PUBLIC HEALTH EDUCATION: A STRATEGY FOR LIVING WITH NOVEL CORONA VIRUS (COVID-19) IN NIGERIAN SCHOOLS.

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Abstract
Public health education is a strategy for imparting health education to individuals which focuses on the application of preventive measures to improve health of individual and community. Corona virus is an illness caused by a novel coronavirus. Public health education is important in fighting against this disease in Nigerian schools as it disrupts the academic calendar. Therefore, the purpose of this paper is to review the strategies of living with Novel Coronavirus (COVID-19) in Nigerian schools as the disease has no cure. But fortunately, the vaccine for prevention is available and public health education is the major tool for halting the spread of the novel disease. These strategies include; social and physical distancing, use of face mask, regular hand washing and use of hand sanitizer and vaccination. These strategies play a significant role in curving the menace of COVID-19 disease. Educating public on this strategies could be through print and electronic media, use of billboards, health education talks to mention but a few. Therefore, this paper recommended among others that public health education should be included in the curriculum of all schools at different level as a course.

Keywords: Public Health, Health Education, Strategies, Corona Virus

Introduction
Globally, Corona Virus Disease (COVID-19) has posed unprecedented challenges to various communities in the health, economic, education, social and many other sectors. It has brought about severe setback in public health and led to heavy socio-economic crises in the affected countries (Ajisegiri, Odusanya and Joshi, 2020). As at October 20, 2021, over 223 countries have reported a COVID-19 case with a total of four million, nine hundred and forty-eight thousand, two hundred and ninety-five (4,948,295) deaths globally (Worldometer, 2021). The initial confusion on how to treat the virus and lack of clinical vaccine for combating it led various countries especially Nigeria to adopt non-pharmaceutical measures for curbing the spread of the virus such as the total or partial lockdown of social, educational, political and economic activities.

This COVID-19 pandemic has already impaired global healthcare systems as well as affected every aspect of human life. Subsequently, countries globally have had to implement global standard control strategies, which had hitherto not been employed since the Spanish Flu epidemic. These measures, which included

travel restrictions, lockdowns or curfews, workplace hazard controls, closure of public facilities including pubs, restaurants, gyms, schools and higher institutions, strict hand hygiene practices, social distancing and the wearing of facemasks have impacted lives on a global scale. Despite these mitigation measures, the number of cases is still on the increase globally with the Americas, Europe and South-East Asia badly affected (*World Health Organization, 2020*). Nigeria reported its index case of COVID-19 on February 27, 2020; incidentally, the first in Nigeria and West Africa according to the Nigerian Centre for Disease Control (The 2019 Outbreak Joint Field Epidemiology Investigation Team, 2020). Subsequently, a lockdown or curfew in various states was implemented to contain the fast spread of the virus. Although COVID-19 affects individuals of all ages, greater severity and mortality occur more among the aged population, that have other co-morbidities such as hypertension and other cardiovascular diseases, diabetes, cancer and other immune-compromising diseases. It has also been observed that COVID-19 seems to affect males more than females. Meanwhile, children tend to exhibit milder symptoms of COVID-19 (*World Health Organization, 2020*).

Brief History and Nature of COVID-19

Severe Acute Respiratory Syndrome–novel Coronavirus 2 (SARS-nCoV-2) was first reported in Wuhan, China, in December, 2019 (World Health Organization, 2020). The disease was first reported to have originated from Wuhan, China and the causative agent identified as a novel coronavirus, Severe Acute Respiratory Syndrome (Coronavirus- 2 SARS-CoV-2) (WHO, 2019). This disease is similar to the previously emerged SARS-CoV and the Middle East Respiratory Syndrome Coronavirus (MERS-CoV). COVID-19 was announced as a pandemic by the World Health Organization and disease of a public health emergency globally on March 12, 2020 (WHO, 2019).

The novel coronavirus disease 2019 (COVID-19), which is caused by severe acute respiratory syndrome virus 2 (SARS-CoV-2) was first reported in December 2019 by Chinese Health Authorities following an outbreak of pneumonia of unknown origin in Wuhan, Hubei Province (WHO, 2019). SARS-CoV-2 is likely of zoonotic origin, similar to SARS and Middle East Respiratory Syndrome (MERS), and transmitted between humans through respiratory droplets and fomites. Since its emergence, it has rapidly spread globally (Patel, Jernigan, Abdirizak, Abedi, Aggarwal and Albina, 2020).

The World Health Organisation (WHO) declared the novel coronavirus outbreak a Public Health Emergency of International Concern (PHEIC) on January 30, 2020 (Jee, 2020). As COVID-19 spread to more countries and caused an increasing number of deaths, World Health Organization led a mission to China with a team of experts from eight countries including Nigeria, to determine the extent of the outbreak, robustness of the response and identify best practices. Subsequently, on March 11, 2020, World Health Organization declared COVID-

19 a pandemic, calling for countries to take urgent and aggressive action (Cucinoffa and Vanelli, 2020).

The severe form of COVID-19 occurs in three phases—viral, pulmonary and final hyper-inflammatory phase, which can lead to severe acute respiratory distress syndrome (ARDS), impaired cardiac function, and death. Thrombosis and coagulopathy is reported to complicate COVID-19. Patients suffering from a severe form of COVID-19 often need to be intubated and placed under a ventilator. The chance of survival following SARS-CoV-2 infection for people 60 years is ~95% in the absence of comorbid conditions, but this chance decreases considerably if the patient has underlying health conditions (Brownson, Burke and Colditz, 2020).

Because COVID-19 is easily transmitted via droplets and can remain suspended in the air for some hours, transmission can occur through human interactions and contaminated fomites. Travellers from countries with reported cases enabled the disease to rapidly spread COVID-19 to all continents, including African countries. People residing in Europe especially from the United Kingdom, France, Germany, Italy, Spain and The Netherlands and the USA were categorized as high risk. Hence, travelers from these countries were also regarded as high-risk people (Cucinotta and Vanelli, 2020).

Since COVID-19 spread at a fast rate, individuals from vulnerable health systems and poor socioeconomic backgrounds are particularly at risk. The majority of countries in Sub-Saharan Africa were faced with prolonged health system vulnerabilities due to civil wars, post-military autocratic delayed reforms, corruption, and the emigration of physicians/health workers and other skilled professionals (Patel, Jernigan, Abdirizak, Abedi, Aggarwal and Albina, 2020). Nigeria is an example of a vulnerable health system, and according to the healthcare system corruption rating among Anglophone West African countries by *Transparency International*, Nigeria ranks the worst. The leadership of the Nigerian Ministry of Health changes with every change in political dispensation, with successive ruling party selecting Health Ministers without consideration of competency. The frequent change of health ministers, coupled with the looting of funds earmarked for the reformation of Nigeria healthcare systems, and government officials often engaging in medical tourism, only serves to make the situation worse. Thus, there is a high burden of chronic diseases such as diabetes mellitus, hypertension, and so on among the population (Jee, 2020).

Role of Public Health Educators towards COVID-19 Management

Improving the health of people is an essential and perhaps one of the most important functions of any government; health is not only a contributor to overall development but also an important factor in reducing poverty. To achieve health of their populations, nations build health infrastructure and invest in a well-trained health workforce. Public health knowledge, expertise and a skilled workforce play

a critical role in prevention of diseases, promotion of health, developing programmes, monitoring and evaluation of health systems. Schools of public health (and allied institutions) all over the world play a key role in the production of such a workforce and have traditionally focused on competencies in areas such as epidemiology, statistics, health systems, disease prevention, health economics and environmental health (Mheidly and Fares, 2020).

COVID-19 is the first pandemic to strike the world since early 1900s and has magnified the existing inequalities and inequities around the world. Managing the pandemic requires not only a biomedical approach but also incorporating a broader social sciences approach to health, and most fundamentally, listening and learning from existing diverse communities and health systems, flexibility and capacity to work across sectors, and recognition of social justice, equity and human rights as basic principles, while undertaking public health actions in diverse contexts (Loomba, de Figueriedo and Piatek, 2021).

Brownson, Burke and Colditz (2020) stated that the ongoing pandemic has clearly shown the global health community that there is a need to further strengthen capacity, competencies and knowledge in some areas of public health taught at this point, such as the politics of public health, working with communities in our approach to community engagement and building trust, and promoting interdisciplinary research. However, there are additional areas of knowledge and competencies that are critical to respond and manage such pandemics. The pandemic demands new investments in schools of public health education, so that they can develop and implement the delivery of some new courses and methods for achieving relevant competencies.

Public Health Education Strategies for living with COVID-19 in Nigerian Schools

Public Health education and promotion are important components of disease prevention activities in general, but during disease outbreaks and health emergencies, they play a key role in an active response by offering well-established tools (especially important in the absence of specific drug therapies and vaccines) to communicate and engage quickly and effectively with the public and prevent infections.

Messaging specifically targeting school children who may well be acting as “silent” transmitters of COVID-19 is presently lacking. In the absence of effective therapeutic drugs, preventive measures such as: good hygiene practices, hand washing, cough etiquette, disinfection of surfaces and social distancing represent the major weapons against COVID-19. *The World Health Organization (WHO)* states, “the best way to prevent and slow down transmission is to be well informed about SARS-CoV-2, the disease it causes and how it spreads” (World Health Organization, 2020). We have seen that health and hygiene campaigns, which reinforce consistent messaging and persuade people to alter their habits, are

effective in reducing infection rates. To date, however, most of the messaging has targeted the general population not children specifically. Children are able to copy parent behaviour, but are not equipped with a true understanding of why they are being asked to make changes, potentially resulting in confusion, fear and lapses in hygiene or social protocols. Development of an appropriate and engaging hygiene and social distancing education campaign targeting children is urgently needed in order to reinforce adult messages appropriately and maximise child compliance. The WHO is the main international body providing information to the public, health sector, and governments. Resources for the media also explain how to relay messages regarding prevention measures. Delivery of these messages uses a variety of formats including information sheets, videos and infographics. These are available on the WHO website and their social media platforms. Advice is provided for parents on communicating with children about COVID-19. Some materials are available for schools on age-appropriate health education regarding the virus and the associated disease but messages specifically targeting school children are lacking and have caused confusion and anxiety for those too young to engage with the current campaigns. Television programs have contributed to reinforcing positive influences in the cognitive development of young children. Cartoons also have a long history of popularity with school children (Bieri, Gray, Raso, Li and McManus, 2012).

With the urgent need to develop specific COVID-19 prevention information for school children it is logical to develop a cartoon video-based entertainment education approach, with a discrete, engaging and highly informative story line, emphasizing correct hand washing procedures and the social distancing concept. One highly successful and proven intervention is “The Magic Glasses”, an inexpensive and engaging 12-min cartoon-based hygiene education intervention package, which is combined with classroom discussions, drawing and essay competitions, and a pamphlet (derived from the cartoon) to reinforce the health messages (Bieri, Gray, Raso, Li and McManus, 2012).

The cartoon concept enables school children to identify with characters to visualize the intestinal parasitic worms and their eggs in people and the environment to reinforce the importance of good hygiene and associated health behaviours (Bieri, Gray, Raso, Li and McManus, 2012). This is directly applicable to the transmission dynamics of SARS-CoV-2 whereby virus would be visualized in people and the environment and the associated messages for prevention. The formative research process used to develop the original “Magic Glasses” would be used here to identify risk factors and drivers for behaviour change in order to translate them into the preventive messages (Bieri, Yuan, Li, He, Bedford and Li, 2013).

Key messages of such an intervention could include hand washing, care in coughing and sneezing, tissue use and disposal, physical distancing (which particularly lends itself to visual display) and what to do when feeling unwell. It

also reinforces how the virus behaves to assist children's understanding and allay fear. Importantly, utilizing a scientifically validated health education intervention to disseminate COVID-19 information to school children ensures that reliable and factual information is delivered through official channels (such as schools) to an audience who are considered to be highly vulnerable to becoming victims of misinformation or 'infodemics' (The United Nations Department of Global Communications 2020).

Conclusion and Recommendations

It is evidently proved by researches that public health education plays significant role in prevention and disease transmission such as corona virus more particularly among students. The public health education strategies to be enforced in schools are hand washing, physical and social distancing, use of facemask, use of hand sanitizer among others. It was recommended that;

i Schools should intensify education campaign on the preventive measures of COVID-19 through prints and electronic media.
ii Schools need to provide more washing hand facilities at strategic places and face masks and enforce use in and outside the school premised.

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