Perceived Experience and Management of Covid-19 in Southeastern Nigeria

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Abstract

SARS-CoV-2 causes the COVID-19 pandemic. Misconceptions and perceived experience with the onset of the COVID-19 infection are attributed to variations in symptom progression and a lack of timely diagnosis. This study aimed to identify the population of people in South-Eastern Nigeria who had perceived experience with and management of COVID-19. This population-based cross-sectional study of adult patients in South-Eastern Nigeria. Data from questionnaires were collected and statistically analyzed. Four hundred twenty responses were obtained, with 200(47.6%) respondents reporting perceived COVID-19 experience and 220(52.4%) reporting positive COVID-19 test results. The mean age of respondents with perceived experience was 37.61±12.27, while respondents with positive COVID-19 tests had a lower value (40.59±13.42). In comparison, 75.5% of respondents with perceived COVID-19 experience manifested unusual symptoms sequence, whereas this phenomenon was observed in 51.8% of positive COVID-19 patients. The most commonly reported symptoms are fever or chill (100% vs. 100%), cough (86% vs. 82%), and breathing difficulty (86% vs. 82%). Respondents with perceived COVID-19 experience primarily obtain their medication from a drug store (34.0%), whereas positive COVID-19 test respondents primarily obtain their medication from a hospital (64.1%). The study concluded that a lack of testing facilities could increase perceived experience with COVID-19, resulting in fewer people being tested for COVID-19. As a result, it is suggested that government agencies develop strategies to reduce the COVID-19 surge and improve testing facilities in southeastern Nigeria.

Introduction

In December 2019, an outbreak of the novel Coronavirus Disease 2019 (COVID-19), caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), was initially detected in Wuhan, China, which was then declared as the pandemic by the World Health Organization [1]. The virus has spread over many countries and territories leading to a significant impact as presented with a dramatic loss of human life, unprecedented challenge to public health, food systems supply problem, and the its socioeconomic consequences [2]. A person can be infected when virus-containing aerosols or droplets are inhaled directly or come into contact with the eyes, nose, skin, or mouth. The virus can also easily spread in poorly ventilated and/or crowded indoor settings [3].

The most common symptoms of COVID-19 include fever, fatigue, anorexia, cough, loss of taste, smell, and shortness of breath - but atypical manifestations of this virus continue to be reported and described [4]. Most people (81%) developed mild to moderate symptoms. In comparison, 14% develop severe symptoms (dyspnea, hypoxia, or more than 50% lung involvement on imaging), and 5% suffer critical symptoms (respiratory failure, shock, or multi-organ dysfunction) [5]. Moreover, at least a third of those infected with the virus remain asymptomatic and do not develop noticeable symptoms at any point in time, but they still can spread the disease [6].

Efforts have been put in place by the government and health policy makers to curb the spread of the virus by making policies and laws such as enacting of laws guiding the use of face masks, making policies as regards to precautionary measures such as observation of physical distancing, washing of hand, and use of hand sanitizers [3]. The procurement of COVID-19 vaccine by the government to vaccinate the public against the infection, yet this virus keeps ravaging and spreading throughout the world at large. While efforts have been placed on vaccinating the population, less attention has been paid as regards to the provision of testing facilities to diagnose the public on COVID-19 [1]. This has led to under-reporting of COVID-19 cases in the country and thus little or no interest in case finding and surveillance. Many who may have developed the signs and symptoms of COVID-19, manage the situation in an improper way [2].

Globally, COVID-19 continues to cause problems with scarcity of COVID-19 testing facilities is a major challenge in a bid to stop the spread of COVID-19 pandemic among the population especially in a developing country. [7] This has led to the less number of the population being tested of COVID-19, leaving the majority of the population untested of COVID-19, among the population that are untested are many who are positive of COVID-19. This is not encouraging considering the magnitude of the pandemic as it facilitates the spread of the virus among the population through symptomatic and asymptomatic transmission [8]. There is a possibility that many have been perceived to have COVID-19 through the manifestation of signs and symptoms of the diseases but due to lack of confirmatory tests many seek to take various health decisions which are detrimental to their health and that of the population at large in a bid to manage the situation. Lack of proper management of suspected COVID-19 may lead to the spread of the virus [9]. This study tends to study the population with perceived experience of COVID-19 and how they managed or are managing the disease. The general objective of the study is to determine the population of people with perceived experience and management of COVID-19 in South-Eastern Nigeria.

Methods

This population-based cross-sectional study was conducted in South-Eastern Nigeria to determine people perceived experience and management of COVID-19. All participants were the residents in various states aged 18 years and above and have lived for at least one year in the region of residence.

This research was conducted in the states of Enugu and Imo in South-Eastern Nigeria (Figure 1). The region is one of the most populous in the country, with an estimated 50,000,000 inhabitants in 2021, comparable to 25% of Nigeria's population. The vast majority of people in this area are farmers, traders, artisans, civil servants, and students. The study area's major activities are related to commercial, religious, educational, and social scope, which support the spread of COVID-19.

Figure 1: Map of Southeastern Nigeria.
Source: Federal Government of Nigeria website.

Sampling

The minimum sample size for the study would be calculated by using the following formula for comparison of two independent proportions:

$$n = \frac{(Z\alpha + Z\beta)^2(p_1q_1 + p_2q_2)}{(p_1-p_2)^2}$$

Where:

n = Minimum sample size for each group

p1 = Prevalence or proportion of the attribute present in the population 1 q1 = 1-p1

p2 = Prevalence or proportion of the attribute present in the population 2 q2 = 1-p2

Zα = Standard normal deviate corresponding to 95% level of significance (α) = 1.96

Zβ = Standard normal deviate corresponding to a power of 80% = 0.84

p1 = Proportion of perceived Experience of COVID-19 among Residents in a previous study = 50%.

p2 = Proportion of Confirmed Cases of COVID-19 in a previous study = 14.7%. If p1 = 50% = 0.50

Then q1 = 1-0.50 = 0.50

If p2 =14.7% = 0.147

Then q2 = 1-0.147 = 0.853

$$n = \frac{(1.96+0.84)^2[(0.50)*(0.50)+(0.147)*(0.853)]}{(0.50-0.147)^2}$$

n= 212.106 = 212

Adjusting for a 5% rate of non-response and invalid response (i.e 95% expected response rate = 0.95).

n= n/expected response rate

n= 212/0.95 = 223.15

n= 223

Therefore, a total of 223 questionnaires each would be distributed to both the population of people with perceived experience of COVID-19 and population with confirmed cases of COVID-19 in South-Eastern Nigeria.

Two states from South-Eastern Nigeria geopolitical landscape were selected using simple random sampling, while purposive sampling was used to sample the proportion of confirmed cases. An online (using Google form) or paper questionnaire was distributed to the selected states. Participants in the study were invited at random via various social media platforms such as Facebook, Twitter, Instagram, Whats App, and others via a Google form link leading to the e-questionnaire. In contrast, targeted participants, who have tested positive for COVID-19, were purposefully chosen for the study. They must agree and sign individual online-written informed consent following a proper introduction of the aim of the study by the researcher. Data collection was repeated until the appropriate sample size was obtained.

The researcher carefully prepared the questionnaire. Then, it was scrutinized by the researcher's supervisor and an expert statistician. The reliability technique used in this study was a test-retest approach to test the internal consistency of the research instrument. The questionnaire was given to 10 people who shared comparable research population characteristics but were not included in the study, and the process was repeated a week later. The Cronbach Alpha test was performed to examine the consistency of the results, and a coefficient of 0.8 was obtained.

Data analysis

The questionnaire data was imported into Microsoft Excel and analyzed with IBM SPSS Statistics for Windows, Version 22.0 (Armonk, NY: IBM Corp, 2013). To explain the data obtained, a descriptive statistical approach that included frequencies and percentages of distribution was utilized. Tables were prepared for all class variables and stated as distribution percentages. Association between variables were observed using Chi-square test (or Fisher exact in case of did not fulfill Chi-square requirement). The analysis was carried out at a 95% confidence interval, and the probability value was used to determine the strength of relationships, with values less than 0.05 being significant.

Ethics

A letter of introduction and ethical clearance was obtained from the Department of Public Health Ethical clearance committee in Federal University of Technology Owerri before the research was conducted. The purpose of the research was explained to each respondent and verbal informed consent was obtained from them before inclusion into the study. Also, anonymity of the respondents was assured and ensured. The confidentiality of the information they gave also maintained.

Results

Socio-demographic characteristics and travel history

Table 1 depicts the Socio-demographic characteristics of respondents with perceived experience of COVID-19 and those with confirmed positive COVID-19 tests. Respondents with perceived experience of COVID-19 have lower mean age than positive COVID-19 patients (37.61±12.27 vs. 40.59±13.42). Moreover, those with perceived experience of COVID-19 lie mainly in the 31-40 age group (31.0%), while in the positive COVID-19 group, dominant participants were 51 and above (35.0%). A statistically significant association was found between age group (p=0.003), gender (p=0.021), education (p=0.004), monthly household income (p=0.003), abroad travel history during the pandemic (p=0.002), and COVID-19 epicenter state visit (p<0.001) and the experience of COVID-19.

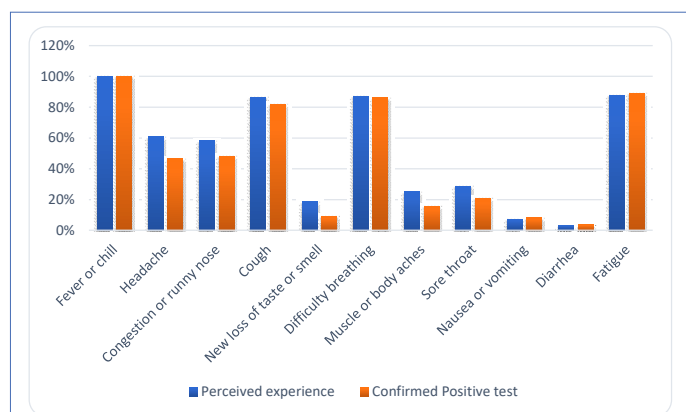**Table 1:** Socio-demographic characteristics and travel history.

Variables	Experience of COVID-19		p-value
	Perceived	**Confirmed**	
	n=200 (%)	**n=220(%)**	
Age group			
Less than 20	20(10.0)	20(9.1)	
21-30	34(17.0)	22(10.0)	
31-40	62(31.0)	65(29.5)	
41-50	51(25.5)	36(16.4)	0.003
51 and above	33(16.5)	77(35.0)	
Gender			
Female	56(28.0)	151(68.6)	0.021
Male	144(72.0)	69(31.4)	
Marital status			
Married	107(53.5)	119(54.1)	0.583
Single	74(37.0)	74(33.6)	
Widowed	19(9.5)	27(12.3)	
Education			
Non-formal education	3(1.5)	0(0.0)	0.004
Primary	39(19.5)	33(15.0)	
Secondary	137(68.5)	107(48.6)	
Tertiary	21(10.5)	80(36.4)	
Employment status			
Employed	168(84.0)	195(88.6)	0.076
Unemployed	1(0.5)	4(1.8)	
Student	28(14.0)	21(9.5)	
Other	3(1.5)	0(0.0)	
Monthly house hold income			
	3(1.5)		0.003
Less than 30,000	5(2.5)	26(11.8)	
30,000 – 49,000	33(16.5)	15(6.8)	
50,000 – 79,000	73(36.5)	91(41.4)	
80,000 – 100,000	82(41.0)	48(21.8)	
Above 100,000	4(2.0)	40(11.8)	
Traveled outside the country during the pandemic			
No	200(100)	180(81.8)	0.002
Yes	0(0.0)	40(18.2)	
Visited any epicenter state			
No	164(82.0)	135(61.4)	<0.001
Yes	36(18.0)	85(38.6)	

Comparison of the COVID-19 experiences between respondents

Figure 1 revealed the proportion of symptoms experienced by respondents. The most common symptoms in positive COVID-19 patients were fever or chill (100%), fatigue (88%), cough (86%), and breathing difficulty. A similar pattern was observed in perceived COVID-19 experience, with 100%, 89%, 82%, and 82%, respectively. However, it was later on described that the majority (89.0%) of those with perceived experience of COVID-19 have positive COVID-19 testing (Table 2). Table 2 shows a significant association between positive test confirmation of COVID-19 and the perceived experience of COVID-19 (p=0.003). In response to the sequence of symptoms pattern (Fever→Cough →Sore throat→Headache→Muscle or body aches→Nausea or vomiting→Diarrhea), 151(75.5%) of respondents with perceived experience COVID-19, while a similar phenomenon was found in 114 (51.8%) of participants with positive COVID-19. A statistically significant association was observed between the sequence of symptoms pattern (p=0.001), loss of taste or smell (P=0.001), the time of recovery (p=0.004), and hospitalization (p<0.001) with the experience of COVID-19.

Table 2: Comparison of COVID-19 experience between respondents.

Variables	Experience of COVID-19		p-value
	Perceived	Confirmed	
	n = 200 (%)	n = 220(%)	
Confirm experience with a test			
No	178(89.0)	0(0.0)	0.003
Yes	22(11.0)	220(100.0)	
Did the sequence of symptoms follow this pattern? Fever →Cough →Sore throat →Headache →Muscle or body aches →Nausea or vomiting →Diarrhea			
No	151(75.5)	114(51.8)	0.001
Yes	49(24.5)	106(48.2)	
Experience loss of taste or smell			
No	173(86.5)	145(65.9)	0.001
Yes	27(13.5)	75(34.1)	
Time taken to recover			
Less than one week	85(42.5)	39(17.7)	0.004
One month	6(3.0)	30(13.6)	
One week	14(7.0)	13(5.9)	
Two weeks	95(47.5)	138(62.7)	
Hospitalized			
No	174(87.0)	112(50.9)	<0.001
Yes	26(13.0)	108(49.1)	

Figure 2: Medication taken by respondents.

Table 3: Comparison of the management of COVID-19 among respondents.

Variables	Experience of COVID-19		p-value
	Perceived	Confirmed	
	n = 200 (%)	n = 220(%)	
First action following symptoms development			
Called a health practitioner	23 (11.5)	4 (1.8)	0.002
No action was taken	96 (48.0)	0 (0.0)	
Self-medication	1 (0.5)	1 (0.45)	
Visited the drug shop	43 (21.5)	122 (55.5)	
Went to the hospital	37 (18.5)	92 (42.3)	
Self-isolation practice			
No	200 (100)	86 (39.1)	0.001
Yes	0 (0.0)	134 (60.9)	
Medication consumption			
No	97 (48.5)	0 (0.0)	0.004
Yes	103 (51.5)	220 (100.0)	
Place where the medication was obtained			
Took No action	96 (48.0)	0 (0.0)	
Drug shop	68 (34.0)	79 (35.9)	
Hospital	32 (16.0)	141 (64.1)	0.003
Leftover drugs	1 (0.5)	0 (0.0)	
Other	3 (1.5)	0 (0.0)	
Drug prescriber			
No Action was taken	97 (48.5)	-	
Drug vendors	28 (14.0)	54 (24.5)	0.093
Medical doctors	46 (23.0)	153 (69.5)	
Self-prescription	12 (6.0)	2 (0.9)	
Relatives	16 (8.0)	11 (5.0)	
Other	1 (0.5)	0 (0.0)	
Prescription method			
No consumption	97 (48.5)	0 (0.0)	
Face to face at home	22 (11.0)	44 (20.0)	0.092
Face to face at the hospital	56 (28.0)	152 (69.1)	
Over the phone	23 (11.5)	24 (0.9)	
Others	2 (1.0)	0 (0.0)	

Comparison of COVID-19 management

The two most common medications consumed by the participants are vitamin C and Zinc. Vitamin C was consumed by 80% of perceived experience participants, while Zinc was consumed by 16% of participants. Similarly, vitamin C (77%) and Zinc (14%) were consumed by positive COVID-19 participants. However, 65% of respondents with perceived experience and 68% with positive COVID-19 test have no idea about the type of medication consumption (Figure 2).

Table 3 shows the management of COVID-19 among respondents. Those with perceived experience of COVID-19 preferred no action (48%) or visited the drug shop (21.5%). Meanwhile, respondents with positive COVID-19 tests visited the drug shop (55.5%) or went to the hospital (42.3%). A significant association was established between the first action taken by respon-

dents and the experience of COVID-19 (p=0.002), self-isolation practice (p=0.001), and medication consumption (p=0.004) and the experience of COVID-19 (P=0.092).

Discussion

Our study depicts that the age mostly affected by COVID-19 perceived experience is usually above the youth age. This is in line with a previous report demonstrating that the SARS Cov-2 affects people aged 40 years and above [10]. We also found that travel history has significant association with COVID-19 case. This is also revealed by a study which stated that travel history is considered as a risk factor for COVID-19 infection [11].

Most participants with perceived COVID-19 experience (89.0%) did not confirm their experience with a test. This ascertains and justifies the general objective of this study. A recent publication by stated that symptomatic pattern and various body changes influence the mind prediction towards an infection [12]. Furthermore, individuals with perceived experience of COVID-19 are more likely to presume infection in responses to the sequence of symptom patterns. Based on the comparison on the infectious pattern from the study it was demonstrated that Fever →Cough →Sore throat →Headache →Muscle or body aches →Nausea or vomiting → Diarrhea was the observed pattern and more than three-fourth of respondents with perceived experience COVID-19 have unusual symptom pattern development. One of the most important contributor of this condition is greater anxiety and depressive symptoms among people with high risk of infection [13]. According to a report, South-Eastern Nigeria has less equipped facilities for managing and treating patients with COVID-19 [14]. Thus majority of the individuals with perceived experience of COVID-19 are more likely to opt for other alternatives due to lack of clinical diagnosis including the search of traditional herbs, as mentioned with similar previous study [15].

Concerning the management of COVID-19 among respondents with perceived experience of COVID-19 and those with confirmed positive COVID-19 test, our study found that 11.5% of respondents with perceived experience of COVID-19 called a health practitioner, in contrast to a study which found that 48% residents with pneumonia called for medical attention in hospital [16]. Contradictorily, only 1.8% of respondents with positive COVID-19 test called a health practitioner, which could be attributed to the study's location [17]. We also found that 51.5% of respondents with perceived COVID-19 experience took medication, while all respondents with confirmed positive COVID-19 test took medication. This could be because respondents' actions and decisions are hampered by their perceived experience [18]. This report is consistent with the study on COVID-19 management among respondents with perceived COVID-19 experiences. Furthermore, respondents with perceived COVID-19 experience obtain their medication mainly from a drug store (34.0%), whereas respondents with confirmed positive COVID-19 test obtain their medication from hospital (64.1%). This demonstrates that individuals with perceived COVID-19 experience in southeastern Nigeria used drug stores to make COVID-19 drug choices, which is also observed as one of the most common method in previous study [19].

Conclusion

This study concludes that despite the efforts made by concerned organizations on the management of COVID-19 in Nigeria, it has been seen that a lack of testing facilities could increase perceived experience towards COVID-19 without a timely diagnosis, and this has led to a less number of the population being tested of COVID-19, leaving the majority of the population untested of COVID-19, among the untested population are many who are positive of COVID-19. The government and concern agencies in Southeastern Nigeria can act with world bodies to minimize misconceptions due to the pandemic because it influences the perceived experience and management options of individuals in a community. Future studies must be placed on the significant gaps and constraints in identifying the various groups in the study. Furthermore, effective and efficient training should be provided to the concerned stakeholders on communication and measures to reduce morbidity and assure public safety.

Declarations

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