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Depression, anxiety, and stress levels in pregnant women who do not have access to regular antenatal services due to existing COVID-19 community quarantine measures and their perception on telemedicine

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Abstract:

BACKGROUND: The COVID-19 pandemic has brought about mental anguish to the general population. This pandemic has changed the way we deliver healthcare. The enhanced community quarantine measures have caused the institution to close the outpatient department, leading to apprehensions among patients. Shifting to telemedicine to reach out to the patients as an alternative to face-to-face prenatal services is the current practice.

OBJECTIVES: This study was conducted to assess the level of depression, anxiety, and stress in pregnant women enrolled under obstetric (OB) service who now have no access to regular antenatal services, as well as to determine the acceptance of telemedicine as a satisfactory alternative to regular prenatal visits.

MATERIALS AND METHODS: This is a descriptive study among patients currently enrolled under OB service in a tertiary hospital in Cebu City and Mandaue City. Respondents have been provided the social media page and given prenatal checks by phone calls from the OB resident doctors since March 2020. A data collection form was filled up online consisting of three parts: (1) the mother's sociodemographic and obstetrical information, (2) a validated tool, the depression, anxiety, and stress-21 scale to assess depression, anxiety, and stress, and (3) query on whether telemedicine has helped alleviate depression, anxiety, and stress.

RESULTS: Among the 196 patients surveyed, 21.94% were found to be moderately to severely depressed, 35.2% were moderately to severely anxious, and 8.61% were moderately to severely stressed. About 96.43% of the patients felt that telemedicine alleviated depression, anxiety, and stress during this crucial time.

CONCLUSION: The level of depression, anxiety, and stress among the patients was generally normal or low. However, 21.93%, 35.2%, and 8.61% were found to be moderately to severely depressed, anxious, and stressed, respectively. Telemedicine was found to be a satisfactory alternative to regular prenatal visits. Respondents accepted telemedicine for the following reasons: unwilling to go to the hospital for fear of contracting the virus, fear of certain lockdown measures such as no available public transportation and no crossing of borders were allowed.

Keywords:

COVID-19, depression, anxiety, and stress-21, pregnancy, telemedicine

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Introduction

Background of the study

Certain populations have been deemed at higher risk for COVID-19 infection. Evidence so far has shown that pregnant women are still no more likely to contract the infection than the general population. The Department of Health has recognized the pregnant population as a "vulnerable group." In a small proportion of women, pregnancy may alter the response of the body to severe viral infections, and as such, some pregnant women may be at a greater risk for severe illness, morbidity, or mortality compared with the general population, mandating that this population must follow strict enhanced community quarantine (ECQ) rules of staying home.[1]

During the onset of the COVID-19 pandemic, guidelines and strict sanitation protocols were issued by the Department of Health and the government. Initially, measures such as regular hand washing, wearing of face masks, social distancing, and staying home were propagated everywhere. On March 28, 2020, Executive Order 64 was passed placing Cebu on ECQ, therefore mandating a stay home order for the general population. People were told to stay at home and maintain social distancing. Cebu remained on ECQ for 2 months, and this was lifted just recently on June 1, 2020.

This pandemic along with all the disease control and preventive measures has unavoidably raised fear and panic reaction among the public. Health and medical services were concentrated on combating COVID-19, and other aspects of healthcare were temporarily disrupted. Private doctors stopped holding clinics and some hospitals closed down their outpatient services causing the general population anxiety and stress as to where they would seek medical consultation and care. Widespread outbreaks of infectious disease, such as COVID-19, are usually associated with psychological distress and symptoms of mental illness.[2]

With the advent of current technology, telemedicine has long since been studied as an effective adjunct to provide quality healthcare to the general public. Telemedicine also allows patients to optimize physical and mental capacities with the support of information technology. The use of internet-based resources provides many forms of services in a healthcare setting and improves accessibility, flexibility, efficiency, and satisfaction. With more than 2 billion monthly active users, Facebook is the most popular social network worldwide. In the Philippines, as of 2020, it has been estimated that there are 45.5 million users of this application ranging from all age groups and all walks of life.[3] Increasingly, institutions and organizations such as enterprises, governments, and hospitals have established Facebook official accounts to disseminate service information and advocate interactions with their end-users. In our institution, due to closure of the outpatient services, our antenatal monitoring has been done through the means of Facebook social media groups and through phone calls and has been the norm for the past 2 months (March–May) up to the writing of research, limiting consultations only to those high-risk mothers, and near-term pregnancies in the outpatient department (OPD).

How this pandemic and the restrictions of physical antenatal monitoring and the provision of social media information groups and telemedicine is affecting our pregnant patient's mental well-being, is under investigation.

Significance of the study

Considering the current pandemic, it is certain that certain populations, such as pregnant women, have an increased risk of developing mental stress, anxiety, and depression. To overcome the barriers to healthcare services, a "new-normal" routine for healthcare providers is currently being slowly adopted. A popular platform being used today is telemedicine. This study hopes to find evidence regarding the mental health status of pregnant women during this pandemic and to evaluate their perception on telemedicine as part of the "new-normal" in providing adequate prenatal care.

Research question

1. What is the level of depression, anxiety, and stress among pregnant women enrolled under the obstetric (OB) service in a tertiary hospital who do not have access to regular antenatal services due to the existing COVID-19 ECQ measures?
2. What is the perception of pregnant women under OB service on telemedicine as a platform for prenatal care?

Research objectives

Specific objectives

1. To determine the socioclinical profile of the surveyed patients in terms of the following variables:
   - 1.1 Proportion of pregnant women in the following age groups:
     - 1.1.1 <20 years old
     - 1.1.2 20–30 years old
     - 1.1.3 30–40 years old
     - 1.1.4 >40 years old

1.1 Proportion of pregnant women living in a COVID-19 hotspot address during the time of the interview

- 1.2 Marital status
  - 1.2.1 Married
  - 1.2.2 Single

1.2.3 Separated
1.3 Gravidity
1.3.1 Gravida 1
1.3.2 Gravida 2–3
1.3.3 Gravida 4 and above
1.4 Age of gestation in weeks
1.4.1 <14 weeks age of gestation
1.4.2 12–28 weeks age of gestation
1.4.3 >29 weeks age of gestation
1.4.4 >37 weeks age of gestation
1.5 Highest educational attainment
1.5.1 Elementary school graduate
1.5.2 High school graduate
1.5.3 College graduate
1.5.4 Postgraduate degree
1.6 Employment status
1.6.1 Employed
1.6.2 Unemployed
1.6.3 Self-employed
1.7 Comorbidities.

2. To classify the patients' level of depression, anxiety and stress using the depression, anxiety, stress scale (DASS-21) tool according to:
2.1 Normal
2.2 Mild
2.3 Moderate
2.4 Severe
2.5 Extremely severe.
3. To determine the patients' perception on telemedicine in terms of:
3.1 Preferred platforms
a. Phone call prenatal
b. Facebook page
c. Viber
d. Other social media applications
3.2 Whether or not telemedicine lessened their anxieties, stressors, and depression by a yes or no answer.
4. To determine if there is a relationship between the following patients' profile and their perception of telemedicine:
4.1 Age
4.2 Marital status
4.3 Highest educational attainment
4.4 Employment status
4.5 Comorbidities.
5. To determine the reasons why respondents agree that telemedicine instead of regular physical prenatal can lessen their depression, anxieties, and stress.

Definition of terms

1. COVID-19
   - An infectious disease caused by the most recently discovered severe acute respiratory syndrome coronavirus 2. It was first identified in China and has since spread globally, resulting in an ongoing pandemic.
2. Comorbidities
   - Comorbidities in pregnancy refer to the presence of hypertension, gestational diabetes mellitus, and other endocrinologic, cardiac, and immunologic problems that coexist with the pregnancy as recorded in the chart.
3. Hotspot address
   - An area of the city with an increasing number of COVID-19 cases at the time of the interview and is considered an official hotspot by the Department of Health.
4. Telemedicine
   - Delivery and facilitation of health and health-related services including medical care, provider and patient education, health information services, and self-care via telecommunications and digital communication technologies
   - In this paper, it also refers to the residents calling our pregnant mothers regularly by schedule through phone to ask patients about the progress of their pregnancies, to address various concerns, and to provide health teachings (specifically strict compliance to social distancing, regular hand washing, staying at home). Reassurance is constantly given to the mothers that despite closure of the OPD, they are still continuously being monitored through phone call prenatal.
5. CHH Obstetrics and Gynecology Facebook page
   - A Facebook group page started during the ECQ with the following functions:
   - Announcements are made the day prior as to who is scheduled for a phone call prenatal to remind them that they will be called for checkup on that day
   - Dissemination of important announcements with regard to changes in the system of the prenatal care due to ECQ
   - An avenue for mothers to ask questions regarding their pregnancy
   - An avenue for mothers to interact with each other and answer each other's questions
   - An avenue to provide health teachings to mothers.
6. Depression, Anxiety, Stress Scale-21
   - A validated tool consisting of 21 questions, designed to measure three self-report scales of depression, anxiety, and stress with 7 questions each
   - Respondents are made to answer questions about how they were currently feeling the past week. Scoring were as follows: 0: did not apply to me at all, 1: applied to me some of the time, 2: applied to me a good part of time, and 3: applied to me very much, or most of the time
   - The sum of the 7 questions for each scale are then added and multiplied by 2 to know their classification.

7. Depression
   - An emotional state marked by feeling worthlessness or guilt and reduced ability to enjoy life
   - Classification is done according to the DASS-21 with the following cutoffs: Normal 0–9, mild 10–13, moderate 14–20, severe 21–27, and extremely severe 28+.
8. Stress
   - A state of mental or emotional strain or tension resulting from adverse or very demanding circumstances
   - Classification is done according to the DASS-21 with the following cutoffs: Normal 0–14, mild 15–18, moderate 19–25, severe 26–33, and extremely severe 34+.
9. Anxiety
   - A feeling of worry, nervousness, or unease, typically about an imminent event or something with an uncertain outcome
   - Classification is done according to the DASS-21 with the following cutoffs: Normal 0–7, mild 8–9, moderate 10–14, severe 15–19, and extremely severe 34+.
10. Perception
    - In this paper, it means an answer of yes or no as to whether they agree that telemedicine has helped lessen their depression, anxiety, and stress in the absence of regular face-to-face prenatal visits.

Ethical considerations

This study was approved by the Institutional Review Board and the Office of the Chief Operating Officer. In course of data collection, the Data Privacy Act of 2012 was strictly followed. The respondents who scored moderate to extremely severe in terms of their depression, anxiety, and stress were informed and referred to a psychiatrist for further evaluation and counseling.

Limitations of the study

This was an online survey without any face-to-face interaction. The study is limited to the ongoing COVID-19 pandemic, and the results may vary once the pandemic is over. The respondents were limited only to mothers belonging in the OB service, and the patients with private consultants might not share the same sentiments. The different sources of depression, anxiety, and stress were not measured in the study.

Review of related literature

COVID-19 has indeed brought not only medical problems but also mental health instability to a lot of people. A PubMed search showed 77 previous studies on mental health during the COVID-19 pandemic, all of which noted that there was a high incidence of new onset of depression, stress, and anxiety among the general population. Out of the 77 studies, using the keywords COVID-19, pregnancy, and mental health, eight previous studies were found on the assessment of pregnant mother's mental health status during the COVID-19 pandemic.

Rashidi Fakari and Simbar published an open article on the different concerns of a pregnant mother during the COVID-19 pandemic. The article noted that several pregnant women articulated their apprehensions of going to their obstetrician for their prenatal visits due to concerns of the possibilities of exposure to the virus in the hospital environment or on the way to the hospital. This apprehensions led to having no proper antenatal care causing these mothers increased anxiety and even possible poor fetal and maternal outcomes. The authors believed that increasing mothers' awareness about coronavirus, its transmission and risk factors, as well as providing telecounseling for pregnancy care may help reduce their anxiety and worries.[4]

A summary of the existing literature and journals of COVID-19 and mental health was published by Rajkumar earlier this year. Twenty-eight articles were reviewed regarding COVID-19 and mental health. Evidence showed that the symptoms of anxiety, depression, and stress were common psychological reactions during the COVID-19 pandemic. The journal states that innovative methods of consultation, such as online services, may be helpful to address these mental well-being problems. The journal noted that most studies were done through online surveys, and these were able to assess the scope of mental health problems while complying with social distancing so as not to increase risk of infection. This review showed that depressive and anxiety symptoms have been reported in 16%–28% of subjects screened in different studies.[5]

Durankuş and Aksu published a study in April 2020 in Istanbul, Turkey, on the effects of the COVID-19 pandemic on anxiety and depressive symptoms in pregnant women. As with this study, an online survey was sent out and had 260 respondents. Questions were asked pertaining to the respondent's concept of COVID 19 and how it was affecting their pregnancy. The percentage of pregnant women who were at risk of developing depression during the COVID-19 pandemic was 35.4%, and the anxiety scores determined via another validated self-perceived stress scale were significantly higher. The study suggested that the pregnant women during the pandemic experienced depressive episodes and that these women exhibited higher levels of anxiety than usual.[6]

Wu *et al*.'s study on perinatal depressive and anxiety symptoms of pregnant women alongside the COVID-19 outbreak was also done. Levels of depression and anxiety were assessed at two points in time, before the

announcement of the pandemic in China and after the announcement. A total of 4124 women were included in the study. Results showed that there was a clinically significant rise in the occurrence of depressive symptoms found among pregnant women, increasing from 26% before the declaration of the pandemic to 34.2% after the declaration. A substantial rise in anxiety symptoms was also noted. Risk factors for women to experience increased levels of depression and anxiety were the following: (1) having had a less than college education, (2) single, (3) had a low annual household income, (4) worked part-time or less, (5) unemployed, (6) were an only child, (7) primiparous women, (8) younger than 35 years old, and (9) pregestational body mass index ≤18.5.[7]

A study by Jiang *et al*. in the last February 2020 done in China showed that during the height of the pandemic in China, the occurrence of stress, anxiety, and depression was high in pregnant women and that the availability of different medical content on different social media platforms was an effective way to reduce mental health disorders. An online survey was answered by about 1,800 pregnant mothers across China with questions regarding stress, anxiety, and depression during the pandemic. Questions were also asked regarding the different available social media platforms available wherein they could get information regarding Covid 19 and if the availability of these platforms had helped alleviate some of their worries. The study showed that mental healthcare is urgently needed to reassure and support pregnant women and that developing specific contents for pregnant women on how to cope in emergency and major disease outbreaks via social media platforms was an effective way to reduce mental health disorders.[8]

The DASS-21 is a 21-item questionnaire created by Lovibond and Lovibond. This was intended to measure a range of three subscales (depression, anxiety, and stress). The scale contains three subscales that cover for depression (7 items), anxiety (7 items), and stress (7 items). Each item is scored from 0 (at all) to 3 (very much). The total score of each subscale ranged 0–21, and the results may be analyzed thereafter using a table with the following DAS scores.[9] Several studies have tested its validity when used with pregnant women; Xavier *et al*.'s study showed that the Portuguese version of DASS-21 had a good dependability, concept, and concurrent validity when used with the pregnant population and that the tool may be very valuable in various settings in the perinatal period.[10]

The American College of Obstetrics and Gynecology states that it has become noticeably salient during the COVID-19 public health emergency to find alternative ways to provide patient care and that telemedicine has appeared as a method to reduce patient and physician exposure, at the same time guaranteeing delivery of needed and proper healthcare. Telemedicine has been found to not fully replace in-person encounters during prenatal care but may be considered as an adjunct to modified prenatal care schedules.[11] van den Heuvel *et al*. reviewed current literature on telemedicine last 2018; a total of 71 literature on telemedicine was reviewed, and A total of 71 literature on telemedicine were reviewed, it showed that patient and health care provider satisfaction with telemedicine intervention rates were satisfactory, with rates up to 95%. The study also showed that most health outcomes for perinatal telemedicine were generally positive.[12] A study done by DeNicola *et al*. on telemedicine showed that telemedicine interventions decreased the need for high-risk obstetric monitoring office visits while maintaining maternal and fetal outcomes.[13] Aziz *et al*. published an article regarding the use of telehealth and telemedicine for high-risk pregnancies in the United States, pointing out that telehealth for prenatal care is feasible and should be tailored to high-risk patients.[14]

In 2019, Kobayashi and Sado published a study on telemedicine in Japan wherein telephone consultation service to support prenatal and postnatal healthcare and childcare was studied. It showed that majority of its 26 respondents reported being willing to use the service again. This provided the first evidence of satisfaction with telephone or social networking consultation service by nurse specialists in Japan.[15]

Pflugeisen and Mou in 2017 experimented on patient satisfaction on the traditional method of physical prenatal care versus a virtual care wherein a patient would have prenatal via a video call; the results showed that both ways showed high acceptability; however, those who had selected the virtual care model reported pointedly higher satisfaction results.[16]

To date, there have been no other published studies done in the Philippines that evaluate stress, anxiety, and depression among pregnant women during a pandemic and no studies documenting telemedicine and its acceptability.

Research Methodology

Study designs
Descriptive study.

Study setting
A tertiary hospital in Cebu City and Mandaue City, Philippines.

Study population
All gravid mothers currently enrolled under the OB service who have access to the social media OB service page and are willing to answer the survey.

Inclusion criteria

All mothers who are enrolled under OB service prenatal care.

Exclusion criteria

Mothers who are not willing to participate in the survey.

Sample size calculation

The parameter used to calculate for the sample size was depression from a previous study by Nasirzadeh and Rasoulzadeh Tabatabayee in 2009.[17] The mean depression score of the studied patients is 15.69 with a standard deviation of 6.18. Since $\alpha = 0.05$ $(1 - 0.95)$, then $z_{\alpha/2} = 1.96$. Using a 95% confidence interval and 90% power that the estimate is within 2 points of the true mean DASS-21 depression score, the researcher needed at least a sample of 101 score readings.

Sampling design

The total population sampling was used since all the mothers under the Facebook groups were invited to participate in the survey.

Data collection

All mothers who were members of the social media OB service page during the ECQ were invited through a private message to participate in the study and answer the survey. The patients were oriented as to the objectives, significance, and procedures of the study. Link of the online survey and QR codes [Figure 1] were given, and a consent to participate had to be filled out before the survey was started. Any questions or clarifications regarding the study and the survey items were addressed immediately.

A predesigned online data form was used to collect the information from the pregnant mothers. The questionnaire was designed on a survey online site (https://www.surverymonkey.com), [Appendix A]. This consisted of three parts: (1) the mother's sociodemographic and obstetrical information; (2) DASS-21 which is a validated tool with a set of three self-report scales designed to measure the emotional states of depression, anxiety, and stress. This tool has been validated for use in several countries according to Sinclair *et al*.'s study, several Philippines researchers have used this tool as well, a validated Tagalog translation has been developed; however, as of the writing of this study, a Cebuano translation has not been made yet. The questionnaire has been validated to be of good reliability, construct, and concurrent validity when used with pregnant women as stated in previous studies. (3) The third portion of the questionnaire contained a selection box for which the respondents will choose two out of three different healthcare platforms provided (phone call/SMS, social media page, group chat) which they usually use to access antenatal healthcare services. It is then followed by a yes or no question as to whether social media and phone call prenatal instead of physical prenatal visits, were able to lessen their depression, stress, and anxiety as a pregnant mother during the pandemic.

After the results were analyzed and tabulated, those who scaled moderate to extremely severe in terms of either depression, stress, and anxiety were called through the phone and informed of their results and proper referrals were made should they wish to seek consult with a psychiatrist. With the consent of the respondents additional questions were asked as to why they were generally accepting of telemedicine and the different reasons of how they think telemedicine had helped them lessen their worries. Their answers were then tabulated based on the common theme of the answers: (1) fear of going to the hospital, due to fear of getting COVID-19, (2) no available transportation, (3) fear of being unable to cross borders, and (4) said yes to being accepting of telemedicine however would still prefer physical prenatal consults. Results were then analyzed.

Data analysis

Each survey form answered was assigned its own respondent number for identification. All forms were checked for completeness, and those lacking answers were excluded. Categorical variables (sociodemographic, obstetrical information) and the depression, anxiety, and stress levels were defined by frequency and simple percentage.

Chi-square test for independence was used to determine the association/relationship between the patients' profile and their views on telemedicine in lieu of prenatal visits. Hypotheses were tested at 0.05 level of significance. Cramer's V^2 test and Fisher's exact test (for 2×2 tables) were also computed in cases of violations in the assumptions for the Chi-square test. For Cramer's V^2 test, a value of zero indicates that there is no association. A value of 1 indicates that there is a perfect association.

Data were entered with Microsoft Excel Spreadsheet. Minitab version 19.0 for Mac Mojave OS (Minitab. Copyright © 2020, LLC, licensed under Asia-Pacific Region) was used in the statistical computations and analysis of data.

Results

A total of 196 respondents [Table 1] answered the online survey with 53.06% from the tertiary hospital in Cebu City and 46.94% from the tertiary hospital in Mandaue City.

Sixty percent of the respondents were within the ages 21–30 years followed by those aged 31–40 years old at

Table 1: Sociodemographics of the respondents

	n (%)
Hospital branch of OB service package	
Cebu city	104 (53.06)
Mandaue city	92 (46.94)
Total	196
Age (years)	
<20	2 (1.02)
21-30	118 (60.20)
1-40	72 (36.73)
>40	4 (2.04)
Total	196
Location considered COVID-19 hotspot	
Yes	35 (17.86)
No	161 (82.14)
Total	196
Marital status	
Single	85 (43.37)
Married	111 (56.63)
Total	196
Gravidity	
1	103 (52.55)
2-3	88 (44.90)
>4	5 (2.55)
Total	196
Age of gestation (weeks)	
<14	2 (1.02)
14-28	79 (40.31)
>29	67 (34.18)
>37	48 (24.49)
Total	196
Highest educational attainment	
Elementary	1 (0.51)
High school	46 (23.47)
College	142 (72.45)
Graduate/postgraduate studies	7 (3.57)
Total	196
Employment status	
Employed	124 (63.27)
Unemployed	60 (30.61)
Self-employed	11 (5.61)
Total	196
Comorbidities	
Without	153 (78.06)
With	43 (21.94)
Hypertension	2
Gestational diabetes mellitus	29
Thyroid problems	5
Asthma	4
Idiopathic thrombocytopenic purpura	1
Systemic lupus erythematosus	1
Total	196

OB= obstetrical

36.7%. Six respondents were below the age of 20 (1%) and only 4 were above 40 years old (2.04%).

At the time of the survey, 17.86% of the respondents were residing in COVID-19 hotspot areas while 82.14% were not.

The respondents were divided almost equally in terms of marital status, with 56.63% being married and 43.37% being single. None of the respondents were separated at the time of the survey.

More than half of the respondents (52.55%) were primigravid while the other 44.90% were in their 2nd and 3rd pregnancy with 1–3 children at most and only 2.55% were noted to have more than four pregnancies. A greater number of respondents were in their second trimester (40.31%), followed by those in their third trimester (34.18%). About 24.49% of the respondents were already at term and beyond. Only 1.2% of the respondents belong to the first trimester of less than 14 weeks AOG (age of gestation).

About 72.45% of mothers were college graduates and 23.47% responded to have finished high school. A few (3.57%) claimed to have finished postgraduate degrees. Majority of the respondents remained employed or self-employed during the ECQ at 63.27% and 5.61%, respectively. Patients who were unemployed were 30.61%.

For comorbidities, 21.94% responded to having one or more of the following: hypertension, gestational diabetes mellitus, thyroid problems, asthma, idiopathic thrombocytopenic purpura, and systemic lupus erythematosus, while the majority (78.06%) of the respondents had no comorbidity.

Patients' depression, anxiety, and stress level classification

After the respondents answered questions regarding their demographic data, they were made to answer the DASS-21 tool to assess for depression, anxiety, and stress.

Out of the 196 respondents [Table 2], 78.06% were not depressed, 9.18% were mildly depressed, 9.18% were moderately depressed, 1.02% were severely depressed, and 2.55% were extremely depressed.

The anxiety scale showed that majority (52.55%) had no anxiety, 12.24% were noted to be mildly anxious, 22.45% were moderately anxious, 6.12% were severely anxious, and 6.63% were classified as having extremely severe anxiety.

For the stress scale, 7.65% were noted to be mildly stressed, 4.59% were moderately stressed, 3.06% were severely stressed, and 0.51% were classified as having extremely severe stress. However, the majority at 84.18% showed no stress.

Table 2: Distribution of the respondents according to the level of depression, anxiety, and stress

Depression, anxiety, and stress	*n* (%)
Depression classification	
Normal	153 (78.06)
Mild	18 (9.18)
Moderate	18 (9.18)
Severe	2 (1.02)
Extremely severe	5 (2.55)
Total	196
Anxiety classification	
Normal	103 (52.55)
Mild	24 (12.24)
Moderate	44 (22.45)
Severe	12 (6.12)
Extremely severe	13 (6.63)
Total	196
Stress classification	
Normal	165 (84.18)
Mild	15 (7.65)
Moderate	9 (4.59)
Severe	6 (3.06)
Extremely severe	1 (0.51)
Total	196

Table 3: Top two preferred platforms/media through which patients receive information regarding their pregnancy

Media platforms	*n* (%)
Phone call prenatal	168 (85.71)
Facebook	180 (91.84)
Viber and other social media messaging applications	5 (2.55)

Table 4: Patients' views on telemedicine in lieu of prenatal visits

Believes that with telemedicine instead of physical prenatal visits, it has lessen the respondents depression, anxiety and stress as a pregnant mother during the COVID-19 pandemic	*n* (%)
Patients who answered (yes)	189 (96.43)
Patients who answered (no)	7 (3.75)
Total	196

While it is of no statistical correlation, it is good to note that there are four mothers whose scores were noted to be severe to extremely severe on the three scales of depression, anxiety, and stress; all four of them were shown to be primigravid, were 21–30 years old, and were all single.

Patients' perception on telemedicine

Phone call prenatal (85.71%) and Facebook (91.84%) were the top two choices the respondent chose in terms of preferred platforms to receive and look for information regarding their pregnancies [Table 3]. Majority of the respondents, 96.43%, answered yes to whether telemedicine had lessened their depression, anxiety, and sadness during the COVID-19 pandemic, and only 3.75% answered no [Table 4].

Correlation of profile of patients and their acceptance of telemedicine lessening their depression, anxieties, and stressors

Since the *P* values in terms of marital status (0.702) and presence of comorbidities (0.183) are greater than the significance level (0.05), the decision is failure to reject the null hypotheses. The relationship between these profile variables and the patients' agreement to telemedicine in lieu of prenatal visits is not statistically significant. Furthermore, with Cramer's V^2 values less than or equal to 0.15, profile variables such age (0.010), highest educational attainment (0.009), and employment status (0.008) are all very weakly associated with the patients' agreement to telemedicine in lieu of prenatal visits [Table 5].

Reasons as to why respondents would answer yes to telemedicine lessening their depression, anxieties, and stressors

Sixty-nine out of 196 respondents who scored moderate to extremely severe in terms of all three states, depression, stress, and anxiety, were called through the phone and further questioning was done [Table 6]. They were asked why they answered "yes" to the question if telemedicine had helped them lessen their stress, anxieties, and depression. Sixty respondents answered that they had apprehensions in going to the hospital due to fear of the possibility of contracting COVID-19 infection in the process. Moreover, 45 respondents preferred telemedicine citing no access to transportation as well as the fear of being unable to cross borders due to the community quarantine lockdown measures. Despite seeing the advantage of telemedicine, 18 respondents still verbalized that they still prefer to have personal (face-to-face) prenatal checkups with their doctors.

The four respondents who all scored severe to extremely severe on the three subscales were called and asked the same follow-up questions. All four of them reiterated that they were all afraid of coming to the OPD in fear of contracting the virus and personal reasons, and one respondent was laid off from her job. Moreover, two of them admitted that they were all financially challenged already and one was separated from her immediate family due to the lockdown measures and was currently living alone.

Discussion

People everywhere are battling the COVID-19 pandemic. The whole world is absorbed in the global outbreak, and almost every country is affected. Considering that COVID-19 remains a physical disease, several studies have already

Table 5: Profiles of respondents and association to their perception of telemedicine

Variables	*P*	Interpretation
Age	0.010[c]	Very weak association
Marital status	0.702[b]	No significant relationship
Highest educational attainment	0.009[c]	Very weak association
Employment status	0.008[c]	Very weak association
Presence of comorbidities	0.183[b]	No significant relationship

[a]Value computed using Chi-Square test for association; significant at <0.05, [b]Value computed using Fisher's exact test (2×2 variables) due to violation/s in Chi-Square test assumptions; significant at <0.05, [c]Cramer's V^2; value computed using Cramer's V^2 due to violation/s in Chi-square test assumption

Table 6: Reasons as to why respondents would answer yes to accepting telemedicine being an alternative to physical prenatal visit

Reasons as to why respondents with DAS scoring of moderate-extremely severe still answered yes to telemedicine being an alternative to physical prenatal visit	*n*
Fear of going to the hospital, due to fear of getting COVID-19	60
No transportation	45
Fear of being unable to cross borders	37
Said yes to the question however would still prefer physical prenatal consults	10

DAS=Depression, anxiety, and stress

shown that not only does this disease entity attack the body physically, but it also should be taken into consideration that it attacks the person socially and emotionally. With growing literature regarding the offset of mental health during this pandemic, this drove the researcher to immediately investigate the mental health of our pregnant mothers who are considered a vulnerable population.

Demographics of the study show that among the respondents who answered the survey, the sociodemographic profile was greatly varied.

Majority of pregnant mothers did not experience any depression, anxiety, or stress. This may be largely due to a cultural factor wherein we Filipinos have close family ties and can easily talk to one another alleviating symptoms of depression, anxiety, and stress.

Similar to Rajkumar's study done last March 2020, this study found that the respondents to be classified as mild to extremely severe for depression were at 21.94% and mild to extremely severe for stress at 15.82%. The presently observed upsurge of symptoms in pregnant women calls for special means of clinical surveillance further highlights the need for current mental health programs during this time

Mirroring Durankuş and Aksu's study on depression and anxiety in pregnant women during the COVID-19 pandemic, this study showed that 47% of the respondents scored mild to extremely severe on the anxiety scale, as with the study noting higher than usual rate for anxiety in pregnant women. Currently, there is still no known cure, correct treatment protocol, or vaccine for COVID-19; these alone may already be a source of feelings of worry, nervousness, and unease causing anxiety. The OPD as of this writing still remains closed and the OB service patients still rely on telemedicine for their prenatal care, this causing uncertainty for the patient contributing to their anxiety. These results further highlight the pressing need to provide psychosocial support and assurance to the aforementioned population during this crisis. Otherwise, adverse events may occur during pregnancy and thereby affect both mother and fetus.

Out of 196 respondents, four patients stood out dramatically due to scoring severely to extremely severe on both three scales of depression, anxiety, and stress. Although not statistically significant, it is worth mentioning that these four women were primigravids, of age 21–30 years and single. Wu *et al.*'s study mentioned profiles for pregnant women more likely to become depressed and these three profiles coincide with the study. This shows us that when assessing pregnant patients, we must be sensitive to their sociodemographic details as part of their risk for depression and to provide adequate mental health education.

Phone call prenatal and the OB service Facebook page scored highest for the top two ways mothers choose to receive information with regard to their pregnancies. Considering Facebook remains to be the most accessible social media platform in the Philippines is most likely the reason why patients have chosen this. Phone call prenatal was also chosen since it is more comforting to hear the voice of the one you are talking to. Telemedicine through the years has shown promise in providing the population with necessary health teachings, and majority of studies show patient satisfaction with telemedicine. Pflugeisen and Mou, 2016 showed that the profiles of patients who were more accepting of telemedicine were those who were multigravid and with a current partner and that primigravids preferred the traditional prenatal visits. In this study, however, there was no association with any of the patient's profiles and their acceptability of telemedicine. This may be attributed to the current pandemic state wherein the respondents answered yes to telemedicine because they had no other choice.

When asked how telemedicine had lessened the respondent's depression, anxieties, and stress, majority of answers were related to COVID-19 and its repercussions. Majority stated that they were afraid to go to the hospital for fear of contracting the virus either in the hospital or on their way to the hospital, which is understandable since some of COVID-19 cases are being admitted. Due to the general community quarantine measures, public transportation was not available, and considering that most of our service patients were middle-class earners, majority of them use public transportation to go to the hospital for prenatal visit. Although the majority of

respondents were accepting of telemedicine, some still verbalized how they would still prefer the traditional way since it would have a more personal touch to it and they are assessed fully. These findings emphasized that during a public health emergency, such as this one, dependable information provided by health professionals via social media platforms is a feasible and effective way to deliver healthcare information and services to pregnant women.

Conclusion

Depression, anxiety, and stress during pregnancy are present and are considered serious public health issues, and these are further escalated during isolation measures which occur during a pandemic.

The study had a total of 196 respondents who answered the survey during the enhanced community quarantine due to the COVID-19 pandemic. When assessed using the DAS-21 scale, the results showed the following: Majority of pregnant women showed no signs of depression, anxiety, or stress. Depression however was found to be moderate in almost 10% and severe to extremely severe in almost 3%; anxiety was moderate in 23% and severe to extremely severe in 12% of patients; stress was moderate in around 5% and severe to extremely severe in less than 3% of respondents.

With the current COVID-19 pandemic and its quarantine measures, majority of the respondents were amenable to telemedicine, lessening their depression, stress, and anxieties. The patient's age, highest educational attainment, and employment status showed weak association to a patient's perception and acceptance of telemedicine, whereas marital status and presence of comorbidities showed no significant relationship. Respondents were generally accepting of telemedicine.

Recommendations

As we move on toward a "new-normal" routine in prenatal care, change must be made to protect both the patient and the healthcare workers. Considering that majority of respondents were amenable to telemedicine, new and concise protocols should be created and standardized for use not only during community quarantine periods but also as an adjunct to routine prenatal care services.

Routine assessment of mental health during prenatal care should be practiced, especially in times of a pandemic where isolation measures can trigger depression, anxiety, and stress.

Further studies focused on mental health and pregnant women should exclude pregnant mother with existing psychological conditions.

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Conflicts of interest

There are no conflicts of interest.

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