

# Coronavirus disease 2019: Knowledge, attitude, and practice of pregnant women in a tertiary hospital in Abakaliki, southeast Nigeria

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## Abstract

**Objective:** To determine the knowledge, attitude, and practice of antenatal attendees towards COVID-19 in Alex Ekwueme Federal University Teaching Hospital, Abakaliki, Nigeria.

**Methods:** A cross-sectional survey was carried out among 430 consenting pregnant women attending antenatal clinics between March 1 and May 30, 2020, using pretested questionnaires.

**Results:** The mean age and mean gestational age of the respondents were 30.04 years (95% confidence interval [CI] 28.9–31.1) and 26.3 weeks (95% CI 23.3–29.3), respectively. More than four-fifths (82%) of the women believed that COVID-19 is real and their main source of information was mass media. The majority had adequate knowledge of COVID-19. More than half of the respondents said COVID-19 is a curable disease and that chloroquine can be used. The majority showed a good attitude and preventive practice of COVID-19 disease; however, one-fourth (24%) thought that infected individuals should be killed to prevent the spread of the virus.

**Conclusion:** The study population has good knowledge, attitude, and practice of COVID-19 disease. However, it is worrisome that some respondents thought that infected individuals should be killed. Proper education must be given to the populace to avert these negative attitudes while promoting a positive preventive attitude.

The study population has adequate knowledge, good attitude, and preventive practice of COVID-19; however, community education is needed to reduce anxiety among the populace.

## KEYWORDS

Abakaliki; Chloroquine; COVID-19; Knowledge; Nigeria; Pregnancy

## 1 | INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a public health problem of global concern<sup>1</sup> which is caused by a novel human coronavirus (SARS-COV-2).<sup>2,3</sup> The virus has spread around the world wreaking havoc along its path. Apart from its economic impact, it has contributed significantly to the

death of men, women, and children around the globe.<sup>1</sup> The African continent is the least affected and Nigeria has so far confirmed 12486 cases of COVID-19 with 354 deaths. The number is expected to increase<sup>1</sup> with dire consequences if proactive action is not taken by African nations.<sup>4</sup>

The cure for COVID-19 remains elusive but tremendous efforts have been made by scientists towards the development of drugs or vaccines for

its curtailment.<sup>5,6</sup> Currently, therapeutic management is mainly supportive with great emphasis being placed on the prevention of transmission of the virus.<sup>1</sup> To this end, WHO has recommended a series of preventive measures to halt the spread of the disease<sup>7</sup> and which has been adopted by the Nigerian government. The success of these measures is largely dependent on the populace having a good knowledge of them.<sup>8</sup>

Everybody is at risk of becoming infected<sup>9</sup>; however, an immunocompromised state, as seen in pregnancy with its physiological changes, could predispose a pregnant woman to increased risk of SARS-COV-2 infection<sup>9,10</sup> compared to the general population. The cytokine storm that occurs in COVID-19 infection is likely to predispose a pregnant woman with COVID-19 to increased morbidity and even mortality.<sup>9,11</sup> The cumulative effect of the disease on the woman is likely to have a detrimental effect on her and the developing fetus. It could predispose a developing fetus to intrauterine growth restriction (IUGR), preterm delivery with immediate and long-term sequelae, abortion, and stillbirth.<sup>12</sup> Even though vertical transmission is yet to be confirmed,<sup>12,13</sup> fear and anxiety associated with infection could lead to increased demand for abortion and operative deliveries.<sup>12,14</sup> With the above background, it becomes imperative that great efforts should be made to prevent pregnant women and their fetuses from the scourge of COVID-19. This can only be achieved if a woman is knowledgeable about how to prevent contracting the virus and its transmission to her family and others. This becomes very obvious in the study setting that lacks the enabling social and medical infrastructures needed to properly manage a case of COVID-19.<sup>4</sup> The aim of the present study is to determine the knowledge, attitudes, and preventive practice of pregnant women towards COVID-19 in Alex Ekwueme Teaching Hospital Abakaliki, Nigeria. The findings from the study will help to modify policies and guidelines towards the successful prevention of COVID-19 among an obstetric population in Nigeria.

## 2 | MATERIALS AND METHODS

### 2.1 | Study design

The present study is a cross-sectional study that assessed the knowledge, attitudes, and preventive practice of COVID-19 infection among antenatal attendees in Alex Ekwueme Federal University Teaching Hospital, Abakaliki, Ebonyi State.

### 2.2 | Study setting

The study was carried out in the Department of Obstetrics and Gynaecology of Alex Ekwueme Federal University Teaching Hospital, Abakaliki, Ebonyi State (AE-FUTHA) between March 1 and May 30, 2020. AE-FUTHA is the only specialist teaching hospital in the state, receiving referrals from private and mission hospitals from within the state and from neighboring states. The antenatal clinic is held daily on Mondays through Fridays, as are the booking and postnatal clinics. The clinics are run by consultant obstetricians with their teams of resident doctors and are assisted by nurses. Health talks were given that covered various topical issues including nutrition, diet, personal and environmental hygiene, signs of danger during pregnancy, the experience of

labor, care of the newborn, exclusive breastfeeding, and immunization. Other health issues, such as hypertension, diabetes mellitus, malaria, anemia, HIV/AIDS, family planning, and contemporary health issues, were also discussed. Routine services after the health talk included measuring weight and height, estimation of blood pressure, urinalysis, and estimation of hemoglobin. Folic acid, ferrous sulfate, intermittent prophylactic treatment (IPT), and multivitamin supplementation are prescribed. Antiretroviral therapy and Septrin were also given to HIV-positive pregnant women. Ethical approval for the study was obtained from the Research and Ethics Committee of the hospital.

### 2.3 | Study instrument

The study instrument was a pretested structured interviewer questionnaire which was divided into sections: socio-demographic and obstetric characteristics; knowledge; attitude; and practice of COVID-19 infection. A 4-point Likert scale (Strongly disagree, Disagree, Agree, Strongly agree) was used to assess the adequacy of attitudes among the respondents. A respondent was judged as having an adequate attitude if her response to a question was "Agree" or "Strongly agree" while those with a response of "Strongly disagree" or "Disagree" were assessed as having inadequate knowledge. Each questionnaire took 5–10 minutes to complete.

### 2.4 | Sample size

The sample size was calculated using the formula for cross-sectional study ( $N = Z^2 PQ/D^2$ ) where  $N$  is the required sample size,  $Z$  is 1.96 at 95% confidence interval (CI),  $P$  is estimated patient satisfaction from similar studies of 50% (0.5),  $D$  is the margin of error at 5% (standard deviation of 0.05), and  $Q$  is  $1 - P$ . A minimum sample size of 423 patients was obtained and, after the addition of a 10% attrition rate, was increased to 430.

### 2.5 | Study population

The study population comprised women that attended their routine visit to the antenatal clinic. The study population was recruited by using a ballot method of simple random sampling method after verbal consent was obtained. Women who consented were asked to pick a piece of a white card marked "Yes" (include) or "No" (exclude) with replacements from a black polythene bag in which an equal number of "Yes" and "No" cards were added. Women that picked a card marked "Yes" were recruited to the study population. They were interviewed by resident doctors in the Department of Obstetrics and Gynaecology who were trained to administer the questionnaire. Face masks were provided to the study population during the process of data collection and each of the researchers also wore a face mask. Translation into native languages was done in cases where the respondents had lower levels of education.

### 2.6 | Data analysis

The data obtained were analyzed using SPSS version 20 (IBM Corp., Armonk, NY, USA). The results were presented with frequency tables/

percentages and bar charts (Tables 1–3 and Fig. 1). Categorical variables were compared with odds ratios (OR) and  $\chi^2$  test. The level of significance was set at  $P < 0.05$ .

### 3 | RESULTS

A total of 450 questionnaires were distributed among antenatal attendees, of which 430 were correctly filled and used for analysis.

**TABLE 1** Sociodemographic and obstetrics variables of the respondents.<sup>a</sup>

Parameters	
Age (years)	
≤24	17 (4)
25–30	43 (10)
31–35	224 (52)
>35	142 (38)
Marital status	
Married	404 (94)
Unmarried	26 (06)
Level of education	
Primary	60 (14)
Secondary	155 (36)
Tertiary	215 (50)
Occupation	
Housewife	120 (28)
Trading	189 (44)
Civil servant	95 (22)
Public servant	26 (06)
Religion	
Christianity	396 (92)
Islam	34 (08)
Residence	
Urban	327 (76)
Rural	103 (24)
Gestational age	
First trimester	86 (20)
Second trimester	112 (26)
Third trimester	323 (54)
Number of children	
0	69 (16)
1	112 (26)
2	86 (20)
3	112 (26)
4	34 (8)
5	9 (02)
6	9 (02)

<sup>a</sup>Values are given as number (percentage).

This gave a response rate of 95.6%. The mean age and mean gestational age of the respondents were 30.0 4years (95% CI 28.9–31.1) and 26.3 weeks (95% CI 23.3–29.3), respectively.

**TABLE 2** Knowledge of COVID-19 among the respondents.<sup>a</sup>

Variables	
Is COVID-19 real?	
Yes	353 (82)
No	60 (14)
Not sure	17 (10)
Sources of information	
TV	91 (16)
Radio	62 (11)
Newspaper	37 (7)
Friends	69 (12)
Health worker	91 (16)
Social media	75 (13)
Internet	65 (12)
Churches/mosque	50 (9)
Town criers	9 (2)
Billboard	9 (2)
Aware of COVID-19 vaccine trials	
Yes	52 (12)
No	378 (88)
Agents of COVID-19	
Virus	378 (88)
Bacteria	52 (12)
Sources of infection	
Animal	138 (32)
Human	163 (38)
Air	129 (30)
Symptoms of COVID-19	
Fever	164 (43)
Diarrhea	5 (1)
Cough	164 (43)
Weakness	60 (13)
Headache	50 (10)
Nose/mouth bleeding	30 (6)
Vaginal bleeding	5 (1)
Does COVID-19 have a cure?	
Yes	225 (52)
No	205 (48)
Cure for COVID-19	
Chloroquine	245 (56)
Antibiotics	32 (7)
Drink hot water	90 (21)
Drink hot gin	23 (5)
Drink saltwater	40 (9)

<sup>a</sup>Values are given as number (percentage).

**TABLE 3** Attitude of the women towards COVID-19.<sup>a</sup>

Variables	Adequate knowledge	Inadequate knowledge	OR (95% CI)
COVID-19 affect the economy negatively	319 (74)	111 (26)	8.25 (6.08–11.20)
Report suspected cases	344 (80)	86 (20)	16.00 (11.45–22.34)
Health education is important	223 (52)	207 (48)	1.16 (0.88–1.51)
Government can prevent COVID-19	352 (82)	78 (18)	20.36 (14.39–28.81)
Afraid family member can contact COVID-19	284 (66)	146 (34)	3.78 (2.85–5.01)
Afraid to visit common places	292 (68)	138 (32)	4.47 (3.36–5.96)
Home treatment for infected persons	112 (26)	318 (72)	0.12 (0.09–0.16)
Medical staff not at risk of infection	172 (40)	258 (60)	0.44 (0.33–0.58)
Closure of public places	353 (82)	77 (18)	21.01 (14.83–29.78)

Abbreviations: CI, confidence interval; OR, odds ratio.

<sup>a</sup>Values are given as number (percentage).

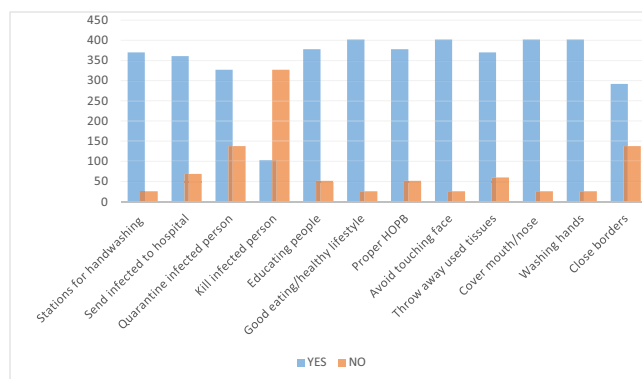
## 4 | DISCUSSION

COVID-19 infection is a public health problem and adequate knowledge among the populace is essential for its management.<sup>1,7</sup> It has been demonstrated that adequate knowledge is a prerequisite for the establishment of preventive belief, forming a positive attitude, and promoting of positive practice to disease.<sup>15,16</sup> The present study shows that the majority of respondents had adequate knowledge about COVID-19 infection. Of the respondents, 353 (82%) believed that the disease is real while more than four-fifths (88%) of respondents thought that the disease is caused by a virus. The findings of the present study support the earlier findings by Zhong et al.<sup>8</sup> (90%) and Zhou et al.<sup>17</sup> (89%) in China, and the findings of Ranjan et al.<sup>18</sup> (95%) in India. This high level of knowledge is expected, bearing in mind the economic and social impact of the COVID-19 pandemic in the study area. It is a cause of concern that 24% of the women interviewed said that COVID-19 infection is a possible scam. This negative attitude exhibited by these respondents might mitigate the efforts made by the government and the health sector to curb the spread of the disease. These women are not likely to adhere to recommendations made by the government to reduce the spread of the virus. Public sensitization and enlightenment programs can assist in

changing this disposition. The majority (n=339, 61%) of the respondent was informed by mass media. It highlighted the importance of mass media in the fight against COVID-19, especially when people are in lockdown. The present study also showed that less than 20% of the respondents got their information from healthcare workers and churches. The ban on religious activities in Nigeria and the fear among the populace that they could contract the disease by visiting a hospital because patients infected with COVID-19 are likely to be there might be the reason.

To date, supportive care is the main therapeutic approach for a patient with COVID-19 infection, although efforts are being intensified in finding a drug or a vaccine<sup>5,6</sup> as there are currently no approved drugs for the treatment of COVID-19. In the index study, over half of the population (52.0%) believes the disease is curable, with more than half (56%) of the studied population believing that chloroquine can cure the disease. Even though there are some controversies on the place of chloroquine in the management of COVID-19 infection, it has been documented by Gao et al.<sup>15</sup> that the use of chloroquine can be useful as it is superior to placebo in the management of COVID-19. A clinical trial in Beijing, China has also recommended chloroquine phosphate for the treatment of COVID-19 in the elderly but warned of the adverse effect of chloroquine in this group of patients. This expression of the women on the place of chloroquine is a cause of concern because it could cause misuse and abuse of the drug by herself, her family, and the community in general. This is especially the case in Nigeria where the majority of the population can buy drugs without a prescription from a doctor or clinical pharmacist from multiple patent/pharmacy outlets in the country. This belief that the use of chloroquine can be of help in a patient with SARS CoV-2 virus infection has led to panic buying, hoarding, and skyrocketing of the price of chloroquine in the study area. About 21% of the respondents in the index study said COVID-19 is cured by intake of hot water, while 5% attributed the cure to intake of hot gin and 9% to intake of saltwater. This erroneous belief on the treatment and cure of COVID-19 could be dangerous, especially to the pregnant population and their unborn babies.

Opinion about the source of the infection is diverse among the respondents as 32%, 38%, and 30% of the antenatal women studied believed that the sources of infection are from an animal, human, and



**FIGURE 1** Practice of COVID-19 prevention among the respondents. Abbreviation: HOPB, handling of personal belongings.

airborne, respectively. This corresponded with the general lack of proper information about the mode of transmission of the disease. COVID-19 infection has been reported to cause clusters of severe respiratory illness and common symptoms of the disease include fever, cough, body pain, headache, hemoptysis, and diarrhea.<sup>11,19</sup> When the population in the present study was asked about the symptoms of COVID-19, they showed a fair knowledge of the symptoms of the disease. The common known symptoms were fever and cough, in keeping with the commonest symptoms of the disease. Other symptoms known to the study population included weakness, diarrhea, and headache. Bleeding from the orifices was reported in less than 10% of the women as one of the symptoms of the disease. This response might be influenced by the respondent's knowledge of Lassa fever – a viral disease – which is a known cause of bleeding disorder and is endemic in the study area.<sup>20</sup> The poor awareness of the common symptoms of the disease by the respondents in the present study may affect the early diagnosis and treatment of the disease. At present, the best weapon to curtail the virus is preventive measures aimed at reducing transmission<sup>21</sup> thus emphasizing the importance of knowledge of the symptomatology of the disease. Adequate knowledge of the symptomatology will prompt early presentation at the hospital for appropriate care and will also indirectly lead to the reduction of the spread of the virus.

The attitude and practice of a person towards the disease are dependent on their knowledge of the disease. Zhong et al.<sup>8</sup> and Zhou et al.<sup>17</sup> reported the existence of a positive correlation between attitudes/practice of COVID-19 and level of knowledge among the individuals they studied in China. The majority of the women in the present study have adequate knowledge concerning the strategies outlined for the containment of the spread of the disease. It is encouraging that the respondents are likely to support government policies (OR 20.36, 95% CI 14.39–28.81) aimed at the prevention of the spread of the disease despite its possible negative effect on the economy (OR 8.25, 95% CI 6.08–11.20). They were of the opinion that restriction of movement (OR 21.0, 95% CI 14.83–29.78) is a good measure to reduce the spread of the virus. There are reduced odds among the women that a home medication would be adopted for the management of COVID-19 as the majority is likely to report to the hospital (or take a family member with clinical symptoms of COVID-19 to hospital) for expert care (OR 16.0, 95% CI 11.45–22.34). These findings are encouraging and a good behavioral disposition to the global fight for the containment of COVID-19. Pregnant women are not immune to the psychological problems of the COVID-19 pandemic as studies have shown that they are prone to heightened anxiety about the wellbeing of their relatives, children, and their unborn baby.<sup>22,23</sup> This could lead to depression and self-induced stress and may be associated with sleep disorders.<sup>23</sup> Evidence of this psychiatric manifestation is demonstrated among the women studied as a significant number of the women are afraid that their loved ones might contract the disease and are not likely to visit places such as amusement parks, recreational clubs, places of work, and markets. This is a cause for concern as sleep disorders and other stress occurring in pregnant women might lead to unfavourable pregnancy outcomes and interventions.<sup>12,19</sup> It is also

worrisome that 24% of the women think that individuals infected with COVID-19 should be killed. This might be attributed to fears about the disease and calls for proper dissemination of information. Support for some of the findings in the present study is seen in the work of Zhou et al.,<sup>17</sup> although among a different study population, where the majority of their study population (85%) was afraid of becoming infected at their places work. They also discovered that the greater the knowledge of COVID-19, the more confident the respondents were in defeating the virus.<sup>17</sup>

WHO has recommended a series of preventive measures to halt the spread of the disease<sup>7</sup>; these measures have been adopted by the Nigerian government as part of an armamentarium to its determination to reduce the burden of COVID-19 in Nigeria. It is important that the populace adheres to these measures. The present study population showed a satisfactory knowledge of the prevention of COVID-19, which is supported by earlier findings from the study area.<sup>24</sup> The majority are aware that the practice of handwashing, wearing a mask, sneezing into the elbow, avoiding touching the face, health education, closure of public places, quarantine, and hospitalization of an infected person are good measures and were seen as a good practice towards the prevention of COVID-19 infection. It is hoped that this satisfactory knowledge will promote the day-to-day practice of COVID-19 prevention. In a related study, a significant number of healthcare workers surveyed had a good preventive practice of COVID-19.<sup>8,25</sup> This high level of practice is expected from healthcare workers, probably because of the nature of their training and experience in their workplace. This good practice seen in healthcare workers is not in tandem with the poor practice seen among pregnant women in Nigeria,<sup>24</sup> even though expressing good knowledge of the measures is needed to contain person-to-person transmission of the virus. Apart from the above reasons, other contributing factors to confounding variables might be availability and/or cost of materials such as masks, illiteracy, and poverty.

The present study is limited by its cross-sectional nature and by being a hospital-based study since only those women that came for antenatal care in the designated facility were interviewed. The findings could not be generalized to the obstetric population in the study area. However, the study highlights that the women, and, by extension, the populace of Abakaliki, are adapting to the measures introduced by the government to curtail the spread of the virus. The social desirability barrier might have influenced the responses of the respondents. However, an effort was made to reduce it by proper counseling and informing the respondents not to write their names on the questionnaire.

In conclusion, the present study has shown a good knowledge of COVID-19 among the cohort of women interviewed. It is hoped that this good knowledge will improve the overall practice of preventive measures aimed at reducing the burden of the disease in Nigeria. Moreover, to reduce the risk of infection in a population of antenatal attendees, it is recommended that further education should be implemented to convey the importance of observing the recommended practice towards reducing contraction and transmission of COVID-19.

## AUTHOR CONTRIBUTIONS

CCA: participated in the study design, data collection/analysis, and interpretation of findings and drafting of the manuscript. COO: participated in study design, interpretation of findings, and drafting of the manuscript. CCI: participated in the data analysis and the interpretation of findings. BCO: participated in the interpretation of findings and drafting of the manuscript. All authors participated in the review of the final manuscript. All authors approved the manuscript.

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## CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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