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Obstetrics

Pregnant women's knowledge and practice of preventive measures against COVID-19 in a low-resource African setting

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Since the emergence of coronavirus disease 2019 (COVID-19) in Wuhan, China in December 2019, the virus that causes it (SARS-Cov-2) has spread to over 110 countries, including Nigeria.[1–3] Although the impact of COVID-19 on pregnant women is not yet clear, there are concerns over its potential effect on maternal and perinatal outcomes due to unique immunological suppression during pregnancy.[4,5]

The World Health Organization (WHO) has recommended a series of preventive measures to halt the spread of the disease and its associated mortality.[3] In Nigeria, these preventive measures have been adopted, along with media campaigns to disseminate information on the measures to the general public. However, the level of knowledge and practice of these preventive measures against the spread of the virus among pregnant women, who constitute a vulnerable group, is yet to be evaluated.

Between February 1 and March 31, 2020, we conducted a cross-sectional study to determine the knowledge and practice of preventive measures to protect against the virus causing COVID-19 among pregnant women attending prenatal care at Alex Ekwueme Federal University Teaching Hospital, Abakaliki, Ebonyi State, Nigeria. The study received ethical approval from the Research and Ethics Committee of the Alex Ekwueme Federal University Teaching Hospital, Abakaliki, and participants provided written informed consent.

A pretested and validated self-administered questionnaire derived from the review of literature on WHO recommendations on preventive measures against COVID-19 was used to collect the data.[6] The variables assessed were age, parity, marital status, area of residence, occupation, participant's level of education, husband's level of education, and knowledge and practice of preventive measures. The measures assessed by the study questions were: (1) frequent hand washing with soap and water or using alcohol-based hand sanitizers; (2) maintaining at least 1 m distance from others; (3) avoiding touching eyes, nose, and mouth with hands; (4) covering mouth and nose when coughing or sneezing; (5) wearing a face mask in public; and (6) staying indoors.

The questionnaire had a 12-item scale (six items for knowledge and six items for practice). The scoring system was 2 (for a correct answer) or 0 (for an incorrect answer). The minimum score was 0 whereas the maximum score was 12 for both the knowledge and practice components. Participants who scored 60% or more (score of 8–12) were classified as having adequate knowledge, whereas those who scored less than 60% (score up to 6) were classified as having inadequate knowledge. Women who scored 100% (score of 12) were classified as having good practice whereas those who scored less than 100% (score below 12) were classified as having poor practice.

TABLE 1 Predictors of knowledge and practice of preventive measures to protect against COVID-19 among study participants

Variable	Knowledge				Practice			
	Adequate (n=173)	Inadequate (n=111)	AOR (95% CI)[a]	*P* value	Good (n=86)	Poor (n=198)	AOR (95% CI)[a]	*P* value
Age, y								
<30	76	70	1.00		43	83	1.00	
31–40	54	31			27	94	2.04 (1.26–5.37)	0.022[b]
>40	43	10	0.19 (0.23–0.65	<0.001[b]	16	21		
Parity								
0	32	24	1.00		29	27	1.00	
1	49	10	0.89 (0.22–3.45)	0.491	21	38		
2–4	41	71	1.01 (0.40–5.88)	0.425	19	93	4.01 (0.55–6.88)	0.601
≥5	51	6	0.24 (0.21–0.87)	0.002[b]	17	40	3.11 (1.32–6.56)	0.021[b]
Marital status								
Single	12	17	1.00		13	16	1.00	
Married	140	84			56	168	2.99 (1.40–6.33)	0.035[b]
Divorced	6	6	0.76 (0.56–1.72)	0.151	5	7		
Widowed	15	4	0.39 (0.63–1.85)	0.413	12	7		
Educational attainment								
No formal education	4	25	6.30 (2.55–6.91)	0.004[b]	5	24	6.73 (2.66–18.34)	0.002[b]
Primary	32	35			13	54	5.95 (3.02–14.39)	<0.001[b]
Secondary	57	50			19	88	3.68 (0.87–6.44)	0.051
Tertiary	80	1	1.00		49	32	1.00	
Area of residence								
Urban	141	32	1.00		61	112	1.00	
Rural	32	79	9.11 (5.67–0.01)	<0.001[b]	25	86	2.08 (1.32–4.05)	0.031[b]
Occupation								
Farming	49	50			15	84	10.05 (3.89–28.03)	<0.001[b]
Artisan	27	7	2.82 (0.02–0.77)	0.021[b]	11	23	2.99 (1.30–10.93)	0.030[b]
Trading	36	34			17	53	5.87 (2.32–12.64)	0.002[b]
Civil servant	51	5	1.33 (1.11–5.40)	0.231	27	29		
Unemployed	10	15	1.00		16	9	1.00	
Husband's educational level								
No formal education	5	11	1.11 (1.69–18.20)	0.055	6	10		
Primary	43	57	1.95 (0.46–3.82)	0.063	20	80	1.89 (0.37–2.55)	0.059
Secondary	77	22			16	83		
Tertiary	48	21	1.00		44	25	1.00	

[a]Variables that showed significant associations on bivariate analysis were used in multivariate logistic regression to identify the independent predictors. Results are expressed as adjusted odd ratio (AOR), 1.00=Reference category.
[b]Statistically significant on multivariate analysis.

Statistical analysis was performed using SPSS version 22 (IBM Corp, Armonk, NY, USA). Odds ratios (ORs) with 95% confidence intervals (CIs) were calculated for variables of interest. *P*<0.05 was considered statistically significant.

Of 284 pregnant participants, 173 (60.9%) had adequate knowledge of preventive measures. However, overall practice of these measures among participants was poor, as 198 (69.7%) were not practicing the measures (Table 1).

Factors associated with inadequate knowledge of preventive measures were age older than 40 years (AOR 0.19; 95% CI, 0.23–0.65, *P*<0.001); parity of 5 or more (AOR 0.24; 95% CI, 0.21–0.87, *P*=0.002); no formal education (AOR 6.30; 95% CI, 2.55–6.91, *P*=0.004); rural residence (AOR 9.11; 95% CI, 5.67–20.01, *P*<0.001); and being an artisan (AOR 2.82; 95% CI, 0.02–0.77, *P*=0.021).

The determinants of poor practice among participants were age 31–40 years (AOR 2.04; 95% CI, 1.26–5.37, *P*=0.022); being married

(AOR 2.99; 95% CI, 1.40–6.33, *P*=0.035); parity of 5 or more (AOR 3.1; 95% CI, 1.32–6.56, *P*=0.021); residing in a rural area (AOR 2.08; 95% CI, 1.32–4.05, *P*=0.031); and having no formal education (AOR 6.73; 95% CI, 2.66–18.34, *P*=0.002) (Table 1).

Level of knowledge of preventive measures among the participants was high. This is likely because since the onset of the first confirmed case of the disease, the Nigerian government has embarked on an aggressive media campaign to educate the populace on preventive measures to curtail person-to-person transmission of the virus.

Although most of the study participants had adequate knowledge of the preventive measures, the level of practice of these measures remained poor. This could be attributed to sociodemographic characteristics of the population in sub-Saharan African countries like Nigeria. High parity, rural residence, low educational attainment, and occupations requiring physical contacts were the factors associated with poor practice of preventive measures. These factors increase pregnant women's risk of exposure and contracting the virus as it continues to spread in Nigeria.

Nigeria's maternal mortality ratio is over 800 maternal deaths per 100 000 live births and most of these deaths are preventable.[7] Therefore, poor practices of preventive measures among pregnant women would put these women at high risk of infection, which could worsen Nigeria's maternal morbidity and mortality profile during the pandemic owing to the poor healthcare system. Hence, pregnant women require special attention in relation to prevention, diagnosis, and management.

There is a need to institute measures to improve practice of these preventive measures among pregnant women. One of the ways to achieve this is that the current media campaign should be extended to rural areas where access to electronic media is limited. In addition, provision of economic palliative support to families who depend on daily income for survival would likely encourage women, who in some cases are the breadwinners in many households, to practice these preventive measures to halt the spread of the virus in Nigeria.

AUTHOR CONTRIBUTIONS

JN contributed to the study design, collection, analysis and interpretation of data, and manuscript writing. JA and BA contributed to the interpretation of data and manuscript revision. AO and IO-A contributed to analysis and interpretation of the data, and manuscript revision. All authors approved publication of this article.

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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