Assessment of Health Workers' Awareness of Infection Prevention and Control Preparedness Levels in Isolation Centers and Secondary Hospitals in Lagos State, Nigeria

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Abstract

Several medical models have consistently shown that infectious diseases will continuously evade the human race. With the recent outbreak of the Covid-19 pandemic in Nigeria and beyond, there is the need for every nation to upscale their level of preparedness. It is against this backdrop that this paper sought to assess level of health workers' awareness of Infection Prevention and Control Preparedness levels in the Isolation centers and secondary hospitals. A mixed method research design was utilized. The study made use of questionnaires and Key Informant Interviews as the main sources of data collection. The study found out that 42% of the facilities were found to be at "basic readiness level", another 41% of the facilities whose healthcare workers were found to be at "intermediate readiness level, while the remaining 16% facilities were at "advanced readiness level of awareness of Infection Prevention and Control preparedness. Furthermore, the study also confirmed that appropriate practices of COVID-19 preventive measures impact positively on the control and spread of COVID - 19. The results also indicated that there were gaps in the supply of Personal Protective Equipment (PPEs). The study recommends amongst others that Infection, Prevention and Control team and other stakeholders should have the capacity and knowledge to deal with infectious diseases.

Keywords: Covid-19, Control Preparedness, Isolation Centers, Infection Prevention, Lagos State, Nigeria.

Introduction

In Wuhan, Hubei Province, China, coronavirus disease (COVID-19) was initially discovered in December 2019 as an unidentified form of pneumonia [1]. Subsequently, the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is identified as the causal agent of COVID-19 by the international committee on taxonomy of viruses (ICTV) [2]. Due to the COVID-19 outbreak's rapid global spread, the World Health Organization (WHO) declared it to be a pandemic on March 12, 2020 [3]. As of August 25, 2020, there were 216 nations with 23,491,520 confirmed cases and 809,970 confirmed deaths, respectively.

The global health community was stunned by the coronavirus disease of 2019 (COVID-19) epidemic, which overtaxed health systems in even wealthy nations. As expected, the people and governments have responded in social and medical ways to the issue. On February 27, 2020, Nigeria registered its first index case from Italy. The National Center for Diseases and Control claims that. In Nigeria, the prevalence of COVID-19 increased gradually, shifting from imported cases to an elite pattern and finally to community transmission. According to the National Center for Disease Control (NCDC), the case fatality rate was 2.8%. During the brief time the lockdown was loosened, the nation saw a spike in COVID-19 transmission cases (52% of all cases) [4]. The government implemented a

number of initiatives to reduce the possibility of disease outbreaks.

Travel restrictions, forced quarantines for travelers, social distancing, prohibitions on public gatherings, closures of businesses and educational institutions, self-isolation, requests that people work from home, curfews, and lockdowns are some of these tactics [5]. To stop the rapid spread of virus infection, authorities have implemented lockdowns or curfews in a number of different nations. These actions had a detrimental impact on business, tourism, education, and health on a global scale.

The COVID-19 epidemic had an impact on Nigeria's healthcare system at all levels. The pandemic swamped the health system in 192 nations in the first, second, and third quarters of 2020, forcing localized closures that affected over 1.7 billion students globally. In the field of education, numerous colleges all around the world have either canceled or postponed all on-campus events in an effort to reduce crowds and, consequently, the spread of viruses. Nonetheless, these actions had more significant effects on the postgraduate and undergraduate groups in terms of the economy, health, and society.

Since the beginning of 2020, nations all over the world have been affected by the corona virus pandemic, which has had an immense and disastrous impact on every aspect of life, especially overtaxing global health systems. On January 30, 2020, the Director General of the World Health Organization (WHO) declared the novel coronavirus disease, or COVID-19, a public health emergency of international concern. The disease continued to spread quickly, killing numerous people and having a major negative impact on the world economy (World Vision, 2020). Within a fortnight, on March 11, 2020, the World Health Organization (WHO) proclaimed the COVID-19 pandemic, following the infection of 118,000 people across 114 nations by the new coronavirus.

The virus was present in 210 countries as of April 30, 2020, and the WHO's analysis of the COVID-19 scenario revealed 3,090,445 confirmed cases and 217,769 deaths worldwide. According to the WHO operational update, there are currently 1 231 017 confirmed deaths and 48 534 508 confirmed cases worldwide [6].

A viral infection known as COVID-19 is the source of respiratory ailments. It is brought on by the SARS-CoV-2 virus, which is primarily transmitted through close contact between infected individuals. When an infected person coughs, sneezes, speaks, sings, or breathes heavily, the virus can travel from their mouth or nose through tiny liquid particles. The sizes of these liquid particles vary; they can be smaller "aerosols" or larger "respiratory droplets."

When the virus enters a person's mouth, nose, or eyes, it can spread to other individuals. This is most likely to occur when a person is in close proximity (less than one meter) to another infected person. According to available data, respiratory droplets between individuals who are in close proximity to one another appear to be the primary mode of virus transmission. Particularly in indoor, busy, and poorly ventilated environments where sick person(s) spend extended periods of time with others, like restaurants, choir practices, fitness classes, nightclubs, offices, and/or places of worship, aerosol transmission can occur [7].

To gain a better understanding of the circumstances surrounding aerosol transmission outside of healthcare facilities that perform particular medical procedures known as aerosol generating operations, more research is being done in this area. Additionally, the virus can spread when infected individuals cough, sneeze, or come into contact with infected surfaces or objects including handrails, doorknobs, and tables. By touching these contaminated surfaces and then touching their lips, noses, or eyes without washing their hands beforehand, other persons may contract the infection [8]. Fever, dry cough, and dyspnea

were the most common symptoms of the infected individuals.

COVID-191 can cause severe illness and even death in most cases, but it is more common in older adults and those with pre-existing medical conditions like cancer, diabetes, cardiovascular disease, and chronic respiratory infections to require specialized treatment to recover from the illness. Reducing exposure to the virus that causes the disease is the greatest strategy to stop the spread of COVID-19, as it is typically difficult to avoid and control. The actions will not only lower the rate of transmission but also significantly lower the disease's death toll. It is impossible to overstate the importance of taking the best possible precautions against infection as there is now no known cure for the illness.

Infection Prevention and Control (IPC) policies and guidelines for long-term care at health facilities are found in just 43% of the 195 countries where data on COVID-19 preparedness and response are available, according to WHO. In contrast, 39% of these countries have national IPC programs and Water Sanitation and Hygiene (WASH) standards that must be followed in all health care facilities.

On February 27, 2020, Nigeria recorded and verified the first COVID-19 case through a visit from an Italian businessman. The announcement of this index case prompted the Nigerian government to take action to stop the disease's spread, with the assistance of pertinent health organizations.

Surprisingly, despite the Nigerian government's best efforts to prevent and contain the outbreak, the number of new cases has not significantly decreased, mostly for a variety of reasons [9]. Healthcare workers' (HCWs') adherence to conventional and transmission-based precautions, encompassing both clinical and non-clinical workers, has been acknowledged as an effective strategy for preventing and managing infections linked to healthcare. These precautions safeguard not just the patient but also the surroundings, visitors, and healthcare workers [10]. The study's goals are to gauge the degree of preparedness for infection prevention and control among medical staff in Lagos State, Nigeria's isolation centers and secondary hospitals. The research is thus guided by the following research question: What is the level of health workers' awareness of infection prevention and control preparedness in Isolation Centres and Secondary hospitals?

The study aims to find out the knowledge and awareness of infection preparedness in Isolation Centres and Secondary Hospitals in Lagos State, Nigeria, with following objectives: To Health Workers Knowledge on IPC in Isolation Centres and Secondary Facilities and to assess the use of PPEs amongst health workers in Isolation Centres and Secondary Hospital in Lagos State.

Methodology

A descriptive cross-sectional study was conducted in ten Isolation Centres and ten Secondary health facilities in Lagos State.

Data Collection

A qualitative methodology employing Key Informant Interviews was utilized to gather data regarding the individual experiences of healthcare professionals regarding the mitigation and containment of the COVID-19 pandemic. The State Epidemiologist and the Lagos State Incident Manager were interviewed as key informants regarding COVID-19-related issues, and survey questionnaires were given to healthcare workers on duty at service delivery points in the ten designated COVID-19 isolation centers and secondary facilities. This will allow for the collection of information regarding the health workers' assessment. To supplement the original data, secondary data from the National Center for Disease and Control were gathered.

Population and Sample

Clinical and non-clinical health personnel employed in Lagos State's secondary health institutions and isolation centers made up the study's population. For the study, a sample of 302 respondents was used. Techniques for easy and purposeful random sampling were used to gather data. Under the supervision of research assistants on duty in the ten (10) chosen COVID 19 isolation centers and secondary facilities, survey questionnaires were distributed to healthcare staff at service delivery points.

Data Analysis

For the study, descriptive and a mix of discourse and direct content analysis were used to analyze the primary data. For data analysis and interrogation, the transcribed interviews were put into NVivo software. Additionally, data from questionnaires was analyzed using basic descriptive statistical methods.

Early Response to COVID-19 Case Management in Nigeria

The NCDC found that 30.0% of those who tested positive for COVID-19 within the first 30 days were female, while 70.0% of those who tested positive for the virus were male. They were between thirty and sixty years old. (39.5%), those between the ages of 31 and 50 were the most affected. Of the patients, about 41.0% (96) had insufficient epidemiological data and about 44.0% (101) were imported; the sources of their infections were unclear. According to the NCDC (2020), 35 patients (15.0%) were known contacts of positive cases, indicating cross-infection or community transmission. More over half of the cases in Nigeria were in Lagos State, with Abuja (20.3%) and Osun State (8.6%) following closely behind.

Major international airports and the centers of the nation's administrative and commercial activity are two traits that Abuja and Lagos have in common. In a similar vein, many of the indigenous people living in Osun State, the epicenter of the virus, are employed in Cote d'Ivoire and other nearby nations that were already dealing with hundreds of COVID-19 cases. Many of them tested positive with COVID-19 after COVID-19 prompted them to return to Nigeria [11]. Through interstate travel, the first index and subsequent imported cases have continuously spread to neighboring states. In Nigeria, the spread of COVID-19 was minimal within the first thirty days of the outbreak. Most of the individuals who tested positive were foreign returnees5.

Because of the high proportion of poverty in Nigeria, air travel is primarily reserved for the elite. Three state governors and a few political appointees tested positive for COVID-19, meaning that the political elite also experienced the early effects of the virus. Because of the (preliminary) trend, people first believed that COVID-19 only affected the elite—those who had contact with the political bourgeoisie or had returned from overseas travel. The perception, which hasn't changed, has made control attempts more difficult. As COVID-19 crossed the class divide, indications of community transmission appeared sooner than anticipated. At that point, taking precautionary responsibility fell on all Nigerians.

Between February 6 and 8, 2020, the African Center for Disease Control (Africa CDC) trained specialists from Nigeria and 15 other African nations on the use of polymerase chain reaction (PCR) for COVID-19 diagnosis (Africa CDC, 2020). As a result, as of June 7, the majority of tests conducted in Nigeria were PCR testing conducted in molecular laboratories, with continuous research being done to verify the accuracy of the Rapid Diagnostic Test (RDT) kits. When Gene-Xpert machines become available, there are also plans to add them (NCDC, 2020). In Nigeria, approximately 76,802 people were tested between February 27 and June 7. In a nation with an estimated 200 million people, the figure was called pitiful 5.

The COVID-19 test is being conducted in runs, with an average run duration of six to seven hours. The results are ready in 20 to 48 hours for each individual. An attempt is being made to shorten the schedule to 12 hours. The Federal Government (FG) has solely targeted people who are in urgent need of testing due to a lack of testing and treatment resources. Therefore, the following need to be tested:

1. returnees from overseas trips who were symptomatic within 14 days of their arrival (the returnees were advised to self-isolate for 14 days upon return to Nigeria),
2. persons who had contact with confirmed cases and developed symptoms within 14 days of contact,
3. Those having COVID-19-related symptoms of unknown cause,
4. and persons residing in areas with a moderate or high prevalence of COVID-19.

As of June 7, 2020, there were twenty-three molecular laboratories capable of testing for COVID-19, up from the previous five. Nigerians are not currently testing for COVID-19 in private molecular labs. More than one-third of the 36 states lack a testing laboratory, more than three months after the index case was confirmed. Should a case be detected in any of the states without testing centers, samples must be transported to Abuja or any other molecular laboratory that is open. 14. The NCDC said that COVID-19 patients are treated in accordance with the recommendations of the African Centers for Disease Control, despite the fact that there is no known cure for the virus.

The Nigerian Institute for Medical Research [NIMR], the Nigerian Institute of Pharmaceutical Research and Development [NIPRD], and the National Agency for Food and Drugs Administration and Control [NAFDAC] are three organizations that will conduct research and discover a cure for the virus. The Federal Government is also working to eradicate the virus by designating the Coalition of Epidemic Preparedness Innovation [CEPI] to oversee these three agencies [12]. A few regional herbal treatments have been approved for testing by NAFDAC. It takes a month on average to treat positive patients. According to reports, the majority of patients in Nigeria who died from the infection had serious underlying medical issues that the coronavirus illness made worse [13].

The NCDC has developed a prescription for safe burial procedures that pose the least amount of risk to the departed's loved ones, in accordance with worldwide best practices. Strict care protocols and expert laboratory diagnosis are necessary for COVID-19 [14]. Because of this, home management by main caregivers (family members) shouldn't be an option, even though the PTF is taking it into consideration because of facilities and resource constraints. PPE is necessary since the virus is highly contagious, yet it is insufficient for individuals who are on the front lines. The option of home care could increase the COVID-19 load in Nigeria if it is put into practice [15].

The Spread of COVID 19 in Nigeria During the Lockdown

A majority (80%) of COVID-19 patients have shown mostly mild symptoms, and some have made a full recovery, according to the NCDC. Despite the capacity response, more deaths were recorded as the CFR increased from 1.2% (on March 27) to 3% on April 27, but dropped to 2.8% as of June 7. Only one State out of the 36 and the FCT has yet to record any COVID-19 cases. Lagos, Kano, and the FCT have the highest incidence, with 46.2%, 8%, and 7.6%, respectively. Lagos remained the epicenter of Nigeria's COVID-19 crisis. [16].

The majority of the deaths were reported to have been caused by underlying medical disorders, primarily chronic non-communicable diseases that are a public health burden in Nigeria and throughout Africa [17].

In addition, it has been revealed that 812 medical professionals in Nigeria (or 6.5% of the positive cases) have contracted COVID-19 [18]. A number of these cases involved patients who had concealed critical information from medical personnel when presenting in hospitals with various ailments and had a subclinical coronavirus infection18.

An additional explanation for the infection of some health professionals at isolation sites was a lack of personal protective equipment. The unscrupulous behavior of many medical professionals who manage private hospitals in places like Lagos is another contributing factor. Without official authority, private institutions were allegedly covertly treating patients who tested positive for COVID-19. Nigerian healthcare workers' infections have raised concerns and may make COVID-19 control initiatives more difficult in the nation. In response, the Lagos State Government launched Eko Telemedicine, a telemedicine platform, to address health issues in the state unconnected to COVID-19.

Public Health Awareness for the Spread of COVID 19 in Nigeria

The nation should have been better prepared for the COVID-19 outbreak thanks to lessons learned from the Lassa fever and Ebola outbreaks in 2014. Contact tracing was the initial tactic used following the index case. Lack of assistance and cooperation from the returnees, who allegedly filled out paperwork at the point of entry with false contact addresses and phone numbers, is one of the obstacles to the contact-tracing strategy's implementation18. As a result, inadequate contact tracing and the slow closing of all entrance sites into the nation were among the early bottlenecks. A lockdown to stop COVID-19 from spreading throughout the community was another essential measure.

Beginning on March 30, 2020, there was a four-week lockdown in place in the Federal Capital Territory (FCT) and two states (Lagos and Ogun), with limitations on cross-state travel across the nation20. On May 4, 2020, a curfew from 8 p.m. to 6 a.m. was implemented in lieu of the complete lockdown, while the interstate travel restriction remained in effect. Workers providing critical services (such as security guards and health care providers) and those involved in the transportation of necessities (such as food and medications) were spared from both the curfew and the lockdown. The goal of the lockdown/curfew was to get people to follow the fundamental safety rules, which include using facemasks in public, washing your hands, and avoiding close contact with strangers.

The number of COVID-19 cases in Nigeria increased relative to the relaxed lockdown. Between May 18 (two weeks after the relaxed lockdown) and June 7 (a total of 20 days), Nigeria recorded 6,527 positive cases, or 52% more than the number of all positive cases5. The relaxed lockdown is a prelude to the gradual reopening of the economy, which could further lead to a COVID-19 upsurge if hurriedly implemented. There are some challenges associated with considering a further lockdown; there are both intended and latent consequences. The lockdown and stay-at-home directive have a negative impact on people's lives, with a disproportionately negative impact on the vulnerable population, the majority of whom are daily wage earners.

The majority of the vulnerable population, according to UNDP observations, works in the unorganized sector, which necessitates intimate interpersonal relationships for monetary transactions and patronage. Although the lockdown was essential for controlling the spread of the disease, it also threatens the social and economic underpinnings of existence as well as the resilience mechanisms of Nigeria's most vulnerable citizens18. Millions more Nigerians are expected to be forced into poverty and face both temporary and chronic unemployment, increasing their vulnerability to the "hunger-virus." Therefore, lockdown-

induced poverty and unemployment may lead to a rise in other social issues such as generalized insecurity, abduction, and gender-based violence.

The COVID-19 approach poses a conundrum that necessitates weighing the trade-offs between socioeconomic effects and public health initiatives. Since the nation has received COVID-19 recovery loans of US $3.4 billion and US $288.5 million from the International Monetary Fund (IMF) and the African Development Bank (AfDB), respectively, the economy can be revived through sensible economic stimuli and recovery policies (IMF, 2020; AfDB, 2020). Reopening too soon would exacerbate the health issue, undo any early-suggested economic improvements, and prolong the recuperation period.

Measure of Infection Prevention and Control Preparedness Levels in the Isolation Centers and Secondary Hospitals as a Determinant of Readiness for COVID 19 Prevention

A globally significant component of all health systems, infection prevention and control (IPC) affects the health and safety of both those who provide healthcare services and those who seek them out [19]. Infection prevention and control, or IPC, is defined by the World Health Organization (WHO) as a scientific strategy and workable fix intended to stop infection-related harm to patients and healthcare professionals. Its foundations include social science, epidemiology, infectious diseases, and bolstering the health system. Since IPC is pertinent to both patients and healthcare providers at every point of care, it holds a special place in the fields of patient safety and high-quality universal health coverage.

As such, it continues to be a problem with universal healthcare that most healthcare systems throughout the world can relate to. It includes everything from the challenging work of preventing and managing hospital acquired infections (HAIs) to monitoring both established and newly emerging infectious illnesses and managing the fallout from catastrophes [20]. A facility's ability to respond to an infectious disease outbreak or epidemic depends on how well-equipped and organized it is in terms of IPC guidelines and procedures. If an outbreak happens, particularly in a hospital setting, there is always a chance that it will overwhelm health systems unless there is a robust and well-equipped preventative and control response mechanism in place.

Establishing competent human resource capacity to provide highly skilled services and consumable and non-consumable materials to safeguard frontline health workers and prevent additional contamination of the environment is a very challenging task. The IPC assessment framework (IPCAF), created by the WHO to evaluate IPC preparedness in acute care facilities, was modified by the authors for a cross-sectional study conducted in Ghana. However, only five of the eight core components—the IPC program, IPC guidelines, IPC education and training, workload, staffing, and bed occupancy, as well as the built environment, materials, and equipment for IPC at the facility level22—were evaluated. Pretests of the questionnaire were conducted at five institutions that were left out of the research.

The WHO IPCAF grading method was used to classify the IPC preparation as Advance, Intermediate, Basic, or Inadequate. "The IPC core components assessed are fully implemented according to the WHO recommendations and appropriate to the needs of the facility," as shown by a "advance IPC preparedness level." As a result, the facility should keep enhancing the scope and caliber of implementation and concentrate on creating long-term plans to maintain and advance the current IPC program activities. An "intermediate IPC preparedness level" denotes

that the majority of the IPC core components are implemented appropriately.

"Some aspects of the IPC core components are in place, but not sufficiently implemented and that further improvement is required," according to a "Basic IPC preparedness level." Ultimately, the statement "inadequate IPC preparedness level" denotes a weak execution of the IPC fundamental components, necessitating major improvement [21].

Of the study's participating facilities, 29 (51.8%) were owned and operated by the government, while the remaining 27 (48.2%) were privately run. The majority (n = 50; 89.35%) were polyclinics, 3 (5.4%) were referral facilities, and the majority (n = 50) were general hospitals.

The following medical specialists responded to the survey: 34 nurses (60.7%), 10 physicians (17.9%), 5 physician assistants (8.9%), 3 ward assistants (5.4%), 3 nursing assistants (5.4%), and 1 midwife (1.8%) were present. IPC Preparedness Level of "Advance" was awarded to 8 (14.3%) of the institutions, all of which had IPC policies with well-defined goals. Next, an IPC Preparedness Level of "intermediate" was assigned to 18 (32.1%) sites. Of these, the majority (10) were government facilities and the majority (12%), had an IPC strategy with specific goals. IPC Preparedness Level "basic" was assigned to twenty-three (41.1%) establishments, the majority of which (13), were private facilities.

Finally, 5 private facilities out of 7 (12.5%) facilities were rated as having "inadequate" IPC Preparedness. In general, government buildings did better in terms of their level of IPC readiness. A favorable correlation between the type of facility management (private or government) and the level of IPC preparation was found using chi-square analysis, although the association was not statistically significant at the 0.05 significant level. To ascertain whether they significantly affected the overall level of IPC preparedness, facilities with IPC policies with well-defined goals, a budget set aside for IPC activities, and IPC training were independently categorized.

The existence of an IPC policy with specific objectives ($X2 = 24.3$; $p = 0.004$), a budget set aside for IPC activities ($X2 = 20.3$; $p = 0.001$), the frequency of IPC education and training ($X2 = 43.3$; $p = 0.001$), and the degree of IPC preparedness were all found to be positively correlated statistically. First, 76 (95% CI; 7.23, 808.19) times more likely to have an advance IPC preparedness than a facility without an IPC policy or one with an IPC policy without clearly defined objectives with a statically significant effect (Wald $X2 = 12.99$; $p = <0.001$), according to a PLUM-ordinary regression analysis.

Once more, there was a statistically significant difference (Wald $X2 = 16.5$; $p = <0.001$) between the odds of a facility with a dedicated budget for IPC activities having an advance IPC preparation and that of a facility without one (13 (95% CI; 3.8–44.3). IPC level may also be predicted by regular IPC training. due to the virus's quick spread, facilities with at least yearly IPC training were 50.9 (95% CI; 6.1–425) times more likely to be prepared for an advance IPC than facilities without regular IPC training [22].

Results

In the chosen secondary institutions and isolation centers in Lagos state, a questionnaire was distributed to thirty-two responders. Twelve questions were missing, but since 85% of the surveys were fully completed and returned, the results were unaffected. A total of 290 people completed the study questionnaire and were included in the data analysis, along with all of the isolation centers and secondary health facilities that were chosen for the study.

The researcher attempted to examine respondents' views on infection prevention and control. **Table 1** presents the data as seen in the table.

Table 1. Respondents' Views on Infection Prevention and Control

Variables	Number (%)
Awareness on IPC	80 (27.1%)
Exposure to IPC	120 (41.3%)
Training on IPC	60 (20.6%)
Little or no Knowledge of IPC	30 (10%)
Total	290 (100%)

Source: Field Survey 2023

Views of respondents on infection control and prevention are displayed in Table 1. It was agreed upon by 80 respondents, or 27.1% of the population, that infection prevention and control were known. Of the respondents, 20.6% are aware of IPC training, and 41.3% have been exposed to IPC. Ten percent of the participants knew very little or nothing about IPC and COVID-19. The opinions of the respondents on COVID-19 and infection prevention and control are aptly illustrated in Figure 2.2. The following variables were utilized to explain the respondents' perceptions: awareness, exposure, training, and lack of understanding.

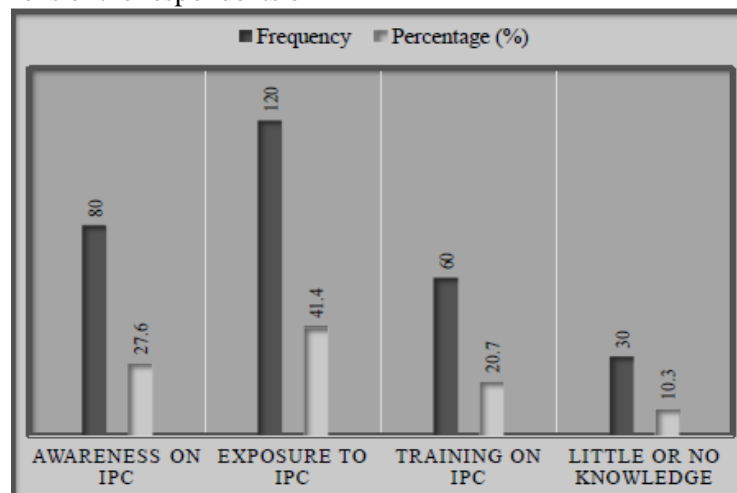**Respondents' Views on Infection Prevention and Control**

Fig 1. Respondents' Views on Infection Prevention and Control
Source: Field work:2023

The study's findings of respondents' exposure to crucial interventions for health providers on IPC as a means of preventing COVID-19 are shown in Figure 1. Eighty respondents in total indicate that they are aware of COVID-19, and some of them have heard of both standard and transmission-based measures. According to the study, 60 respondents have received IPC training, and 120 respondents have been exposed to IPC in relation to specific supportive interventions. Thirty respondents are aware that protocols or standards for infection prevention and control are available at their service delivery points, but they have little or no experience with addressing IPC training.

Every isolation center under investigation included medical staff with extensive training, as well as IPC protocols about hand hygiene, routine measures, and waste management. Guidelines for outbreak management, preparedness, and transmission-based safeguards were in place at every facility under study. The study's evaluation of health care professionals' education and training revealed that every facility has knowledgeable IPC staff who can conduct trainings and on a regular basis onboarding new hires [23]. Evaluation of

the monitoring and auditing of IPC practices and feedback also revealed that, while all institutions have systems in place for tracking and evaluating practices and feedback, the quality of these systems varies.

With the exception of LASUTH and LUTH, which the researcher saw, none of the facilities carry out monitoring, feedback, and auditing reports on IPC in a blame-free manner. Certain secondary facilities located in Male Isolation Centres and A Ward have established protocols for monitoring, evaluating safety and cultural aspects, assessing necessary processes and indicators, and assessing self-hand hygiene practices. However, these activities are not conducted in the other facilities. There is no multidisciplinary team supporting the multimodal approach in the IDH ICU study facilities, and there is no obvious connection between the patient safety team and the quality improvement team collaborating with the IPC team to improve the implementation of strategies.

According to the assessment, there were no strategies in place at any of the sites for changing the safety atmosphere or culture or the systems. As part of their IPC program, all of the facilities have multi-modal techniques with evidence for monitoring and feedback, communication and reminders, and education and training [24]. Out of the twenty facilities, only fifteen had daily access to enough water for use. Additionally, four sites included safe drinking water stations that were always open to facility employees, patients, and caregivers.

Furthermore, all evaluated wards and places of care at Alimosho and Apapa General Hospital facilities offered high-quality water, soap, and single-use towels for suggested hand hygiene practices. While there were working restrooms in all 12 locations, just six had enough of them to meet standard requirements. Although most of the facilities included easily accessible disinfection supplies such buckets, mops, and detergents, they were either inadequate or poorly kept. The researcher noticed that there were no special isolation rooms for COVID 19 patients in various state general hospitals, namely Badagary General Hospital, Ifako Ijaiye General Hospital, and Ibeju Leki General Hospital.

Furthermore, while PPEs were present in some locations, they were not in adequate numbers. There is no structure in place in the facilities to address staff needs, and none of the facilities regularly examine their staffing needs. However, while there is a mechanism in place to determine the facility's capacity needs, it is insufficient to act when sufficient space is surpassed. One patient was assigned to each bed, and a spacing of more than one meter was maintained between patient beds. To support the aforementioned analysis, one of the Chief Medical Officer's (CMD) assistants in LASUTH remarked as follows:

> *Overall, with regard to the IPC readiness in our hospital the "basic" level of readiness needs to be improved. The isolation centres were created and most equipment particularly PPEs provided to show level of IPC readiness. However, they need to do more. To develop or adapt IPC guidelines, provide varying degree of education and training activities, and deploy surveillance for IPC interventions.*

Table 2. Health Workers Knowledge on IPC in Isolation Centres and Secondary Facilities

| Variables	N	%
Do you have any training on Infection Prevention and Control for COVID 19? (N=290)		
Yes	60	20.6
No	230	79.4
Have you ever attended advocacy session on COVID 19 in your facility (N=290)		
Yes	190	65.5
No	100	34.5
Do you use PPEs in your health facility?(N=290)		
Yes	230	79.4
No	60	20.6
Ever heard of Standard Precaution measures? **(N=290)**		
Yes	265	92
No	25	8.8
Ever heard of COVID 19 Protocol and Precautions?(N=290)		
Yes	258	88.9
No	32	11.1

Source: Field Survey, 2023
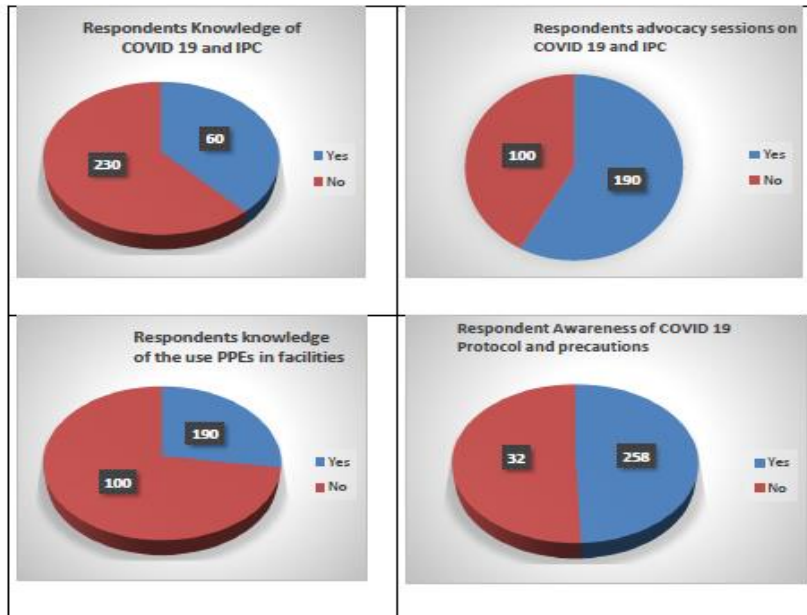
Figure 2. Respondents Level of Awareness of COVID 19 Pandemic and the Use of PPEs

In order to buttress the issues raised an interviewee in Male Isolation Centre said that:

> *We are constantly being informed about COVID 19 Protocol and measures on how to control the infection. We provide all kinds of services to control the spread of COVID 19. We accept deliveries in our facilities of all equipment and reagents that would help control the spread of the disease.*

Another respondent who spoke on regular sensitization on the COVID 19 Protocol in LASUTH stated that:

> *Increasing awareness of health workers on the COVID 19 control measures*
> *Involved the use of Doctors and Nurses and the monthly trainings of all health professionals on ensuring that all safety protocols are adhered to in the hospital. It is the duty of all staff and patients to ensure the disease is controlled.*

Another respondent working in Epe General Hospital added that*:*

> *Isolation Centres for both males and females were established in the secondary*
> *facilities to provide care for mostly COVID 19 Patients. Staff working in the Centres were also provided PPEs so as to reduce transmissions of the Virus*

Discussion of Findings

In terms of their preparedness for the IPC procedures, health institutions were categorized as follows: 41% were at a "basic readiness level," 41% at a "intermediate readiness level," and 16% at a "advanced readiness level." In Ghana, acute healthcare facilities were evaluated for their infection prevention and control (IPC) preparedness. The study also identified factors that were related to the overall IPC preparedness levels in acute healthcare facilities. Of these, 8 (14.3%) had an IPC preparedness level of "Advance," 18 (32.1%) had an IPC preparedness level of "Intermediate," 23 (41.1%) had an IPC preparedness level of "basic," and 7 (12.5%) had an IPC preparedness level of "inadequate."

Running water, detergents, and personal protective equipment (PPEs) were not substantially provided. Additionally, a long-term observational study conducted in Nigeria in 2019 used IPCAF to evaluate the Federal Medical Center (FMC) Owo's IPC preparedness. The facility's "basic readiness level" score following the baseline assessment was 381.5. After a three-month IPC program, the institution received a score of 545 for "intermediate readiness level," indicating improvement from the intervention.

Summary

According to the study's findings, the majority of Lagos State's isolation centers and secondary healthcare facilities for COVID-19 prevention and control were found to be lacking certain necessary components. The main issues revealed in the study that are consistent with the particular objectives of the study were the gaps in health facilities' IPC preparation, health worker knowledge and practices, and difficulties with the provision of disinfectants, supplies, and equipment.

Twenty facilities in Lagos State were used for the study: ten isolation centers and ten secondary facilities. From the study population, 290 respondents were selected as a sample. More than 40% of research participants reported having previously encountered infection prevention and control techniques. they have received IPC training and are aware that their healthcare institutions have the infection prevention and control guidelines available.

Eighty percent of the respondents were aware of conventional and transmission-based measures and how they were being used by healthcare workers.

Additionally, 60% of healthcare professionals knew how to avoid COVID-19, and 53% of service providers followed "always" or "often" policies for hand washing and the use of personal protective equipment. The use of hand gloves for processes during service provision, the habit of not washing hand gloves for reuse, the use of gowns and aprons, and the use of face protection equipment were among the practices that differed statistically

significantly between clinical and non-clinical workers.

Conclusion

The results of this investigation verified that effective COVID-19 preventive strategies had a favorable impact on the disease's control and dissemination. Furthermore, the findings show that there are shortages of personal protective equipment (PPE) and supplies, but also that health professionals providing services in secondary and isolation facilities have greater expertise and are better equipped to offer COVID-19 patients skilled counseling.

Recommendations

1. Infection, Prevention and Control team and other stakeholders should have the capacity and knowledge to deal with the disease. Health workers without formal training should be trained.
2. for those already employed, training plan developed and implemented for all new staffs and those already trained but not performing to standard should be enrolled for refresher trainings and robust supportive supervision mechanism for IPC should be established.

Conflict of Interest

This paper entitled: Health Workers Perception on Precautionary Knowledge and Practices in Secondary Hospitals and Isolation Centres for COVID-19 Preventive Measures in Lagos State, Nigeria is the writer's contribution to knowledge on the fight against Corona Virus Disease. It was made possible through self-funding. Consequently, there is no conflict of interest.

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