Access to Water and Regular Handwashing as a Preventive Measure against the Spread of COVID-19 in Southwestern Nigeria

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Abstract

The coronavirus (COVID-19) was a global pandemic with alarming effects. Preventive measures were introduced worldwide including regular handwashing with soap or alcohol-based sanitizing. Adequate access to water remains a mirage in most urban cities in Nigeria. This paper highlighted issues related to the provision of water and other facilities for regular handwashing at public and private places in the Southwest region of Nigeria. The convenient sampling technique was adopted in the selection of 124 respondents across the region, while a Google survey structured questionnaire was utilized to collect information which was analysed descriptively. The findings revealed that respondents visited both public and private places during the pandemic. Of all the places visited only 61.3% provided necessary facilities for regular handwashing while 28.2% occasionally supplied water and soap. Provision of water for handwashing varied among the states (Lagos 77.8%, Osun 71.4%, Ogun 66.7%, Oyo 64.2%, Ekiti 37.5%, Ondo 36.8%). Among the respondents, only 52.4% performed handwashing regularly, 33.1% seldom performed handwashing while 12.9% did not practice handwashing. Water shortage (41.9%) and lack of hand washing facilities (43.5%) largely accounted for low

regular handwashing while other factors such as fear of using waste water for ritual, lack of soap in some public places, and cultural conflict were responsible for deviance. The paper concluded that handwashing is widely recognized as the most effective preventive measure to curb the spread of COVID-19, but provision of running water and hand washing facilities in public and private locations is low. It is recommended that government should deploy conscious effort to provide running water and handwashing facilities in public places coupled with continuous enlightenment to encourage and educate citizens on the importance of regular handwashing to prevent the spread of COVID-19.

Keywords: Handwashing, COVID-19 pandemic, Preventive measures

1. Introduction

The provision of water is a major issue that relates to all aspects of human development, including health, agriculture, education, economics, and even peace and stability (Naik, 2017). Access to water is a key determinant for infectious disease control and prevention; therefore, limited access creates a challenge for transmission control of disease (World Health Organization, 2019). Water was a key element in controlling the spread of the corona virus (COVID-19) through regular handwashing with soap. Evidence indicates that the COVID-19 virus is transmitted via respiratory droplets. Contact transmission happens when contaminated hands touch the mouth, nose, or eyes. Consequently, hand hygiene (regular handwashing) is highly recommended to control the spread of the COVID-19 virus (Cascella et al., 2020).

The World Health Organization (WHO) and national public health agencies, in giving the global directive on regular handwashing as a means of curbing the spread of COVID-19, did not consider the existing challenges of water shortage in many parts of the world (WHO, 2020). Across many sub-Saharan African (SSA) countries, access to safe water is difficult (Kakonge, 2002). Some African countries such as Ethiopia (60.9%), Somalia (60%), Angola (59%), Democratic Republic of the Congo

(58.2%), Chad (57.5%), and Niger (54.2%) suffer water crisis for domestic use, and much more so for regular handwashing (McNally, 2019).

In response to the increasing threat from COVID-19, most governments of the world instituted a total lockdown measure (Onyeaka et al., 2021). The lockdown became necessary to limit person-to-person contact in public places. This affected water demand and accessibility. For instance in Jordan, where over 93% of people had access to safe water in 2015 (Al-Addous et al., 2023), a water sector official declared in 2023 that demand for water in Jordan jumped by 40% when the government ordered people to stay home as part of a nationwide lockdown. A sudden increase in water demand where water is scarce can cause widespread drought (Al-Addous et al., 2023). On the other hand, residents are concerned about a potential increased spread of COVID-19 due to water shortage and rationing compared with the demand. In Ghana and Kenya for example, many households struggle to comply with the 'frequent washing of hands under running water' because of water rationing. In addition, social distancing is almost impossible as residents are likely to queue to access or buy water in most African countries, particularly in Nigeria (Anim & Ofori-Asenso, 2020). Residents in many communities in developing countries like Nigeria are unable to socially distance or conform to lockdowns for reasons such as the need to get access to water. Furthermore, provision of water and running water systems are not available in most public places and homes in Nigeria, which directly hinder the effectiveness of COVID-19 spread control.

In particular, this study seeks to examine the access to water, sanitation, and hygiene (WASH) facilities that could help to minimize COVID-19 transmission, and reduce healthcare and other societal costs. In view of the above, this paper highlights issues related to water supply in private and public places such as banks, and religious centres to investigate the influence of water supply and regular handwashing across southwestern Nigeria. The findings are expected to assist in providing guidelines on how to encourage regular handwashing at household level and in public places so as to promote health security in the society.

Statement of the Problem

According to WHO, in 2020, about 14.9 million people globally tested positive to COVID-19 while 600,000 people died (WHO, 2020).

Nigeria, and more importantly its Southwestern region, was not exempted from the outbreak. The region recorded 17,744 confirmed cases of COVID-19 representing 50% of 35,454 total cases nationwide and 249 deaths, representing 32.3% of the 772 deaths in the country as of July 2020 (Punch Health Wise, 19 July 2020). According to the Nigeria Centre for Disease Control and Prevention (NCDC), the three states with the highest number of confirmed cases of COVID-19 in the country were Lagos, FCT and Oyo states. Two out of these three epicentres are in south west Nigeria. Lagos had the highest in the country and this underscored the choice of southwestern Nigeria as the study area.

Since the COVID-19 crisis erupted, we have been reminded daily that one of the most important precautionary measures we can take to avoid been infected and become the vector of the virus is regular washing of hands (Joshi and Nicol, 2020). It is unfortunate that water shortage is common in some developed and most common in developing countries. In India's western state, Maharashtra, which has huge numbers of low-income slum settlements, there is acute water shortage; certainly not enough to wash hands more frequently and a major hotspot of COVID-19 cases in that country (Joshi and Nicol, 2020).

More importantly, Southwestern Nigeria, though blessed with ample surface and groundwater sources, still experiences inadequate water supply (Adekalu, Osunbitan & Ojo, 2002). The amount of water supplied per capita per day in this region is less than 25 litres against the 46 litres required (Idowu, Awomeso & Martins, 2012). This suggests that there are likely to be difficulties with water supply for regular handwashing with water and soap to prevent the spread of COVID-19 in the region.

Access to safe water is essential to prevent the spread of infectious diseases, including the coronavirus disease (WHO, 2020). However, across developing countries, access to WASH is limited. For example, 3 billion people lack basic handwashing facilities (UNICEF & WHO, 2019). This creates a number of challenges for combatting transmission of COVID-19 and preventing future potential pandemics. Underdeveloped water and waste management systems were a contributing factor to the spread of Ebola during the 2013-16 outbreak, and were identified as an

underlying factor in thousands of deaths during the outbreak (Kalra et al., 2014). Globally, statistics for 2017 reveal that poor sanitation and limited access to handwashing facilities contributed to about 1.5 million deaths. Nearly 2 billion people around the world without access to safely managed drinking water outlets, and about 22% of healthcare facilities in the least developed countries lack basic water services (Kashiwase & Fujs, 2023**).**

The situation is most severe in informal settlements where the poorest and most marginalized citizens live. They are largely vulnerable as they often rely on communal water and toilet facilities, private vendors and water tankers (Pessoa-Colombo et al., 2023). The high cost of water and limited access prohibits generous use of water for handwashing. At household level, low financial and purchasing power also inhibit the purchase of soap or hand sanitizer.

Concept of Water Security

The concept of water security, being an emerging idea, involves "the sustainable use and protection of water systems, the protection against water-related hazards (floods and droughts), the sustainable development of water resources and the safeguarding of (access to) water functions and services for humans and the environment" (Schultz and Uhlenbrook, 2007). The origin of the concept has not been accredited to any author. The concept encompasses issues of water availability, accessibility, usage, and quality. It traditionally envisaged availability as the central focus although availability alone does not translate to water security at a given point in time. The major principles of the concept can be categorized into five, which are: household water security, economic water security, urban water security, environmental water security, and resilience to water-related disasters.

Water security will help to strengthen the preparation against future pandemics and mitigate the current epidemic (COVID-19) which requires sustainable supplies of water at acceptable quality and quantity for regular handwashing. This will involve supporting storage, regular supply of clean water, and resilient water management. There are enormous public health challenges consequent upon inadequate and inequitable water access (Joshi & Nicol, 2020). Access to WASH needs to be situated within the wider context of increasing water supply to a number of sectors due to a range of human drivers and climate change.

Questions of where water is going to come from to support public health, how it should be managed to ensure sustainable supplies and adequate quality and quantity remain critical. Each public office or institution is expected to address the challenges of water provision for regular handwashing as prescribed by the Nigeria Centre for Disease Control and Prevention.

Literature Review

Many studies have illustrated the importance of water to regular handwashing as one of the key elements to prevent the spread of COVID-19 (WHO, 2019). Rangarajan, Sivakumar and Bhoopalan (2020) specified regular handwashing with soap and running water for 20 seconds, repeatedly throughout the day, as a critical universal measure to reduce rapid spread of the virus. In many sub-Saharan African countries, this is an unimaginable luxury due to the inequalities that characterize the provision of water services as well as the limited opportunity to wash hands regularly at home and in public places. To corroborate this, UN-Water stated that global water demand is increasing at approximately 1% per annum, whilst between 4.8 and 5.7 billion people are projected to live in areas that are potentially water-scarce for one month per year till 2050 (UN-Water, 2019). In a study conducted in Niger State, Nigeria, Maïnassara and Tohon (2014) recommended the construction of latrines, clean water supply, establishment of handwashing stations, and health education. While still waiting to witness the actualization of the recommendations of this study, which included handwashing with soap, water supply, construction of latrines, and promoting general hygiene, the current proclamation of regular handwashing to prevent the spread of COVID-19 came up, which made water provision more urgent than ever. There is therefore a pressing need to put on record the present level of water provision to check the spread of the pandemic (Cooper, 2020).

The provision of safe water, sanitation and hygienic conditions is essential for protecting human health against all infectious disease outbreaks, including the coronavirus disease of 2019 (COVID-19). Ensuring evidenced-based and consistently applied WASH and waste management practices in communities, homes, schools, market places, and healthcare facilities will help prevent community transmission of the

virus (WHO, 2020). Frequent and correct hand hygiene is one of the most important measures to prevent infection with COVID-19 (Wiley, 2020). Till 2017, three billion people were living without handwashing facilities and drinking water at home while COVID-19 has intensified the already existing challenges (Union for the Mediterranean, 2020). Performing hand hygiene at the right time, using the right technique with either alcohol-based hand rub or soap and water is critical (WHO, 2020).

WHO (2020) has suggested that water required for hand washing does not need to meet drinking water standard. This implies that water with moderate cleanliness when used with soap to wash hands applying the correct technique can be effective in removing pathogens from the hands. However, efforts should be made to use and source water of the highest quality. The required quantity of water for effective handwashing that will enable reduction of faecal contamination from the hands ranges from 0 to 5.2 litres per person (Hoque, 2003). The quantity of water used has been associated with the degree of contamination of hands.

Study Area

The study was carried out in the southwestern states of Nigeria. The Southwestern region lies within longitude 20 48' - 6 0 0' E and latitude 50 5' - 9 0 12'N. The zone shares land borders with the Republic of Benin in the west, Kogi and Edo states in the east, and Kwara State in the north. Its coast in the south lies on the Gulf of Guinea on the Atlantic Ocean (Figure 1). The largest and most influential ethnic group in Southwestern Nigeria is Yoruba. The study location is made up of six states, namely Oyo, Ogun, Osun, Ekiti, Ondo and Lagos.

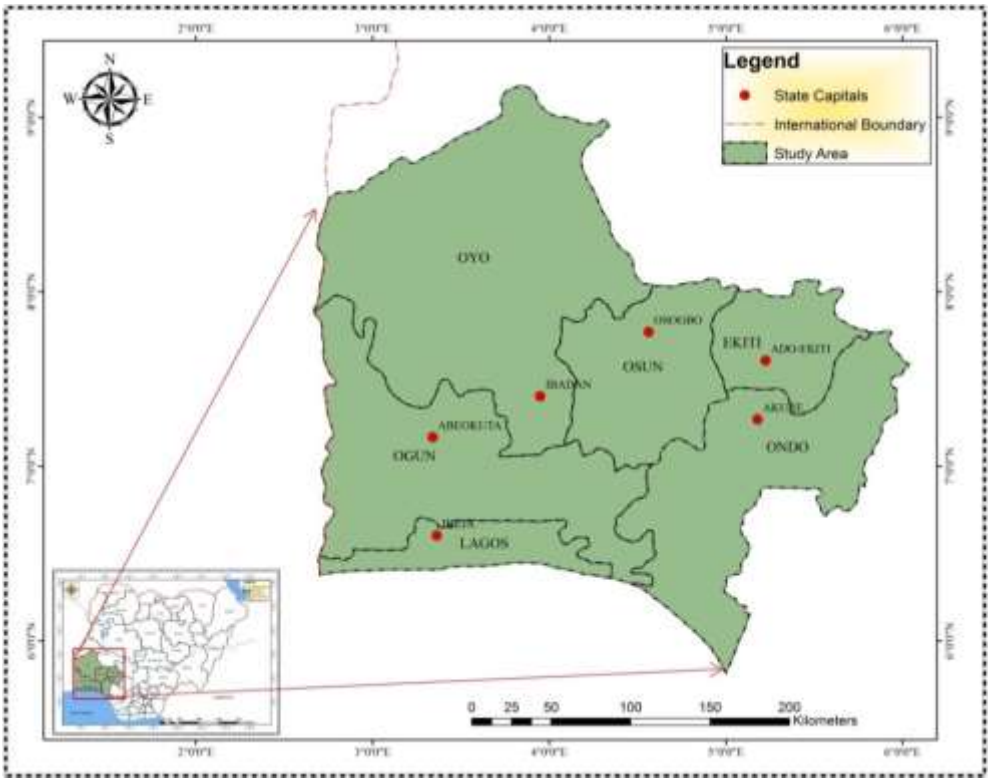

Figure 1: Southwestern Nigeria

Methodology

The research utilized both secondary and primary approaches to source for data. The secondary method was used to extract past information, such as a map of the study area, and current information on the COVID-19 global death rate. For primary data, a questionnaire was employed to get responses from the respondents. The questionnaire was electronically designed and administered using the Google form through social media platforms. A convenient method of data collection was adopted such that, in each of the states, some friends of the researchers whose phone contacts were available were contacted and selected as field assistants to share the questionnaire weblink through social media

platforms to respondents. The field assistants were instructed on how to distribute the questionnaire links to friends as well as WhatsApp groups in which they are members. The questionnaire was designed to capture the objectives of the research. Both closed and open-ended questions were used and brevity was adopted because of the peculiarity of the method of questionnaire administration. Information was obtained from 124 respondents and analysed quantitatively.

Research Findings

Socio economic characteristics of the respondents

The location of respondents revealed that 42.7% were from Oyo State, 6.5% from Ekiti State, 14.5% from Lagos State, 15.3% from Ondo State, 9.7% from Ogun State and 11.3% from Osun State. The educational status of the respondents revealed that 49.2% of the respondents had higher degrees such as Masters and Doctor of Philosophy. A total of 33.1% of the respondents had a first degree, 15% had a diploma certificate while others had primary education. Interestingly, the majority of the respondents (99.2%) were aware of the existence of COVID-19. The educational status of the respondents may largely explain the high level of awareness. Further, 87.9% of the respondents were aware that regular handwashing is one of the measures to forestall the spread of the corona virus.

Availability of handwashing facilities in public places

Immediately the lockdown was lifted, people in all the states of Nigeria began to move around, travelling across states and regions. The results of this study reveal that open markets (32.3%) were mostly patronized, followed by churches (25.8%), probably to appeal to God for total eradication of the pandemic, and then banks (13.7%). Pharmaceutical stores (6.5%) and supermarkets (7.3%) and other places such as mosques, offices, hospitals and schools were visited by respondents with the expectation to regularly perform handwashing at those locations.

Among the places visited by respondents, open markets where consumable materials are obtainable were the most patronized by residents, though some food markets were shut down by the state governments (Oja Oba, Bisi Market and Shasha in Ekiti State). Of all the

markets visited, 68.4% provided water for handwashing as prescribed by the government to forestall the spread of COVID-19.

Plate 1: Mile-12 Market, Lagos State (top) and Bodija Market, Ibadan, Oyo State (bottom) during COVID-19

Churches were another prominent place visited; 68.4% of the churches attended provided water while 27.6% occasionally supplied water. For supermarkets and pharmaceutical stores, 79.6% and 78% respectively regularly provided water for handwashing (Table 1). Banks were visited and 71.7% of them regularly provided water for handwashing while 25.0% occasionally supplied water. Hospitals were unique because all of them provided water for handwashing. The full compliance may be due to the fact that the idea of regular handwashing is health based. Some respondents went to offices and schools but only 75% and 50% respectively provided water for handwashing. Plate 2 reveals a typical handwashing facility commonly used during COVID-19 in most public places such as schools, banks, hospitals and markets in Nigeria. This facility is available in markets and easy to improvise for water supply to enhance regular handwashing.

Table 1: Availability of water in public and private places visited by respondents

Places Visited	Availability of Water		
	Available	Occasionally Available	Not Available
Open Market	13(68.4)	6(31.6)	–
Church	52(68.4)	21(27.6)	3(3.9)
Supermarket	39(79.6)	9(18.4)	1(2.0)
Pharmaceutical Store	39(78.0)	9(18.0)	2(4.0)
Bank	43(71.7)	15(25.0)	2(3.3)
Hospital	1(100.0)	–	–
Work Place	3(75.0)	1(25.0)	–
Mosque	16(59.3)	10(37.0)	1(3.7)
Home	–	1(11.1)	8(88.9)
Restaurant	6(100.0)	–	–
School	1(50.0)	–	1(50.0)

Source: Fieldwork, 2020

Plate 2: Provision of handwashing facilities and handwashing practices in Lagos

Provision of handwashing facilities among the states

Among the states of the Southwest region of Nigeria, 77.8% of places visited by respondents in Lagos State regularly provided water for handwashing (Table 2) while 16.7% occasionally supplied water. Closely following Lagos State is Osun State, where 71.4% of places visited regularly had water for handwashing while 16.7% occasionally provided water. In Ogun State, of all places visited, 66.7% and 16.7% respectively provided water for handwashing regularly and occasionally. In Oyo State, 64.2% of both public and private places visited provided water to perform regular handwashing. In Ekiti and Ondo states, 37.5% and 36.8% respectively regularly provided water for handwashing. The analysis revealed variation in water provision among states which could be mainly due to the severity of the pandemic and enforcement of the handwashing directive in each state. Lagos State had the highest incidence of COVID-19 cases probably because it is a main point of contact for foreigners; it hosts the most busy international airport in the country. Also, it is the economic capital of the country which reflects in its population size and density. Ogun and Osun states were at par in incidence of COVID-19 infection because Ogun State hosts a number of points of entry to Southwest Nigeria from neighbouring countries while a significant number of returnees from some West African countries returned to Osun State during the pandemic. The proximity of Ogun State to Lagos State and being the annex of Lagos industrial estates made

the state an activity area for foreigners who may have been infected with the disease.

Table 2: Water provision among states of the region

State	Availability of water		
	Regularly available	Occasionally available	Not available
Osun	10(71.4)	3(21.4)	1(7.1)
Oyo	34(64.2)	13(24.5)	6(11.3)
Ogun	8(66.7)	2(16.7)	2(16.7)
Ekiti	3(37.5)	3(37.5)	2(25.0)
Lagos	14(77.8)	3(16.7)	1(5.6)
Ondo	7(36.8)	9(47.4)	3(15.8)

Source: Fieldwork, 2020.

Provision of soap is essential to complement the usefulness of water for regular handwashing. The study revealed that 61.3% of the places visited by respondents provided soap. However, variations exist in the provision of soap among the states of the region (Table 3) due to the difference in the level of enforcement of the regulation by the Nigeria Centre for Disease Control and Prevention at state level. In Osun State, as high as 71.4% of the places visited provided soap for people to wash their hands while only 62.3% provided in Oyo State. In Ogun and Ekiti states, 50% of places visited provided soap; in Lagos 66.7% provided soap while 57.9% provided in Ondo State.

The provision of hand sanitizer as an alternative to handwashing with water and soap was examined and revealed that 87% of places visited by respondents provided sanitizer either as an alternative to water and soap or both. Hand sanitizer was provided in all places in Ogun and Ekiti states (Table 3). The situation was however different in other states as 80% provided in Osun State, 84.9% in Oyo State, 88.9% in Lagos State while 78.9% provided in Ondo State. It is interesting to note that many people preferred using hand sanitizer to handwashing with water and soap because it saves time, and is less stressful and neater.

Table 3: Provision of soap and hand sanitizer

	Provision of soap		Provision of Sanitizer	
State	Available	Not Available	Available	Not Available
Osun	10(71.4)	4(28.6)	4(80.0)	1(20.0)
Oyo	33(62.3)	20(37.7)	45(84.9)	8(15.1)
Ogun	6(50.0)	6(50.0)	12(100.0)	0(0.0)
Ekiti	4(50.0)	4(50.0)	8(100.0)	0(0.0)
Lagos	12(66.7)	6(33.3)	16(88.9)	2(11.1)
Ondo	11(57.9)	8(42.1)	15(78.9)	4(21.1)

Source: Field work, 2020.

Regular handwashing and discouraging factors

Subsequent to the government directive through the Nigeria Centre for Disease Control and Prevention (NCDC) to regularly perform handwashing as a preventive measure against the spread of COVID-19, our survey revealed that 52.4% of the respondents performed handwashing regularly, 33.1% agreed to occasional handwashing, while 14.5% did not perform handwashing at all. The investigation showed that 41.9% of the respondents did not regularly wash their hands with soap because of water shortage. Likewise, 43.5% complained of lack of handwashing facilities in public places including water, soap and alcohol-based sanitizer. Other factors indicated include: fear of waste water being used for ritual, lack of soap in some places, and the fact that regular handwashing is not a part of Yoruba culture as mentioned by some respondents. Despite the fear of the pandemic (COVID-19), the study observed that only 17.7% of the respondents regularly washed their hands up to five times a day; 13.7% and 11.2% often performed handwashing two and ten times respectively per day. This is a wide deviation, far less than the WHO recommendation.

Discussion of Findings

The COVID-19 pandemic is a global phenomenon which has had devastating impact on the socioeconomic and political lives of nations. The methodology adopted for data collection in this study allowed mostly literate persons who use social medial to be included as respondents. In Nigeria, during the pandemic, particularly between March and July 2020, there was mass restriction of human and vehicular movement, essentially in all states in the Southwest region. There was no inter-state movement in April to May within the region. However, variations existed in the inter-state and intra-city movements because Oyo State, among all the states in the region, did not adopt total lockdown. The residents in the state were allowed to move within the cities and state during specific hours of the day to source for means of daily livelihood. In all the states in the region, despite the movement restriction, people visited places such as banks, markets, pharmaceutical stores, and religious houses among others. Worthy of note is that open markets, where consumables are obtainable, were most visited by residents. This underscores the significance of food to human life and survival. Other places mostly visited by citizens during the total and partial lockdown were banks and automated teller machine (ATM) galleries, and pharmaceutical stores. An important deduction from the types of places visited is that they are life supporting and unavoidable; such facilities should be neighbourhood based.

The non-availability of public water at the public places visited by respondents was not encouraging to stimulate the regular handwashing practice and provision of handwashing facilities. This shortfall constituted a major hindrance to the compliance to global efforts to limit the spread of the corona virus. Similarly, the water shortage at such critical time and places unveiled the gross neglect over decades by government to provide public water supply. If public water had been available in all cities, it would have encouraged public establishments such as banks, markets and hospitals to situate handwashing facilities at appropriate locations.

Another deduction from the study is the novelty of regular handwashing as a measure to prevent the spread of infectious diseases. This innovation, especially in Yoruba tradition, consequently contributed to the low adoption of regular handwashing. The assumption that

wastewater from handwashing could be used for ritual can also not be ruled out as a detraction to compliance of the handwashing directive.

Conclusion and Recommendations

Access to clean water for handwashing at public places in the Southwest region of Nigeria as a potential measure to prevent the spread of COVID-19 was considered in this study. The study found that water shortage was a challenge to regular handwashing in the region during the COVID-19 pandemic. The study depicts wide public awareness of the pandemic in the region, though the preparedness and adoption of regular handwashing strategy was very low. This was attributed to lack of adequate public water supply in the region. A large number of the respondents admitted that adequate access to clean water supply would encourage them to handwash regularly, particularly at public places.

This paper recommends the support of international organizations like the United States Agency for International Development (USAID) to reinforce the culture of regular handwashing in African countries through public enlightenment. Also, it is suggested that all relevant agencies (international and local) should speed up and scale up the implementation of a communication strategy and a series of community-based educational and behavioural campaigns on water, sanitation and hygiene.

Similarly, the study clamours for the support of both state and local governments in Nigeria to double efforts to provide adequate water supply and handwashing facilities in the toilets of every school and at the front of every block of classrooms in schools so that students in primary and secondary schools will have access to handwashing facilities easily and more frequently. Similarly, mechanized boreholes with solar energy are required in schools to ensure continuous supply of water. Educators should be trained by health and sanitation experts to provide hygiene education and train students on proper handwashing procedure. Regular handwashing as a means to forestall infectious diseases is suggested to be entrenched in school curricula, and particularly included in health education. Finally, the study seeks the support of international donors to support developing nations both in urban and rural communities to have

adequate WASH infrastructure to enable the practice of regular handwashing, safe behaviours and strengthen sustainable resilience during a large-scale health crisis like COVID-19.

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