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Acceptability of telemedicine among patients undergoing prenatal and postnatal care in the setting of the COVID-19 pandemic

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Abstract:

BACKGROUND: While COVID-19 spreads rapidly around the world, innovative means to provide continuing prenatal care are being developed to monitor maternal and fetal health while minimizing disease transmission. Telemedicine is one platform by which patients are provided the necessary prenatal and postpartum care safely as the pandemic rages.

AIMS AND OBJECTIVES: To evaluate the acceptability of telemedicine in the delivery of prenatal and postnatal care in the setting of the COVID-19 pandemic.

MATERIALS AND METHODS: A cross-sectional study was conducted in a tertiary hospital in Manila. A structured Likert scale-based survey consisting of a model measuring telemedicine perception was utilized. This was a predeveloped model by Lin in 2017.[1] Descriptive statistical analysis and Chi-square tests were done to evaluate the data.

RESULTS: A total of 193 pregnant and postpartum patients participated in the study. Majority of the respondents were between 25 and 34 years old, living within Metro Manila, and normal obstetric patients who were previously seen at the outpatient department. Most of the participants considered telemedicine to be cost-effective, reliable, easy to use, and useful.

CONCLUSION: We conclude that telemedicine is an acceptable means of providing prenatal and postnatal care among pregnant patients because it allowed the necessary interaction between patient and doctor and these "users" kept on using the system. There was no association between telemedicine perceptions and patient age, place of residence, type of patient encounter, disease, and treatment. In the setting of the COVID-19 pandemic, telemedicine is an acceptable means of providing prenatal and postnatal care regardless of patient characteristics.

Keywords:

Acceptability, COVID-19 pandemic, postnatal care, prenatal care, *telemedicine*

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Introduction

COVID-19 disease was declared a pandemic by the World Health Organization last March 11, 2020[1,2] and dramatically changed how perinatal care is to be delivered. The American College of Obstetricians and Gynecologists (ACOG) has suggested the reduction of face-to-face visits and the use of telemedicine platforms to conduct additional visits to help reduce disease transmission while continuing to deliver the required prenatal care.[3]

Low-risk pregnant patients are usually recommended to receive monthly prenatal care until 28 weeks, bi-weekly until 36 weeks, and then weekly thereafter, while high-risk pregnancies have a higher number of visits for closer monitoring of the fetus and the mother.[3] Only some of

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these visits actually require face-to-face consultations, like those for ultrasound assessment, laboratory testing, and vaccinations. Moreover, many consultations are meant to provide patient education and to monitor blood pressure, maternal weight, fetal heart rate, and uterine fundal growth, all of which could be taken at home if given the supplies.[4]

Telemedicine is the delivery of health-care services by health-care professionals using information and communication technologies.[5] It encompasses different modalities, including synchronous audio-only or video which allows patient-physician discussions in real time and asynchronous where the patient can store and forward medical images to a physician in a remote location for analysis. It also allows remote monitoring wherein handheld devices are used and data are electronically transmitted to the physician.[6] According to Galle *et al*., the common uses of telemedicine in maternal health care related to the COVID-19 pandemic include: (1) providing education on birth preparedness, breastfeeding, and psychosocial counseling; (2) reducing personal visits by exchanging laboratory results and providing prescriptions by E-mail; and (3) providing guidance on seeking care in patients with early signs of labor.[7]

Based on recent evidence, telemedicine provides comparable health outcomes without compromising patient-physician relationship when compared with traditional methods of providing health-care delivery.[3] However, there are limited studies regarding its acceptability in obstetric care. This study assesses the acceptability of telemedicine in patients undergoing prenatal and postnatal care, in the setting of the COVID-19 pandemic. Acceptability is evaluated based on efficiency, financial cost, reliability, perceived ease of use, perceived usefulness, interaction, and intention to use. Furthermore, this study also attempts to discover the presence of associations between acceptability and various patient characteristics such as age, place of residence, encounter type (new patient, follow-up), disease (low risk, high risk, postpartum), and treatment (prenatal care, management of comorbidities, postnatal care).

Objectives

General objective:

1. To evaluate acceptability of telemedicine in prenatal and postnatal care in the setting of COVID-19 pandemic.

Specific objectives:

1. To summarize the following demographic factors and conditions of patients consulting for prenatal and postnatal care
   a. Age
   b. Place of residence
   c. Encounter type (New patient, follow-up)
   d. Disease (Low risk, High risk, Postpartum)
   e. Treatment characteristics.
2. To determine acceptability of telemedicine in prenatal and postnatal care and postnatal care based on:
   a. Efficiency
   b. Financial cost
   c. Reliability
   d. Perceived ease of use
   e. Perceived usefulness
   f. Interaction
   g. Intention to use.
3. To determine the association between patient characteristics and acceptability of telemedicine.

Methods

Study design

This is a cross-sectional survey conducted in a tertiary hospital in Manila from December 2020 to April 2021. The protocol was reviewed and approved by the ethics board of the institution prior to the conduct of the study.

All patients 18 years old and older who had at least one prenatal or postnatal telemedicine consultation were included in the study. An online self-administered survey form was E-mailed to each participant. The survey form included the informed consent and the questionnaire that was divided into two sections. The first section included demographic data including age, encounter type (new, follow-up from telehealth, follow-up from outpatient department [OPD]), disease (normal pregnancy, high-risk pregnancy, postpartum), and treatment characteristics (prenatal

Table 1: Characteristics of the study population

Characteristics	Summary measures (%)
Age in years	
18-24	53 (27.46)
25-34	109 (56.48)
35-44	31 (16.06)
Place of residency	
Within metro manila	133 (68.91)
Outside metro manila	60 (31.09)
Encounter type	
New patient	73 (37.82)
Follow-up from OPD	95 (49.22)
Follow-up from telehealth	25 (12.95)
Clinic classification	
Normal pregnancy	108 (55.96)
High-risk pregnancy	50 (25.91)
Postnatal	35 (18.13)
Treatment	
Prenatal care	153 (79.27)
Co-morbidity management	9 (4.66)
Postnatal care	31 (16.06)

OPD: Outpatient department

care, management of comorbidities, postnatal care). The second section included questions in the domains of efficiency, financial cost, reliability, perceived ease of use, perceived usefulness, interaction, and intention to use which are based on Lin's measurement.

The questionnaire was translated to Filipino, back translated to English, and was pilot-tested among 10 patients to check for any ambiguity or potential problems with the content of the tool and logistics of conducting the survey. Patients who were part of the pilot testing were excluded in the study sample.

The questionnaire was used to assess the acceptability of telemedicine using a Likert scale to rate responses (1: strongly disagree, 2: disagree, 3: somewhat disagree, 4: neutral, 5: somewhat agree, 6: agree, 7: strongly agree). Survey responses were anonymously collected by the principal investigator into a password-protected database.

Table 2: Distribution of responses across survey questions

Subscales	Mean (SD)	Median	Range	Disagree, *n* (%)	Neutral , *n* (%)	Agree , *n* (%)
Efficiency	5.88 (1.09)	6	1-7	8 (4.15)	11 (5.70)	174 (90.16)
1. Saves time in traveling to hospitals and waiting for registration	6.12 (1.22)	6	1-7	10 (5.18)	9 (4.66)	174 (90.16)
2. Saves time of unnecessary physical examination	5.16 (1.64)	6	1-7	32 (16.58)	22 (11.40)	139 (72.02)
3. Saves the time in traveling different departments within the hospital	6.02 (1.33)	6	1-7	13 (6.74)	9 (4.66)	171 (89.60)
4. Saves time in giving prescriptions and laboratory and imaging requests	6.02 (1.24)	6	1-7	9 (4.66)	12 (6.22)	172 (89.12)
5. Short scheduling time	6.10 (1.18)	6	1-7	8 (4.15)	7 (3.63)	178 (92.23)
Financial cost	6.04 (1.17)	6	1-7	8 (4.15)	8 (4.15)	177 (91.71)
6. Save money on transportation	6.23 (1.18)	7	1-7	7 (3.63)	10 (5.18)	176 (91.19)
7. Minimal internet cost	5.84 (1.37)	6	1-7	14 (7.25)	13 (6.74)	166 (86.01)
Reliability	5.78 (1.10)	6	1-7	5 (2.59)	16 (8.29)	172 (89.12)
8. Reliable diagnosis	5.77 (1.36)	6	1-7	13 (6.74)	18 (9.33)	162 (83.94)
9. Professional doctor	6.32 (1.03)	7	1-7	4 (2.07)	8 (4.15)	181 (93.78)
10. The doctor can learn about patients health condition even without physical examination	5.09 (1.61)	5	1-7	36 (18.65)	17 (8.81)	140 (72.54)
11. No technical problems with the online appointment system	5.94 (1.34)	6	1-7	12 (6.22)	15 (7.77)	166 (86.01)
Perceived ease of use	5.62 (1.11)	6	2-7	6 (3.11)	13 (6.74)	174 (90.16)
12. Easy access to telemedicine through online consultation and appointment system	6.02 (1.17)	6	1-7	8 (4.15)	11 (5.70)	174 (90.16)
13. Easy to understand the form and service process of telemedicine	5.92 (1.23)	6	1-7	10 (5.18)	12 (6.22)	171 (88.60)
14. Easy to use telemedicine	5.97 (1.23)	6	1-7	9 (4.66)	8 (4.15)	176 (91.19)
15. Does not require assistance of medical service providers or technicians	4.56 (2.00)	5	1-7	61 (31.61)	26 (13.47)	106 (54.92)
Perceived usefulness	5.79 (1.14)	6	1-7	8 (4.15)	15 (7.77)	170 (88.08)
16. Can solve patients problems	5.38 (1.36)	6	1-7	18 (9.33)	24 (12.44)	151 (78.24)
17. Can understand patients health conditions in time and manage their health	5.84 (1.34)	6	1-7	11 (5.70)	16 (8.29)	166 (86.01)
18. Telemedicine is useful	6.15 (1.13)	6	1-7	6 (3.11)	11 (5.70)	176 (91.19)
Interaction	5.78 (1.15)	6	1-7	10 (5.18)	13 (6.74)	170 (88.08)
19. Patients can get more attention from medical service providers	5.75 (1.38)	6	1-7	15 (7.77)	13 (6.74)	165 (85.49)
20. Patients feel comfortable communication with medical service providers	5.95 (1.22)	6	1-7	8 (4.15)	13 (6.74)	172 (89.12)
21. Communication with medical service providers is similar to face to face communication	5.53 (1.49)	6	1-7	20 (10.36)	16 (8.29)	157 (81.35)
22. Patients can get in touch with telemedicine service providers when needed	5.91 (1.20)	6	1-7	11 (5.70)	8 (4.15)	174 (90.16)
23. Reasonable communication frequency	5.75 (1.26)	6	1-7	12 (6.22)	11 (5.70)	170 (88.08)
Intention to use	5.81 (1.23)	6	1-7	12 (6.22)	10 (5.18)	171 (88.60)
24. In general, telemedicine is acceptable	5.97 (1.24)	6	1-7	8 (4.15)	12 (6.22)	173 (89.64)
25. Patients will choose telemedicine next time if needed	5.84 (1.33)	6	1-7	12 (6.22)	15 (7.77)	166 (86.01)
26. Patients will always choose telemedicine whenever they need medical services	5.53 (1.46)	6	1-7	19 (9.84)	16 (8.29)	158 (81.87)
27. Recommendable to families and friends	5.88 (1.32)	6	1-7	12 (6.22)	12 (6.22)	169 (87.56)

Setting

With the occurrence of the COVID-19 pandemic, there was a transition from face-to-face to telemedicine consultations. Prenatal and postnatal consultations by telemedicine were completed through voice call. High-risk patients consulting through telehealth required more frequent consultations. These patients were advised to obtain their own blood pressure cuffs and glucometers. All information and documents were exchanged through E-mail. Face-to-face consultations were scheduled when a physical examination, laboratory testing, or ultrasound assessment was required. All telehealth visits were conducted at the same time as face-to-face consultations would have been conducted.

Data analysis

A total of 193 patients were included in the study. Duplicate responses ($n = 5$) and refusals to participate ($n = 9$) were not included.

Descriptive statistics such as the frequency and proportion were used to describe the clinicodemographic characteristics among the patients such as age, place of residence, type of encounter, disease, treatment characteristic, and the perceptions about telemedicine. The ratings and subscale ratings of the survey respondents were presented using the mean, standard deviation, median, and range.

A series of Chi-square tests were performed to compare characteristics between the classification of their ratings on the use of telemedicine for perinatal care. Fisher's exact tests were also performed as needed in the current analysis. All statistical analyses were performed using the Stata 13 software (StataCorp. 2013. Stata Statistical Software: Release 13. College Station, TX: StataCorp LP).[8]

Results

A total of 262 questionnaires were mailed out to patients, but only 207 returned a response. Among those who responded, only 193 were included in the study while those with duplications and without a written consent were excluded.

The characteristics of the sample population are presented in Table 1. Majority of the participants were between 25 and 34 years old (56.48%), living within Metro Manila (68.91%), and were patients undergoing follow-up consultations from the OPD (49.22%). More than half of these patients were normal pregnancy (55.96%) seeking

Table 3: Distribution of subscale ratings across age categories

Subscale scores	18-24 years, *n* (%)	25-34 years, *n* (%)	35-44 years, *n* (%)	*P*
Efficiency				
Disagree	1 (1.89)	6 (5.50)	1 (3.23)	
Neutral	2 (3.77)	7 (6.42)	2 (6.45)	0.77
Agree	50 (94.34)	96 (88.07)	28 (90.32)	
Financial cost				
Disagree	1 (1.89)	5 (4.59)	2 (6.45)	
Neutral	2 (3.77)	4 (3.67)	2 (6.45)	0.79
Agree	50 (94.34)	100 (91.74)	27 (87.10)	
Reliability				
Disagree	-	4 (3.67)	1 (3.23)	
Neutral	3 (5.66)	10 (9.17)	3 (9.68)	0.60
Agree	50 (94.34)	95 (87.16)	27 (87.10)	
Perceived ease of use				
Disagree	-	4 (3.67)	2 (6.45)	
Neutral	3 (5.66)	8 (7.34)	2 (6.45)	0.53
Agree	50 (94.34)	97 (88.99)	27 (87.10)	
Perceived usefulness				
Disagree	-	7 (6.42)	1 (3.23)	
Neutral	4 (7.55)	8 (7.34)	3 (9.68)	0.41
Agree	49 (92.45)	94 (86.24)	27 (87.10)	
Interaction				
Disagree	1 (1.89)	8 (7.34)	1 (3.23)	
Neutral	6 (11.32)	5 (4.59)	2 (6.45)	0.36
Agree	46 (86.79)	96 (88.07)	28 (90.32)	
Intention to use				
Disagree	1 (1.89)	10 (9.17)	1 (3.23)	
Neutral	4 (7.55)	4 (3.67)	2 (6.45)	0.31
Agree	48 (90.57)	95 (87.16)	28 (90.32)	

routine prenatal care (79.27%). Only 25.91% (n = 50) are high risk pregnancies and 18.13% (n = 35) were postpartum.

The distribution of the subscale and question responses among the participants are presented in Table 2. Most of the subjects reported intention to use (88.60% n = 171) and perceived telemedicine as acceptable in terms of interaction (88.08%, n = 170), usefulness (88.08%, n = 170), ease of use (90.16%, n = 174), reliability (89.12%, n = 172), financial cost (91.71% n = 172), and efficiency (90.16%, n = 174). The average response is 5.88 (standard deviation [SD] = 1.09) for efficiency, 6.04 (SD = 1.17) for financial cost, 5.78 (SD = 1.10) for reliability, 5.62 (SD = 1.11) for perceived ease of use, 5.79 (SD = 1.14) for perceived usefulness, 5.78 (SD = 1.15) for interaction, and 5.81 (SD = 1.23) for intention to use. These responses were based on the scale of 1–7 where 7 was "strongly agree."

The distribution of the responses across the age categories, place of residence, type of encounter, and type of consultations is presented in Tables 3-6, respectively. There was no significant association between the patients' characteristics and their perceptions about telemedicine.

Table 4: Distribution of subscale ratings across location

Subscale scores	Within metro manila, *n* (%)	Outside metro manila, *n* (%)	*P*
Efficiency			
Disagree	5 (3.76)	3 (5)	0.89
Neutral	8 (6.02)	3 (5)	
Agree	120 (90.23)	54 (90)	
Financial cost			
Disagree	4 (3.01)	4 (6.67)	0.47
Neutral	6 (4.51)	2 (3.33)	
Agree	123 (92.48)	54 (90)	
Reliability			
Disagree	3 (2.26)	2 (3.33)	0.23
Neutral	14 (10.53)	2 (3.33)	
Agree	116 (87.22)	56 (93.33)	
Perceived ease of use			
Disagree	4 (3.01)	2 (3.33)	0.81
Neutral	10 (7.52)	3 (5)	
Agree	119 (89.47)	55 (91.67)	
Perceived usefulness			
Disagree	6 (4.51)	2 (3.33)	0.27
Neutral	12 (9.77)	2 (3.33)	
Agree	114 (85.71)	56 (93.33)	
Interaction			
Disagree	7 (5.26)	3 (5)	0.44
Neutral	11 (8.27)	2 (3.33)	
Agree	115 (86.47)	55 (91.67)	
Intention to use			
Disagree	8 (6.02)	4 (6.67)	0.09
Neutral	10 (7.52)	-	
Agree	115 (86.47)	56 (93.33)	

Discussion

Pregnant patients have been facing multiple barriers in receiving quality health care even before the COVID-19 pandemic. During this pandemic, these barriers are further worsened. Pregnant women reported a decrease in the health services they received due to the lack of outpatient services for prenatal care, the risk of getting infection, and husbands not allowing them to visit the hospital.[9] Recently, the American College of Obstetricians and Gynecologists (ACOG) encouraged the integration of telemedicine into mainstream obstetrics and gynecology and affirmed that technology-enhanced health-care opportunities can effectively supplement the current standard of care.[6] Recent studies showed that telemedicine decreased no-show rates compared with in-person visits during the COVID-19 pandemic. This may be attributed to the fear of disease transmission during in-person visits.[10,11] Conversely, a study by Galle *et al*. showed that only 23% of health professionals from low income countries use telemedicine before COVID-19 and that only 1% of physicians started using telemedicine during the pandemic.[7]

Efficiency

Most patients perceive that telemedicine is an efficient means of conducting prenatal and postnatal care. Based on their responses [Table 2], telemedicine saves time in scheduling an appointment, traveling to hospitals, waiting for registration, transferring to different departments, and in giving prescriptions, laboratory and imaging requests. These are consistent with a previous study which reported that access to health care was improved by removing traditional barriers such as employment, childcare, travel time, and clinical inefficiencies.[12]

Financial cost

Patients perceived that telemedicine has low financial cost because it eliminates the cost of transportation while having minimal cost for the use of internet [Table 2]. This is in part because of the absence of consultation fees in government health-care facilities. There is no significant difference between perception of patients who live within and outside Metro Manila. This is not the case, however, in private hospitals where the additional cost of teleconsultation is added to internet and phone costs during telemedicine.[7]

Reliability

Both normal/low-risk and high-risk pregnant patients perceived that doctors are professionals and their diagnosis is reliable even without physical

Table 5: Distribution of subscale ratings across encounter type

Subscale scores	New patient, *n* (%)	Follow-up from Telehealth, *n* (%)	Follow-up from OPD, *n* (%)	*P*
Efficiency				
Disagree	2 (2.74)	1 (4)	5 (5.26)	0.91
Neutral	5 (6.85)	1 (4)	5 (5.26)	
Agree	66 (90.41)	23 (92)	85 (89.47)	
Financial cost				
Disagree	1 (1.37)	1 (4)	6 (6.32)	0.56
Neutral	4 (5.48)	1 (4)	3 (3.16)	
Agree	68 (93.15)	23 (92)	86 (90.53)	
Reliability				
Disagree	1 (1.37)	1 (4)	3 (3.16)	0.56
Neutral	8 (10.96)	3 (12)	5 (5.26)	
Agree	64 (87.67)	21 (84)	87 (91.58)	
Perceived ease of use				
Disagree	1 (1.37)	1 (4)	4 (4.21)	0.12
Neutral	8 (10.96)	3 (12)	2 (2.11)	
Agree	64 (87.67)	21 (84)	89 (93.68)	
Perceived usefulness				
Disagree	2 (2.74)	1 (4)	5 (5.26)	0.66
Neutral	8 (10.96)	2 (8)	5 (5.26)	
Agree	63 (86.30)	22 (88)	85 (89.47)	
Interaction				
Disagree	3 (4.11)	1 (4)	6 (6.32)	0.61
Neutral	6 (8.22)	3 (12)	4 (4.21)	
Agree	64 (87.67)	21 (84)	85 (89.47)	
Intention to use				
Disagree	5 (6.85)	1 (4)	6 (6.32)	0.50
Neutral	4 (5.48)	3 (12)	3 (3.16)	
Agree	64 (87.67)	21 (84)	86 (90.53)	

OPD: Outpatient department

examination [Table 2]. In a study by Galle *et al.* (2021), health-care providers perceived that some patients had little trust in the care provided through telemedicine and were reluctant to accept it.[7] In another study by Peahl *et al.*, fewer than half of patients and providers agreed that the quality of virtual visits is the same as in-person visit, but many of them reported that virtual care was acceptable as a way to safely receive care while minimizing exposure to COVID-19. One possible barrier was the lack of home devices such as sphygmomanometers and fetal dopplers which may delay the recognition of pregnancy complications.[12]

Ease of use

Majority of the patients perceived that getting access to telemedicine is easy [Table 2]. The service process of telemedicine is easy to understand even without assistance from technicians or medical service providers. This is consistent with the study conducted by Galle *et al.*(2021), wherein patients reported ease of use with a small number of patients (7.9%) who reported technical difficulties.[7]

Usefulness

The present study shows that patients perceive telemedicine to be useful in helping health-care providers to understand and manage their health [Table 2]. According to Futterman *et al.* (2020), telemedicine is a useful tool for achieving satisfactory care by reducing exposure to COVID-19, especially for those at risk for reduced access to care.[13]

Interaction

Both new patients and patients who had previous face-to-face consultations agreed that telemedicine provides acceptable patient-physician interaction. They perceive that they can get more attention from medical service providers. Patients feel comfortable communicating, with similar communication as with face to face. They can also get in touch with service providers when needed with reasonable communication frequency.

Distrust, language problems, lack of nonverbal feedback, and bonding were reported as barriers to telemedicine.[12] According to a study by Ignatowicz e*t al.*(2019), digital modes of communication work best for patients and clinicians who have already previously established relationships.[7] In a study conducted in high-risk patients, majority reported being able to visualize their doctor just as well as in-person.[10] Previous issues of

Table 6: Distribution of subscale ratings across type of consultation

Subscale scores	Postnatal care, *n* (%)	Normal pregnancy, *n* (%)	High-risk pregnancy, *n* (%)	*P*
Efficiency				
Disagree	1 (2.86)	4 (3.70)	3 (6)	0.53
Neutral	4 (11.43)	5 (4.63)	2 (4)	
Agree	30 (85.71)	99 (91.67)	45 (90)	
Financial cost				
Disagree	2 (5.71)	3 (2.78)	3 (6)	0.48
Neutral	3 (8.57)	3 (2.78)	2 (4)	
Agree	30 (85.71)	102 (94.44)	45 (90)	
Reliability				
Disagree	2 (5.71)	2 (1.85)	1 (2)	0.58
Neutral	4 (11.43)	7 (6.48)	5 (10)	
Agree	29 (82.86)	99 (91.67)	44 (88)	
Perceived ease of use				
Disagree	2 (5.71)	2 (1.85)	2 (4)	0.81
Neutral	2 (5.71)	8 (7.41)	3 (6)	
Agree	31 (88.57)	98 (90.74)	45 (90)	
Perceived usefulness				
Disagree	2 (5.71)	3 (2.78)	3 (6)	0.77
Neutral	2 (5.71)	10 (9.26)	3 (6)	
Agree	31 (88.57)	95 (87.96)	44 (88)	
Interaction				
Disagree	2 (5.71)	4 (3.70)	4 (8)	0.72
Neutral	3 (8.57)	8 (7.41)	2 (4)	
Agree	30 (85.71)	96 (88.89)	44 (88)	
Intention to use				
Disagree	2 (5.71)	6 (5.56)	4 (8)	0.70
Neutral	3 (8.57)	6 (5.56)	1 (2)	
Agree	30 (85.71)	96 (88.89)	45 (90)	

distrust, lack of verbal feedback, and bonding[12] were not encountered during the study.

Intention to use

In a study by Peahl *et al*., less than half of patients reported willingness to continue virtual prenatal visits after the pandemic.[12] Lower satisfaction is associated with difficulty maintaining patient-provider relationships in new virtual prenatal care models.[10] On the contrary, a study by Jeganathan *et al*.(2020) showed that majority of patients reported satisfaction with telemedicine and would recommend telehealth visits to others.[10] This is consistent with the current study, wherein patients perceive that telemedicine is acceptable overall [Table 2]. Majority of the respondents will still choose telemedicine next time if needed and will even recommend it to their families and friends.

Telemedicine perceptions and association with patient characteristics

The acceptability of telemedicine is similar across age groups [Table 3]. This is probably because pregnant patients are within the age bracket who are familiar with recent communications technology. In addition, such setups allow flexibility to end users who may opt for simple voice calls. This is consistent with the assumption that older patients are averse to utilizing telemedicine since it requires E-mail, access to internet, devices, and ability to operate and troubleshoot audiovisual technicalities.[14] A study by Lam *et al*. has shown that many older patients are unready to use video visits as compared to telephone visits.[14]

In terms of location, the results of this study showed that there is no significant difference in perception on the acceptability of telemedicine between patients from within Metro Manila and those living outside Metro Manila. Telemedicine may not be as highly valued in urban settings compared with rural settings because of reduced geographic barriers.[10] However, it is also important to consider that even though access to care seems easier in the urban setting, additional personal and social factors such as obtaining daycare, finding transportation, and taking time off from work may play a role in the ability to attend visits, which supports the use of telemedicine to improve adherence.[10]

In addition, given the complexity of managing pregnant patients with comorbidities, high risk patients are expected to be reluctant to shift from face to face to telemedicine consultations. On the contrary, a study by Jeganathan (2020)

showed a broad acceptance of a telehealth model in this population.[10] This is consistent with our finding [Table 6], that telemedicine is acceptable in low-risk pregnancy, high-risk pregnancy, and in the postpartum.

Lastly, Ignatowicz *et al*.(2019) reported that digital modes of communication work best for patients and clinicians who already have previously established relationships.[7] This was not found in the present study where both new and old patients had similar acceptability scores for telemedicine. This is probably explained by the effect of fear from COVID-19 infection which has forced all patients to embrace alternative means of delivering health care to survive the pandemic.

Conclusion

During this pandemic, patients struggle between seeking proper care and avoiding exposure to COVID-19 virus. Although telemedicine cannot fully replace face-to-face consultations in building patient-physician relationships and in performing a thorough physical examination, patients overwhelmingly perceive that telemedicine is an acceptable tool in providing prenatal and postnatal care during the COVID-19 pandemic. This perception is universal and cuts across age, location, type of encounter, and type of consultation.

Limitations

The data collected are from a single tertiary hospital providing care mostly for low to middle income patients. Therefore, the results may be difficult to generalize to other hospitals with different telemedicine prenatal care approaches. In addition, the study population focused on current users of telemedicine to check acceptability but did not consider other patients who may have avoided the use of telemedicine from the start because of undetermined reasons.

Recommendations

Additional studies about the acceptability of telemedicine in the private hospital setting may be done to compare differences in perception about telemedicine as an alternative tool for providing prenatal and postnatal care. Neonatal outcomes of patients who consulted through telemedicine can also be studied in the future.

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Conflicts of interest

There are no conflicts of interest.

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