

# Knowledge and Anxiety Levels of African University Students Against COVID-19 During the Pandemic Outbreak by an Online Survey

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## ABSTRACT

**Introduction:** The first case of COVID-19 in Nigeria was recorded on March 10, 2020. With a constant increment in numbers, all tertiary educational institutions were closed with an order of the Ministry of Education by March 20, 2020, and the government announced the initial lockdown of big cities on March 30, 2020. In this study, the information and anxiety levels of African university students against COVID-19 during the epidemic outbreak was investigated.

**Method:** One hundred and eighty-three Nigerian university students participated in the study. Participants were 69 men and 114 women who were 17-21 years of age. To get their knowledge and anxiety scores, the questions selected by referencing previous and current epidemic studies were used.

**Results:** The correct rate of knowledge was approximately 88% of Nigerian university students. The anxiety score was higher in women than in men. The students of the college of health sciences had higher knowledge scores than both students of faculty of natural and applied sciences and students of faculty of art and social sciences. Additionally, the 100 level students had lower knowledge scores than both 200 and 300 level students.

**Discussion:** The gender difference supports the previous studies in which depression and alexithymia scores were high in women compared to men. The faculty difference may be attributed to a good and effective education of medical faculty students. The level difference may be attributed to the lower education level in the first-year students.

**Conclusion:** The results of the present study and previous studies suggest that the knowledge levels should be increased and thus the anxiety levels should be decreased to overcome this disease via online systems. Also, the mental health of university students should be monitored.

**Key words:** Coronavirus, COVID 19, Knowledge, Anxiety, Pandemic outbreak, University students

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## INTRODUCTION

Coronavirus disease (COVID-19) is a highly infectious respiratory disease, and its main clinical symptoms include fever, dry cough, fatigue, myalgia, and dyspnea [1]. The coronavirus COVID-19 is affecting 210 countries and territories around the world and 2 international conveyances and nowadays, the report about coronavirus disease in the world shows that the overall case fatality rate of COVID-19 is 21% in the world [2]. In response to this serious situation, the World Health Organization (WHO) declared it a public health emergency of international concern on January 30, 2020 and called for collaborative efforts of all countries to prevent the rapid

spread of COVID-19 [3]. Then, WHO declared COVID-19 disease as a pandemic on March 11, 2020. The very 1st case of COVID-19 infected in Nigeria was recorded on March 10, 2020. With a constant increment in numbers, all tertiary educational institutions were closed with an order of the Ministry of Education by March 20, 2020, and the government announced the initial lockdown of big cities on March 30, 2020.

The straight precautions against COVID-19 are carrying on in the world. To guarantee the final success, people's adherence to these control measures is essential, which is largely affected by their knowledge and practices towards COVID-19 [1,4,5]. SARS outbreak in 2003 taught that knowledge and attitudes towards infectious diseases are associated with the level of panic emotion among the population, which can further complicate attempts to prevent the spread of the disease [6,7].

The epidemic brought not only the risk of death from the viral infection but also unbearable psychological pressure to people in China and the rest of the world [8,9]. The continuous spread of the epidemic, strict isolation measures and delays in starting schools, colleges, and universities across the country is expected to influence the mental health of college students. There have been reports on the psychological impact of the epidemic on the general public, patients, medical staff, children, and older adults [10,11]. In a very recent study, it has been reported that having relatives infected with COVID-19 was a risk factor for increasing the anxiety of college students. Also, its economic effects and effects on daily life, as well as delays in academic activities, increased anxiety levels [12].

Methods of guiding students to effectively and appropriately regulate their emotions during public health emergencies and avoid losses caused by crisis events have become an urgent problem for colleges and universities. The mental health status of college students during the epidemic should be recorded to evaluate their mental situation during the epidemic, to provide a theoretical basis for psychological interventions with college students and to provide a basis for the promulgation of national and governmental policies.

In this study, the information and anxiety levels of African university students against COVID-19 during the epidemic outbreak was investigated.

## METHODS

### Participants

An online survey (questionnaire) was created and shared only with participants, the students of the Nile University of Nigeria. The survey was conducted during the lockdown period of COVID 19, when all students were self-isolated at homes. This was to ensure the results obtained from the probing were valid and reliable. In the survey, the questionnaires for the knowledge and anxiety against COVID-19 disease were posted online for volunteers to fill out. To keep the confidentiality and privacy of the survey, a secured internet link for the survey was produced and shared only with participants to fill out. A total of 183 volunteers participated in this survey (114 women, mean age=19.001, SD=2.492; 69 men, mean age=19.706, SD=2.688). All subjects completed the study voluntarily. All of students in the university were invited to participate on online survey. The number of students who volunteered to participate was 183, in three days, and they were mostly from 3 different faculties: Natural and Applied Sciences, College of Health Sciences and Social and Art Sciences. There were some participants from some different faculties as well, because of their number of participants were very low, thus, they were eliminated. The percentages of students with respect to their faculties were 29% for College of Health Sciences, 46% for Faculty of Natural and Applied Sciences and 25% for Social and Art Sciences. It can be stated that the distribution was approximately balanced. The percentages of students

with respect to their study levels were 24% from 100 level (the first year of education), 37% from 200 level (the second year of education) and 39% from level 300 (the third year of education). The age of the participants was not different statistically by sex.

### Inclusion criteria

Willingness to participate.

Only students could participate.

Only undergraduate students studying were included in the study.

### Exclusion criteria

The study excluded participants that were not willing to be involved.

Students with psychiatric or central and autonomic nervous system disturbance that might change the anxiety and depression scores were not involved.

### Procedure

The experimental protocol was by following international ethical standards. The study was performed per under the Helsinki Declaration (1975, revised in 1996-2013). It was a descriptive cross-sectional study. The aims and objectives of the study were explicitly explained to the participants before the commencement of the study. All participants voluntarily gave written informed consent to participate in the study.

The survey questionnaire consisted of 3 parts.

Part 1. Demographic information: Demographic information like age, gender, level, faculty, etc was asked to participants.

Part 2. Knowledge about COVID-19: The general knowledge questions about COVID-19 were asked, with 3 answer options: True, False and I don't know. Students were asked questions about symptoms, spread factors, self-isolation and medical cures of COVID-19. Only correct answers were given 1 point while the other 2 options got zero points. The questions were selected by referencing previous and current epidemic studies [13-15]. The total score for each participant was calculated and the minimum total score was 1 while many students got the maximum possible score of 6.

Part 3. Anxiety level detection: In the last section, all seven questions to measure anxiety level proposed by Spitzer et al were asked [16]. This easy-to-use self-administered patient questionnaire is used as a screening tool and severity measure for the generalized anxiety disorder. All seven questions had rating scale options to choose from, ranging 0 to 3. The total score for each participant was calculated and minimum total score was zero, while the several students got the maximum possible score of 21.

**Statistical analyses**

Measured values are given as a mean +/- standard deviation (SD). Statistical analysis was performed using SPSS for Windows version 18. To compare the knowledge and anxiety scores in the participants, the Student's t-test to get the gender difference and one-way ANOVA (post-Hoc Tukey test) to get faculty and level differences were used. A p-value of less than 0.05 was considered statistically significant.

**RESULTS**

The anxiety score against COVID 19 disease was statistically significant higher in women than in men in African university students ( $t=2.23$ ,  $p=0.027$ ). But there was no gender-related difference in the knowledge scores (Table 1). Results indicated that 24% of the students were experiencing severe anxiety, 22% moderate anxiety, and 30% mild anxiety.

**Table 1: The knowledge and anxiety scores against COVID 19 disease in university students by gender.**

	Men (N=69)	Women (N=114)	T	P
Knowledge score	5.26±0.868	5.263±0.941	0.02	0.987
Anxiety score	8.203±5.934	10.14±5.547	2.23	0.027

There was a statistically significant difference in terms of knowledge of COVID 19 among students of different faculties of the same university as determined by one-way ANOVA ( $F(2, 181)=7.05$ ,  $p=0.001$ ). The students of the college of health sciences had statistically significant higher knowledge scores than both students of faculty of

natural and applied sciences (difference=0.458) and students of faculty of art and social sciences (difference=0.635) at the  $p<0.05$  level in post-Hoc Tukey test. In terms of anxiety levels, there was no significant difference among faculties ( $F(2, 181)=1.45$ ,  $p=0.237$ ) (Table 2).

**Table 2: The knowledge and anxiety scores against COVID 19 disease of African university students with respect to their faculties.**

	College of Health Sciences (N=52)	Faculty of Natural and Applied Sciences (N=85)	Faculty of Art and Soc. Sci. (N=46)	F	P
Knowledge	5.635 ± 0.627	5.176 ± 0.978	5.262 ± 0.912	7.05	0.001
Anxiety	8.307 ± 5.085	9.67 ± 6.357	9.409 ± 5.758	1.45	0.237

There was a statistically significant difference in terms of knowledge of COVID 19 among students of different levels of the same university as determined by one-way ANOVA ( $F(2, 181)=6.013$ ,  $p=0.003$ ). The 100 level students (first year) had statistically significant lower knowledge scores than both 200 (difference=0.581) and 300 (difference=0.473) level students (difference=0.635) at the  $p<0.05$  level in post Hoc Tukey test. In terms of

anxiety levels, there was no significant difference among levels of students ( $F(2, 181)=0.207$ ,  $p=0.813$ ) (Table 3). In terms of the knowledge ( $F(2, 181)=0.728$ ,  $p=0.484$ ) and anxiety ( $F(2,181)=1.967$ ,  $p=0.143$ ) levels, there was no significant difference among information sources (government, television or newspaper news and social media) of students.

**Table 3: The knowledge and anxiety scores against COVID 19 disease of African university students with respect to their levels.**

	100 Level (N=43)	200 Level (N=68)	300 Level (N=72)	F	P
Knowledge	4.861 ± 1.013	5.441 ± 0.835	5.333 ± 0.856	6.013	0
Anxiety	9.256 ± 5.447	9.765 ± 6.22	9.167 ± 5.544	0.207	0.81

**DISCUSSION**

COVID-19 is a life-threatening disease with worldwide spread. The disease is highly infectious, and its main clinical symptoms include fever, dry cough, fatigue, myalgia, and dyspnea. In China, 18.5% of the patients with COVID-19 develop to the severe stage, which is characterized by acute respiratory distress syndrome, septic shock, difficult-to-tackle metabolic acidosis, and bleeding and coagulation dysfunction [17,18]. During this virus outbreak, many people in countries more than 150 were infected and this pandemic returned a global emergency [2]. Therefore, the knowledge and anxiety levels of humans became very important. The overall

correct rate of the knowledge questionnaire was 90% in a recent study performed in Chinese respondents in which the data was recruited via the authors' networks with residents and popular media in Hubei, China by using a self-developed online questionnaire completed by the participants [15]. In the present study, this rate was approximately 88% of Nigerian university students.

The anxiety score against COVID 19 disease was higher in women than in men in African university students. This gender difference supports the previous studies in which depression [19,20] and alexithymia [21] scores were high in women compared to men. In a recent study, social support was negatively correlated with the level of

anxiety. It is suggested that the mental health of college students should be monitored during epidemics [12].

In Chinese college students, 0.9% of the respondents were experiencing severe anxiety, 2.7% moderate anxiety, and 21.3% mild anxiety [12]. In the present study, 24% of the university students were experiencing severe anxiety, 22% moderate anxiety, and 30% mild anxiety. Possibly the cause of this big difference may be related to the different dates of studies because the disease did not spread to everywhere in the world during the first study.

In the present study, the students of the college of health sciences had higher knowledge scores than both students of faculty of natural and applied sciences and students of faculty of art and social sciences. This difference may be attributed to a good and effective education of medical faculty students. Additionally, the 100 level students had lower knowledge scores than both 200 and 300 level students. This difference may be attributed to the lower education level in the first-year students.

#### LIMITATION

Loss of anxiety and depression levels of participants before pandemic outbreak can be accepted as a limitation of the present study.

#### CONCLUSION

The results of the present study and previous studies about COVID 19 suggest that the knowledge levels should be increased and thus the anxiety levels should be decreased to overcome this disease via online systems. Also, the mental health of university students should be monitored.

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