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Prevalence of SARS-COV-2 units among Achievers University Students, Nigeria

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ABSTRACT

The spread of Severe acute respiratory syndrome 2 (SARS-CoV-2), the virus that causes coronavirus disease 2019 (COVID-19), has resulted in a global pandemic that has claimed the lives of millions of people, the coronavirus disease 2019 (COVID-19) is an infectious disease caused by SARS-CoV-2 that mainly affects the respiratory system, as interstitial pneumonia and acute respiratory distress syndrome. The virus primarily targets the upper and the lower respiratory tract and quickly disseminates to other organs. SARS-CoV-2 dysregulates immune signaling pathways which generate cytokine storm and leads to the acute respiratory distress syndrome and other multisystemic disorders. This study was carried to determine the prevalence of SARS-CoV-2 among achievers' university student, a total of 200 students participated in this study. Individual who participated in this study were students of the university community. Oropharyngeal and nasopharyngeal swab samples were taken from the participants. The polymerase chain reaction (PCR) test for covid-19 is a molecular test which analysis the upper respiratory specimen looking for genetic material ribonucleic acid (RNA) of the virus. The reagent used for this study was the sansure biotech nuclei acid diagnostic kit used for qualitative detection of ORF1ab and N gene of novel corona virus in nasopharyngeal swab, oropharyngeal swab. Only 1% of the population testing positive at the end of the study. ANOVA was employed to analyse the data collected. Personals protection equipment were put in place which included wearing of hand gloves disposable overall and laboratory coat, boots, eye googles during the process of sample collection. Preventive measures such as wearing of nose mask, social distancing should be constantly practiced.

Keywords: Covid-19, prevalence, University students, pandemics

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INTRODUCTION

COVID-19 is defined as a new type of coronavirus that spreads rapidly from person to person and becomes a major epidemic that causes a great tragedy [1-5]. COVID-19 has been identified from a family of zoonotic coronaviruses, such as the severe acute respiratory syndrome coronavirus (SARS-CoV) and the Middle East Respiratory Syndrome Coronavirus (MERS-CoV) seen in the past decade. The starting point of the virus is considered to be the Wuhan city of China, and the first fatal cases were reported in late 2019. At this point, this virus causes fatal effects, especially on the elderly and those with chronic diseases [6]. The coronavirus disease 2019 (COVID-19) is an infectious disease caused by SARS-CoV-2 that mainly affects the respiratory system, as interstitial pneumonia and acute respiratory distress syndrome (ARDS) [7]. Although the lungs are definitely the first target organ of SARS-CoV-2 infection, accumulating evidence indicates that the virus can spread to many different organs, including the heart, blood vessels, kidneys, gut, and brain [8].

The disease has a very dynamic structure and spreads rapidly. Unfortunately, as of April 15, 2020, 123,010 deaths and approximately 2 million cases have been confirmed worldwide. The number of confirmed cases varies due to differences in epidemiological surveillance and detection capacities between countries. However, it can be said that the disease has spread all over the world as of today. Since there is no treatment method determined for this type of virus yet, it requires the effective planning of the health infrastructure and services, where the rate of disease spread should be controlled [9-12]. For this reason, the estimation of the total confirmed cases and possible new cases in the future is vital for managing and directing the demand to the health system. Mathematical and statistical modeling tools that can be used for making short and long-term case estimates to plan the number of additional materials and resources are needed to deal with the outbreak. Estimating the expected burden of disease is essential for public health officials to effectively and timely manage medical care and other resources needed to overcome the epidemic. Also, such estimates can direct the intensity and type of interventions needed to alleviate the outbreak [13].

Nigeria announced the Sub-Sahara Africa's first confirmed case of COVID-19 disease on Friday January 28, 2020 at around 1 am. This confirmation led to the activation of the country's National Coronavirus Emergency Operation Centre [14]. According to the Nigeria Centre for Disease Control (NCDC), COVID-19 has presently infected 36 states in Nigeria. As at June 18, 2020 the number of samples tested in Nigeria is 106,006 out of which 17,735 of them is confirmed positive, 11,299 of the individuals are active ones, discharged cases is 5967 and demise is 469 individuals [15].

Recently, statistical and time series model has also been introduced to model and predict the prevalence of this pandemic [16] subjected the COVID-19 cumulative confirmed cases in Nigeria to some curve statistical estimation models.

Materials and Methods

Study Area

This study was conducted at Achievers University Owo, Ondo state.

Study Design

The research was cross sectional where students were randomly selected and enrolled.

Ethical Consideration

A protocol of this work was submitted to the ethical committee of Federal Medical Center, Owo for ethical clearance. After a successful review and consideration, ethical clearance was given by ethical review board with identification number FMC/OW/380/VOL CLII/109

Inclusion Criteria

Inclusion criteria included all students in Achievers university owo, Ondo state.

Exclusion Criteria

Lecturers, shop owners, Hostel workers, secretaries who are not students of Achievers University were excluded from this study.

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Sample Size Determination

$$n = \frac{Z^2 p(1 - p)}{d^2}$$

where n=the minimum sample size required

p=prevalence of covid-19=19.20% [17]

z=corresponds to significance level (1.96 for 0.005)

d=absolute error or precision =5% (0.005)

n=236

Thus, minimum sample size for the study =200 in order to prevent absolute error during sampling

Sample Collection

Samples was collected from the nasal and oral cavity into a covid test sample bottle.

Processing

The samples collected was processed using real time RT-PCR.

Real time RT-PCR is one of the most widely used laboratory methods for detecting the COVID-19 virus. Real time RT-PCR is a nuclear-derived method for detecting the presence of specific genetic material in any pathogen, including a virus. Originally, the method used radioactive isotope markers to detect targeted genetic materials, but subsequent refining has led to the replacement of isotopic labelling with special markers, most frequently fluorescent dyes. This technique allows scientists to see the results almost immediately while the process is still ongoing, whereas conventional RT-PCR only provides results at the end of the process.

Data Analysis

Data obtained was analyzed and represented as a mean + or - negative standard deviation and the results of the test groups was compared with student T-test using the IBM statistical software SPSS. Statistical significance was set at p<0.05.

RESULTS

Out of 100% population, Age group 18-20years was approximately 94%, 21-30 years was approximately 5%, and above 30years 1%. More so approximately 19% male and 81% female participated in this study. A total number of 200 participants were enrolled over the over the study period. Data collected were arranged in tables and figures.

Table 1: Demographic Characteristics of the participant

Variables	Frequency	Percentage
Age (Years)		
18-20	188	94%
21-30	10	10%
31-40	2	1%
Sex		
Male	38	19%
Females	162	81%

Mean age: 66.67±35.1

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Table 2: Distribution Based on Level

Variables	Frequency	Percentage
Level		
100 Level	28	14%
200 Level	34	17%
300 Level	36	18%
400 Level	38	19%
500 Level	64	32%

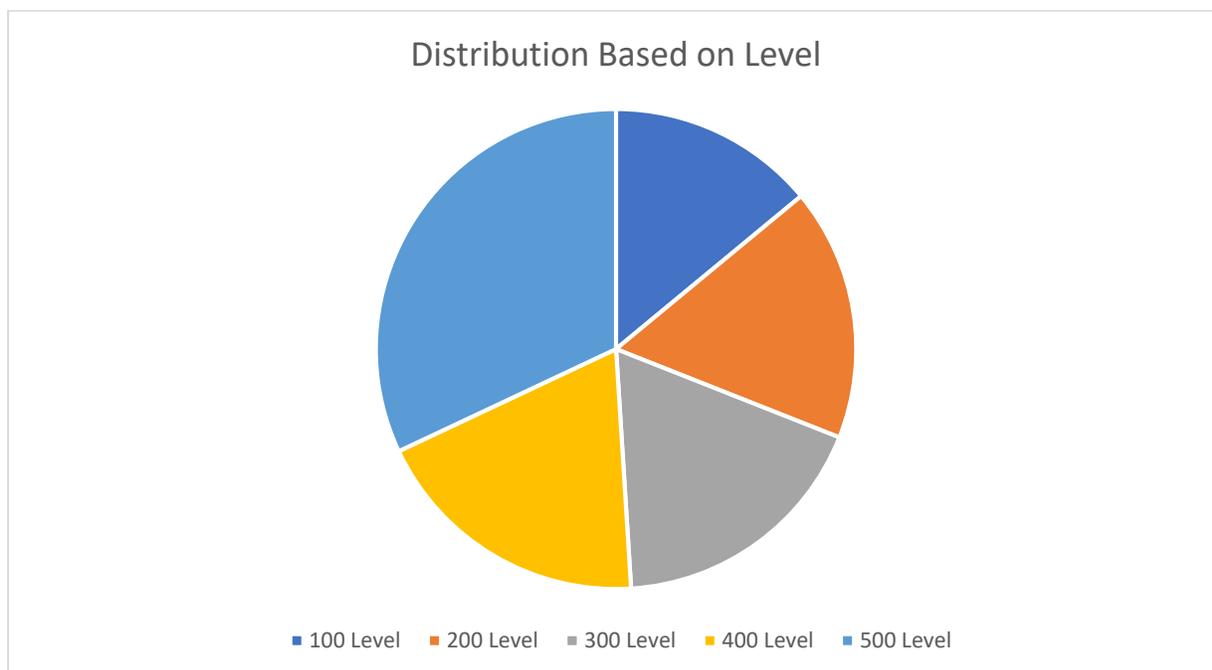


Figure 1: Pie chart showing distribution based on Level of the Participants involved in the study

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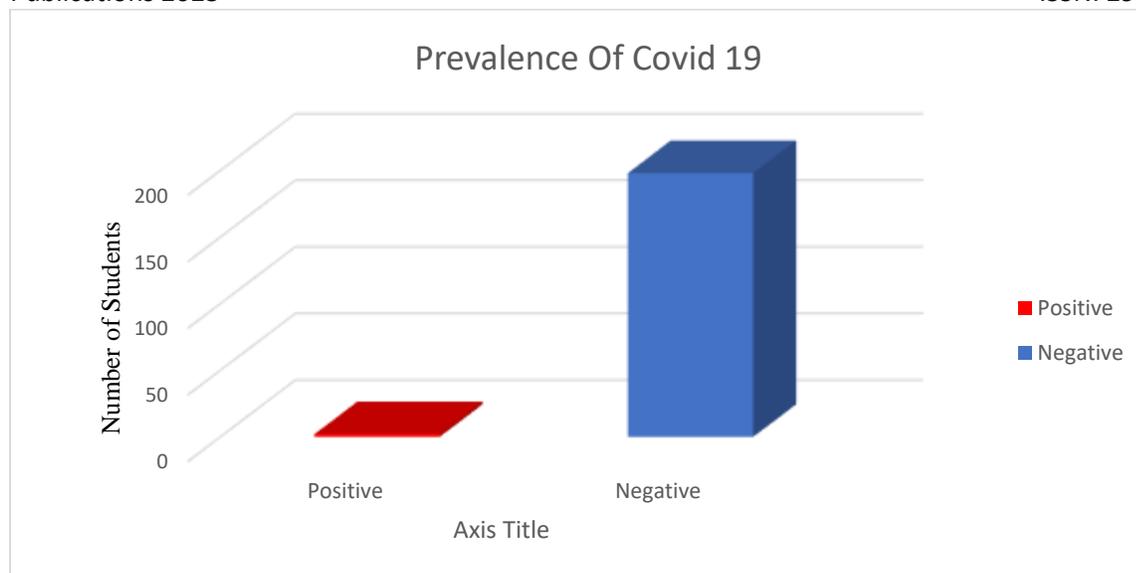


Figure 2: Prevalence of Covid 19 among students of Achievers University Owo

TABLE 3: DISTRIBUTION BASED ON RISK FACTORS

	Yes	No
Close Contact with persons within school	10(5%)	190(95%)
Underlying medical conditions	14(7%)	186(93%)
Use of public transport	21(10.5%)	179(89.5%)
Gathering that included persons other than coursemates	45(22.5%)	155(77.5%)
Wearing of mask	Always Most of the time Some of the time Never Not reported	72(36%) 73(36.5%) 30(15%) 5(2.5%) 20(10%)
Physical distancing	Always Most of the time Some of the time Never Not reported	118(59%) 53(26.5%) 20(10%) 0(0%) 9(4.5%)

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Frequency of going out in the past weeks	Always	0(0%)
	Most of the time	28(14%)
	Some of the time	115(57.5%)
	Never	29(14.5%)
	not reported	28(14%)

Table 4: Distribution based on hall of residence of participants

	Hall 1	Hall 2
Female	104(52%)	58(29%)
Male	38(19%)	

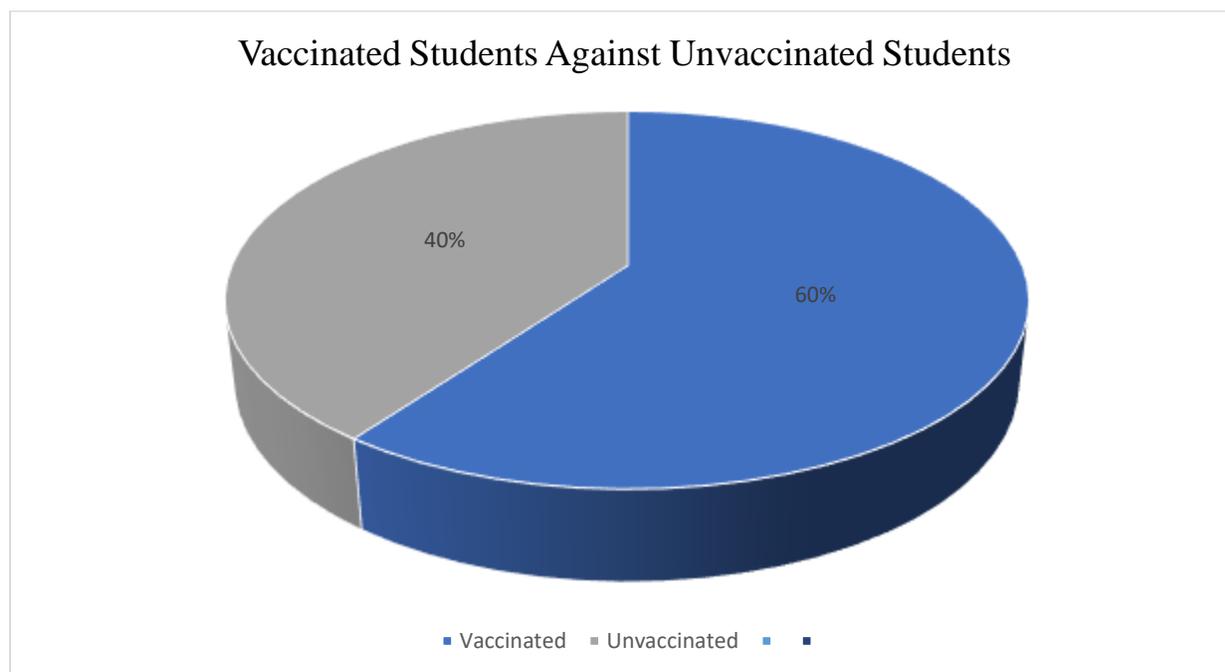


Figure 3: Showing the percentage of vaccinated students against unvaccinated students

DISCUSSION

The SARS-CoV-2 virus infection has been a global source of concern since the onset of the pandemic with alarming prevalence rate among individuals. The global spread of SARS-CoV-2 and the thousands of deaths caused by coronavirus disease (COVID-19) led the World Health Organization to declare a pandemic on 12 March 2020 [18]. Table 1 shows the age group distribution of participants. The majority of the participants were in the 18-20(94%) age group having the highest frequency of 188 and 21-30(10%) age group and a frequency of 10 and age 31-40(1%) having the lowest frequency of 2. There were 38(19%) male participants and 162(81%) female participants. Figure 2 shows the prevalence of SARS-CoV-2 virus in the study which revealed that out of 200 samples examined, 38(19%) were male and 162(81%) were female, only 2% of the population had covid-19. Table 42 shows the distribution of student participant across each level with 100level having 28(14%) number of participants, 200 level having 34(17%) number of participants, 300level with 36(18%) number of participants, 400 level having 38(19%) number of participants and 500level having a total of 64(32%) participants. Table 3 shows the distribution of associated risk factors of participants to contacting covid. Table 4 shows the distribution of student participants based on hostel

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with 104(52%) participants from female hall 1, 58(29%) participants from female hall 2 and 38(19%) from the male hall of residence. According to this study the prevalence of SARS-CoV-2 virus among Achievers university student community was recorded to be 1% of the total population. This was due to the fact that 60% of the population involved in this study were vaccinated and various measures were put in place to combat the spread of covid-19 such continuous use of hand sanitizers, provision of various hand washing points in the school environment, continuous use of face mask, and practicing of social distancing. The reagent used for this study was the sansure biotech nuclei acid diagnostic kit. Novel coronavirus nucleic acid diagnostic kit is used for qualitative detection of ORF1ab and N gene of novel corona virus in nasopharyngeal swab, oropharyngeal swab, alveolar lavage fluid, sputum, serum, whole blood, feces from suspected pneumonia cases with novel coronavirus infection, in patients with suspected clusters of novel coronavirus infection, and other patients requiring diagnosis or differential diagnosis of novel coronavirus infection [19].

CONCLUSION

Students of Achievers University Owo, were less prone to COVID 19 infection with a prevalence rate of 1%. This was because preventive measures were put into place which included vaccination, practicing of social distancing, use of face mask and the likes.

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