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Impact of Digital Health Technologies and Digital Transactions on Healthcare Practitioner and Patient Behaviour: Perspective from India and United Kingdom

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ABSTRACT
Being a health care professional in the twenty-first century is incredibly demanding. The increasing prevalence of chronic illnesses, a shortage of medical personnel, an increase in administrative chores, the rising expense of medical care, and increased life expectancy pose enormous challenges for medical professionals. The expanding prominence of digital health has driven this transition. Digital health refers to more than just technical advancement; it also profoundly alters the physician-patient relationship and treatment environments. The negative features appear to exceed the favourable elements in the shift to digital health adoption in medical practise. Only a few examples exist where hospitals, policymakers, and payers provide adequate incentives to enhance the adoption of important technology. Government driven initiatives like Digital India, Ayushman Bharat Health Account (ABHA) under Ayushman Bharat Digital Mission, UPI payments need awareness on guidelines and policies. Health care is a complicated system, and many revolutionary innovations remain prohibitively expensive. Furthermore, there is a resistance among co workers to accept the digital healthcare and many patients do not rely upon it.

1.1| Introduction of the study -

"Technology is deeply embedded in every aspect of our lives and will remain so as long as it continues to evolve, offering new ways to enhance efficiency improve our quality of life its rapid and unstoppable development has fundamentally changed how we the live, work and communicate" (Maitland,2012) . To keep pace with progress we must embrace technological advancements and integrate them in all areas of our daily lives

Health technology is defined as "the application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures and systems developed to solve a health problem and improve quality of lives" (WHO, 2022)

Advancements in digital tools are reshaping healthcare from mobile applications and decision support software used by doctors to intelligent systems that analyse data. These innovations have immense potential to enhance disease detection and treatment while improving the overall delivery of medical services. Examples of such technologies include mobile health solutions, wearable monitors, remote consultations and tailored treatments.

To support medical and wellness needs, digital healthcare solutions rely on computing systems, connectivity software and sensors. Their applications range from general health monitoring to integration with medical device and treatments. These technologies may function as standalone medical solutions enhance existing treatments assist in diagnostics or contribute to the development and study of new therapies.

Furthermore, the coronavirus outbreak has driven the healthcare industry to accelerate its digital transformation. There has been a surge in both digital health development and technology adoption as governments and healthcare companies have dug deep to safeguard frontline workers, increase patients' access, and ultimately save lives faster.

1.2| Rationale of the study –

The modern era has introduced unique obstacles for healthcare providers a surge in long term illness a shortage of medical experts worldwide rising healthcare expenses and longer life spans have collectively created significant difficulties for the medical field the emergence of technology driver healthcare solution has started to reshape both patient care and medical practice.

Digital health is defined as "the cultural transformation of how disruptive technologies that provide digital and objective data accessible to both health care providers and patients leads to an equal-level doctor-patient relationship with shared decision-making and the democratization of care." With integrated into medical services and healthcare costs rising beyond sustainable levels globally, a fundamental change is inevitable. (Digital health is a cultural transformation of traditional healthcare, 2017)

A significant transformation is taking place in the personal aspects of medical care in conventional healthcare practices, individuals have little to no role in making choices about their own treatment and wellbeing. The entire responsibility for decisions and their consequences rested solely on medical professionals. People were completely dependent on doctors' medical facilities and the available resources for guidance and care this lack of control along with the fear of being subjected to external decision let to the movement toward greater patient involvement. The emergence of new

technologies at the same time further supported this shift alloying individuals to take a more active role in managing their health.

Physicians are transforming into guides for their patients in the jungle of healthcare information and technologies from being an authority, from being the one who makes all the decisions (Bloem, 2011) . They remain critical parts in the status quo because they still have the skills and a lot of experience. Rather than being the gatekeepers to the ivory tower, they become partners in the patient's healthcare journey.

The bond between doctors and patients is evolving with the rise of modern technology and the availability of knowledge to both parties. Understanding of health conditions and the role of innovation now come from both ends. The shift encourages collaboration open discussions and joint efforts in making informed choices about treatment and we'll being.

Many nations have a poor rate of digital health adoption in the health-care industry. Acceptance by existing and future health care providers is a helpful element for the implementation and adoption of digital health.

Thus, it is critical to comprehend both sides' readiness to adapt this huge cultural transition of the health-care industry from its conventional traditions, namely, physicians and patients.

1.3| Objective of the study –

This study primarily examines the acceptability of new medical technologies in health care settings, as well as if there is any opposition to these technologies from hospitals, surgical centres, electronic health (eHealth) centres, and other organisations. In addition, we also aim to explore the impact of digital transactions in healthcare sector.

Aim of this study is to determine whether there has been a transition in physicians' and patients' attitudes regarding digital health technologies, as well as whether the adoption rate of digital health technology and digital transaction has evolved since the coronavirus outbreak.

Because many countries have a low percentage of digital health and digital payments adoption in the health-care business, this study investigates if this is true for countries such as India and the United Kingdom.

2.1| Literature Review –

The COVID-19 pandemic, like previous worldwide catastrophes in human history, is creating significant health and economic disruptions in many countries.

At the same time, this new environment favours the transition to digital solutions in many businesses and society as a whole. One example of this transition is education (Robbins, et al., 2020) ; From primary schools to colleges, the whole industry has created new ways for teaching remotely, changing from classroom lectures to live conferencing or web-based courses. (Gewin, 2020)

Similarly, health-care institutions responded to the COVID-19 epidemic by rapidly implementing digital solutions and modern technological tools; Telehealth, mHealth, electronic medical records, artificial intelligence, the internet of things, and big data/internet in various ways to prevent and control the COVID-19 pandemic in various contexts utilising varied methodologies. (Golinelli, et al., 2020)

The list of new digital solutions is rapidly growing (Ramsetty & Adams,2020) . Beyond virtual consultations, these advancements include communication through email and mobile applications along with the integration of smart accessories, automated assistance, AI-based diagnostic systems, voice activated interfaces and mobile tracking devices like smart watches oxygen level detectors and temperature sensors. New services have emerged such as monitoring individual in home isolation and tracking health trends across large groups. Remote healthcare solutions have already demonstrated their value especially when access to in-person medical care is restricted delayed or unavailable for those without severe symptoms or non COVID-19 related conditions.

In fact, according to Keesara et al (Keesara, Andrea, & Schulman, 2020) , instead of using a model structured on the historically necessary model of in-person interactions between patients and their clinicians through a face-to-face model of care, current health care services and patient assistance can be guaranteed remotely through digital technologies.

Prior to the pandemic it was expected that like other industries the digital transformation in the healthcare business will be disruptive.

Literature search Sub Theme 1:India

The most significant shift brought about by COVID-19 is the unambiguous embrace of digital technology in India and throughout the world. Humans discovered that there are digital ways of accomplishing things on a scale we never considered imaginable. Healthcare has seen the greatest adoption of digital technologies throughout this pandemic time. Many years medical technology has advanced to support healthcare needs but it was often waved as a secondary option rather than a primary solution. Physical resources within healthcare systems remained the primary focus. However the global health crisis brought by the pandemic shifted the role of digital solutions to a central position. This transformation became essential for conducting tests tracking infections and managing diagnostic processes.

Despite ongoing recommendations from international organizations urging governments to integrate technology into healthcare on a larger scale many policy makers remained hesitant. Some doubted its effectiveness for their specific regions and populations while others did not consider it a priority.

Surprisingly, even professionals within the medical field had long resisted widespread adoption of technological solutions while digital innovations were acknowledged they were not fully accepted as an essential part of mainstream healthcare

when the pandemic placed overwhelming pressure on health systems hospitals and clinical struggle to accommodate the surge in both COVID-19 and non COVID-19 patients the limitations of physical infrastructure created an urgent need for alternative approaches

Among the most impacted were patients and healthcare consumers who were now in a position to reassess the role of technology in Medical Care. As the primary beneficiaries of healthcare services their concerns about the effectiveness and reliability of digital solutions became more relevant than ever.

The majority of people in India pay for their own healthcare. For numerous reasons, such as infrastructural barriers, language barriers, education barriers, access, and so on, digital health literacy or even basic health literacy has remained poor. Most of these parameters were significantly altered by the epidemic. While it was previously optional to employ digital health technology, it is now required. (Bhambere, B, & H, 2021)

Payment digitalisation in healthcare is aimed at improving healthcare accessibility (Shorbaji N/July 2021). In a report by Nasscom/August 2021, it was reported that "the government health services available to people in a more efficient and convenient manner by use of digital payment tool like UPI and a market value $700Bn opportunities & healthcare sector to benefit the maximum" (B.G.Pathak/ Oct 2023)21.

UPI Payment Apps transactions in 2019 over 2018 has shown 300% growth with a huge jump from 546million transactions to 1335million transactions (S.B.Gupta Ajn-Feb 2020)22

Integrating cashless payment gateways in India's healthcare holds transformative potential, as it will foster transparency, equitable access and heightened patient experiences.

While UPI payments are growing up, the cybersecurity concerns are also ramping high leading to big money losses. Data breach is another critical area which remains as a huge security threat; as people who do not have authority are having access to sensitive customer data. (Nanda,A.S. 2024)23

Cyber security has got various domains and to address that enough manpower with desired skillset is need of the hour to tackle situations. An uncertainty in the mind of a common man is evident, who hesitate to use UPI apps/ digital transactions even in a hospital of high repute.

However, recent statistics from RBI/ NPCI showcases current trend of adaption of digital transactions in India in year 2024.

(Source: RBI reports on digital transactions in 2024)

Sub – theme 2: The United Kingdom

The global health crisis bought by COVID-19 transformed this situation within a short span of time the ability of digital medical solutions to safeguard individuals healthcare providers and society from direct exposure became widely acknowledged this recognition accelerated the adoption of such innovations at north unprecedented pace.

Numerous nations have implemented digital first approaches remote monitoring systems and virtual healthcare platforms to facilitate medical services without requiring in person visits in the United Kingdom primary healthcare has widely adopted telemedicine introducing a new digital first model to efficiently direct patients to appropriate care settings.

The UK government and dissipates that technology will play a growing role in delivering healthcare and support particularly for its aging population a former health and social care Secretary of State emphasise the importance of fully integrated health and social service while advocating for a more technologically advanced National Health Service.

Their objectives follow a number of parliamentary and government assessments with the NHS Long Term Plan being a key example urging greater adoption of medical and healthcare innovations . However, a decade after Lord Darzi highlighted it in a national review that while the country excels in creating new advancements, it struggles to implement them effectively, this perception still holds true . The UK has particularly fallen behind in the integration of digital healthcare systems and seamless connectivity between east health platforms

Covid-19 struck the globe and progressively shut down life in various ways and with varying degrees of severity. Many countries and their economies have suffered and continued to face setbacks with employment disruptions and most importantly the loss of lives. Although the crisis has impacted various sectors wherein the healthcare field has experienced some of the most profound effects and is expected to undergo lasting changes. The medical infrastructure in many nations was deeply strained leading to rapid and significant transformations. The transition of healthcare services to digital has been in the works for some time, but it took a horrific worldwide epidemic to fully kickstart it. But now that the genie has escaped, I don't see how we can go back to the way things were. Digital health has emerged as a critical facilitator in the battle against a deadly virus, demonstrating how we may be more efficient, proactive, personalised, and collaborative.

3.1| Research Methodology –

This research studies the 'Change in Physicians' and Patients' Attitudes in Adoption Rates of Digital Health Technology: India and the United Kingdom'. In this study, structured questionnaires were used to obtain primary data. Because of the participant's proximity to the researcher, convenience sampling was employed to gather data in the present analysis.

3.2| Research Hypothesis

H1: There has been a shift in power, perspective, and attitude towards digital health technology; patients have become empowered, while physicians fear losing their status-quo in the healthcare industry.

DATA ANALYSIS AND FINDINGS

The IBM SPSS application was used to analyse the data. To put the following theory to the test: "H1: There has been a

shift in power, perspective, and attitude towards digital health technology; patients have become empowered, while physicians fear losing their status-quo in the healthcare industry."
The study was based on the findings of a well-structured survey.

4.1| Descriptive Analysis -

Over the course of one month, a total of 100 responses were gathered. Out of the 100 responders, 53% were patients, 45 % were general practitioners, and the rest were students.
Out of the 100 responses, 48% were female, 51% were male, and the rest were others.
In the statistic above, 45% were between the ages of 18 and 25, 16% were between the ages of 25 and 40, 27% were between the ages of 40 and 55, and 12% were between the ages of 55 and above.
Out of the 100 respondents, 44% are from the United Kingdom, 55% of them are from India and 1% are from Singapore.
Out of the 100 responses, 46% had suffered from COVID-19 during 1st phase of Covid, 47% had not suffered from COVID-19, and 7% were unclear.
The figure above depicts the use of various digital health technologies during the COVID-19 Pandemic. Online Patient Portals (45 %) are the most commonly utilised technology among the 100 responders, while Wearable Sensing Devices are the least commonly used (24%).
Out of the 100 respondents, 29% utilise none of the digital health technologies indicated.
The chart above depicts some startling data. Almost 28% do not use any health programmes to track their health, and 19% are unsure if they do.
Out of the 100 respondents, 57% of them have a perspective that digital health technology tools are not useful in solving even low-risk health problems but on the contrary 43% of the respondents believe such tools help in solving health problems with low-risks.
The above figure depicts the percentage of respondents who believe these tools have been useful to them during 1st Phase of COVID-19 pandemic. Almost 58% of the respondents have found digital health technology tools to be useful. While the rest of them are unsure about the same.
The above figure represents how many respondents are most to least likely to recommend digital health technology tools to their family and friends.
The above charts represents how many respondents used digital health technology tools before the COVID-19 Pandemic. 52% of the respondents did not use these tools at all before the pandemic. Only about 26% of them used these tools and 22% of them are unsure whether they have used them or not.
The figure above depicts the range in which most of the participants were least-most likely to use such tools before the COVID-19 pandemic.
At last out of the 100 respondents, 51% of them believe their attitude/perspective towards digital health tools have change during Covid 1st phase pandemic. 40% are unsure whether there has been a change in their thinking and 9% of them believe their perspective has not changed at all.

4.2| Findings -

From the above findings, it can be drawn that majority of respondents belonging to both the nations i.e., India & United Kingdom somewhat believe their attitude towards digital health technologies have changed over mainly due to the COVID-19 pandemic, although surprisingly almost half of them still do not believe there has been a change in their thinking perspective regarding the same. The data also shows how a majority of these respondents did not utilise these tools before the pandemic and how unlikely they were to even consider using these tools. It can also be said that most of them also believe these tools are not useful for solving small low-risk health problems, which makes me assume whether they would trust these digital tools to help with high-risk health problems at all.
In addition to this it was derived that digital payments in healthcare sector have impacted the patient and Healthcare Providers. Five major areas of impact identified were as follows:

S.No.	Areas of Impact	Impact on Patients	Impact on Physicians and Healthcare Providers
1	Financial Accessibility and Affordability	Enables Cashless Transaction	Ensures Timely payments, reduces risk of revenue loss
2	Faster and Seamless Payment Processing	Reduces wait time at hospitals and pharmacies	Improves operational efficiency payment delays and billing backlogs
3	Improved Transparency and Trust	Provides digital receipts and transaction history, enhancing financial clarity	Reduces payment disputes, enhances trust in financial transactions
4	Better insurance and Claim Management	Enables real-time clearance of claims and reimbursement	Automates claim handling, reducing administrative workload and errors
5	Enhanced Convenience & Digital Integration	Allows integration with telemedicine and mobile health apps for seamless healthcare access	Enables easier patient billing and remote consultation with integrated payment systems

5.1| Conclusion –

The increased dependence on digital health tools has been identified as a prevalent trend during the COVID-19 pandemic.

Prior to the pandemic, the use of digital health technology to directly boost public health systems had been slow; nevertheless, during the COVID-19 epidemic, there was a relentless acceleration inside health care systems. The patient and consumer groups were the most likely to see digital health in a new light this time. Patients, who are the recipients of health services and products, are justified to be concerned about the extent to which digital health technology can assist them. For all these years, professionals in the Healthcare industry have been sceptical about widespread use of Health technology. Traditional health institutions have been welcoming of digital health technology but have been slow to adopt it as a mainstream choice. When the Pandemic struck the world, health-care systems were directly impacted.

Being a health care professional in the twenty-first century is incredibly demanding. The increasing prevalence of chronic illnesses, a shortage of medical personnel, an increase in administrative chores, the rising expense of medical care, and increased life expectancy pose enormous challenges for medical professionals. Digital health refers to more than just technical advancement; it also profoundly alters the physician-patient interaction and treatment situations. In conclusion, employing digital technology in medicine has become inescapable, and empowered patients, also known as e-patients, have requirements that differ from what medical education trains physicians for. Today's doctors are seeking for their position, authority, and role in the current system. From being an authority, to being the one who makes all the decisions, physicians are morphing into guides for their patients in the jungle of healthcare information and technologies.

After conducting a thorough study, researchers stipulate that the hypothesis stated previously is correct, as the responses from General Practitioners and the theories studied for the topic all point to the same conclusion: while GPs welcome digital transformation, they remain sceptical about their attitude toward it. When it comes to patients, it can be mentioned that they were suspicious about the same thing before to the Covid-19 outbreak, but their attitude toward digital health technology has evolved during and after the pandemic, though some of them remain unsure about their perspective on the matter.

While the adoption of newer digital health technology has evolved the acceptance of using digital payment has also increased. However, it was found that a segment of consumers is still sceptical to use digital payment or mobile wallet. A clear need of awareness drive seems to be the need of the hour as many consumers fear loss of their hard-earned money due to cyber frauds and many of them are afraid that government or the private companies operating wallets have their hidden charges.

While the adaptation of digital health technology will have its learning curve, the awareness about digital transactions is also an area to look at. Considering the cyber crimes and other technological advancements in UPI transactions the patients and physician both equally need to be aware of the steps that are to be followed and the point which they need to be careful about while using apps. Keeping your handset same from viruses or from malwares is also a subject which should be part of awareness campaigns.

5.2| Limitations of the study –

This study has the following limitations:

1. There were relatively few publications accessible on people's perspectives on various digital health tools.
2. While the survey was useful in gathering patient perspectives on the issue, reaching out to general practitioners for their perspectives proved problematic.
3. It is difficult to acquire primary data from people because they may not feel comfortable expressing specifics or emotions about a given issue.
4. The data was gathered from free sources rather than paid websites or web pages owing to a lack of financial backing, making them untrustworthy.

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