

Millennials Perception Towards Telehealth as a Service

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Abstract

Telehealth is a modern form of healthcare delivery that departs from traditional healthcare systems by utilizing advanced telecommunication technologies, including wireless communication methods. As a rapidly growing healthcare service, telehealth enables long-distance patient-clinician contact, care, advice, reminders, education, intervention, monitoring, and remote admissions. The study highlights the background, need, and significance of telehealth in the healthcare sector. A review of existing literature helped identify the independent variables of the study, namely recommendation, time saving, comfortability, interaction quality, learnability, acceptability, reliability, future use, effectiveness, satisfaction, and accessibility, while experience was considered the dependent variable. The study also examines the importance of telehealth services in healthcare and explores the changing perceptions of millennials toward healthcare, particularly after the COVID-19 pandemic, when online health consultations became increasingly preferred to reduce the risk of infection. Further, the study outlines the research problem, objectives, target population, sample size, data collection methods, and questionnaire testing procedures. The analysis includes the calculation of Cronbach's alpha and correlation analysis, followed by an examination of the responses collected from participants.

Keywords

Telehealth, Millennials, Healthcare Technology, Patient Satisfaction, Digital Health

Introduction

Telehealth is defined as the delivery and facilitation of health and health-related services including medical care, provider and patient education, health information services, and self-care via telecommunications and digital communication technologies. Telehealth is different from telemedicine because it refers to a broader scope of remote healthcare services than telemedicine. While telemedicine refers specifically to remote clinical services, telehealth can refer to remote non-clinical services.

The development and history of telehealth or telemedicine is deeply rooted in the history and development in not only technology but also society itself. In the 21st century, with the advent of the internet, portable devices and other such digital devices are taking a transformative role in healthcare and its delivery. The beginnings of telehealth have existed through primitive forms of communication and technology. As technology developed and wired communication became increasingly commonplace, the ideas surrounding telehealth began emerging. The advent of high-speed Internet, and the increasing adoption of ICT in traditional methods of care, spurred advances in telehealth delivery.

Increased access to portable devices, like laptops and mobile phones, made telehealth more plausible; the industry then expanded into health promotion, prevention and education. The integration of smart home telehealth technologies, such as health and wellness devices, software, and integrated IoT, has accelerated the industry. Healthcare organizations are increasingly adopting the use of self-tracking and cloud-based technologies, and innovative data analytic approaches to accelerate telehealth delivery.

Telehealth is playing a significant role amidst the COVID-19 pandemic. With the pandemic, telehealth has become a vital means of medical communication. Like so many other sectors of the economy, the COVID-19 pandemic has radically reshaped the delivery of healthcare, both in the present and the future. When stay-at-home orders were put in place across the U.S., the engine fuelling healthcare literally ground to a halt. Elective surgeries, procedures, and treatments were cancelled to preserve precious supplies and resources in preparation for the expected surge in COVID

cases. To prevent exposure among both patients and providers, most in-person care visits were also suspended forcing health systems to rapidly ramp up the use of telehealth technologies to fill the gap. Telehealth technologies were used to meet a variety of healthcare needs during the early months of the COVID-19 public health emergency. Telehealth was used to triage and diagnose patients with COVID-19 symptoms, reduce the risk of exposure to patients by conducting virtual primary care visits, provide remote monitoring of chronically ill patients, outpatient isolation support and rounding, inpatient isolation support, and inpatient e-consults.

Early in the COVID-19 pandemic, telehealth usage surged as consumers and providers sought ways to safely access and deliver healthcare. During the tragedy of the pandemic, telehealth offered a bridge to care, and now offers a chance to reinvent virtual and hybrid virtual/in-person care models, with a goal of improved healthcare access, outcomes, and affordability. The telehealth devices in use today resemble earlier telemedicine equipment, but modern health tech is smaller in size and greater in scope of features. Wearables like fitness wristbands and heart rate monitors are an early example of mobile health tools that track patients' vital data in real time. Telehealth creates an environment that encourages greater vulnerability among patients in self disclosure in the practice of narrative medicine.

Literature Review

1. Burmeister Oliver, Ritchie David, Devitt Alison, 2019

The impact of telehealth technology on user perception of wellbeing and social functioning, and the implications for service providers.

The purpose of this paper was to evaluate the benefits of health facilities being made available for the homes of older persons living in the community wise, as well as to review in the social and economic impact. A multidisciplinary approach was adopted, which included observations, face to face talks and the Anxiety Stress Scale measurements. Overall, the significant benefits were seen in those participants with little technical knowledge and who had knowledge of digital learning. Focusing on specific situations and improved self-regulation can strengthen the evidence of intended economic benefits.

2. Neely Leslie , Tsami Loukia, Graber Jessica, Lerman Dorothea, 2022

Towards the development of a curriculum to train behaviour analysts to provide services via telehealth.

The COVID-19 epidemic has led to a dramatic increase in the use of telephone health analysts. However, no research has evaluated the skills or training required for clinicians to successfully render these services. The purpose of this study was to develop and evaluate a curriculum for providing quality health care services for parents. Skills are common in the novel family and are maintained for about 1 year after training. All participants rated training as highly acceptable and effective. More research is being confirmed as the demand for health services continues to grow.

3. Nasir Jamal, Abdul Hussain, Shahid Dang, Chuangyin, 2018

An Integrated Planning Approach Towards Home Health Care, Telehealth and Patients Group Based Care.

The main aims of the proposed model are to provide an optimal selection of locations for health care offices, health care workers, and patients' cluster centres besides their specific assignment, to schedule the health care session for each patient or patients' group by creating a pair of health care nurse and telehealth staff against a specific time window and to seek the enhancement of patient satisfaction and quality of service considering the penalties for violation of patients' preferences and inappropriate experience gap between the pair of nurses. Finally, a sensitivity analysis is performed to explore the model behaviour against the variation in parameter values. The detailed analysis of the results shows the effectiveness of the proposed model and its behaviour with respect to different types of cost.

4. Frederico M. Bublitz, Arlene Oetomo, Kirti S. Sahu, 2018

Disruptive Technologies for Environment and Health Research: An Overview of Artificial Intelligence, Blockchain, and Internet of Things

The primary objective is to conduct the research on disruptive technology and its current environmental applications, as well as to determine the degree of connection between the chosen variables. The development patterns of disruptive

technologies for environmental monitoring should be studied and anticipated in order to aid in the promotion of India's environmental monitoring and protection. A discussion of the existing environmental impacts associated with artificial intelligence (AI), blockchain, and the Internet of Things (IoT), as well as new advancements in these fields are also mentioned.

5. Maximilian Herrmann, Philip Bohme, Thomas Mondritzki, 2018

Digital Transformation and Disruption of the Health Care Sector

The goal of the study was to provide an up-to-date comprehensive analysis of the transformational forces within the health care sector. It identified the patterns that shows established corporations rely more on incremental innovation that supports their current business models, while start-ups engage their flexibility to explore new market segments with notable transformations of established business models. Thereby, start-ups offer higher promises of disruptive innovation. Additionally, start-ups offer more diversified value propositions addressing broader areas of the health care sector. Therefore the study evaluates the strategies on digital offerings and identified those that could enable digital disruption within the health care system.

6. Sutherland Rebecca, Hodge Antoinette, Chan Esther, 2021

Barriers and facilitators: Clinicians' opinions and experiences of telehealth before and after their use of a telehealth platform

The aim of the paper was to explore the perceived barriers and facilitators of telehealth among speech and language therapists before and after their use of a telehealth platform. The COVID-19 pandemic has caused significant disruption to essential health services, including speech and language therapy assessment and intervention, meaning that telehealth must now be considered as part of the suite of service delivery options for all clinicians. The perceived barriers included technology issues, limited clinician experience and concerns around parent acceptance of the service. Potential facilitators included access to appropriate platforms, tools and resources as well as increased clinician confidence with telehealth. Following the trial, barriers to telehealth use continued to include technology barriers, particularly internet stability, and client issues, including suitability for telehealth services. Facilitators for future telehealth use included access to appropriate platforms for telehealth, stable and appropriate internet connectivity, and more extensive telehealth resources for both assessment and intervention for the model of service delivery. his study indicates that technology issues including internet stability are a barrier to effective telehealth services, but that appropriate telehealth platforms, resources and experience are facilitators of uptake and successful use of telehealth.

7. Beneteau Erin, Paradiso Ann, Pratt Wanda, 2022

Telehealth experiences of providers and patients who use augmentative and alternative communication.

The paper explains how designers should view telehealth as part of a broad healthcare ecosystem, which includes in-person, telehealth, and remote health monitoring technologies. Telehealth should be flexible enough to allow patients to use the communication modality that best meets their needs. It suggests that healthcare systems has the healthcare ecosystem as one which includes a variety of telehealth options in addition to traditional in-person clinical visits. However, the accessibility of telehealth technologies needs to be improved. Designers should view telehealth as part of a broad healthcare ecosystem, which includes in-person, telehealth, and remote health monitoring technologies.

8. Muhammed Elhadi, Ahmed Msherghi, Ahmed Elhadi, Aimen Ashini, 2021

Utilization of Telehealth Services in Response to the COVID-19 Pandemic

This study aimed to assess the usability of telehealth services and to provide an overview of the current COVID-19 scenario. The survey items yielded information on the sociodemographic characteristics, availability and accessibility of health care services, effects of the COVID-19 pandemic on health care services, mental health status, and the feasibility and application of the telehealth system. Regarding the feasibility of the telehealth system, approximately half of the participants reported that telehealth services were useful during the COVID-19 pandemic, and reported that the system was an effective means of communication and of obtaining health care services. The survey items yielded information on the availability and accessibility of health care services, effects of the COVID-19 pandemic on health care services, mental health status, and the feasibility and application of the telehealth system.

9. Chuck CORDRAY, 2017

Communicating Across Generations: Millennials prefer high tech in treatment, payment.

The article discusses millennials prefers high technology in health care. Millennials are in the crucial habit-forming stage when it comes to paying bills. It mentions that millennials support the use of telehealth as a fast, on-demand way to get around in-person physician visits according to a Salesforce study. The study has further evaluated the skills or training needed for therapists to provide the telehealth services effectively.

10. Aniruddha Singh, Natalie Mountjoy, Doug McElroy, 2021

Patient Perspectives with Telehealth Visits in Cardiology During COVID-19

This study aims to determine the limitations of telehealth accessibility, patient satisfaction with telehealth relative to in-person visits, and the perceived advantages and disadvantages to telehealth. Reduced travel time, lower visit wait time, and cost savings were seen as big advantages. Poor internet connectivity was rated as at least somewhat of a factor given by respondents. This study takes advantage of the natural experiment provided by the COVID-19 pandemic to assess the efficacy of telehealth in cardiology. Patterns of satisfaction are consistent across modalities and show that telehealth appears to be a viable alternative to in-person appointments. However, it found evidence that scheduling of telehealth visits may be problematic and needs additional attention. Additionally, they include a note of caution that patient satisfaction with telehealth may be artificially inflated during COVID-19 due to external health concerns connected with in-person visits.

Research Methodology

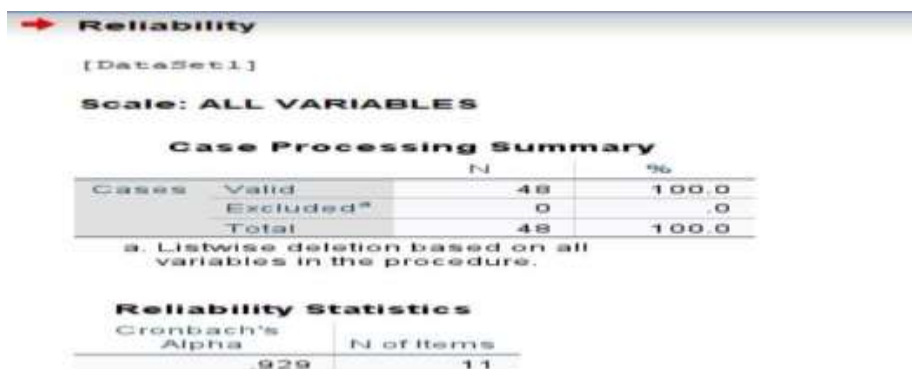
The study adopted a descriptive research design to examine the perceptions and experiences of millennials using telehealth services. The target population consisted of millennials who had used or were currently using telehealth services. A total of 300 responses were collected for the purpose of the study. Primary data was gathered directly from telehealth service users through a structured questionnaire administered via Google Forms and hard-copy surveys. The survey link was distributed to respondents through WhatsApp to facilitate wider participation. No secondary data was considered for this research. The responses collected through Google Forms were automatically recorded in Google Spreadsheets and subsequently exported as Excel files for analysis. The data was then imported into SPSS software to perform the required statistical tests and analyses. The descriptive research approach was chosen as it helps in understanding and describing the characteristics, opinions, and experiences of the selected population regarding telehealth services.

Objectives of the study

- To determine the changing perspective of millennials towards telehealth as a service.
- To identify the parameters which influence millennials towards telehealth post covid-19 pandemic.
- To analyse the usage of information and communication technology in the field of healthcare sector.

Data-analysis technique

In this study, Cronbach alpha test was done to identify the reliability of the questionnaire. Regression test was done to compare between independent variable and dependent variable.



SPSS Reliability Statistics output showing Case Processing Summary and Reliability Statistics.

Case Processing Summary			
		N	%
Cases	Valid	48	100.0
	Excluded ^a	0	.0
	Total	48	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	N of Items
.929	11

Multivariate Analysis

Dependent variables: Experience

Independent variables: recommendation, time saving, comfortability, interaction quality, learnability, acceptability, reliability, future use, effectiveness, satisfaction, accessibility

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.840a	.705	.694	.643

The main summary of model table explains the strength of the relationship that exists between the model and a dependent variable in the questionnaire. R, which means the multiple correlation coefficient, gives the linear correlation between the observed and model-predicted values of the variable that is dependent. Its larger value suggests a stronger relationship.

Interpretation

$R=0.840 \rightarrow$ which means that there is a positive correlation between independent and the dependent variables for the purpose of the conducted research project.

R Square, which is the coefficient of determination, is the squared value of the multiple correlation coefficient. It explains that 70.5% of the variation in time is explained by the model.

$R\text{ Square}=0.705 \rightarrow$ Deviation in dependent variable caused by independent variable.

Anova Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	291.124	11	26.466	63.982	<.001b
	Residual	121.611	294	.414		
	Total	412.735	305			

Dependent Variable: experience

Predictors: (Constant), recommendation, time saving, comfortability, interaction quality, learnability, acceptability, reliability, future use, effectiveness, satisfaction, accessibility.

The ANOVA table examines the acceptability of the model from the perspective of statistics. The Regression row indicates the details pertaining about the variation accounted for by the model. The Residual row gives the information about the variation that is not accounted for by the statistical model. The regression equation is judged based on the overall F-test for the model. The p value is less than 0.05, hence this is significant at 95 percent confidence level.

Interpretation

$P(\text{sig}) < 0.01$

As $P(\text{sig}) < 0.05$, it implies that null hypothesis (H_0) is rejected.

i.e., there is a positive impact of preferred factors on perception of Millennials towards telehealth as a service.

From the above output table of ANOVA, it is observed that P value is <0.01 , which means that all the 11 variables i.e., recommendation, time saving, comfortability, interaction quality, learnability, acceptability, reliability, future use, effectiveness, satisfaction, and accessibility, all these 11 factors are relied on over the dependent variable i.e, experience.

These variables affect the experience of using telehealth as a service for the millennials.

Coefficients Table

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.102	.202		-.505	.614
	accessibility	.085	.058	.078	1.477	.141
	learnability	.061	.048	.057	1.279	.202
	reliability	.048	.049	.046	.982	.327
	comfortability	.063	.045	.057	1.378	.169
	acceptability	.099	.046	.096	2.132	.034
	interaction quality	.160	.046	.155	3.450	<.001
	time saving	-.065	.047	-.050	-1.360	.175
	effectiveness	.090	.052	.085	1.711	.088
	satisfaction	.123	.054	.118	2.290	.023
	future use	.262	.054	.244	4.834	<.001
	recommendation	.159	.052	.148	3.045	.003

Interpretation

As you can observe in the above table, we can find P value of each variable

Among the 11 variables, it is observed that 5 of them are significant i.e., these 5 variables positively impact the Dependent Variable.

The 5 significant variables include acceptability, interaction quality, satisfaction, future use, and recommendation.

There are multiple implications that can be taken from the findings of the study. It is evident that the perception of millennials towards telehealth is changing especially after covid-19 pandemic.

Hypothesis

- $P(\text{sig})$ of accessibility = 0.141 > 0.05, which implies that Null hypothesis (H_0) is accepted, Alternate hypothesis (H_1) is rejected.
i.e., there is no impact of accessibility with respect to influencing the perception of millennials towards telehealth as a service.
- $P(\text{sig})$ of learnability = 0.202 > 0.05, which implies that Null hypothesis (H_0) is accepted, Alternate hypothesis (H_1) is rejected.
i.e., there is no impact of learnability with respect to influencing the perception of millennials towards telehealth as a service.
- $P(\text{sig})$ of reliability = 0.3270 > 0.05, which implies that Null hypothesis (H_0) is accepted, Alternate hypothesis (H_1) is rejected.
i.e., there is no impact of reliability with respect to influencing the perception of millennials towards telehealth as a service.
- $P(\text{sig})$ of comfortability = 0.169 > 0.05, which implies that Null hypothesis (H_0) is accepted, Alternate hypothesis (H_1) is rejected.
i.e., there is no impact of comfortability with respect to influencing the perception of millennials towards telehealth as a service.
- $P(\text{sig})$ of acceptability = 0.034 < 0.05, which implies that Null hypothesis (H_0) is rejected, Alternate hypothesis (H_1) is accepted.
i.e., there is a positive impact of acceptability with respect to influencing the perception of millennials towards telehealth as a service.
- $P(\text{sig})$ of interaction quality = 0.001 < 0.05, which implies that Null hypothesis (H_0) is rejected, Alternate hypothesis (H_1) is accepted.
i.e., there is a positive impact of interaction quality with respect to influencing the perception of millennials towards telehealth as a service.
- $P(\text{sig})$ of time saving = 0.175 > 0.05, which implies that Null hypothesis (H_0) is accepted, Alternate hypothesis (H_1) is rejected.
i.e., there is no impact of time saving with respect to influencing the perception of millennials towards telehealth as a service.
- $P(\text{sig})$ of effectiveness = 0.088 > 0.05, which implies that Null hypothesis (H_0) is accepted, Alternate hypothesis (H_1) is rejected.
i.e., there is no impact of effectiveness with respect to influencing the perception of millennials towards telehealth as a service.
- $P(\text{sig})$ of satisfaction = 0.023 < 0.05, which implies that Null hypothesis (H_0) is rejected, Alternate hypothesis (H_1) is accepted.
i.e., there is a positive impact of satisfaction with respect to influencing the perception of millennials towards telehealth as a service.
- $P(\text{sig})$ of future use = 0.001 < 0.05, which implies that Null hypothesis (H_0) is rejected, Alternate hypothesis (H_1) is accepted.
i.e., there is a positive impact of future use with respect to influencing the perception of millennials towards telehealth as a service.

- $P(\text{sig})$ of recommendation = $0.003 < 0.05$, which implies that Null hypothesis (H_0) is rejected, Alternate hypothesis (H_1) is accepted.
i.e., there is a positive impact of recommendation with respect to influencing the perception of millennials towards telehealth as a service.

Results and Discussion

The findings of the study indicate that the perception of millennials toward telehealth services has undergone a notable shift, particularly following the COVID-19 pandemic, which accelerated the adoption of digital healthcare solutions. The statistical analysis revealed that accessibility ($p = 0.141$), learnability ($p = 0.202$), reliability ($p = 0.327$), comfortability ($p = 0.169$), time saving ($p = 0.175$), and effectiveness ($p = 0.088$) did not have a statistically significant influence on millennials' perception of telehealth services, as their p -values were greater than the significance level of 0.05. Therefore, the null hypotheses for these variables were accepted. In contrast, acceptability ($p = 0.034$), interaction quality ($p = 0.001$), satisfaction ($p = 0.023$), future use ($p = 0.001$), and recommendation ($p = 0.003$) were found to have a significant positive influence on millennials' perception of telehealth services, leading to the rejection of the corresponding null hypotheses and acceptance of the alternative hypotheses.

Overall, the study concludes that millennials' perception of telehealth is primarily shaped by how acceptable they find the service, the quality of interaction they experience during consultations, their level of satisfaction, their willingness to continue using telehealth in the future, and their likelihood of recommending the service to others. While factors such as accessibility, ease of learning, reliability, comfortability, time saving, and effectiveness were considered important dimensions of telehealth, they did not emerge as significant determinants of perception in this study. These findings suggest that healthcare providers and telehealth platforms should focus on enhancing user acceptance, improving interaction quality, ensuring customer satisfaction, encouraging continued usage, and fostering positive word-of-mouth recommendations to strengthen the adoption of telehealth services among millennials.

Conclusion

Based on the findings of the study, several recommendations can be made to enhance the adoption and effectiveness of telehealth services among millennials. Since a majority of respondents perceived telehealth as an acceptable method of accessing healthcare services, hospitals and healthcare providers should strengthen their online presence by developing informative websites, maintaining healthcare blogs, encouraging patient reviews, and actively engaging through social media platforms. As interaction quality was found to be a significant factor influencing perception, efforts should be made to improve the quality of remote consultations by ensuring effective communication, user-friendly interfaces, and seamless virtual interactions that closely resemble in-person consultations. Providing patients with secure online access to their medical records can further empower them to manage their health more effectively and improve overall satisfaction with telehealth services. To encourage future use of telehealth, healthcare organizations should invest in mobile-compatible applications that facilitate appointment scheduling, timely reminders, prescription updates, and other healthcare notifications. Additionally, maintaining an email communication system can serve as a valuable tool for sending appointment reminders, sharing updates regarding patient portals, and disseminating important health-related information, thereby improving patient engagement and strengthening long-term relationships with healthcare providers.

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