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Telemedicine Effectiveness and its impact on Patient Satisfaction and loyalty

Dr Abhishek Sharma¹, Dr Smita Sharma²

¹Research Scholar, TAPMI School of Business, Manipal University Jaipur
²Assistant Professor, TAPMI School of Business, Manipal University Jaipur

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ABSTRACT

Telemedicine uses latest telecommunication methods to provide information and services related to disease and their management. It is a popular tool for delivery of health services across the world. To the common man it has proved to be a blessing in disguise. The study tries to analyse patient satisfaction levels with telemedicine specifically clinical teleconsultation between the doctor's and the patient and to explore the subsequent effects of satisfaction on patient loyalty and reuse intention of telemedicine by the patients. Telehealth services were considered when consultations done through a computer or mobile or tablet which has a camera facility. There was found to be a significant correlation between explaining the problem to healthcare provider and the interest of the provider in the patient's problem (0.728). There reflects a strong negative correlation between reuse intention of telemedicine platforms and patient satisfaction (-0.529). Factor analysis for data reduction was also carried out and revealed that 82.61% of variance in patient satisfaction is contributed by three factors. The study concludes that the satisfaction levels of the patients to a large extent are a result of the communication established between treatment and care providers and their patients. The more clarity in patients' deliverables in communicating his problem the more is the responsiveness in form of teleconsultation from the health care provider's end.

Introduction

Objectives of the Study

1. To analyse patient satisfaction levels with telemedicine specifically clinical teleconsultation between the doctor's and the patients.
2. To explore the subsequent effects of satisfaction on patient loyalty and reuse intention of telemedicine by the patients.

a) Hypotheses

H1: Technical aspects have a significant impact on Patients' satisfaction.

H2: Physician's behaviour has a significant impact on patients' satisfaction.

H3: Communication levels between the patient and physician has a significant impact on patients' satisfaction.

H4: Patient satisfaction has a significant impact on patient loyalty.

b) Literature Review

To continue uninterrupted medical services during pandemic, to break the chain of infection spread, for both the healthcare provider and the patients, telemedicine has evolved as a safer option. Benefits noted for telemedicine being decreased infection spread, avoid unnecessary clinic visits, less use of personal protective equipment, minimise hospital staff attendance, reduction in hospital running costs. From a clinician's perspective, a decrease in number of patients in Outpatient department encouraged specialists to look for alternative methods for patient care. Telemedicine is beneficial on patient's perspective in avoiding chance of infection, inconvenience of travel, and in earlier non covid days, missing a day's wage. Patients with disabilities are special beneficiary with teleconsultation.

A report in 2011 (Caswell 2011) suggested, by 2018 patients number using telemedicine will increase tenfold and in turn will increase the revenue. In India with the increase in telemedicine, ministry of health and family welfare (MoHFW), with NITI Aayog and Board of Governors (BoG) Medical Council of India (MCI) issued long-pending telemedicine guidelines.

There are multiple digital platforms available in India. Even most of the corporate hospitals have their own mobile application easily downloadable from google store. Many specialist doctors also have their own mobile applications. Some of the online consultation health platform (like Practo), have reported increase in number of patients using it since 2020, when Covid lockdowns were implemented.

As reported by service providers like Practo, Online consultations increased as the lockdown progressed. Symptoms related to Upper and lower respiratory tract infection and fever increased by 200%.

Current use of telemedicine has been made possible with the help of high-speed Internet, smartphones and tablets with camera facility, and multiple platforms available with one-to-one consultation and also video conferencing. The availability of high-speed internet at cheaper costs has been a major technical requirement and advantage for a successful telemedicine program (Baker 2018).

Earlier before pandemic one of the primary goals of telemedicine has been to increase access of remote patients to specialized health care. Telemedicine role has been defined in health services to diagnose the disease and advise for investigations and management to patients. (Wilson 2015).

First true telemedicine practice started in 1950 in US. Telemedicine evolved through different phases from Pre electronic phase to Electronic telemedicine then through Telegraphy, Telephony, Radio, Television, and the way we see at present as Wireless communication- Use of mobile phones (Krupinski 2013).

Telemedicine has evolved from different phases as the needs changed. Earlier used in emergency conditions, then in Rural areas where there was scarcity of specialist, and now telemedicine is cosmopolitan. In current scenario even places in urban areas where many specialists are available people prefer telemedicine.

The Telehealth ecosystem consists of technology start-up, Service provider i.e.,

doctor, patient and Payer. Technology starts up includes all the mobile application providers private companies, corporate hospitals, government agencies. On the basis of provider telemedicine can come from different sources like Local physician practice service, Health insurance service provider, Counselling /therapy/ mental health, Local hospital system provider, Telehealth service with network of doctors, Health app with telehealth service, Pharmacy virtual visit or chat app.

The service provider the doctor needs a platform, to interact with the patient, check for the reports, do screening of patients for diseases, if required do remote monitoring and fulfil prescription for the patient.

Founded in 1993, a non-profit association headquartered in Washington D.C. ATA American telemedicine association has been working in field of telemedicine. It has provided with best practice guidelines. It states that proper diagnosis and successful treatment is not mandatory in all teleconsultations. (Krupinski 2013).

For rural areas telemedicine is a boon to remove barriers to access of subspecialty healthcare. (Kokesh 2008).

According to Firas et al, in their study found that 8% patients would again go for teleconsultation even when pandemic. Most people (64.4 %) were satisfied to the extent, they felt online consultation same as a personal visit. In their study 22.2% people preferred telemedicine as it was convenient and 20 % due to provider availability. Majority patients felt that they received timely answers to all their queries. (Firas et al, 2021).

Loeb et al, (2020) found the benefit of telemedicine in orthopaedic care as safe and effective during covid pandemic. Bove et al, (2013) found Telemedicine use in medical disorders like for managing hypertension particularly among nondiabetic subjects. Serwe et al, 2017 found that study participants highly rated usefulness, ease of use, and satisfaction subscales for Telemedicine.

c) Methodology adopted

Inclusion Criteria- Telehealth services were considered when consultations done through desktop, laptop, smartphone or tablet with internet and camera facility.

Exclusion criteria - Other methods of communications like text message only, email, other social network sites, coaching health services between healthcare providers and patients were not considered in the study.

An empirical study was conducted during Covid 19 Pandemic from May 2019 to October 2019. The study utilized a random method of data collection. The study was done in Jaipur district. The average number of patients per day in the select private and government hospitals telemedicine cases were 300-500 per day. On 95% confidence level with 5% margin of error, sample size was 218. The questionnaire was thus scheduled to 300 patients, out of which 188 filled the survey completely. This was almost 85% of the required sample size. The select patients were provided a short questionnaire to be filled up as a feedback after they were relieved from their ailment. A standardized questionnaire adapted from Patient Satisfaction Levels was used for the study.

d) Empirical results

Out of 188 patients who filled the survey 70% were male and rest females. People under study were from urban area, still 85 % of total patients never had online

consultation prior to COVID-19. Most of the respondents (82%) rated as Fear being the topmost concern for not visiting the hospitals during the pandemic. During Online consultation, in a website there are options for opting the medical speciality which the patient feels is suffering from. Choice of speciality depends on the patient himself. In our study, patients were not using single tele consultation platforms, even then 95% patients could accurately find their doctor, suggesting nearly all platforms are fulfilling the requirement for doctor availability.

Measuring the service quality indicators in tele consultation, 88% patients said, doctor listened to their problem empathetically. Also 86% patients felt healthcare provider was sincerely interested in solving their problems.

In teleconsultations patients mostly have the liberty to choose from the doctors' available slots. In present study 86.7% people could avail services on first consultation itself. Also, doctor was available at appointed time for 80% of patients. The results are in congruence with that reported by Hjelm et al, 2005; who also suggested that telemedicine is a faster and convenient way of connecting to health care provider. In study by Lanier et al, 2021 found majority (88%) patients were comfortable with their doctor on teleconsultation, and 79% patients found it easy to connect with their doctor.

Diagnosis and proper treatment are major part in management of illness. The patients (88%) were satisfied as they could explain their problem adequately even with the consultation done from a distant remote place. In our study 78% of people felt that they got solution for their problem right at the first time. A Majority of respondents (60%) agreed and another (20%) strongly agreed that consultation was complete irrespective of it being performed from distant place. On safety of data sharing, majority agreed and other strongly agreed out of 75% that online platform is safe for sharing their personal data and investigation reports. The results are contrary to those reported in Telemedicine Action Report by Western Governors' Association US in 1994 which presented problems with confidentiality with patient information (Hjelm et al 2005).

Overall, 70% patients were satisfied with performance of online platform. Similar to our study Layfield et al, (2020) found that majority of patients were highly satisfied with telehealth visits. The reason being increased access to health care services, time saving, fulfilling their health needs and were cost saving.

Lanier et al, (2021) in their study found people choose teleconsultation in relation to comfort it provides, the wait time which is decreased and it being money and time saving which is lost in transportation. Most of the respondents were able to avail follow up online consultation within specified period 45 % agreed and other 30% strongly agreed. When patients were asked for another online consultation after Covid restrictions ends 25% patients agreed, but other 93 patients were neutral.

Serwe et al, (2017) in their study found that study participants rated usefulness, ease of use, as satisfaction subscales for Telemedicine.

In speciality specific consultation, Loeb et al (2020) found the benefit of telemedicine in orthopaedic care as safe and effective during covid pandemic. Also, Bove et al, (2013) found Telemedicine useful in medical disorders like for managing hypertension particularly among nondiabetic subjects.

Correlational Analysis was further carried out for the data. There was found to be a strong positive correlation between explaining the problem to the healthcare

provider and the interest of the provider in the patient's problem (0.728). There reflects a strong negative correlation between reuse intention of telemedicine platforms and patient satisfaction (-0.529). This suggest that a better response by the health care provider and a better communication by the patient can enhance the satisfaction levels of the patients to a large extent. Multivariate analysis was then used for the study. The primary aim was data reduction of several variables into a small group of variables which majorly impact the satisfaction level of the patients. The Kaiser Meyer Olkin measure of sampling adequacy was 0.816 which indicates the appropriateness of factor analysis. The Barlett's test of sphericity was 0.00 which suggest that the data in hand does not produce an identity matrix. The correlation matrix, Component matrix, communalities and the Total variance have been shown in the tables. The three major factors which emerge from the study reflect a variance of 82.616% in the dependent variable which is patient satisfaction.

e) Implications for theory and practice

Earlier studies on Telemedicine have focussed on the patient satisfaction levels without much focus on their reuse intention and loyalty levels with the telemedicine platforms. This study has emphasized that the satisfaction levels of the patients to a large extent are a result of the communication established between the doctor and patient. The more clarity in the patients' deliverables in communicating his problem the more is the responsiveness from the health care provider's end. The results may aid the service providers an in-depth into how to design the entire technical servicescape for the patient s and the necessary skill required by the healthcare providers to enhance the patient service experience.

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Table:1 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Consultation	188	1	2	1.69	.463
Revisit	188	1	2	1.17	.377
Specialist	188	2	5	4.38	.725
Avail service	188	1	5	3.99	1.094
Availability	188	2	5	3.84	1.016
Empathetic	188	2	5	4.14	.911
Interested health care	188	2	5	4.09	.906
Explain rob	188	2	5	4.24	.802
Solution Pro	188	1	5	3.91	1.200
Follow up	188	1	5	3.88	1.040
Satisfaction	188	2	5	3.67	.924
Plot for	188	3	5	3.89	.606
Complete consult	188	2	5	3.80	.987
Future consultation	188	1	5	2.88	.929
Valid N (listwise)	188				

Table: 2 Communalities

	Initial	Extraction
Consultation	1.000	.792
Revisit	1.000	.904
Specialist	1.000	.774
Avail service	1.000	.733
Availability	1.000	.760
Empathetic	1.000	.774
Interested health care	1.000	.869
Explain rob	1.000	.825
Solution Pro	1.000	.920
Follow up	1.000	.785
Satisfaction	1.000	.918
Plot for	1.000	.762
Complete consult	1.000	.885
Future consultation	1.000	.864

Extraction Method: Principal Component Analysis.

Table:3 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.488	60.627	60.627	8.488	60.627	60.627
2	1.747	12.479	73.106	1.747	12.479	73.106
3	1.331	9.510	82.616	1.331	9.510	82.616
4	.720	5.144	87.760			
5	.524	3.743	91.503			
6	.371	2.649	94.152			
7	.238	1.700	95.852			
8	.209	1.491	97.343			
9	.134	.959	98.302			
10	.109	.781	99.084			
11	.046	.328	99.412			
12	.037	.263	99.675			
13	.027	.193	99.868			
14	.018	.132	100.000			

Extraction Method: Principal Component Analysis.

Table:5 Component matrix

	Component		
	1	2	3
Consultation	.179	-.538	.686
Revisit	-.275	.646	.641
Specialist	.572	-.641	.190
Avail service	.833	.136	.142
Availability	.773	.325	.238
Empathetic	.854	-.016	.210
Interested health care	.922	-.071	.117
Explain rob	.771	-.477	.058
Solution Pro	.900	.332	.012
Follow up	.829	.312	.025
Satisfaction	.857	-.098	-.417
Plot for	.815	.129	-.286
Complete consult	.921	.192	-.007
Future consultation	.919	-.037	-.136

Extraction Method: Principal Component Analysis.
 a. 3 components extracted.

Table:6 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.816
Bartlett's Test of Sphericity	Approx. Chi-Square	3664.394
	df	91
	Sig.	.000

Figure 1: Research Model

