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### Effectiveness and utilization of COVID-19 control PPE among Senior Secondary School Students in Rivers State

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#### Abstract

This study investigated the effectiveness and utilization of COVID-19 control PPE. The study was guided by three objectives, three research questions and one hypothesis. The adopted a descriptive survey design and sample 800 senior secondary school students using simple random sampling technique. A validated instrument titled effectiveness of COVID-19 PPE and utilization questionnaire with a reliability index of 0.82 was used to collect. The data was collected by the researcher. Mean, standard deviation and spearman rank order correlation were used to analyze the

data collected. It was found that the senior secondary school student has negative perception about the effectiveness of COVID-19 control PPE ( $2.45 \pm 0.914$ ) and poor utilization of PPE ( $2.29 \pm 1.057$ ). students' perception correlated with their level of utilization of PPE ( $r = 0.728$ ,  $P_{val} = 0.000$  and  $r^2 = 0.529$ ). it as recommends among others that: Secondary school students should be properly oriented regarding reality of utilizing COVID-19 control PPE and Government should set up monitoring team to ensure that school management enforce compulsory nose masking by the students.

**Keywords:** COVID-19 control, PPE, effectiveness, Secondary school students, Rivers State

#### Introduction

Shock and fear gripped the world as a noble version of Severe Acute Respiratory Syndrom-Corona Virus-2 (SARS-COV2) emerged on the 8<sup>th</sup> of December, 2019 in China. The noble virus was called COVID-19 by World Health Organization which implies Corona Virus Disease of 2019 (WHO, 2020). The first case of COVID-19 was identified in Wuhan, China. Ever since then, the diseases have spread to 210 countries of which Nigeria is one the countries affected as well as most impacted in Africa (Ajisegiri, Odusanya, Joshi, 2020). WHO declared the novel human coronavirus disease (COVID-19) outbreak, which began in Wuhan, China on December 8, 2019, a Public Health Emergency of International Concern (PHEIC) on January 30, 2020 (WHO, 2020). With over seven million cases globally as of June 7 (2020): United States (over two million cases), Brazil (over 700,000 cases), Russia (over 500,000 cases), and in Africa, South Africa (over 54,000 cases) and Egypt (over 38,000 cases) bear the greater brunt. Following this WHO declaration, the Coronavirus Preparedness Group was constituted on January 31 in Nigeria (a country with 36 states and a Federal Capital Territory [FCT]). WHO categorized Nigeria as one of the 13 high-risk African countries with respect to the spread of COVID-19. Nigeria is also among the vulnerable African nations, given the weak state of the healthcare system (Marbot, 2020). In Africa, there are still communities without healthcare facilities, apart from the scarcity of health workers (Amzat, 2011). The projection is that Africa could bear the final burden of the COVID-19 pandemic if the countries do not institute effective measures to combat the pandemic.

Coronavirus disease 2019 (COVID-19) is a viral pneumonia with symptoms such as dry cough, fever, sore throat, dyspnea, body pain and diarrhoea (Adhikari, Meng, Wu, Mao, Ye, Wang, Sun, Sylvia, Rozelle, Raat, 2020) <sup>[1]</sup>. According to Roussel, Giraud-Gatineau, Jimeno, Rolain, Zandotti, Colson, Raoult (2020), COVID-19 belongs to the family Coronaviridae (of the order Nidovirales, large, positive single-stranded RNA viruses), which are important human and animal viruses, in permanent circulation with four members of this family causing respiratory infections (common cold) worldwide. Although the SARS (in 2002) and Middle-East respiratory syndrome coronavirus (MERS-CoV) (in 2012) epidemics were not globally dispersed like COVID-19, they seem to have caused more fatalities than COVID-19 (Roussel *et al.*, 2020) according to innime and Chibuzor (2021) <sup>[13]</sup>. Coronavirus is a communicable disease that effect not only the respiratory system but the entire major organs of the body system due to the chemistry chain from the brain to the liver and other part of the body that will experience a similar

symptoms. Coronavirus is a type of common virus that infects humans, typically leading to an upper respiratory infection in humans and chibuzor (2021) [13]. Seven different types of human coronavirus have been identified. Most people will be infected with at least one type of coronavirus in their lifetime. The viruses are spread through the air by coughing and sneezing, close personal contact, touching an object or surface contaminated with the virus and rarely, by fecal contamination. The illness caused by most coronaviruses usually lasts a short time and is characterized by runny nose, sore throat, feeling unwell, cough, and fever. Examples of human coronaviruses that have been reported to cause severe symptoms include the MERS-CoV (the beta coronavirus that causes Middle East Respiratory Syndrome, or MERS), SARS-CoV (the beta coronavirus that causes severe acute respiratory syndrome, or SARS), and the new 2019 Novel Coronavirus (2019-nCoV) outbreak that began in Wuhan, China. Charles (2021)

In the Nigeria, the first case of COVID-19 was confirmed in Lagos State on 27 February 2020. This index case was a 44-year-old man, an Italian citizen who returned from Milan, Italy, on 24 February and presented at a health facility on 26 February 2020 (Nigeria Center for Disease Control [NCDC], 2020). Following the confirmation of the index case, according to NCDC (2020), 216 people were identified as contacts to be followed up. Of these, 45 travelled out of Nigeria and one of the remaining 176 contacts was confirmed to be positive for COVID-19 on 9 March 2020.

In Rivers state, the first case of COVID-19 was recorded on 26<sup>th</sup> of March 2020 which contributed the nationwide 51 cases of the diseases (Awoseye, 2020). Ever since, new case of the disease a weekly report pattern. Thus, there were barely any week that went by without a case or more being identified. Currently, Rivers state is the 5<sup>th</sup> state with the highest cases of COVID-19 in Nigeria (Nigeria Center for Disease Control and Prevention, 2020).

In response to the spread of COVID-19 in Rivers state, the government began to implement stringent measure to help curtail the spread. The Governor (Nyesom Wike) adopted the WHO guideline on COVID-19 prevention which recommends that the public to practice protective measures, including social distancing, hand hygiene and refraining from touching the eyes, nose and mouth with unwashed hands (WHO, 2020; Center for Disease Control and prevention, 2021). One of the most important of them all, was the use of Personal Protective Equipment (PPE). Apart from the use of PPE and observation social distancing, movement of people were severely restricted though lockdown. These measures saw the total shut down of schools, markets, religious institutions.

On January, 2021, the primary, secondary and tertiary schools were reopened amidst the second wave of the COVID-19 (Abiola, 2021). Unfortunately, the reopening was only followed with instructions to all school owners to ensure that students practice all the necessary control measure without any monitoring team to supervise the exercise. The secondary school student who by the level of their development are still the playing type would most likely have a trivial attitude toward social distancing which is important for the prevention of contacts. Thus, if students must play with each other confidently, the students will be left to wearing PPEs.

Personal protection equipment is used as a protection from the transmission of infections from person-to-person

individuals are using PPEs to prevent the disease spread from suspected or confirmed cases or from a pathogenic specimen. Achalu (2019) defined PPE are devices that the worker uses to protect from environmental hazards. The PPE shall prevent the worker from contacting the hazardous agent or device and significantly protect the workers against the risk of injury or illness by creating the barrier between the potential hazardous material and the health workers. Several types of PPE, such as respirators, gloves and ear protectors, are applied in the job depending on their specifications and applications. However, in the face of COVID-19, PPE is not a monotony of workers but a device that are worn by all and sundry to protect themselves against the contraction of the disease from infected person.

The ability of PPE to protect against diseases is a tied to its utilization. Utilization is the judicious use of materials in line with its prescribed manner of usage. Ekenedo and Obiechina (2018) observed that utilization of materials are crucial. The utilization of COVID-19 PPE is very necessary if the pandemic is the controlled, contained and prevented. Be that as it may, different persons have different levels of utilization. The demarcation in the levels of utilization is informed by different factors such as perception, level of education, perception among others.

Perception is the sensory experience of the world. It involves both recognizing environmental stimuli and actions in response to these stimuli. In the study of Alao *et al.* (2021), it was concluded that though perceived risk and perceived severity triggers high perceived threat, but had not met with corresponding adoption of behaviour change. Much like knowledge, sometimes perception does not produce commensurate behaviour. Thus, in addition, perceptions of the "thinking, understanding and interpretation of people" (Qiong 2017) play an important role in behavior in human health. And it is critical that the disease is perceived individually and the Protocol is effective when it comes to adopting intervention protocols. The individual's perception of their sensitivity, severity, and benefits of prescribed actions to prevent disease spread is key to their decision and behavior in the health, as Rosenstock rightly argued in the cited McDonald (2012). Students have also argued that positive perception is conducive to positive health behaviour (achalu, 2019; McDonald, 2012).

Secondary school is a crucial level of education in which human behaviour is sculptured for better integration into the society. Also, in secondary, children play, violet social distance guideline. Thus, the only easy to go protection measure would be to wear nose mask or face shield. Finally, secondary school students' perceived effectiveness and utilization of COVID-19 PPE by secondary school students in Rivers State.

### **Aim and objectives of the study**

This study investigated the effectiveness and utilization of COVID-19 PPE among senior secondary schools. The specific objectives include:

1. To determine the effectiveness of COVID-19 PPE among secondary school students in Rivers State
2. Ascertain the utilization of recommended COVID-19 PPE among secondary school students in Rivers State
3. Ascertain the influence of student's effectiveness of COVID-19 PPE on the utilization of COVID-19 prevention PPE

### Research questions

1. What is the effectiveness of COVID-19 PPE among secondary school students in Rivers State?
2. What is the utilization of recommended COVID-19 PPE among secondary school students in Rivers State?
3. What is the influence of student's effectiveness of COVID-19 PPE on the utilization of COVID 19?

### Hypothesis

1. effectiveness of COVID-19 control PPE has no significant effect on secondary school students' utilization of PPE

### The concept of COVID-19

As usual, the conceptualization of diseases is a very straightforward task. The focal requirement is often the cause (virus, bacteria, fungi or protozoa), the nature (communicable or non-communicable), mode of transmission, and sometimes the discoverer or areas that the diseases was found as in case of MERS (Middle East Respiratory Syndrome). In the case of COVID-19, the conceptualization was founded on three epidemiological basis, (1) the cause of the disease (2) the nature of the disease and (3) the year of detection. These conceptualization foundations were found in WHO's nomenclature and definition of COVID-19.

In the early part of 2020, WHO named the sparingly detected virginal disease in China (precisely in the city of Wuhan) COVID-19. This name was rationally based on the facts that it is caused by coronavirus and was first detected in 2019. WHO (2021) thus, defined COVID-19 as "an infectious diseases which is caused by a newly discovered version of corona virus? A critical look at the WHO's definition will tell that COVID-19 is a communicable disease (an infectious disease). This means that the disease can be passed from an infected person to an uninfected person or animals to humans. It is also disclosed in the definition that COVID-19 is a viral infection. This implies that is caused by a virus.

Almost by the middle of the month of March, COVID-19 was conceptualized as a pandemic. A pandemic disease is a disease that know no national boundary (Achal, 2010). It is a disease that infects everybody all over the world (though sometimes demographic disparity do factor in). So, due to the rate at which COVID-19 permits countries across the continent with over 200 countries becoming victims, COVID-19 was declared a pandemic disease (WHO, 2020). Similarly, due to the pandemic nature of COVID-19, other scholars have attached several adjectives to diseases to describe its swift spread. Examples include; Ferocious wind disease (Anozie et'al, 2020), inferno-like disease that spreads like wild fire (Ipinnimo et'al., 2020) among others.

### COVID-19 outbreak preparedness in Nigeria

Prior to the importation of COVID-19 into Nigeria, the government established a "Coronavirus preparedness group" through its nation's leading public health agency, the Nigeria Centre for Disease Control (NCDC), which commenced point of entry screening for travelers. Based on lessons learnt from the EVD outbreak, the NCDC strengthened the National Reference Laboratory with diagnostic capacity for epidemic-prone pathogens. Through this process, the NCDC supported 22 of the 32 states to establish emergency operation centers (EOC), and trained

rapid response teams in all the 36 states (Ihekweazu, 2020). Furthermore, according to Adepoju (2020), the agency provided relevant public health advisory to the Nigerians; shared the case-definition and preventive information with networks of national and subnational public health workers; built capacity for contact tracing and case management; and strengthened five laboratories for diagnostic capacities.

Also vital to the COVID-19 outbreak preparedness is the country's Polio infrastructure - a programme originally aimed at the eradication of poliomyelitis. The structure brings on board its technical expertise, logistical capacity, human resources, community network and disease surveillance experience. The EOCs coordinating the outbreak response in each state are modelled after the Polio EOC operating under six functional units, namely: point of entry, epidemiology and surveillance, risk communication, management and communication, case management, and laboratory services (WHO, 2020). The Polio infrastructure was vital to the success of the 2014 EVD outbreak response. Currently, it provides technical support to government agencies including NCDC (13) and has an on-ground network of human resources including traditional and religious leaders, community mobilizers and health workers to support the COVID-19 response. In addition, the Polio infrastructure had SMS-based application, auto-visual AFP detection and reporting (AVADAR) that support disease surveillance through networks of community volunteers and healthcare workers. This app has been useful for the current pandemic as COVID-19 surveillance questions have been added to this app (WHO, 2020).

### Current situation of COVID-19 outbreaks in Nigeria

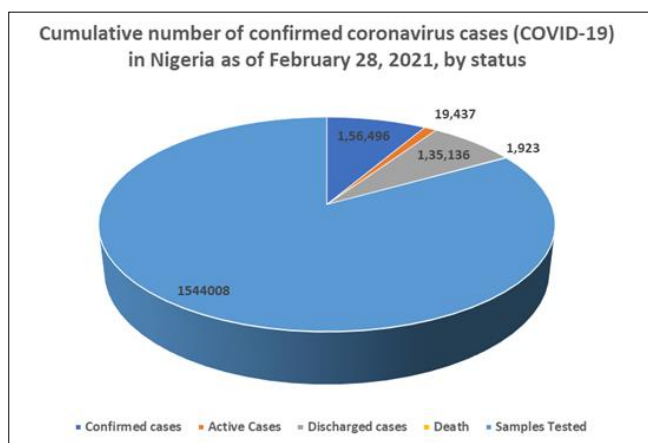
As of February 28, 2021, the total number of COVID-19 cases in Nigeria amounted to roughly 156,496. The number of active cases was 19,437 (see fig 1 and table 1). The south-western state of Lagos was the most impacted one, counting over 50 thousand cases. In total, 1.5 million people were tested in Nigeria (Statista.com). Prior to report of the COVID-19 outbreak in Africa, the WHO identified a strong link between the continent and China and has sent out guidelines on preparedness for the outbreak. Nigeria is one of the thirteen top countries identified as high risk for COVID-19 importation based on either direct link or high travel volume to and from China (WHO, 2020). The WHO also advised that countries develop capacity to promptly detect cases that will enable them to contain the outbreak early so that the health system is not overwhelmed (WHO, 2020).

**Table 1:** Current COVID-19 cases in Nigeria by state

State	Cases	Active	Recovered	Deaths
Lagos	56,001	1,786	53,805	410
FCT	19,274	7,211	11,914	149
Plateau	8,911	101	8,753	57
Kaduna	8,531	95	8,374	62
Oyo	6,746	952	5,684	110
Rivers	6,544	259	6,190	95
Edo	4,607	286	4,151	170
Ogun	4,398	623	3,728	47
Kano	3,764	149	3,511	104
Ondo	2,983	846	2,080	57
Kwara	2,931	579	2,301	51
Delta	2,579	770	1,744	65

Osun	2,433	301	2,082	50
Nasarawa	2,234	1,848	373	13
Enugu	2,078	184	1,865	29
Gombe	2,051	56	1,952	43
Katsina	2,030	18	1,983	29
Ebonyi	1,881	303	1,547	31
Anambra	1,726	116	1,591	19
Abia	1,530	21	1,488	21
Akwa Ibom	1,519	595	910	14
Imo	1,497	206	1,263	28
Borno	1,292	190	1,064	38
Bauchi	1,232	19	1,196	17
Benue	1,188	575	591	22
Niger	917	483	417	17
Taraba	813	94	697	22
Ekiti	804	85	709	10
Bayelsa	772	40	706	26
Sokoto	769	1	740	28
Adamawa	762	470	264	28
Jigawa	496	56	429	11
Kebbi	377	63	300	14
Cross River	334	43	274	17
Yobe	268	17	242	9
Zamfara	219	-4	215	8
Kogi	5	-	3	2
Total	156,496	19,437	135,136	1,923

Source: [https://en.wikipedia.org/wiki/COVID-19\\_pandemic\\_in\\_Nigeria](https://en.wikipedia.org/wiki/COVID-19_pandemic_in_Nigeria)



Source: <https://www.statista.com/statistics/1122637/coronavirus-cases-in-nigeria-by-status/>

Fig 1

### Personal protective equipment

Personal protective equipment are devices used that serve as shield against the transmission of infection from person to person. Health workers use personal protective equipment (PPE) to prevent the spread of a pathogen from either a suspected or confirmed case or a pathogenic specimen. The use of PPE serves as a means of preventing disease from patients to HCWs and from HCWs to patients. These physical barriers include; goggles, face shields, fluid-resistant medical or surgical masks, particulate respirators, gloves, disposable gowns and disposable coveralls. Other PPE include water-proof or heavy-duty aprons, waterproof boots and hoods or head covers in combination with other infection preventive measures (Ejeh *et al.*, 2020) [14]. The use of personal protective equipment was one of the first

steps taken to reduce community transmission in the case of Covid-19, in addition to lock downs and movement restrictions instituted by governments at various levels. The rational and correct use of PPE reduced exposure to pathogens. The effectiveness of PPE strongly depends on staff training on putting on and removing, prompt access to sufficient supplies, appropriate hygiene and health worker compliance (WHO, 2020). The PPE required to be used by a health care worker in the prevention of COVID-19 were discussed below:

### Gloves

It is important to always wear gloves before touching patients, when taking samples from patients and when handling patient’s specimen for laboratory analysis. The hands should always be kept clean before putting on the gloves. Healthcare workers should ensure that they do not touch their faces or adjust their PPE with contaminated gloves. The environmental surfaces should not be touched during patient care except when it is necessary. Healthcare workers should ensure that torn gloves should always be changed. Soiled hand gloves should be replaced even if it is being used on the same patient, a new hand glove should be worn for a new patient. Health care workers are to ensure that used hand gloves are properly discarded and never washed or reused. However re-usable gloves must be properly decontaminated and washed, while on the hands and after removal (Itodo *et al.*, 2020)

### Mask

Masks are made to ensure a one-way protection for healthcare. The mask must be checked to ensure it has no tear or torn strap or ear loop. The top ties should be brought to the crown of head and secure with a bow, while the bottom ties should be secured in a bow at the nape of the neck. The mask should be removed when no longer in clinical space and the patient intervention is completed. Mask should not be worn if wet or soiled. Mask should not be left hanging off one’s ear or hanging around the neck. Used mask should be discarded after wearing once. The front of the mask should not be touched as it is contaminated after use (Itodo *et al.*, 2020).

### Respirator

Respirators are tight masks that must seal of the wearer’s face and work in bidirectional sense, in particular for the protection of the wearer from dust or small particles in the air. The N95 respirator should always be checked to ensure it has no defects such as holes or torn straps. N95 respirator is worn for protection against very small particles that float in the air and other microorganism. The N95 respirator must be properly fitted-making sure the nose and mouth are completely covered. It must have a complete seal all around. Complete face seal check must be ensured, after donning the respirator. Wet and soiled N95 respirator should not be worn. It is essential that N95 mask be properly fitted and the ones with leaks around the edges should not be used. N95 respirator should never be shared with others, also the front of the N95 respirator should not be touched as it is contaminated after use (Itodo *et al.*, 2020).

### Gown

Gowns should be secured at the base of the neck and at the waist or as directed by the manufacturer. The gown must

completely cover the wearer clothing from front to back. The gown should be gradually removed by rolling it inside out and away from the body. Contaminated front and sleeves should be kept inside the bundle. Gown must not be re-use for the same or different patient. Contaminated gowns must not be allowed to hang out of the garbage. Contaminated gown must not be worn outside of the patient care area or laboratory or taken home for the purpose of washing (Itodo *et al.*, 2020).

Health care workers involved in caring for coronavirus disease 2019 (COVID-19) patients and other patients in the health facilities are at high risk for infection. This is due to their continued exposure to patients who may be infected with the disease but have not been diagnosed or patients who are asymptomatic to the infection.

**Methodology**

This study adopted a descriptive survey design. 800 senior secondary school students were sampled from a population of 18000 seniors’ secondary students in Rivers State using simple random sampling technique. A validated instrument titled perceived effectiveness of COBVID-19 PPE and utilization questionnaire with a reliability index of 0.82 was used to collect. The data was collected by the researcher. Mean, standard deviation and spearman rank order correlation were used to analyze the data collected.

**Results**

**Table 2:** Analysis of the students perceived effectiveness of COVID-19 PPE

S. no	Statements	Mean	Std	Remark
1	Nose mask does suffocate the body	2.41	0.678	Negative
2	The face shield does not cause	2.56	1.463	Positive

**Table 4:** The effects perceived effectiveness of PPE on the utilization of PPE among senior secondary school students

		Perceived effectiveness	PPE utilization
Spearman's rho	Perceived effectiveness	Correlation Coefficient	1.000
		Sig. (2-tailed)	.728**
		N	783
	PPE utilization	Correlation Coefficient	.728**
		Sig. (2-tailed)	.000
		N	783

\*\* . Correlation is significant at the 0.05 level (2-tailed). R<sup>2</sup> = 0.529

Table 4 disclosed the correlation analysis between senior secondary school students’ perceived effectiveness of COVID-19 PPE and the utilization of the PPE. The result revealed a correlation coefficient of 0.728 with a P.val of 0.000. Since the P.val is less than 0.05, the null hypothesis was rejected. Thus, she perceived effectiveness of COVID-19 PPE has a significantly effect on its utilizations. The R<sup>2</sup> value of 0.529 indicates that 52.9% of the level of utilization of COVID-19 PPE is determined by the students’ perceived effectiveness.

**Discussions**

The capacity to limit the spread of the new coronavirus COVID-19 in the in the school environment requires infection prevention and control measures, of which the PPE is a basic component (PHE, 2020). This is essential if the virus spread is to be mitigated within community as a whole. Not only does it protection the students but also the members of the school community.

		excessive sweating			
3	The nose masks sold in Rivers state are original and effective against COVID-19	2.31	0.999	Negative	
4	Most of the nose mask do itches the face because of the material they use in making them	2.51	0.654	Positive	
5	The nose masks do not irritates the ear angles nor as causes injury	2.47	0.774	Negative	
Aggregate mean		2.45	0.914	Negative	

\*Critical mean = 2.50

Table 2 showed that majority of the statement had mean below the critical mean of 2.50 except for the face shield do not causes excessive sweating (2.56±1.463) and Most of the nose mask do itches the face because of the material they use in making them (2.51±0.654) whose mean are greater than the critical mean. On the aggregate, the entire statements had mean score rating of 2.45±0.914 (mean<2.50). The senior secondary school students do not believe that face mask and nose are effective enough to protect them against COVID-19.

**Table 3:** The level of utilization of COVID-19 PPE among senior secondary school students in Rivers State

S. no	Statements	Mean	Std	Remark
1	I wore my face shield	2.22	1.002	Negative
2	I wear my nose mask	2.36	1.111	Positive
Aggregate mean		2.29	1.057	Negative

Table 3 revealed that the student rarely wore their PPE against COVID-19 (2.29±1.057). the least worn PPE was face shield (2.22±1.002). followed by nose mask (2.36±1.11). despite the ravaging effects of COVID-19, the students were not utilizing the prescribed PPE.

First, we found that the student perceived that face shield do not cause excessive sweating (2.56±1.463) and Most of the nose mask do itches the face because of the material they use in making them (2.51±0.654) whose mean are greater than the critical mean. On the other hand, the students perceived nose mask to contribute to human suffocation, nose mask irritate the ear and cause injury and that most nose mask sold are not original. collectively, the entire response of the students had mean score rating of 2.45±0.914 (mean<2.50). thus, senior secondary school students do not believe that face mask and nose are effective enough to protect them against COVID-19.

Secondly, we document that the student rarely wore their PPE against COVID-19 (2.29±1.057). the least worn PPE was face shield (2.22±1.002). followed by nose mask (2.36±1.11). despite the ravaging effects of COVID-19, the students were not utilizing the prescribed PPE. The poor utilization of PPE may have been propelled by their negative perception of the PPE.

Furthermore, the Spearman Rho analysis disclosed the correlation coefficient of 0.728 with a P.val of 0.000. Since the P.val is less than 0.05 between senior secondary school students' perceived effectiveness of COVID-19 PPE and the utilization of the PPE. Thus, we failed to accept the null hypothesis that students perceived effectiveness does not influence the utilization of PPE the perceived effectiveness of COVID-19 PPE has a significantly effect on its utilizations. The  $R^2$  value of 0.529 indicates that 52.9% of the level of utilization of COVID-19 PPE is determined by the students' perceived effectiveness.

This result does not align with the findings in China by Fang, Liu and Gao (2021). Fang *et al.* (2021) found that secondary school students in China were very confident that the government approach to preventing COVID-19 will help rid the country of the disease. They further observed that 472 (76.3%) respondents always wore a mask when going out in a correct way; 351 (56.7%) always washed hands frequently and correctly; 420 (67.9%) always covered the nose and mouth with hands when sneezing or coughing; 469 (75.8%) always avoided meeting and gathering; 214 (34.6%) often took physical exercise; 271 (43.8%) often had a balanced and nutritious diet, with less or no consumption of wild animals; 427 (69.0%) always avoided contact with live poultry; 287 (46.4%) often got enough sleep; and 382 (61.7%) would always go to the designated hospital immediately for medical treatment in case of suspected symptoms. This demarcation be as a result of environmental and political difference. It is very clearing that China committed immensely to ensuring that COVID-19 is wiped off their land.

Senior secondary school students in Rivers State do not believe that PPE can help resolve the problem of COVID-19. This their perception was shown in their poor utilization of PPE.

### Conclusion

COVID-19 is a viral infection that has ravaged the entire country. The pandemic has taken over a million lives and still counting. The effort to interfere with the disease from wiping humanity included the use of PPE. The importance of PPE in the disease control cannot be over emphasized. Yet the secondary school students have failed to utilize them effectively. The students do not perceive PPE effective enough to control COVID-19.

### Recommendations

Based on the findings of the study, the following recommendations were made

1. Secondary school students should be properly oriented regarding reality of utilizing COVID-19 control PPE
2. Government should set up monitoring team to ensure that school management enforce compulsory nose masking by the students.
3. School teachers should always guide the students right to place their minds towards following the COVID-19 control guidelines

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