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Adaptation of Telemedicine during the COVID-19: Evaluating Perceived Quality and Acceptance

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ABSTRACT

Purpose: While telemedicine has grown in popularity during the COVID-19 epidemic, less research in Bangladesh has investigated how it affects patients' acceptability, perception, and purchasing intent. As a result, this study will evaluate patients' perceptions of the quality and acceptability of telemedicine services. This will determine ultimate purchase intention during the pandemic and how it will affect future decision-making in a developing country like Bangladesh.

Methodology: The eSERVQUAL scale was utilized in this study, and its impact on the patients' purchase intent was explored. We asked 300-plus people who used telemedicine services at least once during the pandemic to participate in an online survey. During the data collection period of June 1st to July 25th, 2022, we collected 251 responses online. This research proposed five hypotheses, all tested using Structural Equation Modeling (SEM).

Findings: The findings show that telemedicine services' 'e-tangibles,' 'assurance,' and 'empathy' directly impact patients' perceptions and readiness to repurchase the services. Furthermore, according to the study, there is no significant evidence that the 'reliability' and 'responsiveness' of these services significantly influence patients' perceptions in the same way.

Originality/Value: This original research applied the five-dimensional e-SERVQUAL model and assessed the perceived value of newly adapted telemedicine service quality by utilizing 22 factors. This will definitely add value to the application of contemporary and established statistical techniques to measure the service quality perception among service users.

Practical Implications: The findings of this study will motivate Asian healthcare institutions, professionals in this field, and academic programs to establish effective tangibility and provide assurance, and empathy to patients to increase their purchase intent.

Limitations: Key study limitations include convenient sampling, 300 questionnaires were distributed but only received 251 responses which are limited in size, and access to the actual patients who used telemedicine.

1. Introduction

Famous novelist Arundhati Roy mentioned, "The Covid-19 pandemic is a portal". Because the pandemic is responsible for a worldwide disaster and has opened up many new opportunities,

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reshaping our way of living, working, and pattern of communication, service delivery, and, most remarkable change in the healthcare sector. COVID-19 is mainly transmitted by human close contact and respirational droplets. The pandemic has interrupted the traditional way of healthcare service delivery to prevent community transmission (Bayram et al., 2020). It is advised not to visit any hospital physically unless it is an extreme emergency. Telemedicine plays a vital role during this pandemic scenario through providing safe digital access and quality healthcare services that especially reduce the threat of cross-contamination affected by direct face-to-face contact. Bangladesh has begun and adopted telemedicine services to fully leverage its advantages in combating the Pandemic. COVID-19 has generated worldwide telemedicine opportunities that are expected to continue when this pandemic will over (Alvarez-Risco et al., 2020).

WHO (2021) stated that telemedicine is a "cost-effective and secure use of information and communications technologies in support of health and health-related fields, including health-care services, health surveillance, health literature, and health education, knowledge and research". Therefore, telemedicine covers information and communication technology (ICT), such as health-related apps and websites, online doctor's appointments, video-chat sessions, disease tracking, and remote clinical and non-clinical services. In addition, in 2019, HRSA (Health Resource Services Administration) denoted telehealth/telemedicine as "the use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health and health administration" (Bokolo, A. J. 2021).

Telemedicine and eHealth platforms that use high-speed telecommunications structures and various software technologies to deliver healthcare solution packages ranging from monitoring, counselling, and providing e-prescriptions to protect both medical practitioners and patients from COVID-19 threats (Okereafor et al., 2020). These digital platforms offer 24/7 communication between patients and doctors as they use teleconferencing through webcam-enabled computers or smartphones (Hollander & Carr, 2020). Hospitals and the healthcare sector faces enormous resource challenges due to the COVID-19 pandemic. Telemedicine is accepted extensively and recognized as a platform to relieve resource pressures such as reduced use of PPE (Personal Protective Care), N-95, and surgical masks and better access to health solutions, especially where patient-doctors physical interaction is not required as consultations plus slowdown the contamination (Lurie & Carr, 2018; WHO 2020; Becker et al., 2021; Bokolo, A. J. 2021).

COVID-19 was first identified in Bangladesh on the 8th of March 2020, and so far, 1558758 people have been affected, and 27591 died due to this pandemic (WHO, 2021; Chowdhury et al., 2021). Like other countries, Bangladesh Govt. imposed different strict restrictions to control the contamination of this deadly virus, by social distancing, home quarantine, complete lockdown, and shutdown of international flights and educational institutes (Akter et al., 2020).

The telemedicine concept and service were first time introduced through a charity trust (Swinfen) in 1996, cited in Chowdhury et al., (2021) in Bangladesh. After that, the Bangladesh government and non-profit organizations often tried to promote telemedicine facilities to serve remote places but didn't get that much acceptance (Hizam & Ahmed, 2019; Chowdhury et al., 2021). The worldwide healthcare sector is under massive challenge due to the pandemic, and like the developed world, developing countries like Bangladesh have adopted telemedicine facilities to utilize their full advantages (Chowdhury et al., 2021). During the brutally infectious COVID-19, telemedicine services have played an essential role in different healthcare sectors (Keri et al., 2020). All of the telecom companies in Bangladesh have provided different telehealth services through their hotlines and app-based services for their users (Akter et al., 2020, cited by Hossain, 2016).

Bangladesh is one of the 57th countries that faces a huge deficit of healthcare personnel for example less than 1.26 doctors for per 1000 people and in rural areas situation is worst. Due to insufficient healthcare facilities and high population density COVID-19 pandemic challenged the country harshly. Public and private sectors tried to offer telemedicine facilities to minimize contamination and maximize the healthcare facilities (Zobair et al., 2020). This study will enrich the

existing literature by investigating people's perception and attitude to the newly adapted telemedicine service and also find out their future purchase intention based on the offered service quality.

This study aimed to focus on patients' adaptation to telemedicine service due to the COVID-19 pandemic and critically evaluate this emerging health sector's perceived quality and performance by applying the SERVQUAL model. Several measurement scales have been developed to assess service quality and performance from the users' viewpoint, but the SERVQUAL model is the most frequently acknowledged and used (Parasuraman et al., 1988; Hizam & Ahmed, 2019). Several prominent studies have been conducted in the telemedicine sector of Bangladesh. However, none of them has assessed the quality and performance of this emerging sector through the five-dimensional SERVQUAL model during the COVID-19 pandemic. The outcomes of this research will indeed contribute to the update and quality enhancement of telemedicine in Bangladesh and other developing countries.

2. Literature Review

Bangladesh has a population of 166.75 million that made it the world's eighth-most populous country (Worldometers, 2021), which did not have a notable healthcare policy and governmental framework to fight the COVID-19 pandemic (Shammi et al., 2021). Overcrowded hospitals, trucks took dead bodies to cemeteries, and exhausted healthcare professionals fighting to protect lives with limited resources confirmed the inadequate capacity of health sectors to face the outbreak (El Bcheraoui et al., 2020). Bangladesh faced many limitations in providing and managing healthcare facilities during the pandemic (Anwar et al., 2020). Without prior preparation, hospitals suddenly received thousands of COVID-19-infected patients (Satyanarayana, 2020). Healthcare professionals and hospitals were under severe pressure due to limitations of resources, fear of being infected even several patients committed suicide in Bangladesh due to the negligence of treatment (Mamun et al., 2020). COVID-19 infection and death rates are higher in Bangladesh among physicians, motivating them to online practice (Repon et al., 2021). Other possible reasons why both the healthcare sector and patients both inclined to telemedicine may be poor infection control techniques, insufficient training to face virus-affected patients, inappropriate usage of PPEs, the patient's inclination to hide facts, quarantine to ensure social distancing, lockdown, decreasing extreme workload, include remote areas patients and slow down the infections (Sakib et al., 2021). Patients' acceptance of telemedicine is crucial for its successful implementation (Yin et al., 2016).

171.854 million People in Bangladesh are currently mobile subscribers. Among them, 102.3 million users are connected through mobile operators, and the other 9.5 million use the internet through different private providers (BTRC 2021) 41% of users have a smartphone (Bhuiyan et al., 2021).

According to (Hjelm, 2005 cited in Hong et al., 2020), telemedicine provides several benefits in the healthcare field during the pandemic, including

- Enhanced access to patients' information 24/7
- Tele-nursing and tele-pharmacy (Weinstein et al., 2014)
- Providing care during the pandemic that was not deliverable earlier
- Better access and delivery to remote and risky health services
- Enriched professional training and learning to manage the crisis
- Controlling the quality of screening and monitoring programs
- Reduced costs of healthcare services (Bokolo, 2021)
- Improvement of patients' awareness of the pandemic crisis and self-care (Yin et al., 2015).

According to Grönroos (1984), cited in Upadhyai et al., (2019), telemedicine patients' assessment of the perceived service quality is subjective because they developed prior expectations, and any

change in offered service would be a gap. Healthcare service quality has grabbed the attention of many scholars worldwide for a long time due to its essential correlation amid patients' satisfaction level, expenses, reliability, and profitability. Scholars have developed varied methods to measure and assess the quality of healthcare service (Tripathi & Siddiqui, 2018). WHO declared clear recommendations about healthcare service quality that must be safe and free of any injury, effective and, when required, must be provided on a priority basis? It should also confirm time-effective and people-oriented service quality. Healthcare quality is defined by the Institute of Medicine (IOM) "as the extent to which health services for individuals and populations maximize the likelihood of desired health outcomes while remaining consistent with current professional knowledge" (Upadhyai et al., 2019).

The most crucial criterion for evaluating the quality and performance of any healthcare service, including telemedicine, is patient contentment. This pandemic has challenged the health sector severely, and patient satisfaction and service quality both became complicated. Hence, the importance of patients' feedback regarding assessing the healthcare service quality is enormous (Al-Neyadi et al., 2016; Upadhyai et al., 2019). The assessment of healthcare service quality comprises three stages, i. structure and settings ii. Skilled and appropriate process and iii. Outcomes (Donabedian, 1966, cited in Upadhyai et al., 2019).

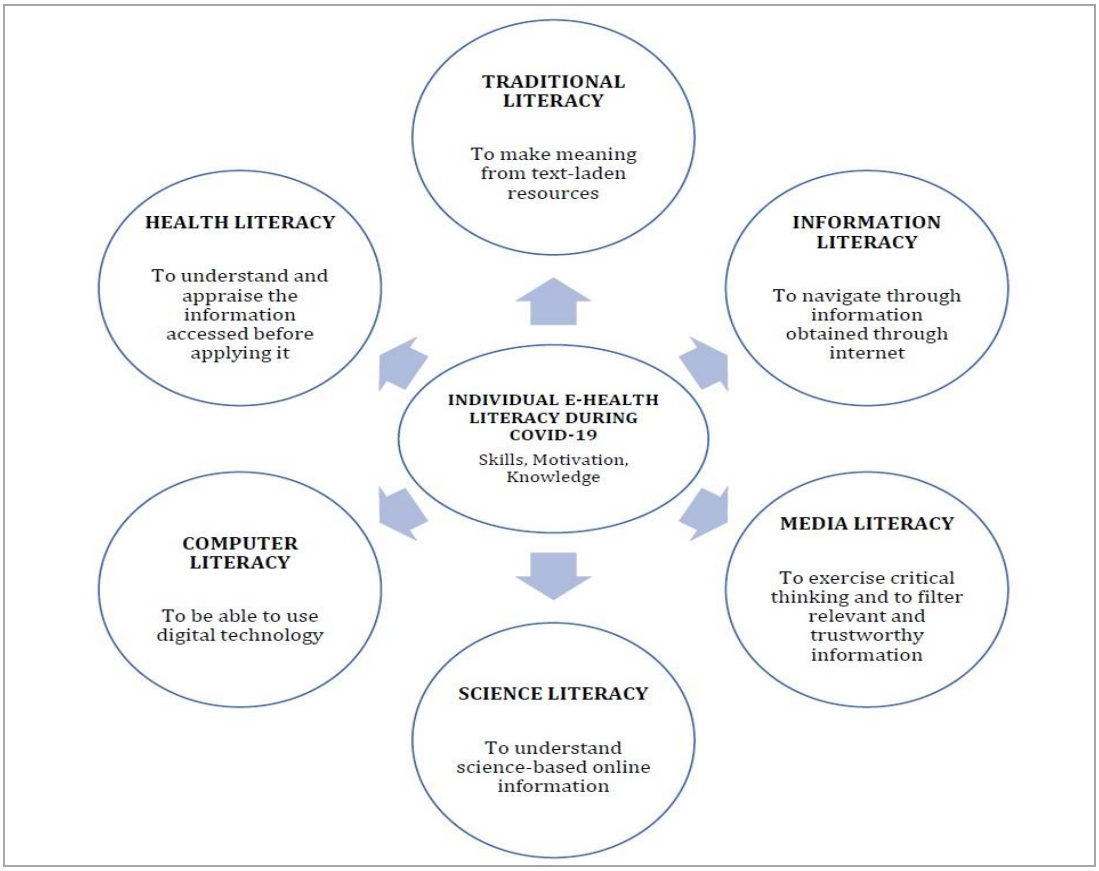

Figure 1

EHealth/telemedicine Literacy Lily model in the COVID-19 pandemic
Source: Norman & Skinner (2006) cited in Brørs et al., (2020) P-459.

The above figure is clearly showing how and in which context telemedicine/eHealth is working to face the pandemic globally. According to this model, the healthcare sector should have enough

resources, relevant information, skills, and technology to provide telehealth services. Patients also need to know the digital technology, enthusiasm, and skill to receive appropriate service.

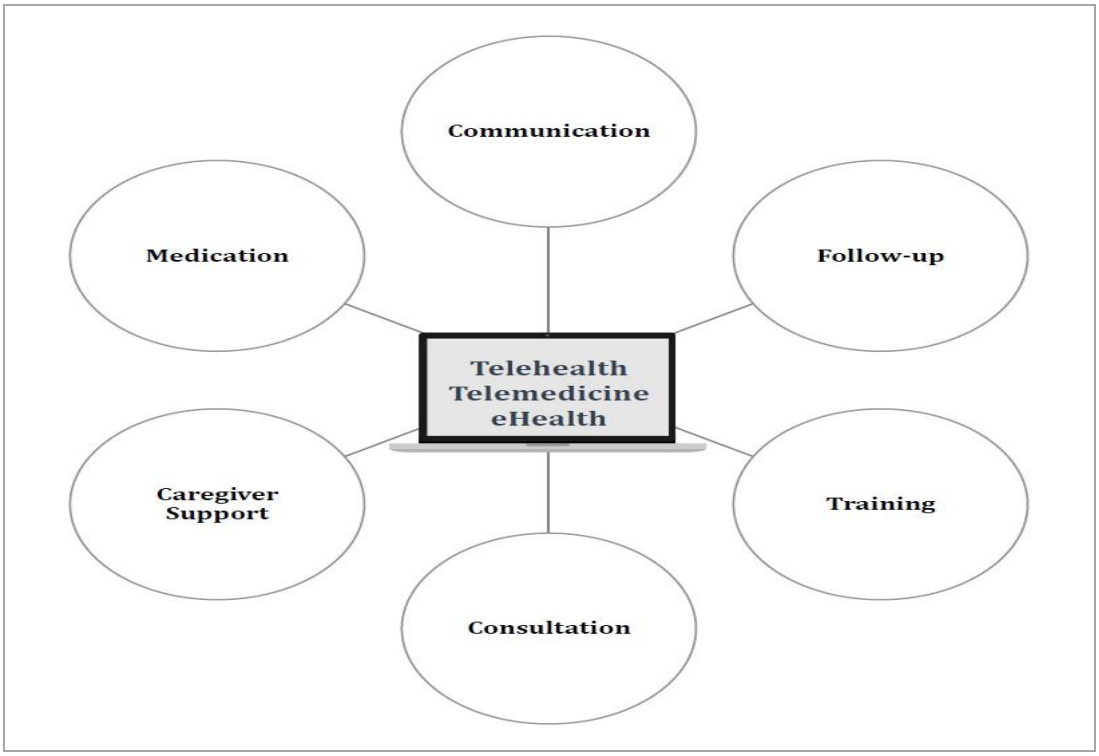

Figure 2

The COVID-19 pandemic healthcare challenge's six ways solution through telemedicine services.

Source: Bitar & Alismail (2021).

Telemedicine services provide 6 ways solutions are; follow-up calls, training both for patients and medical practitioners, medical consultations, providing e-prescriptions and medications, 24/7 digital communication, and caregiver support. The UK and USA have successfully implemented telemedicine applications; many are App-based such as tele-paediatrics, tele-cardiology, tele-dermatology, tele-infectious disease, tele-neurology, tele-ophthalmology, tele-pathology, tele-psychiatry, and tele-nursing and many more during any crisis time (Weinstein et al., 2014).

2.1 Theoretical Background

2.1.1 eSERVQUAL Model to assess the telemedicine perceived Service Quality

The SERVQUAL model was first developed by Parasuraman et al., (1988) still considered the most effective instrument to measure service quality (Hizam & Ahmed, 2019). The SERVQUAL model developed a five-dimensional service quality assessment with 22 items such as tangibles, reliability, responsiveness, assurance, and empathy aspects (Pena, da Silva, Tronchin, & Melleiro, 2013 cited in Maghsoodi et al., 2019). SERVQUAL is a multi-dimensional approach to finding out service quality that compares users' expectations in advance of a service encounter and delivered services perceptions level (Gronroos, 1982 cited in Tamanna, 2020).

This study applied the e-SERVQUAL model (Parasuraman et al., 1988, cited in Hizam & Ahmed, 2019) to assess throughout the COVID-19 epidemic, the perceived value of telemedicine services.

Table 1

Explanation of the eSERVQUAL Dimensions to Assess Telemedicine Perceived Quality.

Dimension	Definition of eSERVQUAL model
eTangibles	Visually pleasing physical amenities, updated and user-friendly websites and mobile apps, webcam, computers, and internet-connected smartphones, modern digital equipment, and professional staff of the telemedicine service provider (Yin et al., 2016; Maghsoodi et al., 2019). Neat and clean dress up and appearance of the healthcare Employees (Tripathi & Siddiqui, 2018).
Reliability	The capability of medical personnel to deliver the assured service as promised reliably (Maghsoodi et al., 2019). Medical staffs are concerned and supportive. The Healthcare facility is reliable. Services are provided at the assured time. Medical records and billing systems both are transparent and correct (Tripathi & Siddiqui, 2018).
Responsiveness	The inclination to offer proper guidance to patients and provide quick service (Maghsoodi et al., 2019). Medical staffs are continuously prepared to help patients 24/7. Medical personnel are very prompt in responding while patients needed. Medical staffs are always respectful (Tripathi & Siddiqui, 2018).
Assurance	Medical personnel's acquaintance and pleasant demeanour, and their capability to inspire patients' self-confidence (Maghsoodi et al., 2019). Patients trust medical service. patients feel safe while receiving telemedicine services Medical personnel have comprehensive knowledge of their particular fields Medical staffs get sufficient support from the hospital Management (Tripathi & Siddiqui, 2018)
Empathy	Individualized and customized care and attention to patients (Maghsoodi et al., 2019). Doctors provide personal attention to patients. Proper understanding of patients' needs. Working for the patient's best interest at heart. Delivered medical service should be convenient to patients (Tripathi & Siddiqui, 2018; Yuan & Gao, 2019).

Source: (Parasuraman et al. 2005 cited in (Hizam & Ahmed, 2019; Maghsoodi et al., 2019; Yuan & Gao, 2019).

In telemedicine, service quality and performance could be identified as how healthcare providers meet or exceed patients' expectations. Quality services enhance performance, patient satisfaction, loyalty, and profitability (Pakurár et al., 2019).

2.2 Conceptual Framework

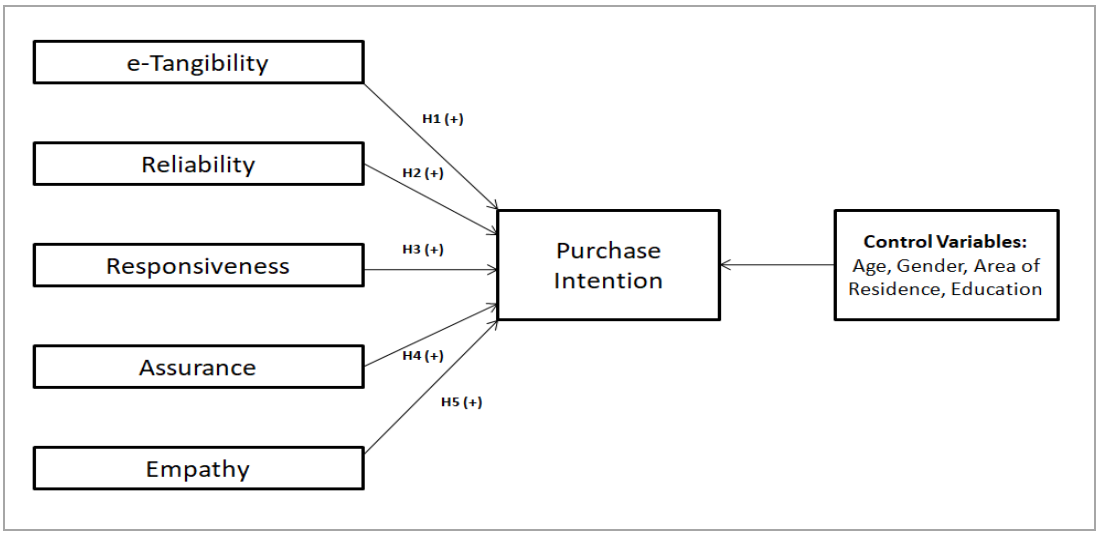

Figure 3

The Conceptual Framework Developed by the Researchers

2.3 Telemedicine in Patients' Perceived Service Quality and Satisfaction Level

2.3.1 Medical Aspects of Telemedicine Quality

The medical features of healthcare quality are mainly three-dimensional, technical, outcome-based and interpersonal, which is equally vital in the telemedicine field as well. The technical aspect considers the knowledge level, skills, and decisions of the service providers (Grönroos, 1984; Piligrimiene & Buciuneine, 2008; cited in Upadhyai et al., 2019). The outcome-based feature includes effectiveness, efficiency, unbiased, appropriate, harmless, and patient-oriented healthcare. Finally, the interactive aspect considers exchanging information, awareness, attention, and developing empathetic and teamwork skills (McKinsey, 2015, cited in Upadhyai et al., 2019).

2.4 Non-medical Aspects of Telemedicine Quality

The non-medical features that influence the quality of healthcare indirectly are servicescapes, accessibility, and responsiveness. Servicescapes consider basic facilities and the physical surroundings where the service is provided. Accessibility would consider location, waiting time, affordability, easy appointment, and billing. Responsiveness includes self-respect and autonomy of the patient, privacy, immediate attention, and access to social networking during the service delivery (Grönroos, 1984, cited in Upadhyai et al., 2019).

Prior research on patients' satisfaction with telemedicine, specifically clinical consultations between doctors and patients, demonstrated that patient-physician connections could be a source of patient empowerment, which can influence patient loyalty and reuse intentions (Cheng et al., 2021; Sharma & Sharma, 2021). Patients are more likely to feel confident when having a video telemedicine session if their doctor can deliver authentic health-related information, make accurate recommendations, and address their apprehensions since the contact strengthens their comprehension of their health state (Battineni et al., 2021; Sittig & Singh, 2020; Yin et al., 2016).

Customer or patient satisfaction denotes the customer's or patient's inner perception of the experience they had with health care, where the outcomes will be assessed based on what they expected from the health service worker (Haxhihamza et al., 2021; Liljander & Strandvik, 1994), allowing patients to reuse the service again, which is referred to as loyalty (Haxhihamza et al., 2021; Rivai & Amirrudin, 2021).

Unusual mental pressures during COVID-19 cause extraordinary levels of health concern, causing people to misapprehend harmless biological sensations as signs of sickness or indication of infection, causing people's mental processes to differ from usual times while they consult through telemedicine, negatively causing different irrational behaviours (Asmundson & Taylor, 2020). Health care is more than just a business that treats people's ailments; it's also where consumers are treated with compassion and affection (Pizam, 2020). This study employed the SERVQUAL model to analyze the perceived quality, satisfaction, loyalty, and confidence among patients when accepting healthcare services, to understand the value of the behaviours a physician exhibits while engaging with a patient. SERVQUAL was widely used to study customers' perceptions of service quality (Parasuraman et al., 1988) and used to assess hospitals and healthcare organizations (Büyüközkan et al., 2011; Wu & Hsieh, 2012), particularly in the telemedicine field (Büyüközkan et al., 2011; Yin et al., 2016).

Doctors' immediate responses to patients' health-related queries through a video consultation might enhance perceived competency since the patient gets assurance in swiftly resolving his or her health difficulties with the support of professionals (Büyüközkan et al., 2011; Wu & Hsieh, 2012). If patients feel safe in their communications with the doctor and the doctor appears compassionate, well-mannered, and friendly, they are more likely to feel adequate in their capacities to understand the truth about their health state (Büyüközkan et al., 2011; Yin et al., 2016). When a doctor acts to have the patient's best well-being in mind during a video consultation and pays close attention to the patient's opinions and suggestions, the patient is more likely to think that he or she can manage the present disease. (Yin et al., 2016). While receiving telemedicine conference, the responsible authority or service provider should provide an opportunity for the patient to meet caregivers and gain a better understanding of the support from the patient's community, including sympathy and practical assistance for medical conditions, as well as provision for technology-based virtual care (e.g., device availability, knowledge of how to use required devices, etc.) (Shankar et al., 2020).

As a consequence of the COVID-19 pandemic, an increasing number of people in Bangladesh are turning to telemedicine, which can enable higher accessibility and contact to care for virtual meetings while lowering the risk of spreading the virus which can occur while visiting a healthcare professional (Iqbal, 2020; Joarder et al., 2019; Rahman & Amit, 2021). Because of the COVID-19 pandemic in 2020, both state-owned and non-government organizations have begun to use telemedicine to provide medical care across the country. High-quality telehealth services have been established at Bangabandhu Sheikh Mujib Medical University and the National Institute of Cardiovascular Diseases with three district public hospitals (Shatkhira, Nilphamari, and Gopalganj) and three local health centres (Pirgonj, Dakope, and Debhata) through a government scheme run by the Directorate General of Health Services (DGHS) (LightCastle Partners, 2020). Several eminent medical facilities and businesses in Bangladesh are leading the way in telehealth services including Praava Health, Evercare, Maya, and Telenor Health. Although telemedicine services were not widely used before the COVID-19 epidemic, the pandemic has caused a major increase in telehealth services in Bangladesh. As an outcome, many people have chosen to stay at home and pursue health treatment via virtual networks in order to avoid getting the virus (Joarder et al., 2019).

In light of this study's context, the authors chose five SERQUAL model dimensions (reliability, responsiveness, assurance, empathy, and tangibles) to investigate their effects on patient acceptability and adoption.

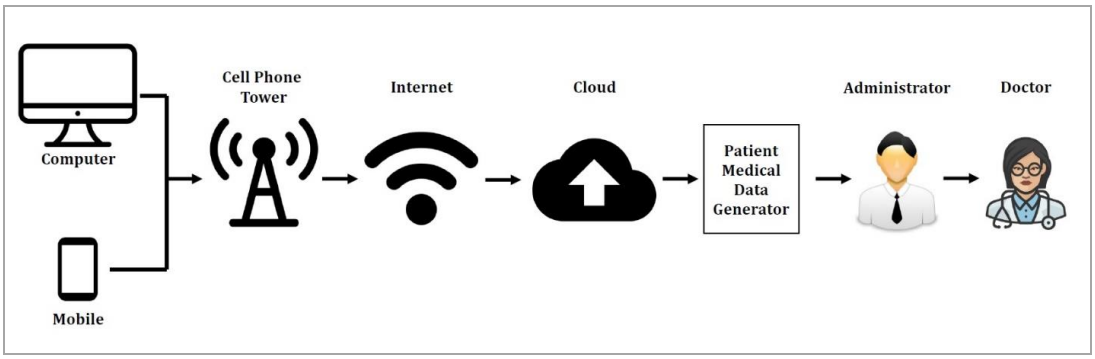

Figure 4

How Telemedicine Works
Source: (Khan et al., 2021)

3. Hypothesis Development

3.1 Tangibility

Tangibility is the measure of how well staff or people's appearance, physical resources, and equipment function (Heller et al., 2021; Kanori et al., 2020). In addition, website design, content, visualization, and other factors contribute to the perceptibility of virtual services (Heller et al., 2021; Nugraha, 2020).

Several prior studies (Faragli et al., 2020; Gupta & Raina, 2021; Shankar et al., 2020) show that tangible aspects of telemedicine services impact customer or patient impression and overall purchase intention during the period of COVID-19. Telehealth providers, enablers, and suppliers constitute a concrete resource that can assist patients in avoiding going to the hospital during the pandemic by examining them remotely, tracking their progress, and keeping all stakeholders in touch while intensive efforts for vaccination and successful treatment are underway (Gupta & Raina, 2021; Faragli et al., 2020).

Based on the previous discussions and analysis of relevant literature during the time of the pandemic, it can be construed that tangible factors such as websites, contents, updated instruments or devices, and other factors contributing to the services' tangibility, lead to the purchase intention among patients regarding telemedicine. Therefore, in this research, we hypothesize:

H1: There is a significant affirmative relationship between the e-tangibility of telemedicine services and patients' purchase intent.

3.2 Reliability

Patients can rely on the system to provide a service of a predetermined quality regarding reliability. The user should be able to access the service anytime and from any location (Jararweh et al., 2020). Poor reliability causes client unhappiness and harms an organization's reputation (von Westarp & Brabänder, 2021). The capability of a service process to achieve its set performance requirements in a particular amount of time is referred to as reliability (Akter et al., 2020).

In various significant articles, the relationship between patient perception and purchase intention and service reliability has been examined (Battineni et al., 2021; Layfield et al., 2020; Munusamy et al., 2021; Park et al., 2021). In addition, the COVID-19 outbreak has encouraged all healthcare

organizations to collaborate to promote digital technology. Despite significant ethical and legal issues, most medical experts feel telemedicine can be a valuable source of health care during global epidemics (Battineni et al., 2021). Some research has also validated the authenticity and reliability of services related to telemedicine systems (Alfuraydan et al., 2020; Baudier et al., 2020; Bilder et al., 2020).Based on the discussed review and explanation, it can be hypothesized that:

H2: There is a positive influence of telemedicine service providers' reliability on patients' purchase intention.

3.3 Responsiveness

Responsiveness denotes a service worker's eagerness to assist their consumers in completing a task promptly and efficiently (Murray et al., 2019; Parasuraman et al., 1988; Ye et al., 2017). Such characteristics include the ability to maintain service speed and quality throughout periods of fluctuating demand and the desire of service personnel to assist customers with their specific needs (Murray et al., 2019; Qin & Prybutok, 2009). In addition, the time it takes for a company to communicate the solutions to its customers' problems is used to gauge its responsiveness (Vaddadi et al., 2018).

Several previous research demonstrated a link between responsiveness, a SERVQUAL scale dimension, and patient perceptions of service quality or the overall purchase intention during the pandemic (COVID-19) when it came to delivering and adopting telemedicine services (Ageta et al., 2020; Cheng et al., 2021; Coram et al., 2021; Gadzinski et al., 2020; Venville et al., 2021). Thus, we can hypothesize:

H3: There is a statistically positive impact of telemedicine service providers' responsiveness on patients' purchase intention.

3.4 Assurance

Assurance refers to consumer comfort in the company area, employee politeness and friendliness, providing financial advice, staff and management expertise and competence, and customers' ease of accessing account-related information (Vaddadi et al., 2018). It has been observed that during the period of COVID-19, patients prioritize assurance when evaluating service quality and taking final purchase or adoption decisions, according to certain studies (Hole et al., 2018; Ibidunni & Agonor, 2021; Yaghoubi et al., 2017). Also, patients' trust and purchase telemedicine services when they are provided with assurance, according to studies (Bhattacharyya & Mandke, 2021; Cheng et al., 2021; Pointer, 2020).

Therefore, for this research, we hypothesize:

H4: Telemedicine service providers' quality assurance has a statistically positive effect on patients' purchase intention.

3.5 Empathy

Empathy is a significant psychological phenomenon that is a major factor in successful interactions between customers and frontline personnel in the service marketing literature (Bove, 1029; Davis et al., 2017; Umasuthan et al., 2017). In the case of providing telemedicine services to patients, empathy or caring behaviour can be defined as paying special attention to their needs, prioritizing both the physical and mental well-being of care receivers, treating hospital employees as core clients who could play an significant role in organizational progresses, and adjusting patient requirements and choices (Yaghoubi et al., 2017). Empathy is considered a crucial trait for professional caregivers while dealing with nervous, in pain, and uncertain patients (Bove, 2019; Reynolds & Scott, 2000; Ye et al., 2017).

Some critical research (Cheng et al., 2021; Chowdhury et al., 2021; Hoque et al., 2021; Li et al., 2021) have demonstrated that patients are more comfortable receiving telemedicine services if nurses

and doctors are caring towards them even though they are not physically contacting them during COVID-19.

Therefore, we hypothesize:

H5: There is a statistically significant influence of telemedicine service providers' empathy on patients' purchase intention.

4. Methodology

4.1 Research Design

An online structured questionnaire was used to perform the study. The respondents were recruited through institutional email ID lists and social media groups. Hence the sampling strategy was convenience-based. All respondents' responses were kept confidential, and all participants gave their informed agreement to participate. This study's data-collecting took place from 1st June to 25th July 2022.

4.2 Study Population

This study comprised students and professionals from Bangladesh aged 18 and up who have used telemedicine services at least once. A total of 251 individuals (132 males and 119 females) responses were used in the data analysis for this study.

4.3 Research Model Development

We suggest the following study model based on the assumptions mentioned above, as well as the selected constructs and measurement items:

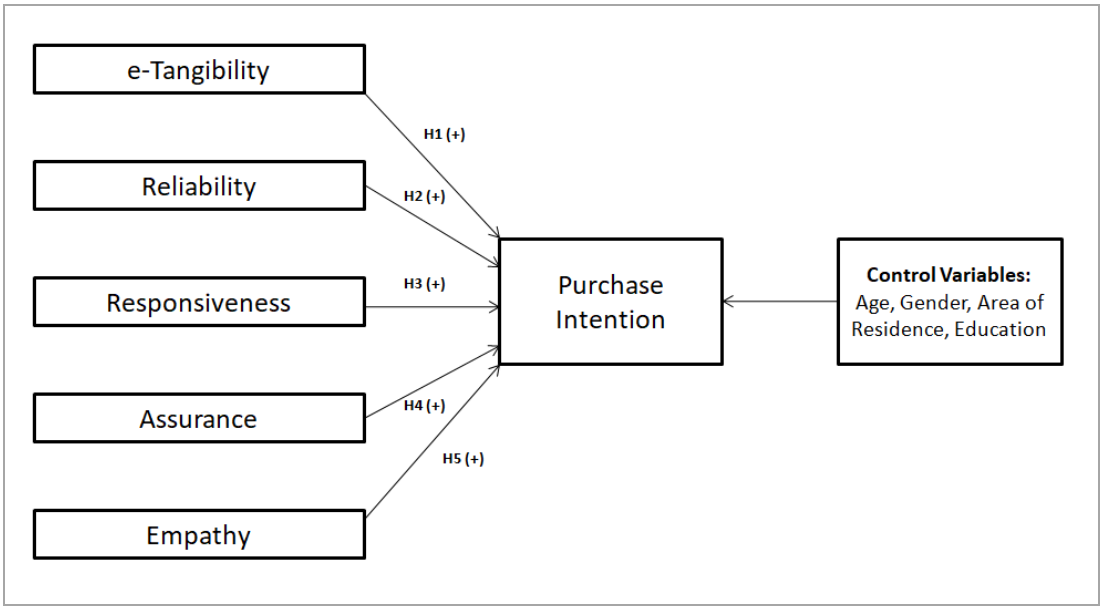

Figure 5

Proposed Research Model

4.4 Data Analysis

An online questionnaire was created over a few weeks, and 251 responses were obtained from people of various ages who had used telemedicine services at least once. The dataset was then evaluated with SmartPLS (v3.3.3), and the hypotheses and conceptual framework were put to the test using a variety

of statistical analyses. The demographic statistics of the study respondents are broken down in Table 1. In statistical tests, these values would serve as control variables (Figure 1). The demographic profile (control variables) has been used as a latent variable in the structural equation model.

Table 2

Demographic Information

Variables	Category	Frequency (n = 227)	Percent
Age	Up to 20 Years	20	8%
	20 – 30 Years	147	58.6%
	30 – 40 Years	42	16.7%
	Above 40 Years	42	16.7%
Gender	Male	132	52.6%
	Female	119	47.4%
Area of Residence	Urban Area (e.g. city)	226	90%
	Rural Area (e.g. village, city outskirts)	25	10%
Education (Highest Degree)	SSC (10^{th} Grade)	0	0%
	HSC (12^{th} Grade)	75	29.9%
	Bachelor's Degree	111	44.2%
	Master's Degree	64	25.5%
	PhD or Higher	1	0.4%

Source: Authors Developed

4.5 Measurement Model Analysis

For the objectives of the study, the outputs that were obtained from the survey replies were measured in a variety of ways. The results of the data analysis were interpreted following the standards set forth by Hair et al. (2010). Furthermore, Hair et al. (2010) derived some of the criteria concerning various acceptance levels of sampling methods and statistical tests (2011), which were used to justify the hypotheses tests in this research.

First of all, the 'Outer loadings' values were calculated (Table 3) by running the responses of each of the measurement items through the PLS algorithm. The obtained numbers suggest that each of the outside loading values is more than the acceptability limit of 0.5, indicating reliability.

Table 3

Outer Loadings

Constructs/Measurement Items	Outer Loadings
Tangibles/e-Tangibles	
X1. Medical centres have modern-looking equipment (e.g. updated and user-friendly websites and mobile apps, webcams, computers, internet-connected smartphones, and modern digital equipment).	0.811
X2. Telemedicine service provider Apps and Websites are user-friendly/ easy to understand and access?	0.856
X3. The physical facilities at the medical centres are visually appealing.	0.778
X4. Medical centres providing telemedicine services to patients have a presence on	0.828

different platforms (e.g. social media, websites, and advertisements on TV/ radio/ billboards).	
Reliability	
X5. The capability of medical personnel to deliver the assured services as promised.	0.818
X6. I will recommend telemedicine services to others.	0.831
X7. The medical staffs are concerned and supportive.	0.872
X8. Services are provided at the assured/ pre-specified time.	0.821
X9. Medical records and billing systems are both transparent and correct.	0.779
Responsiveness	
X10. Healthcare providers tend to offer proper guidance to patients.	0.851
X11. Healthcare providers tend to offer quick service to patients.	0.779
X12. Based on my overall experience, I am satisfied with telemedicine services.	0.875
X13. The medical staffs are prepared to help patients 24/7.	0.829
X14. The medical staffs are always respectful towards patients as well as willing to help the patients.	0.830
Assurance	
X15. The behaviour of the medical employees builds confidence in citizens' minds.	0.825
X16. Patients feel safe in sharing thoughts while receiving telemedicine services.	0.879
X17. Medical personnel have comprehensive knowledge of their particular fields to answer patients' queries.	0.867
Empathy	
X18. Individualized and customized care and attention are provided to the patients in telemedicine service.	0.924
X19. Medical personnel understand patients' specific requirements.	0.917
Purchase Intention	
X20. I am likely to give the telemedicine services in Bangladesh a positive recommendation during the pandemic.	0.899
X21. I will likely purchase telemedicine services in Bangladesh in the future during the pandemic.	0.914
X22. I usually prefer telemedicine services over physically visiting the doctor for consultation during the pandemic.	0.817

Table 4 displays the values for R Square and Adjusted R Square. According to the survey, the independent factors employed in this study, account for 73.2 percent of the discrepancy in the dependent variable (i.e., Purchase Intention).

Table 4

R Square Value

Variable	R Square	R Square Adjusted
Purchase Intention	0.741	0.732

Source: Authors Calculation

Table 5 shows the correlations between each construct. Based on the findings, it can be inferred that the discriminant validity in this study is satisfactory. This is evidenced by the numbers placed diagonally (in bold), which have each column's most significant numerical values (discounting a couple of exceptions in terms of the construct 'Responsiveness', which is related to a hypothesis (H4); we will eventually reject based on the analyses that follow). Furthermore, the square-rooted values of the Average Variances Extracted (AVE) are represented by the diagonal values in Table 5.

In addition to these results, the VIF values (all <10) in Table 6 indicate a very low probability of this dataset being affected by Multicollinearity.

Table 5

Discriminant Validity Analysis (Control Variables are Omitted) based on Fornell-Larcker Criterion

Variables	Assurance	Empathy	Purchase Intention	Reliability	Responsiveness	e-Tangibles
Assurance	**0.857**					
Empathy	0.785	**0.921**				
Purchase Intention	0.803	0.783	**0.878**			
Reliability	0.813	0.774	0.825	**0.825**		
Responsiveness	0.864	0.801	0.883	0.883	**0.833**	
e-Tangibles	0.705	0.683	0.739	0.739	0.717	**0.819**

Source: Authors Calculation

Table 6

VIF values

Variables	Purchase Intention (VIF Values)
Purchase Intention	
e-Tangibles	2.514
Empathy	3.340
Assurance	4.590
Reliability	5.328
Responsiveness	6.816

Source: Authors Calculation

4.6 Results of Hypothesis Testing

The findings of the hypothesis tests were obtained by creating 5000 random subsamples to ensure plausibility. The following are the findings from the SmartPLS bootstrapping tool:

Table 7

Bootstrapping (5000 subsamples)

Particulars	O	M	STDEV	T-Statistics	P-Values
e-Tangibles -> Purchase Intention	0.133	0.143	0.067	1.978	0.048
Reliability -> Purchase Intention	0.124	0.123	0.085	1.462	0.144
Responsiveness -> Purchase Intention	0.137	0.139	0.103	1.336	0.182
Assurance -> Purchase Intention	0.285	0.28	0.081	3.505	0.000
Empathy -> Purchase Intention	0.25	0.244	0.073	3.431	0.001

O = Path Coefficients from Original Sample; M = Sample Mean;

Source: Authors Calculation

Based on Table 8 and the acceptance rule ($p \leq 0.05$) we have computed the outcomes of our original hypotheses. As a result, three out of the five hypotheses are supported by the study.

Table 8

Results of Hypothesis Tests

Hypothesis	Path Coefficient	P Values	Outcome
H1: e-Tangibles to PI	0.133	0.048	SUPPORTED
H2: Reliability to PI	0.124	0.144	NOT SUPPORTED
H3: Responsiveness to PI	0.137	0.182	NOT SUPPORTED
H4: Assurance to PI	0.285	0.000	SUPPORTED
H5: Empathy to PI	0.25	0.001	SUPPORTED
Here, PI = Purchase Intention; Hypothesis is accepted at p<0.05			

Source: Authors Developed

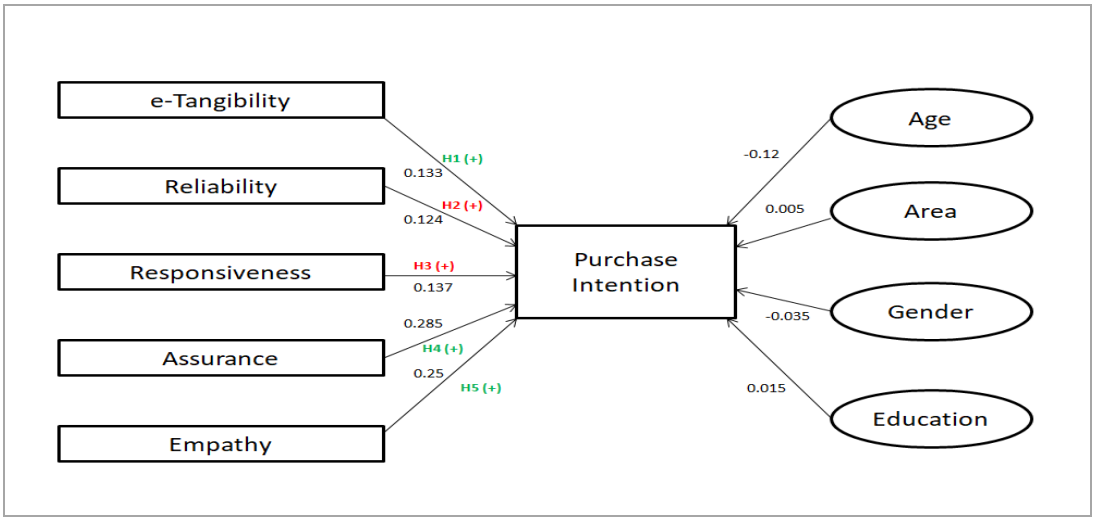

Figure 6

Final Research Model (Outcomes)

5. Discussion of the Results

This study successfully attempted to explore the opinions of these consumers about various aspects of telemedicine services in Bangladesh based on a survey conducted among 251 respondents from Bangladesh from an array of demographic backgrounds.

According to our findings, the data analysis supports three of our five hypotheses. In the telemedicine sector, the 'e-Tangibles,' 'Assurance,' and 'Empathy' of service providers are positively related to the 'Purchase Intention' of consumers. However, there is insufficient evidence to conclude that 'reliability' and 'responsiveness' positively correlate with consumer purchase intention in the Bangladesh telemedicine sector.

Individual responses of users of these services can reveal the positive relationships of various measurement items to consumer purchase intentions in telemedicine. Our survey shows consumers value 'e-tangibles' such as user-friendly apps and websites when purchasing telemedicine. Since consumers frequently purchase medicine and medical equipment in an emergency, apps that provide consumers with an easily accessible interface that ensures ordering ease are likely to be more popular. The indicators of 'Assurance' and 'Empathy' that respondents felt most strongly about were related to the service providers' knowledge and the individualized attention and openness that medical personnel are willing to provide. During a global crisis, such as the Covid-19 pandemic, medical professionals'

up-to-date knowledge in treating the virus appeared to play a critical role in assuring the patient of the specific service and generating purchase intention.

'Reliability' and 'Responsiveness' were the constructs that did not have a positive relationship with consumer purchase intentions. One possible explanation for the rejection of our corresponding hypotheses is that in terms of measurement items such as recommending a particular service to others, transparency of billing systems, and quick service, the consumers of telemedicine seemed less important, particularly during emergencies.

6. Policy Implementations & Recommendations

Through this study, we have analyzed the consumer perspective of telemedicine from a few vantage points. By addressing the particular factors of the telemedicine sector and the healthcare service sector that the consumers find most desirable, policymakers, healthcare organizations, and the telemedicine sector can pinpoint the focus of their future investments. For example, creating user-friendly apps and websites for telemedicine services, building safe spaces for patients to thoroughly open up about their physical and mental health issues with professionals, and an overall empathetic approach from all personnel working in the medical sector can be improved with high investment on medical equipment and training for all employees working in the sector.

The findings of this study show that the tangibility of telemedicine services, assurance, and empathy from the telemedicine service providers play an important role while determining patient behaviour or future purchase intention when it comes to the adoption of telemedicine websites whereas reliability and responsiveness are playing the least importance. As a result, constructs such as the presence of physical evidence of telemedicine services, assurance, and empathy provided by service providers are of intermediate importance in determining patients' perception or acceptance of telemedicine by determining the relationship of eSERVQUAL with the presence of perceived quality of services among patients, as well as satisfaction, loyalty, and confidence in telemedicine. Because assurance provided by telemedicine service providers had the highest performance-index values, it's irrefutable that this is a crucial construct for management implications. Patients' perceptions of telemedicine service providers' assurance of services are the most crucial component in determining patient intention to use telemedicine health services, as per the construct assurance by telemedicine service providers. Providing health services to patients with competent, credible, and knowledgeable staff; implementing and continuously monitoring quality standards in healthcare institutions; and implementing appropriate technology in the healthcare industry in a way that maximizes its benefit to patients' health and builds trust among them are all examples of quality assurance in the healthcare industry.

From a practical standpoint, this research aids healthcare professionals and university programs in identifying a cutting-edge field to find out appropriate elements which are responsible for creating patients' ultimate purchase decisions while adopting telemedicine services. The current study provided empirical support for initiatives like proper and up-to-date establishment of tangible elements for telemedicine service providers; increasing the level of assurance, and empathy among the telemedicine service providers as well.

7. Conclusion

This epidemic has brought to light the value of telemedicine in the healthcare system. The study's findings revealed that a large percentage of patients are eager to begin using telemedicine services as a well-being net during the epidemic. Telemedicine service has enormous opportunities for developing countries such as Bangladesh. The outcomes of this research could be adapted and applied in the developed world. The revolutionary telemedicine service may promote a healthier society by eradicating health challenges during the COVID-19 pandemic. The study's outcomes supported the developed research model, therefore, imparting confidence in the critical role of perceived quality and patients' acceptance which also motivates them to continue intentions even after the pandemic. Future successful adaptation of telemedicine is connected with how the challenges and apprehensions could

be minimized. Policymakers and healthcare professionals should collaborate to create standards and guidelines that will effectively promote the use of telemedicine. Understanding patients' perspectives and preferences regarding their treatment, as well as designing privacy-enforcing eHealth solutions, is the first step. The knowledge gained during the pandemic would be used to reinforce existing solutions and establish a better coordinated general plan to encourage the widespread deployment of telemedicine in the healthcare industry. Achieving this aim will aid in the preparation for any future pandemic and, in the long run, enhance the care of COVID-19 and general patients.

As the popularity of telemedicine services proliferated throughout the COVID-19 epidemic, market researchers were forced to dig deeper into understanding consumer perceptions and behaviour toward these services. We have based this research on a solid theoretical background, a review of contemporary research articles, and the application of contemporary and established statistical techniques. A research model is developed and presented in this paper that explains factors that directly influence the patient's perception of the telemedicine services they consumed during the pandemic. As per the data analysis result, three tested variables such as 'e-Tangibles,' 'Assurance,' and 'Empathy' of service personnel are positively correlated to the future 'Purchase Intention' of service users. 'Reliability' and 'Responsiveness' were the two other paradigms that did not have an affirmative association with the users' purchase intents. Furthermore, this study aims to promote much larger-scale research on this topic.

Our findings recommend that, in the event of a COVID-19 pandemic, ensuring proper tangible elements in healthcare centres, a relevant level of assurance, and empathy among telemedicine service providers is unavoidable to implement critical policy modifications that encourage widespread adoption of transformative health services in Asia and help prevent COVID-19 spread.

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