



A Review of the Impact of Coronavirus in Nigerian Educational System: Challenges, Preventive Measures & Navigating to the Digital Education

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Abstract

The Coronavirus epidemic has had a severe effect on several industries, including education. Before the pandemic, the schools in Nigeria used a solely face-to-face method of teaching and learning. Students in schools were not permitted to own any digital devices, such as phones or computers, and they were also not permitted to be observed using them in the classrooms. Following the COVID-19 pandemic, lockdown conditions and school closings were instituted, leaving both teachers and students unsure of how to carry on with their studies. Globally, the COVID-19 pandemic has had an impact on educational systems, forcing almost complete closures of schools, colleges, and universities. Most governments around the world have temporarily closed educational institutions in an attempt to contain the spread of COVID-19. The closure of educational institutes affects not only students, teachers and families but has far-reaching economic and societal consequences. An amount of social and economic issues, including student debt, digital learning, food insecurity, and homelessness, as well as access to childcare, health care, housing, the internet, and disability services, had also come to light as a result of the closure of academic institutions in rebuttal to the disease outbreak.

Keywords: Covid-19, Digital Education, Lockdown, Social Distances, Infection



Introduction

A community health emergency of international concern with high danger to several countries was announced on January 30, 2020 [1], [2]. In December 2019 [1], [2], the first case was discovered in Wuhan, China. The coronavirus infection 2019 (COVID-19) epidemic, which has spread to other nations as well as to Wuhan, China, has evolved into a serious public health issue. The new coronavirus outbreaks have been declared a public health emergency of global concern by the World Health Organization [3]. With a total of 80,239 research lab cases and 2,700 fatalities as of February 26, 2020, Covid-19 has been acknowledged in 34 nations [4], [5], [6]. To stop the virus from spreading further and to aid in containing the epidemic, infection prevention and control measures are required. The danger of cross-infection among patients and dental professionals can be substantial due to the peculiarities of dental environments [4]. Strict and efficient infection control procedures are urgently required for dental offices and hospitals in regions that are (maybe) impacted by COVID-19. This paper delivers crucial information concerning coronavirus and reinfection disease in dental settings and offers suggested management methods for dental professionals and students in (possibly affected areas), based on our experiences and pertinent recommendations and research [7], [2], [8], [9].

The absolute shutdown of the economy, particularly academic institutions, is one strategy used by several nations to enforce physical distance Nicola et al.; UNESCO, cited in [2], which is cited in [2]. Preschool through higher education are all being negatively impacted by the epidemic, with far-reaching effects on both education and the economy Lindzon, cited in [2]. For instance, Lindzon reported in [4] that a four-week school shut down in New York City had an economic impact of between \$10.6 to \$47.1 billion. According to Araz et al. cited in [2].

A 12-week nationwide school closure cost 1% of the GDP, whereas longer closures might cost the UK GDP 3%. Keogh-Brown et al., cited in [3], [10].

Over 91% of the world's students are affected by these widespread closures. Localized closures have been adopted in several other nations, affecting millions of additional students. UNESCO is assisting nations in their attempts to lessen the immediate effects of closing schools, especially for even more vulnerable and underprivileged groups, and to make it easier for everyone to continue their education through distance learning [4], [5]. According to UNESCO research, the coronavirus pandemic will negatively affect more than 290 million pupils across 22 nations. According to UNESCO, 32 crore students in India, including those attending schools and institutions, are impacted [7], [11], [9].

Covid-19, however, encouraged academics to reevaluate the traditional educational model. While reducing the risk of any infection to pupils until classes restart, digital education seems to be a workable approach to fill the hole left by classroom instruction for a duration of between three and four months. More significantly, it has thrust the previously unimportant problem of electronic education in India into the spotlight. In the future, it's conceivable that digital education will be included in traditional schooling. This will facilitate learning across various Indian geographies, enabling inclusive education. Additionally, it will give teachers the chance to develop personalised learning plans for each student [7], [3], [6].

The method we learn nowadays has undergone a full transformation thanks to technology. Every student has access to a global education, which is difficult to deliver using the conventional white chalk and board style of instruction [5]. This new education is more engaging, tailored, and fun. An online course with open access and limitless

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enrollment is known as a massive online open course (MOOC). After the United States, India is regarded as having the largest MOOC market worldwide. Massive open online courses (MOOCs) are thought to provide many Indians with access to a revolution in education due to the country's enormous population. With the aid of internet connectivity, online distance education programmes provide a terrific chance to participate in high-quality learning [7].

Digital learning has several benefits in and of itself. In contrast to traditional learning, e-learning has no physical limitations, is more engaging for students, is also more affordable, and allows them to study in the convenience of their own homes. Since face-to-face communication is typically seen as the best method of interaction as opposed to the rather impersonal character of remote learning, digital learning does have some drawbacks and difficulties. Online education has had some success on a global scale [9]. In India, there is still a long way to go before online learning is accepted as the norm since students in metropolitan areas have the tools to choose digital education, but those in rural areas lack the necessary infrastructure and financial means to access such resources [9].

Background to the Study

Due to issues with social distance and also the issue of live classrooms at educational institutions, Covid-19 has had a significant impact on the educational system. According to recent research, Covid-19's detrimental effects on upholding the correct educational process have affected about 284 million students worldwide, according to Statista, cited in [12]. Therefore, a crucial component that has assisted in maintaining the educational process, particularly during the Covid-19 crisis, is the virtual conversion of the educational system via the online process [12].

The Concepts

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Pandemic and Closure of Schools

School closings and prohibitions on public gatherings were implemented during the difficult 1918–1919 influenza outbreak in the US, which helped to lower fatality rates. Cities that implemented such measures sooner experienced bigger delays in reaching their peak mortality rates, according to data [12]. According to a survey of 43 US communities' responses to the Spanish Flu, schools were shuttered for 4 weeks. It has been demonstrated that closing schools can reduce influenza morbidity by up to 50% and by 90% during outbreaks of the Asian flu in 1957–1958 in the US from 2004–2008. During the 2009 H1N1 Flu pandemic, several nations successfully halted the spread of the virus by closing schools [9], [3]. Even during the height of the outbreak, the shutdown of schools in the Japanese city of Oita helped to successfully reduce the number of sick kids. A 29% to 37% decline in influenza transmission rates was correlated with mandatory school closings and other social isolation measures. The 2009 H1N1 Flu pandemic's peak was postponed in the United States due to early school closings. Despite the fact that school closures have generally been successful, several studies have found that they are not the greatest way to control the epidemic and that the method is unproductive. An investigation carried out in Michigan, for instance, concluded that "district-level reactive school closures were inefficient" [10].

Several nations have decided to close their schools, colleges, and institutions. The problem highlights the impasse that decision-makers must make regarding whether to keep schools open or close them to save lives and reduce interaction (allowing workers to work and maintain the economy). Many families all over the world experience the significant short-term disruption that comes with homeschooling, which has a profound impact on children's social and academic

development in addition to parents' productivity. On an unproven and unheard-of scale, education is migrating online. With such a lot of trial and error and uncertainty for everyone, student assessments are also shifting online. The results of many tests have merely been cancelled. Importantly, these disruptions won't only be a problem in the near term; they could also have long-term effects on the cohorts affected and are likely to lead to greater inequality [10], [12].

It is indeed feasible that the breaks will help certain students' careers. For instance, it has been determined that all Norwegian 10th graders would receive a high school diploma. According to Maurin and McNally, the 1968 abandonment of France's customary examination processes in the wake of student riots had favourable long-term effects on the cohort in question's access to the workforce [7], [3].

Online assessment tools are increasingly being used in higher education to replace traditional exams. Both students and instructors are unfamiliar with this topic, therefore assessments will probably have bigger measurement mistakes than usual. According to research, companies sort applicants based on educational credentials like degree categories and average grades Piopiunik et al. cited in [3]. Consequently, the potential reduction in the matching efficiency for recent graduates on the labour market, who may face slower wage growth and greater job separation rates, is due to an increase in the noise of the individual's signals. This is expensive for the individual as well as for society at large. Fredrikson and others cited in [7], [3].

What is Covid-19

The enormous virus family known as coronaviruses (CoV) is responsible for a variety of ailments, from the common cold to more serious conditions. Learn more about

this novel coronavirus (nCoV) that hasn't been seen in people before [2], [14].

The World Health Organization (WHO) declared this epidemic to be a public health emergency of international concern on 30th January 2020, according to current research Mahase cited in [13]. Initially known as 2019-nCoV, the novel coronavirus is now officially known as the severe acute syndrome coronavirus (SARS-CoV-2). As of 26th February, COVID-19 was acknowledged in 34 nations, with a cumulative of 80,239 cases that had been confirmed in laboratories and 2,700 fatalities (WHO 2020) [13].

Viral Etiologic

Recent studies have found that SARS-CoV-2 is zootoxic, comparable to SARS-CoV and the Middle East respiratory syndrome coronavirus (MERS-CoV), with Chinese horseshoe bats (*Rhinolophus sinicus*) being its most likely source [4,9]. Pangolins were identified by The Chinese Preventive Medicine Association (2020) as the virus's most likely intermediate host [10], [13], [14].

Mode of Transmission

Respiratory droplets, airborne contact, aerosol transmission, and close touch with the patient are the main modes of transmission that could occur. But it has not yet been determined whether there is a possibility of vertical transfer from the mother to a foetus [1], [14], [13], [15].

Source of Transmission

Patients who are sick as well as those who are asymptomatic have been observed to be the disease's carriers. According to certain research, there may be human-to-human transfer. It has been discovered that respiratory droplets are the mode of person-to-person transfer (airborne spread) [1], [8], [13], [15].

Incubation Period

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The Coronavirus has an incubation period that ranges from 0 to 14 days on average. The period of medical monitoring and quarantine, which can last up to 14 days in cases of any history of travelling or interaction with exposed patients, has been extended due to the increased likelihood of virus transmission in asymptomatic individuals now [1], [8], [15].

High Risk of Acquiring Infection

Medical professionals, especially dentists, are typically those who are most at risk of contracting an illness. All age ranges are susceptible, although the elderly, those with immune disorders, and those with cardiovascular illnesses are more at risk and have a worse prognosis [13], [1], [8].

Clinical Presentation

The COVID-19 virus typically causes fever, cough, exhaustion, and shortness of breath. Less frequently, the virus causes headaches, diarrhoea, and vomiting. According to several research, a Computed Tomography Scan showed bilateral pneumonia and ground glass opacity [1], [8].

Oral Manifestations

The absence of feeling or taste may be a COVID-19 early sign, according to the CDC. Ulcerations, xerostomia, fungal infections, and gingivitis are some other symptoms [1].

Preventive Measures Recommended for the Control of the Spread of Covid-19

The DCI provides numerous guidelines and preventive measures to limit the spread of the Covid 19 Virus. The following protocols and control measures have been declared by the Dental Council of India [8], [15], [16], thus;

1. **Hydroxychloroquine Prophylaxis:** It is recommended that all healthcare

professionals who treated or had a connection with asymptomatic or confirmed cases of Covid -19 undergo hydroxychloroquine prophylaxis [1], [15].

2. **Training of the Health Care Workers:** All team members who work in operating rooms, dental clinics, or hospitals are encouraged to keep a safe distance from others and wear masks. In addition to this, they ought to take [1], [15].
3. **Clinic entrance, waiting area and reception:** Barriers made of plastic or glass should be put at the welcome area. The use of contactless or cashless payment options should be encouraged. Patients might be informed by posters on proper coughing technique, respiratory care, and social withdrawal [1], [15].
4. **A Changing room:** Should be provided for donning and doffing of PPE kits and for changing clothes [1], [16].
5. **Area for sterilization:** An assistant should be assigned for proper sterilization and packing of the instruments. He should also make sure of sufficient availability of PPE kits and their proper storage [1], [15].
6. **Toilets:** Use sensor taps to prevent leaks. Towels or tissue paper should be used in place of towels [1], [16].
7. **A Dental Clinic:** Each time a patient visits, surfaces should be cleaned, and tools used in the operating room should be properly sterilized. All other individuals accessing the clinic facilities should adhere to the laws of social distancing and must wear masks in places with centralized air conditioning. Returning air vents should also be covered, in addition to the windows and doors [1], [15].

Impacts of Covid-19 on the Nigerian Education System

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Throughout Nigeria, outbreaks of Lassa fever, bird flu, monkeypox, Ebola disease, and other diseases did not burden the socioeconomic and educational systems as much as the coronavirus outbreak has. This has caused controversy in the nation and among the concerned staff, who are aware of the potential effects of the prolonged holidays brought on by the disease outbreak [10], [16].

Impacts on Education: Schools and Colleges

The class can be enjoyable, and from an economic perspective, the main benefit of attending school is that it improves a child's ability to become a valuable and respectable member of society. Attending classes is the best public policy tool available for developing skills and potential. Even a relatively brief term in school has a lasting effect on a child's life; skipping just a few days could have negative effects on future skill development [17]. Because we can only perceive the immediate effects of the COVID-19 disruption, it is impossible to predict how much learning will be affected. Similarly, it may be difficult to detect the progressive decline in innate talents. The world we live in today is very diverse from the one we were used to. The school calendars and schedules have altered, and when classes resume following the lockdown, numerous issues need to be resolved for Nigeria's educational system to stay competitive with those across the world. During the lockdown, educational facilities were not used to their full potential, and some may have even sustained damage [7].

According to UNESCO, the closing of schools has left around 35.9 million primary and secondary school students without access to education. There are roughly 25.6 million kids in primary schools overall, of whom

about 87 per cent (23.5 million) attend public schools. The statistics for students in secondary schools are just as startling. Around 81 per cent (8.4 million) of the nearly 10.3 million secondary school students who aren't in class because of the closures attend public schools [17]. There is no guarantee that every student who left the school during the pandemic lockdown will return; some students may have changed their lives and stopped seeing going to school as a worthwhile endeavour; others may have passed away; others may have to change schools; still, others may have had to join dangerous organisations, diverting their attention from education. Etc. To ensure the right well-being of students even while they remained at home, parents and guidance should step in. Looking at certain Nigerian parents' literacy levels, learning is unfortunately also severely limited at home. Not all parents can manage the pedagogical aspects of parenthood properly, and other parental responsibilities must also be taken into account. Although the impact of this might not be immediately apparent, children in this category are inevitably at risk of a significant academic collapse if the right measures are not made because most of them won't be able to attend school until the movement ban is lifted and the schools are reopened [10], [7], [16].

Impacts on Education: Families

According to [10], families are essential to education and agree to put significant effort into a child's learning. At first glance, the current global expansion of home-based education can be viewed as largely favourable and as likely to be active. However, this portion is seen as an addition to the school's work. Parents can supplement their children's math instruction by practising counting or emphasising problems with basic math in everyday life. They can also liven up history lectures by taking them on field trips to significant museums or monuments [17].

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Being the primary force behind learning, especially when combined with online resources, is a different matter. While many parents around the world successfully educate their children at home, it seems unlikely that this is true for the majority of people [11], [7].

Global homeschooling will undoubtedly result in some moments of inspiration, some times of wrath, some moments of amusement, and some moments of annoyance, but it seems highly implausible that it will consistently replace the learning that is lacking from school. The extent to which families can support their children's learning will likely vary greatly. They also concur that the primary differences are the amount of time that can be devoted to instruction, the resources' non-cognitive skills, the parents, and the amount of knowledge - it's hard not to understand yourself. As a result, the impacted partners' discrepancy in the growth of their human capital will increase as a result of this incident [11], [7].

The Coronavirus Epidemic Effect of 2019/2020 on Education

Globally, the 2019 coronavirus epidemic has had a tremendous impact on educational systems, forcing almost all schools, colleges, and universities to close. As of April 27, 2020, there are currently close to 1.725 billion students who are impacted by the epidemic-related school closings. One hundred eighty-six (186) nations are now engaging in national closures and local closures, impacting nearly 98.5% of the global student population, according to a UNICEF monitoring study. The cancellation of the Cambridge O Level, Cambridge IGCSE, Cambridge AICE Diploma, Cambridge International AS & A Level, and Cambridge Pre-U examinations for the May/June 2020 series was announced by Cambridge International Examinations (CIE) on March 23, 2020. Exams for the

International Baccalaureate have also been cancelled [11], [16].

Closures of schools have significant negative effects on society and the economy in addition on teachers, students, and families. As a result of COVID-19, many social and economic issues have come to light, including homelessness, digital learning, student debt, food hardship, and access to health care, daycare, housing, disability services, and the internet. The effects were severe for children from low-income families and their families, impairing education, complicating feeding and childcare, and costing money to families who were unable to work [7], [11], [16], [17].

The Coronavirus Pandemic Managing in Nigeria's Education System

The Nigerian Education sector maintains a Response Monitoring Tool named 5W Matrix (Who is doing What, Where, When, and for Whom) for monitoring National Education partner activities under the current COVID-19 contingency response, according to the coronavirus response monitoring plans by Unicef Nigeria (2020). Partners continue to submit monthly updates to the Education Sector secretariat team while the pandemic is still ongoing [18]. The Education Sector Secretariat team regularly created maps and other tools to improve coordination of the response based on the submissions; they also made sure that proper documentation was in place to identify gaps and prevent duplication of activities/programs during and after this pandemic period. Along with ensuring alignment with the (to be) modified Humanitarian Response Plan, the Monitoring System also sought to simplify reporting requirements to partners while simultaneously providing routinely requested information regarding the progress of programme execution (HRP). Regular partner participation in this monitoring along the way was essential to maintaining solid

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coordination because it was found that only by working together can we all put an end to the coronavirus's ongoing hold on us. This was done to enable the Sector to consistently identify gaps and requirements, form alliances and partnerships, and advocate on behalf of the Sector as a whole [10], [18], [17].

Coping with the Challenges and Charting a Way Forward

Public health should come first when dealing with the Coronavirus outbreak and moving forward rather than the existing situation of personal interest. Information on COVID-19 transmission and prevention would be shared early to encourage the adoption of safety measures by individuals when the public interest takes precedence. As a result, the public would be more confident in the government's judgement and ability to administer COVID-19 [17], [18].

The Digital Education

Digital or Virtual education can be termed a revolutionary process that has provided a positive influence on the teaching and learning process. Therefore, proper use of technology and the internet in maintaining virtual learning is beneficial enough in providing better support for students to learn things during this pandemic situation [12].

The Impact of the Digital Education System during Coronavirus Pandemic

Virtual education is important especially during the pandemic as it supports online facility of learning without any bearers of face-to-face learning which is an issue during the pandemic. According to (Moreira & Rodríguez (2021), virtual methods of education can be termed as an important challenge regarding constructive method implementation that can help in improving the learning process [12]. Therefore, a virtual learning method during the pandemic is

helpful enough in maintaining responsibility for an individual in gathering knowledge as well as supporting stimulating interaction [12]. In contrast, Zeide and Nissenbaum have argued that virtual learning helps in automating the instructions in learning that support the automotive process of education for students. Therefore, it can be termed as an important aspect of the modern lean ring during the pandemic to maintain the effective process of learning process globally [12].

The Strategy used for Digital Education System during Covid-19

To help students, virtual learning employs a variety of methods, including the internet, social media sites, and other private websites or platforms operated by educational institutions. Real-time and self-paced online learning methods can be regarded as crucial components of an ongoing online education system Kamińska [12] Virtual reality (VR) is said to as a sophisticated approach that supports a computer-generated strategy in retaining education strategy for professional development [12]. In online learning systems, Holmberg's idea can be considered a key component supporting the management of personal contact between instructors and the respective learners. The spiritual perspective can be described as a crucial ecological understanding that encourages the investigation of novel theoretical ideas, according to Holmberg et al, cited in [12]. As a result, it can be referred to as a digital learning strategy that helps people learn more by improving their awareness of the environment. A stronger infrastructure for delivering education and a choice of qualified teachers are required for a bias-free educational process, which virtual education helps to preserve [12].

Conclusion

The current efforts are concentrated on informing the public and halting the epidemic's progress. These are significant and

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must not be disregarded. The more challenging tasks involved in planning for the effects that will hamper the Authority's ability to provide schools must be given equal weight. The programme of activities must also include planning for the impacts on the demand for education and the capacity of the Government to provide education now that the impacts on the education system itself are more recognized. The study has looked at a variety of theories and notions, including digital or online learning and other terms that are linked and have turned classroom instruction into an online process.

Conflicts of Interest

The author declares that there is no conflicts of interest exist regarding the publication of this article.

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