Original Article

Triage of antenatal care through telehealth during COVID-19 pandemic in a tertiary care centre of North India

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Abstract

Background: Telemedicine facilitates patient care in various fields including antenatal care. Its application and usefulness need objectification and can be a guide to using this service in the care of pregnant women. **Material and Methods:** This was a prospective observational study conducted from May 2020 to December 2020. Following the telemedicine practice guideline of the country, 3,360 teleconsultations were sought by 862 antenatal patients. The duration of each call, an indication of referral and pregnancy risk stratification were noted. Further management was classified into three categories depending upon the need for an immediate hospital visit, no hospital visit or scheduled visit after at least 48 h after the first contact. **Results:** The antenatal cases were referred for either maternal, foetal or both indications in 24.7, 54.8 and 20.5% of the cases, respectively. Women were classified as low risk (61.6%), high risk (35.7%) and severe risk (2.7%). In 1.4% of the patients, history and review of the records could not be done through telemedicine. The average time spent was 16.6 min for the first contact and 3.1 min for subsequent contacts. Further management was done with immediate visits in 385 (45.3%), scheduled hospital visits in 292 (34.3%) women and no tertiary care hospital visit in 173 (20.4%). **Discussion:** Women (20.4%) not called to the maternal-foetal medicine department of the institute were managed along with the treating obstetrician and no difference in pregnancy outcome was noted. **Conclusion:** Antenatal care can be provided following triage over teleconsultation and 1.4% of the women may not be able to use telehealth.

Keywords: Antenatal care, COVID-19, outpatient health services, teleconsultation, telemedicine

Introduction

Telehealth or telemedicine used synonymously and interchangeably by the World Health Organisation means clinical diagnosis and monitoring through technology. It defines "telemedicine as the delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of diseases and injuries, research and evaluation and for the continuing education of health providers, all in the interests of advancing the health of individuals and their communities.[1]" Despite the introduction of teleconsultation in the early twentieth century, the application was initially for treating psychiatric patients which was later extended to other medical fields. From 1999 onwards, teleconsultation was considered a billable service in developed

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countries. Yet, the awareness regarding these services was poor as many practitioners felt it as limited doctor-patient interaction. Overcoming the reluctance of the health care providers to engage in teleconsultation services as a part of clinical practice was the major task. In more recent times, the ongoing COVID-19 pandemic has forced both the patient and doctor to utilise this technology to its maximum to have optimum care with limited hospital visits. The previous publications point towards the need for an objectification for such teleconsultation services regarding the care of pregnant women. It was against this background that the present study was designed and conducted.

Method

This was a prospective observational study conducted from May 15, 2020, to December 31, 2020, at a tertiary care referral centre for complicated pregnancies in northern India. All antenatal cases were referred by their treating obstetrician for a consultation to a Maternal and Foetal Medicine department. The telemedicine practice guideline of India which was released in March 2020 by the Ministry of Health and Family Welfare and is accessible at *https://www.mohfw.gov.in* was followed. The pregnant women were asked to contact a particular landline and a mobile phone number which was displayed in print and electronic media. The phone calls were received by two trained obstetricians. Previous reports including past and present pregnancy management reports were received through WhatsApp messages. A structured proforma was used to record the past obstetric history, medical and surgical diseases complicating pregnancy and present obstetric history including a three-generation pedigree. Cooplands scoring system was used to classify women into low, high and severe risk.[2] The indication of referral of the patients was classified as maternal, foetal or both. The maternal conditions included bad obstetric history, medical and surgical disorders complicating pregnancy and obstetric complications. The foetal conditions included congenital anomalies, high risk of genetic disease, multiple gestations and foetal growth restriction. Further pregnancy management was decided by a senior obstetrician who was an expert in Maternal and Foetal Medicine. Depending upon the aforementioned criteria, women were classified into three categories (i) those requiring physical consultation within 48 h, (ii) those requiring physical consultation after 48 h and (iii) those managed through discussion with their treating obstetrician or received instructions via teleconsultation only and were, therefore, not called for any physical visit to our referral centre. Those who were not called for any physical hospital visit at our centre were followed up for pregnancy outcomes. Those who contacted but were unable to send the previous report or were unable to follow the instructions were called for a physical visit to the referral centre and were, therefore, excluded from further analysis. The primigravida was defined as a female who was pregnant for the first time and multigravida as those who were pregnant more than once. The first trimester was defined as less than or equal to 14 weeks, the second trimester as 14 weeks 1 day to 27 weeks 6 days and the third trimester as 28 weeks till delivery.

Results

During this period, 3,360 phone calls were received from 862 pregnant women or their relatives. Among them, 12 (1.4%) women could neither send their reports nor give a detailed history telephonically or electronically and were, thus, excluded from further analysis. All these 12 women were asked to come for a physical visit to our hospital for their further management. Among the 850 women, the mean age of the women was 29.3 years (range 19–46 years); 305 (35.9%) were primigravida and 545 (64.1%) were multigravidas with mean gravidity of 2.4 (range = 1–9). The indication for referral was a maternal cause, foetal and both foetal and maternal cause in 210 (24.7%), 466 (54.8%) and 174 (20.5%) women, respectively. The mean gestational age of the patients was 18 weeks. The women were referred at first, second and third trimesters in 232 (27.3%), 484 (56.9%) and 134 (15.8%), respectively. The risk scoring indicated that 524 (61.6%) women belonged to low risk, 303 (35.7%) belonged to high risk and 23 (2.7%) belonged to severe risk. The average duration of teleconsultation for the first contact was 16.6 min (range: 4–35 min) and 3.2 min (range: 1–6 min) for repeat consultation. Further antenatal management was done advising for physical hospital visits within 48 h of contact (n = 385, 45.3%) or a scheduled visit on a later date (292, 34.3%). Of the severe risk category women, 16/23 (69.6%) were called to visit within 48 h and 7/23 (30.4%) were called to visit on a scheduled date. The patients were informed and guided regarding subsequent management or their treating obstetricians were guided through both audio and video discussions in 173 (20.4%) cases, and hence, such women never visited the tertiary care referral centre. The follow-up of these patients was obtained by calling the patients and treating obstetricians and no abnormal maternal and foetal outcomes were noticed. The results of the study are detailed in [Table 1].

Discussion

The onset of the COVID-19 pandemic and declaration of restricted movement necessitated the exploration of an alternative mode of doctor-patient contact. This was more appreciated in the field of medical emergency and antenatal care. After prolonged discussion and deliberation, the World Health Organisation had decided to have a minimum of eight contacts during pregnancy for optimum antenatal care. This was expected to be compromised during the global pandemic. Compromising in antenatal care can have enormous health care consequences for mother and child. The application of teleconsultation in such a situation was reinforced as an alternative mode of care. Meanwhile, the Government of India issued telemedicine practice guidelines on March 25, 2020. The application of advanced communication and information technology was allowed, thereafter, for health care. Telemedicine was used mostly by radiologists (39.5%), psychiatrists (27.8%), cardiologists (24.1%) and the least by obstetrics and gynaecologists (9.3%), gastroenterologists (7.9%) and immunologists (6.1%) (2). In obstetric practise, telemedicine has been used for the interpretation of ultrasound findings

Table 1: Characteristics of study subjects

Characteristics	Patients (*n*=850)
Mean age, years (range)	29.3 years (19-46 years)
Gravidity (range)	2.4 (1-9)
Primigravida, *n* (%)	305 (35.9%)
Multigravida, *n* (%)	545 (64.1%)
Indication for referral	
Maternal, *n* (%)	210 (24.7%)
Foetal, *n* (%)	466 (54.8%)
Both, *n* (%)	174 (20.5%)
Mean gestational period, weeks	18
Referral time	
First trimester, *n* (%)	232 (27.3%)
Second trimester, *n* (%)	484 (56.9%)
Third trimester, *n* (%)	134 (15.8%)
Mean teleconsultation duration	
First contact, min (range)	16.6 (4-35)
Repeated contact, min (range)	3.1 (1-6 minutes)
Further antenatal management	
Physical hospital visit within 48 h, *n* (%)	385 (45.3%)
Scheduled visit on a later date, *n* (%)	292 (34.3%)
No visit, *n* (%)	173 (20.4%)

and non-stress tests, management of diabetes and postpartum depression. It has been demonstrated to save time, and decrease transportation costs and medical costs apart from providing efficient health care.[3]

According to a review article by Odibo *et al*., there were 68 publications focussing on the topic of telemedicine in obstetrics, published up to September 2012.[4] Telemedicine plays an important role as an adjunct to the delivery of health care to remote patients with inadequate medical access and emphasises efficient use of these available resources. Thus, telemedicine can be very well utilised in this era of limited resources due to the global pandemic. The American College of Obstetricians and Gynaecologists also recommends the use of telemedicine by the members via Committee Opinion, Number 798.[5]

DeNicola *et al*.[6] performed a systematic review to analyse telehealth intervention improving the obstetrics outcome. Of the 3,926 published abstracts identified, 47 fulfilled the inclusion criteria and included 31,967 participants. It was concluded that telehealth interventions were associated with improvements in obstetric outcomes, perinatal smoking cessation, breastfeeding, early access to medical abortion services and schedule optimisation for high-risk obstetrics. They opined to have further well-designed studies to examine these interventions and others to generate evidence that can influence decisions regarding the implementation of newer telehealth technologies into obstetrics and gynaecology practice.

A few studies have reported the use of telemedicine in antenatal diagnosis and counselling services.[7] The use of telemedicine in women with diabetes had resulted in reduced need for outpatient clinic visits with similar pregnancy outcomes,[8] although women preferred the telehealth model of care.[9] Telemedicine has also been demonstrated to offer a timely intervention in women diagnosed with gestational hypertension[10] and it is effective in optimising blood pressure in the postpartum period.[11,12]

High-risk factors contribute to significant maternal and neonatal morbidity and mortality which is further expected to rise as women tend to delay their antenatal visits amidst ongoing fear and travel restrictions due to the pandemic. Telemedicine played a vital role by identifying at-risk pregnancies and allowing for the selection of women who would benefit from immediate physical visits and scheduling their visits, thus, reducing the frequency of physical visits without compromising the antenatal care. It also enabled the women to interact with maternal-foetal medicine specialists from those areas with limited access, thus, helping to decentralise obstetric care. This also had the added advantage of decreasing the cost of transportation, time away from work and being getting infected with COVID-19.

Conclusion

The present study showed that 1.4% of the women may not be able to use telehealth technology. As expected, the time spent for consultation is higher during the first contact as compared to subsequent contacts. A triage over teleconsultation may avoid a hospital visit in 20.4% of the pregnant women without any maternal or foetal adverse outcomes. Our study suggests that telemedicine use is feasible and acceptable in antenatal care with a reduction in outpatient visits, thus, reducing exposure to possible COVID-19 infection.

All health care providers should make telecare the first option in patient care, thereby, minimising the unnecessary hospital visits by the patient. The COVID-19 pandemic and lockdown has removed financial and legal barriers to teleconsultation and would serve as a driving force for improving teleconsultation in the management of pregnancy.

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Conflicts of interest

There are no conflicts of interest.

References

1. WHO Global Observatory for eHealth. Telemedicine: Opportunities and developments in Member States: Report on the second global survey on eHealth. Geneva: World Health Organisation; 2010.
2. Kichloo A, Albosta M, Dettloff K, Wani F, El-Amir Z, Singh J, *et al*. Telemedicine, the current COVID-19 pandemic and the future: A narrative review and perspectives moving forward in the USA. Fam Med Community Health 2020;8:e000530.
3. Coopland AT, Peddle LJ, Baskett TF, Rollwagen R, Simpson A, Parker E. A simplified antepartum high-risk pregnancy scoring form: Statistical analysis of 5459 cases. Can Med Assoc J 1977;116:999-1001.

4. Magann EF, McKelvey SS, Hitt WC, Smith MV, Azam GA, Lowery CL. The use of telemedicine in obstetrics: A review of the literature. Obstet Gynecol Surv 2011;66:170-8.
5. Odibo IN, Wendel PJ, Magann EF. Telemedicine in obstetrics. Clin Obstet Gynecol 2013;56:422-33.
6. Implementing telehealth in practice: ACOG committee opinion summary, number 798. Obstet Gynecol 2020;135:493-4.
7. DeNicola N, Grossman D, Marko K, Sonalkar S, Butler Tobah YS, Ganju N, *et al*. Telehealth interventions to improve obstetric and gynecologic health outcomes: A systematic review. Obstet Gynecol 2020;135:371-82.
8. Morris DG, Hayward T. Enhancement of an antenatal diagnosis and counselling service (ADACS) through the ready availability of telemedicine services. J Telemed Telecare 2000;6(Suppl 1):S56-8.
9. Dalfrà MG, Nicolucci A, Lapolla A. The effect of telemedicine on outcome and quality of life in pregnant women with diabetes. J Telemed Telecare 2009;15:238-42.
10. Mackillop L, Hirst JE, Bartlett KJ, Birks JS, Clifton L, Farmer AJ, *et al*. Comparing the efficacy of a mobile phone-based blood glucose management system with standard clinic care in women with gestational diabetes: Randomized controlled trial. JMIR Mhealth Uhealth 2018;6:e71.
11. Lanssens D, Vonck S, Storms V, Thijs IM, Grieten L, Gyselaers W. The impact of a remote monitoring program on the prenatal follow-up of women with gestational hypertensive disorders. Eur J Obstet Gynecol Reprod Biol 2018;223:72-8.
12. Hirshberg A, Downes K, Srinivas S. Comparing standard office-based follow-up with text-based remote monitoring in the management of postpartum hypertension: A randomised clinical trial. BMJ Qual Saf 2018;27:871-7.