

TELE-ANC model in public sector in India: a feasible option to sustain quality antenatal care

Abstract

Introduction: Prenatal care is one of the most widely used preventive strategies in healthcare. Despite rapid advances in medical practice over a century, obstetric care remains 'traditional'. It is resource intensive with heavy footfall in public sector antenatal OPD leading to compromise in quality of care. Therefore, hybrid 'TELE-ANC model' is a feasible option to sustain quality care in limited resource setting. We assessed feasibility of this model in reducing 'in-person visits' in terms of provider, process and recipient and determined barriers and facilitators to implementation and robustness of process in delivering the model.

Methods: Single center prospective feasibility study, composed of 50 low-risk women within 20 weeks of pregnancy; recruited from outpatient obstetric department. Model had 5 in-person and 4 virtual visits. During in-person visits; history, general and systemic examination, ANC investigations and ultrasounds were done and clubbed; counseling and treatment were advised. During virtual visit, patients monitored blood pressure, pulse, weight and fetal movements at home. Pictures of prescription were sent on patients' phones with records maintained by provider. Patients and provider filled detailed Satisfaction Performa after each virtual visit and last antenatal visit which were measured through Likert scale.

Results: Each pregnant woman on an average made 5 physical and 5 virtual visits (one extra than proposed 4 in the model). Each patient saved approximately 10 productive hours and 700 Rupees during their antenatal period. Doctor was able to implement services readily. Adequacy to conduct virtual visits, successful decision making, technical issues faced, ease and safety of process and overall improvement in access to healthcare and positive change, demonstrates high levels of Provider satisfaction score of >80% overall. There was high patient satisfaction score of 80 to 90% in areas assessed i.e., satisfaction with the care received, doctor-patient rapport, knowledge about pregnancy, convenience of self-monitoring and ability to contact provider during emergencies. Nearing term, patients had satisfaction score of 85-90% overall in ability to express, continuation of visits post COVID, reduction in overall cost and time, desire for such a model in future and positive change. Minimal technological barriers were identified which did not adversely impact the quality of care. It is 'Good' in terms of its robustness. 96% of patients desired hybrid model as mode of future antenatal care.

Discussion: Due to rapid increase in use of telehealth during COVID-19 pandemic, we were encouraged to test feasibility of a reduced in-person visit hybrid model; 'The TELE-ANC model' in a tertiary care public hospital. It is feasible in delivering an efficient antenatal care with additional advantages of lower cost, greater doctor-patient rapport, increased patient's productivity, increased patient satisfaction, better continuity of care, better time management and increased provider engagement and satisfaction. It has potential to be standard care model for antenatal services in future leading to a more flexible and patient centered care.

Volume 9 Issue 5 - 2023

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Received: September 10, 2023 | **Published:** September 22, 2023

Introduction

Prenatal care is one of the most widely used preventive strategies in healthcare.¹⁻³ Improvement in healthcare service delivery in India is one of the key aspects of Reproductive and Child health program with prime focus on ensuring quality services to pregnant women. Despite rapid advance in medical practice over a century, obstetric care remains 'traditional', which is resource intensive with heavy footfall in public sector antenatal outpatient departments (OPD) leading to compromise in quality of care.⁴ Some prenatal care models with reduced number of in-person antenatal visits have been tested without affecting maternal and perinatal outcomes especially in high resource settings.^{3,5-10} Despite cost effectiveness, safety and convenience of reduced physical visit schedule, change in clinical practice did not occur until COVID-19 pandemic happened. Concerns about patient

and provider satisfaction, gaps in contact and perceived liability were some of the inhibiting factors.^{5,10} To preserve rapport between provider and patient and to maintain patient satisfaction and facilitate the provider, a combination of telemedicine and reduced in-person visits were adopted.¹¹ They are touted to become the 'new normal' antenatal care in post COVID era too. Therefore, the hybrid 'TELE-ANC model' is a feasible option to sustain quality care in limited resource setting.

Aim & objectives

The present study aimed to assess the feasibility of 'Tele-ANC model' in reducing the number of in-person visits. The primary objectives were to assess the feasibility of Tele-ANC model in terms of provider, process and service recipient for reducing in-person

visits, and secondarily to determine the barriers and facilitators to implementation, and the robustness of process from provider and service recipient's outlook in delivery of Tele-ANC model.

Materials and methods

It was a single center prospective feasibility study conducted from January 2021 to May 2022 after taking approval from the Institutional Ethics Committee-Human Research (IEC-HR) (Ethics approval number- IECHR/2020/PG/47/46). A total of 50 study subjects were enrolled. Written informed consent was taken from all the participants and detailed history, examination and investigations were recorded on predesigned case record form.

Sample size

Sample size was calculated based on the assumption that if we recruited 2 participants per week due to the prevailing COVID-19 situation, and considering the period of recruitment to be approximately 8 months, this would make our sample size as 64, considering a 20% risk of attrition. We counseled 104 patients but 50 finally completed the study. Thus, the final number of cases which were analyzed and followed in present study despite the infrastructure constraints and COVID conditions were 50 cases.

Inclusion criteria

Pregnant women reporting for antenatal care ≤ 20 weeks of pregnancy (preferably ≤ 14 weeks gestation) were included according to the pre-formed screening questionnaire (ANNEXURE II):

1. 18- 35years of age
2. Confirmed and desired pregnancy
3. Low risk at the time of recruitment*
4. Intending to deliver at the same institute of study
5. Availability and familiarity with smart phone and internet connectivity
6. Availability and familiarity with BP apparatus and weighing machine

*Low-risk was defined as a singleton pregnancy with no previous diagnosis of essential hypertension, diabetes mellitus, renal disease, collagen vascular disease, maternal substance abuse, or other previously documented condition posing a high risk of poor pregnancy outcome and not requiring any maternal or fetal intervention during pregnancy (for present study).

Exclusion criteria

The subjects who developed the following conditions in the subsequent antenatal visits upto 34 completed weeks were excluded:

1. Fetal abnormalities/Intrauterine fetal death
2. Placenta previa
3. Fetal growth restriction
4. Pregnancy-induced hypertension/pre-eclampsia
5. Gestational diabetes
6. Preterm Premature rupture of membranes

Methodology

Participants were explained in detail about the **TELE-ANC model**, schedule of visits and procedure of care at each visit for their current pregnancy. All pregnancies were followed up till delivery. Details of maternal and neonatal outcomes were recorded.

Consent for each virtual visit was either implied or explicit depending on the following situations.¹¹

- i. When the patient initiated the Telemedicine consultation, then the consent was implied.
- ii. When the provider initiated the Telemedicine consultation, an explicit consent was taken. Explicit consent was recorded in any form. Patients send an email, text or audio/video message. Patients stated his/her intent on phone/video to the doctor.

Schedule of visits: The model had 5 physical and 4 virtual visits alternatively (Figure 1 & Table 1).

- a. Physical Visit-1: <12 weeks (Booking Visit)
- b. Virtual visit-1: 16 weeks
- c. Physical visit-2: 18-20 weeks
- d. Virtual visit-2: 24 weeks
- e. Physical visit-3: 28-30 weeks
- f. Virtual visit-3: 32 weeks
- g. Physical visit-4: 34-36 weeks
- h. Virtual visit-4: 37 weeks
- i. Physical visit-5: 38-40 weeks

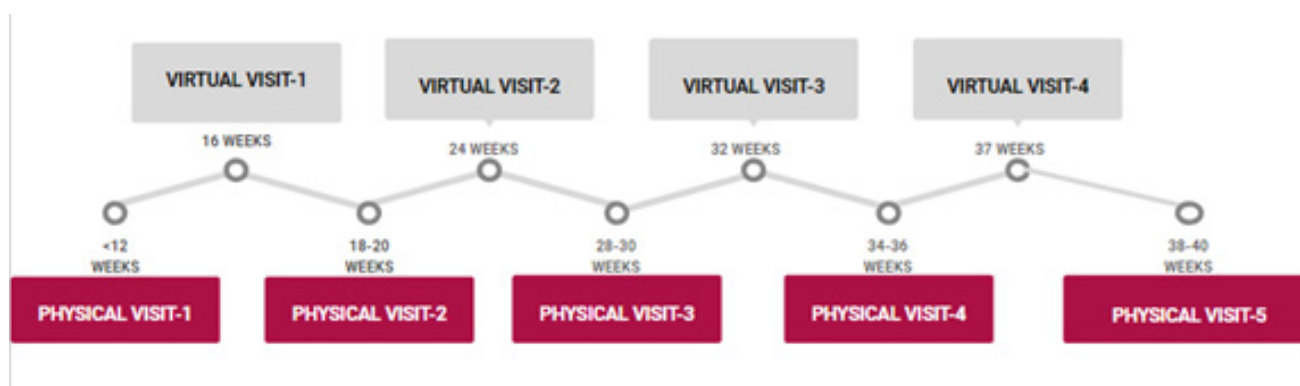


Figure 1 Timeline of The TELE-ANC model.

Table 1 The TELE-ANC model

NO. OF Visit	POG	Type of visit	Procedure of care
1.	≤12 weeks (Booking appointment)	Physical-1	<p>Detailed history</p> <p>General physical examination and systemic examination</p> <p>BP, Weight /body mass index (BMI)</p> <p>Urine dipstick - albumin/sugar</p> <p>Per-abdomen examination, per speculum (P/S) or per vaginum (P/V) if indicated</p> <p>Inv: BG, Hb, thalassemia screen, OGTT, HIV, VDRL, HbsAg, URM, UCS, S.TSH</p> <p>USG: viability and dating scan, NT/NB scan</p> <p>Counseling regarding diet, exercise and pregnancy care of the patient</p> <p>Prescription: Tab. FA, Tab. calcium</p> <p>Plan of Tele-ANC explained</p> <p>Symptoms and examination findings reviewed</p> <p>Results of all screening tests and scans, reviewed, discussed and recorded.</p> <p>Risk stratification revised</p>
2.	16 weeks	Virtual-1	<p>Weight, BP</p> <p>Patient counselled regarding diet, exercise and pregnancy care.</p> <p>Prescription: Tab. IFA, Tab. calcium</p> <p>Recipient and provider Performa filled</p> <p>Any new complaints asked, examination findings , fetal movement noted</p> <p>Weight/BP</p>
3.	18-20 weeks	Physical-2	<p>USG: 2nd trimester scan (anomaly scan, placental localization)</p> <p>1st dose TT/Td</p> <p>Patient counselled regarding diet, exercise and pregnancy care.</p> <p>Prescription: Tab. Iron-FA, Tab. calcium</p> <p>Symptoms and examination findings reviewed</p> <p>Investigations and scans reviewed</p> <p>DFMC asked</p>
4.	24 weeks	Virtual-2	<p>Weight/BP</p> <p>Patient counselled regarding diet, exercise and pregnancy care.</p> <p>Prescription: Tab. Iron FA, Tab. Calcium</p> <p>Recipient and provider Performa filled</p>

Table I Continued...

NO. OF Visit	POG	Type of visit	Procedure of care
5.	28-30 weeks	Physical-3	Any new complaints asked, examination findings, DFMC noted GPE, Weight/BP/urine albumin/OGTT symphysis–fundal height measured and plotted FHR by stethoscope/ fetal doppler 2 nd dose of Td/Tdap Anti-D in case of Rh-negative pregnancy given Patient counselled regarding diet, exercise and pregnancy care. Prescription: Tab. Iron-FA, Tab. Calcium Symptoms and examination findings reviewed Investigations and scans reviewed DFMC asked
6.	32 weeks	Virtual-3	GPE, Weight/BP Patient counselled regarding diet, exercise and pregnancy care. Prescription: T. IFA, T. calcium Recipient and provider Performa filled Any new complaints asked, examination findings, DFMC noted GPE, Weight/BP/urine albumin symphysis–fundal height measured and plotted
7.	34-36 weeks	Physical-4	FHR by stethoscope/ fetal Doppler Investigations: Hb, USG: Growth scan Patient counselled regarding labour and birth, including the plan of delivery, recognising active labour and coping with pain Prescription: Tab. Iron-FA, Tab. Calcium Symptoms and examination findings reviewed investigations and scans reviewed DFMC asked Weight/BP
8.	37 weeks	Virtual-4	Patient counselled regarding labour and birth, recognising active labour, coping with pain, contraception options (PPIUCD or PPS) Breastfeeding preparedness, care of newborn, postnatal self-care and postnatal mental health issues. Prescription: Tab. Iron-FA, Tab. calcium Recipient and provider Performa filled

Physical visit: Detailed history, general and systemic examination, routine ANC investigations and ultrasounds were carried out. Counseling and treatment were advised as per the visit plan. The physical visits and the date for investigations and ultrasound were clubbed.

Virtual visit (Figure 2): The patients were required to have a phone with well connectivity/internet services. They were required to measure blood pressure, pulse rate and weight at home to monitor vitals and had to maintain daily fetal movement counts chart (Figure 3). The pictures of prescription and any other information for each

virtual visit were sent to them on their phones and its records were also maintained by the provider. They were required to fill a satisfaction Performa after each virtual visit and at the last antenatal visit and send them virtually to the provider (Figure 4). These were available in both English and Hindi (ANNEXURE III & IV). Provider was also required to fill the satisfaction Performa after each virtual visit for every patient (ANNEXURE V).

In case of emergency, they could contact the doctor on the helpline number and if required, had to visit the emergency department.

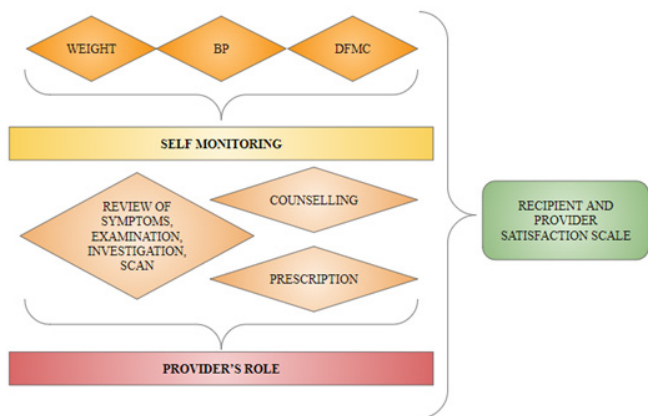


Figure 2 Recipients' and Provider's expectations at each virtual visit.

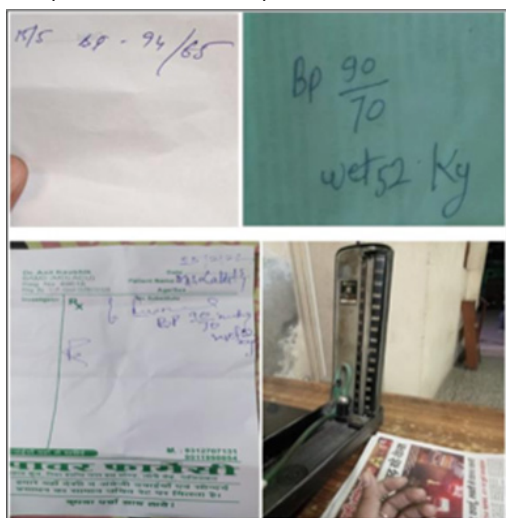
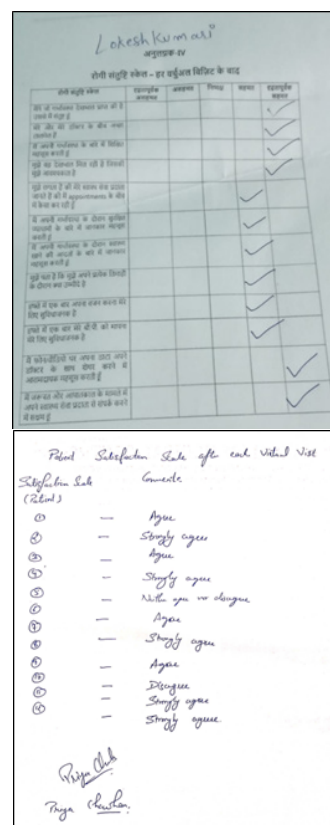


Figure 3 Measurement of blood pressure and weight through virtual visits.



ANNEXURE V
PATIENT SATISFACTION SCALE AFTER THE LAST ANC VISIT

SATISFACTION SCALE (PATIENT)	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
I was able to express myself effectively during virtual visits					✓
I am satisfied with doing virtual visits					✓
After COVID-19, I would like to continue virtual visits					✓
I had audio/visual interconnectivity during my virtual visits	✓				
This model reduced the overall cost of antenatal care					✓
This model saved my overall time in antenatal care					✓
I would like to have similar virtual visits for my further pregnancy					✓
I had an overall positive experience with virtual visits in my pregnancy					✓

Figure 4 Patient satisfaction scales as assessed through Tele-consultation.

Statistical analysis

Microsoft EXCEL spreadsheet (version 2019) and SPSS software, version 21.0 were used for data analysis. The presentation of the Categorical variables was done in the form of number and percentage (%). The quantitative data were presented as the means ± SD and as median with 25th and 75th percentiles (interquartile range). Standard satisfaction assessment scales scores for both provider and recipient were measured on the basis of Likert scale.

Observations and results

Salient observations and results are as follows:

The study population consisted of low risk pregnant women

predominantly urban, middle class, Hindu, home makers, between 20-30 years of age and educated up to secondary level. They resided within 5 kilometers from the hospital and used public mode of transport. Most of the women (88%) were recruited between 12-20 weeks of gestation and majority were primigravidae. The mean period of gestation at delivery was 39 weeks. 80% of patients delivered vaginally with/without episiotomy. Although the majority (88%) of women delivered at GTB hospital, 6 patients (12%) delivered at other hospitals as our hospital as designated as COVID only hospital during that time. Associated obstetric conditions developed towards the end of pregnancy in few patients (10) which required planned termination of pregnancy but no additional physical/virtual visits. 32% patients had mild anaemia which was treated on an outpatient basis (Figure 5).

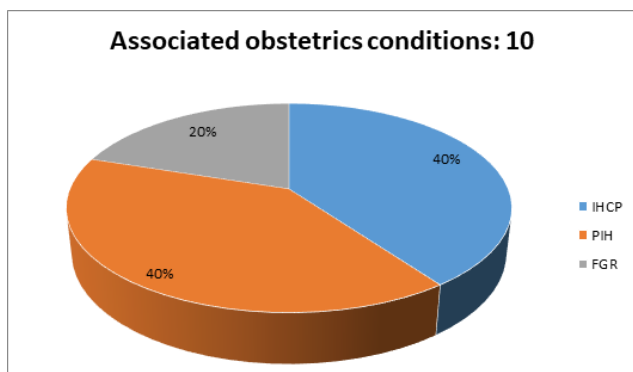


Figure 5 Associated obstetrics conditions.

No. of visits: On an average, a pregnant woman made a total number of 5 physical visits which corresponds to what was committed in our proposed TELE-ANC model. However, the number of virtual visits were also 5 on an average which is one extra than proposed 4 virtual visits in the model (Figure 6).

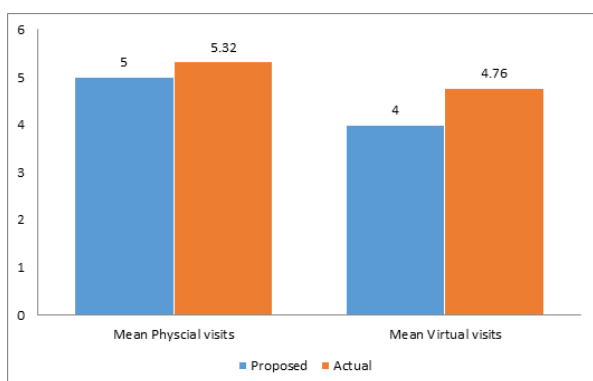


Figure 6 Mean number of physical and virtual visits (Proposed & actual).

Provider: The doctor was able to implement the services readily. The provider satisfaction measured in terms of adequacy to conduct virtual

Table 2 Provider satisfaction scale after each visit

S NO.	Question	Satisfaction score Mean±SD (out of 5)	%
1.	The telemedicine technology was adequate to conduct today's visit	4.58±0.42	91.6
2.	Clinical decision making was successfully accomplished in virtual visit.	4.13±0.313	82.6
3.	I am satisfied with today's virtual visit	4.11±0.32	82.2
4.	I had technical issues with virtual visits	2.04±0.36	40.8
5.	Virtual visits improve access to health services	4.44±0.39	88.8
6.	It is easy to do virtual visits	4.13±0.29	82.6
7.	I think the virtual visits are safe for patients	4.04±0.35	80.8
8.	I think virtual visits are a positive change for patients	4.13±0.32	82.6

Table 3 Patient satisfaction scale after each virtual visit

S NO.	Question	Satisfaction score Mean±SD (out of 5)	%
1.	I am satisfied with the antenatal care I have received	4.42±0.56	88.4
2.	I feel connected to my healthcare provider	4.44±0.64	88.8
3.	I feel knowledgeable about my pregnancy	4.21±0.53	84.2
4.	I am getting the care that I need	4.35±0.57	87.0
5.	I feel my healthcare provider knows how I am doing in between my appointments	4.12±0.58	82.4
6.	I feel knowledgeable about the safe exercises I need to do during my pregnancy	4.21±0.52	84.2
7.	I feel knowledgeable about my health and dietary habits during my pregnancy	4.29±0.60	85.8

visits, successful decision making, technical issues faced, ease and safety of process and overall improvement of access to healthcare and positive change, demonstrates high levels of satisfaction of more than 80% overall (Table 2).

Process: The duration of 1st, 2nd and 3rd virtual visits was approximately 6 minutes. Duration of the last virtual visit was maximum with an average of 7 minutes (Figure 7). There were minimal technological barriers identified which hindered the delivery of antenatal care.

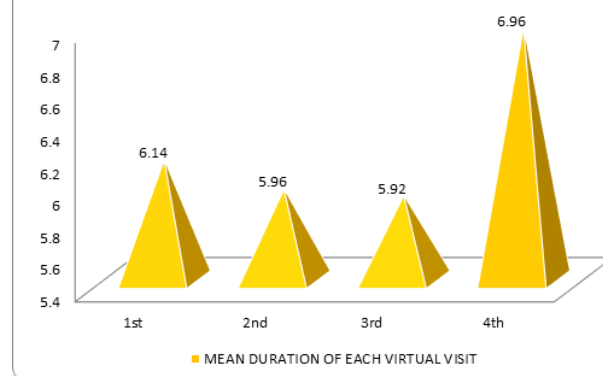


Figure 7 Mean duration of each virtual visit (min.).

Recipient: Overall, there was a high rate of patient satisfaction of 80 to 90% in the areas assessed which includes satisfaction with the care received, doctor-patient rapport, knowledge about pregnancy, convenience of self-monitoring and able to contact during emergencies, measured after each virtual visit (Table 3).

Nearing term, patients had a satisfaction of 85-90% overall in the parameters assessed as ability to express, continuation of visits post COVID, reduction in overall cost and time, desire for such a model in future pregnancies and positive change, after the last antenatal visit. 40% of patients did have minor technological glitches in the form of background disturbances, voice cuts and call drops during their virtual visits but that did not hamper their overall management of antenatal period (Table 4).

Table 3 Continued...

S NO.	Question	Satisfaction score Mean±SD (out of 5)	%
8.	I feel that I know what to expect during my each trimesters	4.26±0.59	85.2
9.	It is convenient for me to weigh myself at least once weekly	4.23±0.57	84.6
10.	It is convenient for me to measure my blood pressure at least once weekly	4.51±1.52	90.2
11.	I feel comfortable sharing my data with my healthcare provider during virtual visits	4.45±0.56	89.0
12.	I am able to contact my healthcare provider in case of need and emergency	4.32±0.57	86.4

Table 4 Patient satisfaction scale after last visit

S NO.	Question	Satisfaction score Mean±SD (out of 5)	%
1.	I was able to express myself effectively during virtual visits	4.50±0.71	90
2.	I am satisfied with doing virtual visits	4.50±0.71	90
3.	After COVID-19, I would like to continue virtual visits	4.26±0.80	85.2
4.	I had audio/video issues/call drops during my virtual visits	1.94±0.55	38.8
5.	This model reduced the overall cost of antenatal care	4.26±0.80	85.2
6.	This model saved my overall time in antenatal care	4.46±0.58	89.2
7.	I would like to have similar virtual visits for my further pregnancy	4.50±0.58	90
8.	I had an overall positive experience with virtual visits in my pregnancy	4.54±0.58	90.8

Barriers: The phone and internet connectivity were good in most of the cases (94%). Most of the patients had only one missed appointment.

Facilitators: On an average, each patient saved a total of 10 productive hours during their entire antenatal follow up. Each patient also saved approximately 700 Indian rupees during their whole ANC visits.

Robustness of process: Our current model can be noted as ‘Good’ in terms of its robustness. There were approximately 2 call drops per patient (Figure 8). 96% of the study population desired telemedicine/hybrid model as the mode of antenatal care in future too.

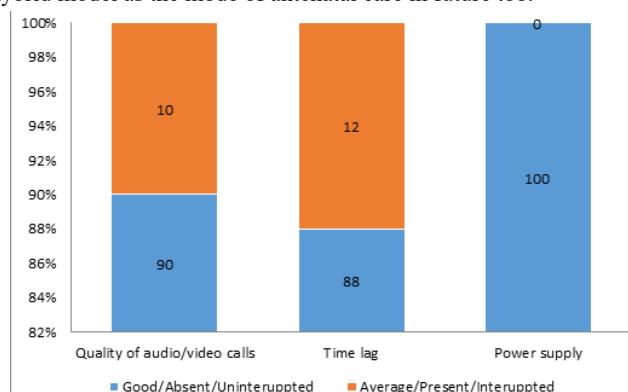


Figure 8 Robustness of the model.

Discussion

WHO recommends a minimum of eight contacts with the health care provider to reduce perinatal mortality and improve women’s overall experience of care. This increases maternal and fetal assessments to detect complications, improves communication between health providers and pregnant women, and increases the likelihood of positive pregnancy outcomes.¹² In India, only 21% of pregnant women utilized full antenatal services, ranging from 2.3–65.9% across states. Overall, 51.6% had 4 or more antenatal visits but full utilization of these services was inequitable across place of residence, caste and maternal education, despite it being free of cost in most parts of the country.¹³ Telemedicine has played a major role in health promotion especially in improving the knowledge, beliefs and attitudes of common people and can be helpful in disease prevention and health promotion in many areas.¹⁴ It has helped spreading the reach of healthcare to remote areas. The demand for telemedicine to provide antenatal care to cover the unmet need also evolved.

A comparison of patients who received <10 prenatal visits to those with >10 visits found no difference in neonatal composite outcomes, including NICU admission, low APGAR score, low umbilical pH and neonatal demise. In fact, Low-risk women with ≥10 antenatal visits had higher rates of pregnancy interventions without improvement in neonatal outcomes.¹⁵ In March 2020, The University of Michigan designed a COVID-19 prenatal care model, with incorporated reduced in-person visits and virtual visits in response to the pandemic. Their 4-1-4 model for the pandemic involved a combination of 4 office visits, 1 ultrasound and 4 virtual visits in addition to a supplemental online program with small group counselling sessions and classes by behavioral health specialists.¹⁶ They concluded that reduced visit schedules and virtual visits were rapidly integrated into real-world settings, with positive experiences for many patients and providers.¹⁷ This model is very similar to what is proposed in the present study.

In a study conducted by Jessica N. Tozour et al during the COVID pandemic, they assessed multiple providers who participated in conducting telemedicine visits and found a high levels of satisfaction in them. 83% of them agreed that telehealth was an acceptable and convenient method to provide health care and improve access to patients, very similar to the responses by the provider in the present study where 83-89% of the time the provider felt the same.¹⁸

In the New York University Langone Hospital, it was seen that obstetrical patients and providers were highly satisfied with the implementation of telemedicine during the initial wave of COVID-19 pandemic and majority preferred it for future visits. It depicted an overall high rate of patient satisfaction of 80%.¹⁸ In a cross-sectional study conducted in India by Snehal Deshmukh et al, there was an overall satisfaction of 89% with telemedicine. It concluded that, teleconsultation could effectively manage 80.95% population without urgent need for hospital visit.¹⁹

The OB-NEST model has also identified potential benefits of a hybrid mode of delivery of antenatal care. It includes the following benefits to women as well as to the practice: (1) lower cost of care, (2) increased access for higher-acuity patients, (3) decreased loss of productivity for the pregnant patient population, (4) greater connections and stronger relationships between patients and their care team, (5) increased patient satisfaction, (6) increased continuity of care, (7) facilities savings, and (8) increased provider engagement and satisfaction.⁶

Hence, telemedicine can be revolution in delivery of efficient antenatal care without compromising the overall maternal and neonatal outcomes.

Conclusion

The present study concludes that the **TELE-ANC model** is an innovative, feasible, acceptable, and effective hybrid prenatal care model with reduced-frequency of physical visits. It is feasible in delivering an efficient antenatal care with additional advantages of lower cost, greater doctor-patient rapport, increased patient's productivity, increased patient satisfaction, better continuity of care, better time management and increased provider engagement and satisfaction. The prenatal care delivered through this model maintained the standards of a routine antenatal care and did not have any adverse impact on the maternal & neonatal outcomes. It has broad implications even beyond the pandemic and can be adopted as model for routine antenatal care in post COVID era leading to a more flexible, cost effective and patient centered care.

Acknowledgments

This thesis has come to reality with the kind support and help of many individuals. I am heartily thankful to my Supervisor Dr. Kiran Guleria Director Professor, Department of obstetrics and Gynaecology, UCMS and GTB hospital, who gave me this wonderful opportunity and whose encouragement, guidance and support right from the beginning, has helped me in accomplishing this task. I would like to thank my co-supervisors; Dr. Arun Sharma, Director Professor, Department of Community Medicine, Dr. Himsweta Srivastava, Professor, Dr. Richa Aggarwal, Professor, Department of Obstetrics & Gynaecology, UCMS & GTB Hospital, Delhi for providing all assistance and guidance in our study. Any amount of gratitude shall be less for the contribution of my parents and family, for their unconditional and unlimited support and encouragement that kept me going and complete this work successfully.

Informed consent: Written informed consent was obtained from the patient(s) for their anonymized information to be published in this article (ANNEXURE I).

Ethical approval: Approval was obtained from the Institutional Ethics Committee- Human Research (IEC- HR) (Ethics approval number- IECHR/2020/PG/47/46) of University College of Medical Sciences, Delhi, India.

Authorship: RaA and KG researched literature and conceived the study. AKS was involved in protocol development, gaining ethical approval, patient recruitment and data analysis. RaA wrote the first draft of the manuscript. All authors reviewed and edited the manuscript and approved the final version of the manuscript.

Conflicts of interest

The Author(s) declare(s) that there is no conflict of interest.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

References

1. Martin JA, Hamilton BE, Osterman MJK, et al. Births: final data for 2017. *Natl Vital Stat Rep.* 2018;67(8):1–50.

2. Alexander GR, Kotelchuck M. Assessing the role and effectiveness of prenatal care: history, challenges, and directions for future research. *Public Health Rep.* 2001;116:306–316.
3. Clark E, Butler–Tobah Y, Demosthenes LD. Feasibility—and safety—of reducing the traditional 14 prenatal visits to 8 or 10. *OBG Manag.* 2019;31(7):21–24.
4. Butler Tobah Y, LeBlanc A, Branda M, et al. Randomized comparison of a reduced–visit prenatal care model enhanced with remote monitoring. *Am J Obstet Gynecol.* 2019;221(6):638.e1–638.e8.
5. Dowswell T, Carroli G, Duley L, et al. Alternative versus standard packages of antenatal care for low–risk pregnancy. *Cochrane Database Syst Rev.* 2015(7):CD000934.
6. de Mooij MJM, Hodny RL, O'Neil DA, et al. OB Nest: Reimagining low–risk prenatal care. *Mayo Clin Proc.* 2018;93(4):458–466.
7. Pflugeisen BM, McCarren C, Poore S, et al. Virtual Visits: Managing prenatal care with modern technology. *MCN Am J Matern Child Nurs.* 2016;41(1):24–30.
8. Ridgeway JL, LeBlanc A, Branda M, et al. Implementation of a new prenatal care model to reduce office visits and increase connectivity and continuity of care: protocol for a mixed–methods study. *BMC Pregnancy Childbirth.* 2015;15:323.
9. Marko KI, Krapf JM, Meltzer AC, et al. Testing the feasibility of remote patient monitoring in prenatal care using a mobile app and connected devices: a prospective observational trial. *JMIR Res Protoc.* 2016;5(4):e200.
10. Carroli G, Villar J, Piaggio G, et al. WHO Antenatal care trial research group. WHO systematic review of randomised controlled trials of routine antenatal care. *Lancet.* 2001;357(9268):1565–1570.
11. Ministry of Health & Family Welfare. Board of Governors: In supersession of the medical council of India telemedicine practice guidelines.
12. World Health Organization. WHO recommendations on antenatal care for a positive pregnancy experience.
13. Kumar G, Choudhary TS, Srivastava A, et al. Utilisation, equity and determinants of full antenatal care in India: analysis from the National Family Health Survey 4. *BMC Pregnancy Childbirth.* 2019;19(1):327.
14. Strehle EM, Shabde N. One hundred years of telemedicine: does this new technology have a place in paediatrics? *Arch Dis Childh.* 2006;91(12):956–959.
15. Carter EB, Tuuli MG, Caughey AB, et al. Number of prenatal visits and pregnancy outcomes in low–risk women. *J Perinatol.* 2016;36(3):178–81.
16. Rosenthal T. Geographic variation in health care. *Annu Rev Med.* 2012;63:493–509.
17. Peahl AF, Powell A, Berlin H, et al. Patient and provider perspectives of a new prenatal care model introduced in response to the coronavirus disease 2019 pandemic. *Am J Obstet Gynecol.* 2021;224(4):384.e1–384.e11.
18. Tozour JN, Bandremer S, Patberg E, et al. Application of telemedicine video visits in a maternal–fetal medicine practice at the epicenter of the COVID–19 pandemic. *Am J Obstet Gynecol MFM.* 2021;3(6):100469.
19. Deshmukh S, Ambad R, Gawande U, et al. Evaluation of telemedicine consultation in obstetrics and gynaecology– a cross sectional observational study. *Nat Volatiles Essent Oils.* 2021;8(5):1209–1214.