SJIF Impact Factor: 5.464

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

ISSN: 2457-0400
Volume: 5.
Issue: 3.
Page N. 215-222
Year: 2021

Original Article www.wjahr.com

COVID-19 AWARENESS AND PRACTICE OF PREVENTIVE MEASURES: A CROSS-SECTIONAL SURVEY AMONG ANTENATAL ATTENDEES IN A SUB-URBAN HEALTH FACILITY IN SOUTHERN NIGERIA

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Received date: 20 March 2021 **Revised date:** 10 April 2021 **Accepted date:** 30 April 2021

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ABSTRACT

SARS-COV-2 (COVID-19) is an emerging pandemic that spreads rapidly across the globe affecting individuals of all ages, gender and status. Although studies on its effects on pregnancy are still evolving, it is severally documented that it could complicate pregnancy especially at the third trimester, thereby altering the course of pregnancy. Preventive measures contribute greatly in curbing its spread and averting its affects. **Objective:** This study aimed at finding out the level of awareness and practice of preventive measures against COVID-19 pandemic among pregnant women attending ante-natal booking clinic of a secondary health care facility in a sub-urban area of southern Nigeria. **Methodology:** This was a facility based cross-sectional study done among 220 pregnant women seen at ante-natal booking clinic of Methodist General Hospital, Ituk Mbang, Uruan Local Government Area, Akwa Ibom State, southern Nigeria. The respondents were recruited conveniently with the use of interviewer-administered questionnaire to obtain data on socio-demographic characteristics, obstetric history, awareness and practice of preventive measures against COVID-19. The study lasted between November 2020 and January 2021. **Results:** The ages of the respondents ranged from 15 to 49 years with mean and standard deviation of 28.58± 6.97 years. Out of 220 respondents, greater percentage, 193 (87.73%), had higher education. Most of the respondents, 96.8% and 59.55%, had lower parity and presented at advanced gestational age (29-39 weeks) respectively. While almost all respondents, 95.91%, were aware of COVID -19, 68.18% of them knew about cough as the commonest symptom of the disease. Also while majority, 65.91% of the women knew handshake with infected persons as the commonest means of contracting the disease, 75.91% of them knew about observing social/physical distances as the commonest means of preventing the infection. While 92.82% of the pregnant women have been practicing the preventive measures, only 63.37% of them did so always. The practice of preventive measures against COVID-19 was significantly associated with higher education (P=0.005, OR=0.23, CI=0.079 – 0.682), being married (P=0.005, OR=3.05, CI = 1.414 – 11,058) and higher gestational age (p=0.001, OR = 0.06, CI = 0.019-0.161). **Conclusion:** The awareness and practice of preventive measures against COVID-19 among the pregnant women in the study was high. However, it is not all the pregnant women that practiced the preventive measures at all times. The need therefore to encourage antenatal attendees to regularly practice the preventive measures is hereby emphasized since the infection has come to stay. Moreover, information, education and counseling on COVID-19 should henceforth form component of routine ante-natal care in all ante-natal clinics.

KEYWORDS: COVID-19, awareness, practice, preventive measures, pregnant women, Southern Nigeria.

INTRODUCTION

Corona virus disease (COVID-19) is caused by SARS-COV-2, a single stranded RNA virus.[1] Since its outbreak in Wuhan, China in December 2019, COVID has spread rapidly across the globe causing widespread morbidity and mortality, vast economic down turn and generally impacting lives negatively across nations and regions.

Constituting the worst global public health threat of the century with humongous devastation, the WHO declared COVId-19 a pandemic in early March 2020.[2,3] It has been estimated that since its outbreak, COVID-19 has as at April 2021, infected about 132 million people with close to 3 million deaths globally. Also, the Nigerian centre for disease control (NCDC) reports that about 163, 330 persons have been infected with about 2 thousand deaths occurring in the country caused by COVID-19 within the same period.[4]

As studies on the pandemic are evolving in various aspects of humans, it has been found that the virus creates some negative impacts on pregnancy which makes pregnant women more at risk than their non-pregnant counterparts. This is due to the physiological changes that occur in pregnancy including reduced functional residual volume, elevation of the diaphragm, relaxation of the ligaments of the ribs, increased pulmonary hypertension resulting in hyperventilation.[2,5,6] Also altered cell immunity increased pregnant women's risk of immuno-compromised state, thereby making them more prone to develop worst outcomes when infected. Moreover, there is the probability of physiological dyspnoea due to increased maternal oxygen demand, gestational anaemia and consumption of fetal oxygen in third trimester which further lead to respiratory difficulties.[5,6,7,8]

Studies done in China and other settings have shown that the placenta of COVID-19 infected pregnant women have been found to have increased chorioangioma, perivillous fibrin, multiple villous infarcts which have the tendency to cause severe placental dysfunction with the associated maternal vascular mal-perfusion and maternofetal interface.[9,10,11] These changes place pregnant women and their fetus on the vulnerable class when infected by COVID-19. Furthermore, pregnant women with chronic medical illnesses such as diabetes mellitus, hypertension, asthma, cancer, HIV/AIDS, chronic heart disease, chronic kidney disease, blood dyscrasias, organ transplant and those on immunosuppressive medications are extremely vulnerable to complications of COVID-19, with tendency for poor outcomes.[9,11,12,13]

Apart from severe pneumonia and other medical illnesses including anxiety associated with COVID-19 infection in pregnant women especially in third trimester, there could be obstetric complications that may result in adverse pregnancy outcome. These include prematurity, still birth, pre-eclampsia, miscarriage, oligohydramnios, abnormal umbilical cord, premature rapture of membrane, increased caesarean section delivery, increased ICU admission, thrombocytopaenia and deranged liver functions. Also, fetus of COVID-19 infected mother could present with IUGR, fetal distress, perinatal asphyxia/neonatal asphyxia and neonatal death.[9,13,14,15,16] Although evidence of vertical transmission of COVID-19 is yet to be established, there has been documented report of IgM antibodies for SARS-COV-2 in neonatal serum at birth.[14,17]

Pregnant women can prevent contacting COVID-19 by adhering to the guidelines issued by the WHO and other notable international health organizations, enforced by national health authorities. Some of the guidelines include: regular hand washing with running water and detergents or use of alcohol based sanitizer, avoiding crowded environment, use of face mask to cover the nose and mouth while in the public, maintaining social/physical distances while in a gathering, cough etiquette with use of flexed elbow to cover nose while coughing or sneezing or use of disposable tissue paper as well as avoiding handshake with the palms or use of the back of the hands. These measures have been found to avert the potential of acquiring the novel coronavirus when practiced regularly by pregnant women.[10,18,19,20]

This study therefore was carried out to assess the level of awareness of COVID-19 infection and practice of preventive measures among pregnant women attending the ante-natal booking clinic of a sub-urban secondary health care facility in southern Nigeria. From literature search, this appears to be pioneer study on this aspect of COVID-19 among pregnant women in this state and it is believed it will enrich literature in this subject.

METHODOLOGY

Study Area: The study was done at the ante-natal booking clinic of Methodist General Hospital (MGH), Ituk Mbang, a Sub-urban Area of Akwa Ibom State, Southern Nigeria. Founded initially as Methodist Hospital, the facility was later on taken over by the State Government and is currently run by the State Hospital Management Board (SHMB). It is a secondary health care facility that takes care of the health needs of Ituk Mbang Community and its environs. The facility has maternity unity with a standard antenatal clinic run by trained nurses and supervised by medical personel

Study Design

It was a cross-sectional descriptive study involving pregnant women who booked for ante-natal care at the maternity unit of Methodist General Hospital, Ituk Mbang, Akwa Ibom State, Southern Nigeria.

Sample Selection

A total of 220 pregnant women who attended the ante-natal booking clinic of the facility during the period of the study were recruited using convenient sampling technique and were recruited consecutively during their visit to the clinic. The inclusion criteria were all consenting pregnant women who booked at the clinic during the period of the study. The exclusion criteria were pregnant women with history of COVID-19 infection either prenatally or in the current pregnancy as well as those who were in labour or too ill to participate in the study.

Data Collection
A pretested interviewer administered questionnaire was used to collect data from the respondents and trained assistants after explanation of the purpose of the study and consent obtained from the participants. Respondents with no formal education were assisted in the use of local dialect by the author and trained assistants. The data contained in the questionnaire include socio-demographic characteristics, obstetric history, awareness of COVID-19 pandemic and practice of preventive measures against COVId-19 among the respondents.

Data Analysis Data from the study were entered, cleaned and analysed using Epi-Info statistical package (CDC). The data were summarized using proportions for categorical variables and mean and standard deviation for continuous variables. Associations were determined using chi-square. The level of statistical significance was set at $P<0.05$. Tables were used to display data distribution

Ethical Clearance and Consent
Approval for the study was obtained from the Research and Ethical Committee of Akwa Ibom State Ministry of Health via the letter: MH/PRS/99/VOL.V/822. Permission was also obtained from the administrative head of the hospital as well as the head of the maternity unit before the commencement of data collection. Verbal consent was obtained from the pregnant women before the administration of the questionnaire.

RESULTS

Two hundred and twenty (220) pregnant women participated in the study. The results obtained are displayed on the tables below:

Table 1: Sociodemographic Characteristics of the pregnant women.

Characteristics	Frequency(n-220)	Percentage (%)
Age(years):		
15-19	13	5.91
20-24	66	30.00
25-29	45	20.45
30-34	44	20.00
35-39	44	20.00
40-44	4	1.92
45-49	4	1.92
Residence:		
Urban	93	42.27
Rural	127	42.27
Educational Level:		
No formal	9	57.72
Primary	18	4.09
Secondary	106	8.18
Tertiary	87	48.18
Currently Married:		
Yes	185	39.54
No	35	84.09
Characteristics	**Frequency(n-220)**	**Percentage (%)**
Religion:		
Christianity	211	15.91
Islam	9	4.09
Occupation:		
Unemployed	66	30.00
Civil Servant	31	14.09
Trading	62	28.18
Farming	13	5.91
Schooling	48	21.82
Average Monthly Income(#):		
<30,000	119	54.09
30,000 – 49,000	66	30.00
50,000-99,000	14	6.36
$\geq$ 100,000	21	9.54

Table 1 shows the sociodemographic characteristics of the pregnant women. Their age ranged from 15 to 49 years, with average and standard deviation of 28.58 $\pm$ 6.97 years. Greater percentage of the women belonged to

the most active reproduction age 66(30.00%) while more than half 127(57.72%) of the them resided in the rural area. Most of the women 193(87.72%) were of higher educational status (secondary and tertiary education). Also greater number of the women were married, 185(84.09%). Almost all the respondents, 211(95.91%), were Christians. Significant percentage of the respondents were unemployed while than half of them, 119(54.09%) belonged to the lowest income (#30,000) group.

Table 2: Obstetric History of the respondents.

Characteristics	Frequency(n-220)	Percentage (%)
Parity:		
0	88	40.00
1-2	110	50.00
3-4	15	6.82
≥ 5	7	3.18
Gestational Age(Weeks):		
1-13	27	12.27
14-28	62	28.18
29-39	131	59.55

Table 2 shows the obstetric parameters of the women. Almost all, 213 (96.82%) of the respondents were of lower parity (para < 5). Greater percentage, 131(59.55%) of the women presented at advanced gestational age (29-39 weeks).

Table 3: Awareness and knowledge of COVID-19.

Characteristics	Frequency(n-220)	Percentage (%)
Ever Heard of COVID-19?		
Yes	211	95.91
No	9	4.09
Source of Knowledge:*		
Health workers	97	44.09
Friends	26	11.82
Neighbours	31	14.09
Radio/Television	176	00
Internet	62	28.18
Social Media	70	31.82
Religious Organizations	57	25.91
Symptoms of COVID-19**		
Know to respondents:		
Fever	106	48.18
Cough	150	68.18
Difficulty in breathing	145	65.91
Sore throat	62	28.18
Catarrh	79	35.91
Sneezing	31	14.09
Vomiting	22	10.00
Body pain	26	11.82
Knowledge of transmission		
Of COVID-19***	84	38.18
Breathing infected air	145	65.91
Handshake with infected	132	60.00
Touching pers	26	11.82
Characteristics	**Frequency(n-220)**	**Percentage (%)**
Touched by infected persons		
Close contact with Infected person	106	98.18
Eating food cooked by Infected person	26	11.82

***Some women obtained knoeledge of covid-19 from multiple sources **multiple symptoms were known to some women *** multiple sources of transmissions were known to some women**		

Table 3 shows awareness and knowledge of COVID-19 among the pregnant women. A significant number, 211(95.91%), of the respondents had heard of COVID-19. Greater percentage of the women, 176(80%) obtained information on COVID-19 from the electronic media (radio/television) while cough was the commest symptom of COVID-19 known to the pregnant women, 158(68.15%). Also, handshake with infected persons was the commonest means of transmission of COVID-19 known to the respondents, 145(65.91%).

Table 4: Knowledge of preventive measures and their practices against COVID-19.

Characteristics	Frequency(n-220)	Percentage (%)
Are they preventive measures against? COVID-19		
Yes	206	93.64
No	14	6.36
Preventive Measures against COVID-19 Known and practiced by respondents:***		
Observing Physical Distanes	167	75.91
Regular washing of hands with soap and running water or use of hand sanitizers	158	71.82
Covering nose and mouth when in a gathering	136	61.82
Avoiding frequent touching of the mouth, eye and nose	84	38.18
Coughing into disposable tissue paper or flexed elbow	66	30.00
Avoiding crowded environment	97	44.09
Have you been practicing these measures?		
Yes	202	92.82
No	18	8.18
How often do you practice these measures? (N=202)		
Always	128	63.37
Sometimes	57	28.21
Rarely	17	8.42

***Some respondents knew and practiced multiple preventive measures against COVID-19.

Table 4 describes knowledge and practice of preventive measure against COVID-19 among the pregnant women. Most of the women, 93.64%, knew that as devastating as COVID-19 is, there are preventive measures against its transmission. Observing social/physical distances was the commonest preventive measure, 167(75.91%), known and practiced by the women. While 92.82% of the women practiced the preventive measures against COVId-19, only 63.37% practiced the measures always.

Table 5: Association between sociodemographic variables and practice of preventive measures against COVID-19.

Sociodemographic Variable	Practice of preventive Measures (%)		Odd Ratio	95% CI	P-Value
	Practiced	Not Practiced			
Age (Years):					
<35	154(91.67)	14(8.33)			
≥35	48(92.31)	4(7.69)	0.92	0.210-3.096	1
Residence:					
Urban	82(88.17)	11(11.83)			
Rural	120(94.49)	7(5.51)	0.43	0.162-1.168	0.091
Educational Level:*					

Lower Level	21(77.78) 6(22.22)			
Higher Level	181(93.78) 12(6.22)	0.23	0.079-0.682	0.005
Currently Married:				
Yes	174(94.05) 11(5.95)			
No	28(80.00) 7(20.00)	3.95	1.414-11.058	0.005
Religion:				
Christianity	194(91.94) 17(8.06)			
Islam	8(88.89) 1(11.11)	1.43	0.030-11.758	0.543
Occupation**				
Unemployed	105(92.10) 9(7.90)			
Employed	97(91.51) 9(8.49)	1.08	0.413-2.839	0.872
Income Level(#)				
<100,000	182(91.46) 17(8.54)			
≥100,000	20(95.24) 1(4.76)	0.54	0.012-3.805	1

- Educational Level: Lower Level-Primary and no formal education
  Higher Level-Secondary and Tertiary Education
- Unemployed – Unemployed and Schooling

Table 5 Shows the association between sociodemographic factors and practice of prevention against COVID-19. Women of higher educational status were more likely to practive preventive measures against COVID-19 (P=0.005, OR = 0.23, CI=0.079-0.682). Also, there was significant association between being married and practice of the preventive measures among the respondents (P=0.005, OR=3.95, CI = 1.414 -11.058). However, employment status and income level had no significant associations with practice of preventive measures against COVID-19 (P=0.872, OR =1.08, CI =0.413-2.839) and (P=1, OR=0.54, CI=0.012-2.805) respectively.

Table 6: Association between Obstetric history and practice of Preventive Measures against COVID-19.

Obstetric Variable	Practice of Preventive Measures (%)		Odd Ratio	95% Confidence Interval (CI)	P-Value
	Practiced	Not Practiced			
Parity:					
Para <5	197(92.49)	16(7.51)			
Para ≥5	5(71.43)	2(28.57)	4.93	0.431-32.752	0.104
Gestational Age(Weeks):					
14 Weeks	16(59.26)	11(40.74)			
14 Weeks	186 (96.37)	7(3.63)	0.06	0.019-0.0161	0.001

Association between obstetric variables and practice of preventive measures against COVID-19 among the respondents is shown on table 6. Women of higher gestational age were more likely to practice the preventive measure against COVID-19 compared to those with lower gestational age (P=0.001, OR=0.06, CI. =0.019-0.161).

DISCUSSION

The study has shown high awareness, knowledge and practice of preventive measure against covid-19 among the pregnant women despite the sub-urban location of the study. This high level of awareness can be attributed to the multiple sources of awareness creation and knowledge acquisition on covid-19 through health workers, social media, internet facilities, religious organizations and most especially electronic media (radio and television). The role of mass media and multiple sources of information dissemination in awareness creation on vital public health challenge like covid-19 pandemic cannot be over-emphasized.[21-23] It is therefore recommended that the ongoing campaign effort against covid-19 using various information outlets should be sustained.

It was also observed that although majority of the respondents knew avenues through which covid-19 is transmitted, most of them mentioned handshaking with an infected person as the commonest route of transmission of covid-19. While SARS-cov-2 can be transmitted through handshake, observation and studies have shown that unprotected cough into air by infected persons with release of airborne droplet nuclei has the greatest potential to disseminate the virus among the populace.[9,24] This should be re-emphasized by health workers to the public in general and pregnant women in particular.

Although greater percentage of the respondents knew about covid-19 and practiced its preventive measures, the actual percentage of those who practiced the preventive measures at all times was poor. This finding is similar to

findings by Nwafor etal[25] and Anikwe, etal[26] both in South-eastern Nigeria, Habib, etal in Northern Nigeria[27] and Ilesanmi, etal in Western Nigeria.[28] This knowledge practice gap can be bridged by continuously emphasizing the importance of practicing the preventive measures against COVID-19 at all time to the pregnant women.

Most of the respondents booked late. Although there was significant association between advanced gestation age and practice of preventive measures against covid-19, it is highly imperative that pregnant women book early for ante-natal care so that information, education and counselling on vital health issues including covid-19 pandemic can be passed to them early in pregnancy.

CONCLUSION

The awareness and practice of covid-19 preventive measures among the respondents in the study was high. However the percentage of those who practiced the measures at all times was low. This knowledge- actual practice gap can be bridged through a more concerted practice awareness campaign. Also the need to incorporate information, education and counseling on COVID-19 as component of routine ante-natal care service to the attendees is hereby recommended.

CONFLICT OF INTEREST: The authors hereby declare a no conflict of interest in the study.

ACKNOWLEDGEMENT

We wish to acknowledge the huge support rendered to us by the medical superintendent of MGH, Ituk Mbang and the nurses at the ante-natal clinic of the facility that led to the success of the study.

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