happening within digital healthcare are telemedicine, wearable technologies, healthcare chatbots, AR and VR healthcare UX and electronic health records. As previously mentioned, technology in healthcare has had to progress quickly in response to the global pandemic. Development of user-focused tools has assisted in making care more accessible to all on more adaptable platforms demonstrating how UX is changing for the future of healthcare.

Telemedicine allows physicians to consult, diagnose and treat patients from the comfort of their own home. Using health apps, software and video consultations, telemedicine can look and feel like any regular GP visit. As telemedicine is taking the medical field by storm, UX within healthcare now also has to evolve in order to keep up the quality of care and accessibility required and expected by our more vulnerable patients. For patients new to participating in remote services, a clear, accessible guideline or tutorial on how the process works will be essential for patients to have a good user experience. So when UX designers are creating these new forms of medical technology, it is necessary to take into account the various categories and characteristics of users that are intended to use the platform.

Smartwatches and fitness trackers are another platform that has gained popularity in recent years. With the advancements in the capabilities of technology, app creators now have the ability to expand and enhance the use cases of these wearables. These connective devices allow patients control in tracking their own personal medical data through monitoring basic metrics such as heart rate, steps or sleep pattern. According to a Business Insider report, *"more than 80% of consumers are willing to wear fitness technology,"* [19] and one study suggests that by 2022, the number of wearable devices will soar to 1.1 billion due to technological enhancements. [18]

Although AI chatbots are still relatively new within healthcare UX, they have become a key part in helping medical organisations like the NHS to reduce the workload on an already strained workforce. Chatbots assist with organisational management, helping patients to book appointments, manage their medication, connect them to their GP or collect feedback at the end of their consultation. The main role of UX in these AI chatbots is to ensure patients still receive quality, user-centric services. If users have a bad first experience with a medical chatbot, this could impact their willingness to use them for future interactions.

Augmented reality and virtual reality, commonly known as AR and VR, have brought to light a whole range of new opportunities within the healthcare industry. Doctors use these technologies to better their skill sets in their initial training stage and it has even gone as far as to help physicians with more in depth diagnosis with its ability to accurately perform scans on a patient's body. There is also research from UCLA's David Geffen School of Medicine that shows surgeons who used VR platforms for simulated training heighten their surgical performance by 230% compared to those who use traditional training methods. [19] As these types of platforms continue to evolve, it will be important for their continued success that UX designers continue to test and respond to feedback from users in order to ensure a good experience is had.

Electronic health records have existed for many years now but their use case within healthcare UX is on the rise. In the past, administrative staff were highly reliant on paper records which requires a lot of organisation and management to maintain. *"The purpose of EHR is to digitise medical charts and records while reducing the amount of paperwork needed."* [18] Patients now have the ability to access their medical information much more efficiently using online portals and with the click of a button they can easily supply their full medical history. As these online portals contain personal and confidential information, extensive and continued UX research will be required in order to reassure users that their information is being managed safely and to ensure that the platform itself is effective and user-friendly.

With all these technological and remote developments happening in the medical sector, how can we ensure no one is being left behind in this new age of healthcare?

How Will This Impact Our More Vulnerable Patients?

With digital healthcare seeming like the future with it's growing popularity and demand, patients need reassurance that they are still receiving the same quality of care, if not better.

> **"Medical technologies aim to improve the efficiency of healthcare, enhance the patient experience, and make the doctors' hard work a little bit easier." [18]**

However, with the rise in digital devices used in healthcare comes the rise in challenges such as cybersecurity threats, the growing senior population and the unfair access and outcomes in healthcare. In order to combat these challenges and maintain user trust, good UX has never been more important as it's imperative to understand that not every user type will be satisfied using a product unless it's been created using accommodating design. For example, by 2060 it's expected that seniors alone will make up as much as 23.5% of the population which will cause a pivotal change in the standards required in UX design. In order to make services usable and accessible to everyone, systems need to be designed with simple navigation and compatibility for assistive tool functionality.

As mentioned previously, the digital transformation of the NHS has been a long-term goal for improving our healthcare services but the dangerous infection rates of COVID 19 accelerated the urgency for better digital services. Although these enhancements have been beneficial to many, the inability to have one on one consultation with a GP has left others struggling to get the care they need. Undoubtedly digital healthcare is going to play an important role in how people receive healthcare in the future. However, it will be essential to provide patients with the ability to decide what type of appointment is right for them going forward whether that be remotely or face to face.

Studies show patients feel digitally excluded due to their *"lack of interest in using technology and going online"*, their *"lack of digital skills"* and sometimes personal factors such as age , disability or even language barriers. [20] Physicians will have to respect patient's preferences by maintaining the traditional methods of healthcare whilst offering hybrid systems of remote services. Clarifying peoples rights to access remote healthcare as well as maintaining and supplying traditional methods will help ensure no user feels at a disadvantage or left behind.

Only time will tell what's next for digital progression in healthcare, but as long as we design for inclusivity we can provide equitable and accessible treatment to even our most vulnerable patients.

BIBLIOGRAPHY

References

Reference 1: Leprince-Ringuet, Daphne. 2021. "The Digital Divide Is Only Getting Worse For Those Who Are Left Behind". Zdnet. https://www.zdnet.com/article/the-digital-divide-is-only-getting-worse-for-those-who-are-left-behind/ .

Reference 2: "NHS Confusion, A UX Design Approach". 2017. Medium. https://medium.com/@precisedesign/nhs-confusion-a-ux-design-approach-199304139e34

Reference 3: Unger, Russ, and Carolyn Chandler. 2012. A Project Guide To UX Design. 2nd ed. Pearson Education Inc.

Reference 4: Morville, Peter. 2004. "User Experience Design". Semantic Studios. http://semanticstudios.com/user_experience_design/ .

Reference 5: WIRE, BUSINESS. 2018. "Healthcare Artificial Intelligence Software, Hardware, And Services Market To Surpass $34 Billion Worldwide By 2025, According To Tractica". Businesswire.Com. https://www.businesswire.com/news/home/20180827005149/en/ .

Reference 6: "NHS Digital Service Manual". 2021. NHS.UK. https://service-manual.nhs.uk/ .

Reference 7: Morrison, Gyles. 2019. "What Is Healthcare UX And Why Is It So Important?". Medium. https://drgylesmorrison.medium.com/what-is-healthcare-ux-and-why-is-it-so-important-be21b415e681

Reference 8: "Designing For Inclusion - NHS Digital". 2021. NHS Digital. https://digital.nhs.uk/about-nhs-digital/our-work/digital-inclusion/designing-for-inclusion .

Reference 9: National Audit Office. 2020. "Digital Transformation In The NHS". National Audit Office. https://www.nao.org.uk/wp-content/uploads/2019/05/Digital-transformation-in-the-NHS.pdf .

Reference 10: Hutchings, Rachel. 2021. The Impact Of Covid-19 On The Use Of Digital Technology In The NHS. Ebook. Nuffield Trust. https://www.nuffieldtrust.org.uk/files/2020-08/the-impact-of-covid-19-on-the-use-of-digital-technology-in-the-nhs-web-2.pdf .

Reference 11: Digital Health Unplugged. 2021. "UX In Digital Design". Podcast. Digital Health Unplugged. https://open.spotify.com/episode/6uinbcP3YjZ3OeOR5yddp2 .

Reference 12: Rue, Noah. 2021. "The Future Of Healthcare UX Design". Usabilitygeek.Com. Accessed December 16. https://usabilitygeek.com/the-future-of-healthcare-ux-design/ .

Reference 13: Dunlop, Gareth. 2018. "What We Can Learn About UX From The NHS". Silicon Republic. https://www.siliconrepublic.com/business/ux-process-nhs .

Reference 14: Krug, Steve. 2014. Don't Make Me Think, Revisited. 3rd ed. [S.I.]: New Riders.

Reference 15: Weidberg, Efrat. 2020. "Lessons From Designing Digital Health For Patients, With Patients". Medium. https://uxdesign.cc/insights-from-designing-digital-health-for-patients-with-patients-31d975f4b326.

Reference 16: Sethfors, Hampus. 2020. "Parent Accessibility | Axess Lab". Axess Lab. https://axesslab.com/parent-a11y/ .

Reference 17: "Healthcare UX: How Better UX Is Improving The Patient Experience". 2021. Mindsea Development. Accessed December 16. https://mindsea.com/healthcare-ux/ .

Reference 18: Miller, Anthony. 2020. "Why UX In Healthcare Technology Matters And Where It'S Going | 2020". UX Planet. https://uxplanet.org/why-ux-in-healthcare-technology-matters-and-where-its-going-2020-82a2cb09ef55 .

Reference 19: Morales, Justin. 2020. "Healthcare UX/UI Design & How It's Evolving | Adobe XD Ideas". Adobe XD Ideas. https://xd.adobe.com/ideas/process/ui-design/healthcare-ux-design/.

Reference 20: *Locked Out: Digitally Excluded People'S Experiences Of Remote GP Appointments. 2021. Ebook. Healthwatch. https://www.healthwatch.co.uk/sites/healthwatch.co.uk/files/Digital%20Exclusion%20v4.pdf .*

Imagery

Fig. 1: Morville, Peter. 2004. User Experience Honeycomb. Image. http://semanticstudios.com/user_experience_design/ .