Research Article

Telehealth Service Utilization for Gynae & Obstetrics During COVID-19 Pandemic in Lahore, Pakistan

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Abstract:

Background: Provision of health information and delivery of health care services by means of electronic information and communications technology (ICT) to distant patients, separated by geography, time, social and cultural barriers is termed as telehealth.

Objective: To evaluate the provision of telehealth services for Gynae and Obstetrics in relation to satisfaction of patients and fetal outcomes.

Methods: An analytical cross-sectional study was conducted between 18-5-21 to 31-12-21 in Gynae and obstetrics unit of Farooq Hospital Westwood branch. A sample of 108 respondents was collected through simple random sampling technique. In order to analyze the data, SPSS version 23 was utilized, and chi square test was used to determine the associations between variables fixing p value at less than 0.05.

Results: Most common device used for appointment of telehealth services was smartphone (87%) (p=0.02) and most important barrier in telehealth services was network issues reported by (55.5%) (p=0.01) of respondents. Majority of the respondents (84.1%) were satisfied with telehealth service utilization (p=0.00). Strong association was seen between utilization of services and easing of appointment (p=0.00), understandability of language (p=0.00), need based services (p=0.00), convenience (p=0.00), comfort (p=0.00), cost effectiveness (p=0.01), better standard of care (p=0.01), careful response of physicians (p=0.02) and sympathetic attitude (p=0.00).

Conclusion: High satisfaction rate was observed with provision of telehealth services in Pakistan and most important barrier was network issues.

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Introduction:

Provision of health information and delivery of health care services by means of electronic information and communications technology (ICT) to distant patients, separated by geography, time, social and cultural barriers is termed as telehealth.[1] One way of providing patient centered care and alleviating risk for exposure of antenatal patients specially in the situations like disasters and COVID-19 pandemic is Telehealth.[2] In impoverished countries such as Asia, Africa, and Latin America, global organizations like the World Health Organization (WHO) have been encouraging telehealth usage, as a new means to deal with serious health challenges.[3]

In a study conducted in Florida, K Fryer et al assessed that patients using virtual care model are benefitted by incorporating virtual visits and reducing in-person visits in schedule of prenatal care.[4] The key to provide the benefits of research developments to all is by expanding the "traditional" point-to-point telemedicine model to comprise latest cell phone and Internet-based telecommunication gadgets that are extensive and

economical, especially in suburban and distant locations.[5] Technologies like mobile applications, short message service (SMS), mechanized telephone support systems, Internet-based diaries, decision-support systems, and bridging systems incorporating various components of digital communication technologies (e.g. mobile apps reinforced by Web platforms) can be used to carry out this task.[6] Telemedicine has extensive use in high-risk obstetrics, comprising treatment of gestational diabetes, diagnosis and management of hypertensive conditions of pregnancy, screening for fetal malformations with tele-ultrasound, provision of care to low coverage areas, and more.[7]

In US, Mojdehbakhsh RP et al conducted a Telehealth Satisfaction Survey (TeSS) of 217 patients that showed a response of 74.8%. Following components of telemedicine experiences were evaluated as good by the patients: quality of the call (96.5%), personal ease (92.9%), duration-of-visit (94.7%), treatment description (93.8%), and on the whole experience (88.5%). Moreover, 82.3% of patients would use telemedicine again.[8] A complete implementation of telemedicine is however restricted despite the vast benefits, mostly in developing countries; as in a study conducted in Nigeria researchers grouped the barriers to telemedicine implementation into Technological, Human, Organizational, Social and Financial Factors.[9] In this COVID-19 era, with restrictions on number of people allowed to attend doctor's visits, telehealth gynecology and obstetrics visits can help reduce the amount of stress caused because of organiz-ing childcare, transportation, leave from employment, and the time spent in waiting room for in-person care.[10]

In Pakistan, catastrophic situation is clearly evident by the current medical statistics. Shortage of skilled health care staff further aggravates the intensity of the problem.[11] Merely 31% of the total births in Pakistan are assisted by the trained birth attendants, leading to highest infant mortality rate among SAARC countries at approximately 70 deaths per 1,000 live births, according to the 'World health statistics' by WHO for 2007.[3] additionally Pakistan has the highest maternal mortality rate in South Asian region i.e. 350-500 per 100,000 live births.[12] The collapse of the existing health set-up of Pakistan is evident by this prevailing situation. A dire need of revamping this infrastructure is apparent, which can be fulfilled by utilizing ICT (information and Communi-cation Technology) as an enabler. The aim of this study is to evaluate the satisfaction of patients using telemedicine on Gynecology and obstetrics service and fetal outcomes related to obstetrical services provided through telehealth.

Methods:

This analytical cross-sectional study was done in Farooq Hospital Lahore after the approval from Institutional Review Board (IRB no M-21/71/- Gynae & Obs) from 18.5.21 till 31.12.21. Simple random sampling technique was used to collect data of 108 patients. Sample size was calculated while Keeping margin of error at 5% and confidence level at 95%, using Rao soft sample size calculator. Tele health services were provided in Gynae and Obs unit of Farooq hospital west wood branch during COVID 19 pandemic closure of routine health services. Telehealth services were provided to patients through live interactive consultations and video conferencing techniques.

In conjunction with live interaction with patients, asynchronous telehealth services were established with pathology and radiology department. Telepathology and teleradiology services were provided in which online reports of Ultrasonography and Lab reports were shared with consultant and patient simultaneously. Telesurgery department was also established in which a senior surgeon provided expert opinion during surgery at the primary operation site. The equipment like digital B.P apparatus, glucometer and pregnancy testing strips were used to support patient monitoring at home. Patient shared recordings of fetal kick count and recording of fetal heart rate by digital fetoscope. Images were shared by patients regarding their complaints and site of pain. Some minor conditions were diagnosed and treated by the used of telehealth services during telephonic conversations. For providing comprehensive care to patients who were unable to visit personally, services like virtual ante natal care visits, feto-maternal blood pressure, blood sugar level, fetal kick count and fetal heart rate monitoring, mental health care, virtual post-partum visits and lactation support were provided. Patients were able to receive

consultations by health care providers. Care to patients who needed medically induced abortion was also provided.

All female patients using tele health and willing to participate were included in study. Those who did not give consent were omitted. The questionnaire was planned after widespread literature search centered on questions employed in preceding studies. A self-structured pre-tested questionnaire was used to record sociodemographic details and satisfaction with services along with outcome of patient. Data were entered and analyzed using SPSS Version 23. Continuous and categorical variables were expressed as mean ± standard deviation and frequency (percentage) respectively. Chi square test was applied to determine the association between the variables. p-value ≤ 0.05 was taken as significant.

Results:

A total of 108 women participated in this study. Age distribution showed that out of 108 respondents 80 (74%) belonged to the age group of 25-34 years of age.

Table 1: *Socio-demographic Profile of the participants*

Characteristics	Frequency n=108	Percentage (%)
Age (in years)		
15-24	22	20.4
25-34	80	74.1
35-44	4	3.7
45 and above	2	1.9
Marital status		
Married	82	75.9
Unmarried	26	24.1
Educational status		
Primary	2	1.9
Secondary	6	5.6
Intermediate	16	14.8
Graduation	66	61.2
Masters and above	18	16.9
Residential area		
Rural	18	16.7
Urban	90	83.3
Job status		
Housewife	56	51.9
Working	52	48.1

Married participants were 82(75.9%). Majority, 90 (83.3%) lived in urban areas. Out of these 108 women, 56 (51.9%). (Table 1)

Eighty eight participants (81.5%) were aware about the provision of telehealth services in Pakistan and 78(72.2%) had experienced encounter with health care provider through telehealth in last one and half year. Smartphone was the most used medium for telehealth by 94(87%) and 83.3% used phone call to take appointment. Majority of participants 60(55.5%) had less than 2 virtual visits and the major barrier in use of telehealth services was network issues. (Table 2)

Table 2: *Telehealth Services*

Variables	Frequency	Percentage (%)
Awareness about provision		
Yes	88	81.5
No	20	18.5
Experience in last one and a half year		
Yes	78	72.2
No	30	27.8
Duration of use		
Less than 3 months	50	46.3
3-6 months	18	16.7
6 months-1 year	20	18.5
More than 1 year	20	18.5
Device used		
Smart phone	94	87
Tablet	6	5.6
Laptop	8	7.4
Desktop	0	0
Mode of appointment		
Text message	14	13
Email	4	3.7
Phone call	90	83.3
No. of virtual visits		
Less than 2	60	55.5
2 to 5	32	29.6
5 to 7	6	5.6
More than 7	10	9.3
Barriers		
Network issues	60	55.5
Software incompatibility	6	5.6
Untrained service provider	6	5.6
Understanding issues	36	33.3

Regarding utilization of telehealth services, smartphone was most commonly used (p=0.02). A vast majority 84.1% of the respondents were content with use of telehealth services (p=0.00). Significant association was seen with responses for easy appointment, understandability of language, need based services, comfort and convenience. Majority of respondents 76.6% believed that implementation on advice was easy, improved outcome was obtained with much cost-effective technique.

Significant association was observed with patient's response with standards of care obtained, careful response of clinicians, sympathetic attitude, provision of test prescrip-tion and tests observation.

Significant association was observed with use of telehealth services and fetal outcome (p=0.02). Network issue was major barrier but majority of the participants believed in utilization of telehealth services in future and recommen-dation of its use to friends and family. (Table 3)

Discussion:

According to this study majority 88 (81.5%) of the participants were aware about the provision of telehealth services and 20 (18%) had no realization of it, in contrast to another study conducted to know about the awareness of telehealth in India which revealed that 100 of the 121 (82.6%) patients were not aware of telemedicine service.[13] According to this study 78 (72.2%) of the participants were using telehealth services and 30 (27.8%) chose otherwise. In a similar study conducted in 2019 in U.S it was revealed that majority 90.2% of the participants were using telehealth services.[14]

According to this study 94(87%) of the participants use smart phones and 6(5.6%) of the participants use Tablets while another study conducted on telehealth revealed that 14(74%) of the respondents utilize smart phones and 6(32%) utilize Tablets.[15]

In this study, 85% of the total respondents were

Table 3: *Telehealth Services Utilization*

Variables	Yes	No	Total	P-Value
Device				
Laptop	4(50%)	4(50%)	8(100%)	0.02
Tablet	6(100%)	0(0%)	6(100%)	
Smart phone	68(73.9%)	24(26.1%)	92(100%)	
Satisfaction				
Yes	74(84.1%)	14(15.9%)	88(100%)	0.00
No	4(25%)	12(75%)	16(100%)	
Easy to Appointment				
Yes	78(83%)	16(17%)	94(100%)	0.00
No	0(0%)	14(100%)	14(100%)	
Understandability of Language				
Yes	78(75%)	26(25%)	104(100%)	0.00
No	0(0%)	4(100%)	4(100%)	
Services According to Needs				
Yes	70(79.5%)	18(20.5%)	88(100%)	0.00
No	8(40%)	12(60%)	20(100%)	
Comfortable				
Yes	72(78.3%)	20(21.7%)	92(100%)	0.00
No	6(37.5%)	10(62.5%)	16(100%)	
Convenience				
Yes	64(80%)	16(20%)	80(100%)	0.00
No	14(50%)	14(50%)	28(100%)	

Implementation of Advice				
Yes	72(76.6%)	22(23.4%)	94(100%)	0.00
No	6(42.9%)	8(57.1%)	14(100%)	
Improved Outcome				
Yes	72(83.7%)	14(16.3%)	86(100%)	0.00
No	6(42.9%)	16(72.7%)	22(100%)	
Cost Effective				
Yes	60(78.9%)	16(21.1%)	76(100%)	0.00
No	18(56.3%)	14(43.8%)	32(100%)	
Standards of Care				
Yes	74(75.5%)	24(24.5%)	98(100%)	0.01
No	4(40%)	6(60%)	10(100%)	
Clinicians Carefully Response				
Yes	76(74.5%)	26(25.5%)	102(100%)	0.02
No	2(33.3%)	4(66.7%)	6(100%)	
Clinician Sympathetic				
Yes	78(79.6%)	20(20.4%)	98(100%)	0.00
No	0(0%)	10(100%)	10(100%)	
Tests Prescribed				
Yes	64(80%)	16(20%)	80(100%)	0.00
No	14(50%)	14(50%)	28(100%)	
Tests Seen				
Yes	70(77.8%)	20(22.2%)	90(100%)	0.00
No	8(44.4%)	10(55.6%)	18(100%)	
Fetal Outcome				
Healthy Baby	48(80%)	12(20%)	60(100%)	0.02
Complications	14(77.8%)	4(22.2%)	18(100%)	
Barriers				
Network issues	48(80%)	12(20%)	60(100%)	0.01
Software incompatibilities	6(100%)	0(0%)	6(100%)	
Understanding issues	22(61.1%)	14(38.9%)	36(100%)	
Untrained Service Provider	2(33.3%)	4(66.7%)	6(100%)	
Utilization in Future				
Yes	78(78%)	22(22%)	100(100%)	0.00
No	0(0%)	8(100%)	8(100%)	
Recommendation to Friends and Family				
Yes	76(77.6%)	22(22%)	98(100%)	0.00
No	2(20%)	8(80%)	10(100%)	

satisfied with the utilization services provided through telemedicine. Similarly, study conducted in USA in 2020 where 86% of the participants expressed satisfaction level while 78% would recommend the telemedicine services to others.[16]

This study stated that 87% of the participants called upon these services as hassle free in contrast to the study conducted in India in 2021 where only 27% showed their interest in using the telemedicine services which may be due to the decreased literacy rate in

developing countries.[17]

This study stated that 96% of the participants understood the consultation provided in telemedicine sessions which is in accordance with the qualitative study conducted in 2020 in USA where majority of the participants developed the acceptance within the telemedicine framework to alleviate the disruptions effectively in treatment approach.[18]

In this study, majority 80 (74.1%) participants found telehealth service more convenient than in person health services, similarly, a study conducted in U.S revealed that 95% of the patients appreciated the convenience of telehealth medicine.[19]

Ninety-four (87%) of the participants said that they implemented the advices given by their doctors; in a similar study a total of 1003 patients (88%) were accessible for the subsequent telephone interview. Of those, 85% stated that they had followed all the self-care advices given by the physician.[17]

When asked about improvement in condition after telehealth visit 86(79.6%) stated yes and only 13 (14%) said no. In contrast to a study conducted in Zimbabwe during the consultations 35 (52.5%) of the respondents said they had improved outcomes.[3] In another study in US, ICU mortality was 9.0% during the period, prior to intervention, in comparison with 4.9% during the Tele-ICU period of intervention.[20]

Amongst the selected sample of this study 76 out 108 respondents stated that telemedicine visits were cost effective. A study conducted in US concluded that simultaneous audio-video telemedicine consultations led to short-term cost savings by diverting patients from more expensive care settings resulting in a net cost savings per telemedicine from $19-$121 per visit.[21]

In this study 98(90.7) of the participants stated that the standard of the care was met. In another study conducted in Texas 96% were satisfied with the standard of care and rated their experience as good.[22]

This study stated that 94% of the participants reported to have received attentive response from the clinician which is similar to a study conducted in USA in 2017 which concluded 88% of the patients admitted to experience the same response as to the in-person consultation.[23]

In this study 90(83.3%) of the patients stated that their reports were seen by the physician during telehealth visit. In a study conducted in UK in a total of 297 women who had telemedicine consultation, (ultrasound scan and counseling) were undertaken by all of them via the telemedicine link.[24]

This study suggested that out of 108 participants, 77% had healthy fetal outcome which is similar to the study conducted in Japan in 2020 which concluded that among all of the primigravidas who opted remote telemedicine obstetric services only one case had developed the complications which was later shifted to the hospital.[25]

According to this study one of the barriers in telemedicine was compatibility issue seen in 36(33.3%) of the respondents due to lack of understanding, another study conducted to know about the barriers associated with telemedicine revealed that it revealed that 32% of older adults would not eagerly use video consultations because of newness of the technology.[19]

Ninety-two percent of the participants in this study stated that they would use telemedicine in future. In a qualitative study conducted in Philadelphia, Powell et al interviewed patients following telemedicine visits found that a majority stated that they would prefer to use telemedicine rather than in-person visits in the future.[15]

In this study 98 (90.7%) said that they would recommend telehealth visits to their family and friends in contrast to another study, a total of 32 telemedicine consultations were conducted and the recommendation of the consultant was done by 12 patients (37.5%).[22] Telehealth medicine is a neglected field in Pakistan. With emergence of COVID-19 pandemic patients and their families used this alternate pathway. As most of the people are uneducated and are unaware of the provision of these services only few opted for it. So, the sample size is too small to generalize the results.

Moreover, telemedicine is not only limited for provision of services in Gynae & Obs. So, one of the major limitations is limited scope of provision of telehealth services. So, other future studies are recommended in other fields of medicine to have a better understanding of implications of this emerging field.

Conclusion:

Most common device used for appointment of telehealth services was smartphone and most important barrier in telehealth services was network issues. High satisfaction rate was observed with provision of telehealth services during COVID-19 pandemic among participants. Easiness of appointment, convenience of patient, comfort and cost-effectiveness were the major advantages mentioned for utilization of telehealth services.

Ethical Approval: Given

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