



**NIGERIA
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WATCH**

Informed commentary, intelligence and insights on the Nigerian health sector



COVID-19 HOUSEHOLD VACCINE SURVEY



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COVID-19 HOUSEHOLD VACCINE SURVEY

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Stopping a pandemic requires using all the tools we have available. While wearing masks and physical distancing are useful measures to help reduce being exposed or spreading it to others, vaccination is a critical tool in the battle against the COVID-19 pandemic.

Source: NHW COVID-19 Vaccine Perception Survey, 2021



EXECUTIVE SUMMARY

Study Rationale

The objectives of the survey were to:

- investigate public knowledge, awareness and perceptions about the COVID-19 vaccine, thus identifying knowledge gaps, cultural beliefs, and attitudes to inform interventions for roll-out.
- identify barriers that stop Nigerians from engaging in positive behaviours towards the vaccine.
- understand myths and misconceptions around the vaccines.
- understand the drivers of vaccine hesitancy in Nigeria.
- gather data to inform the crafting of key messages for the COVID-19 vaccine risk communication campaigns towards its uptake.

The overall goal of this study is to understand the behavioural and cultural insights of the public on COVID-19 vaccines and to use the findings to guide advocacy and social mobilization interventions towards the acceptance of vaccines in Nigeria.

Study Design and Methods

In order to gain an in-depth understanding about attitudes and perceptions towards vaccines, an in-depth desk review was carried out to comprehensively analyze existing studies, data, publications and reports on health systems and service delivery, focusing on health seeking behaviour and attitudes to vaccines and COVID-19 vaccines.

The appropriate data sources such as published studies, research and survey reports and relevant grey literatures were reviewed. The research was carried out in February 2021.

An electronic structured community-based household survey was carried out. The objective was to select representative sample households in each of the Local Government Areas (LGAs), selected to represent fully both rural and urban perceptions of COVID-19 vaccines. To achieve this, 2 LGAs were randomly selected per state one urban and one rural Local Government. Enumeration areas (EAs) based on rural and urban stratification.

Key Findings

Respondents were asked where they sought healthcare if they or a family member was unwell. Just over two fifths of respondents in urban areas indicated that they visit the General Hospital, while just over a quarter in rural areas indicated that they do the same. Respondents in the rural areas are far more likely to seek care at the local health clinic. Despite scientific advances in healthcare, the use of traditional medicine remains deeply rooted in the culture and health seeking behaviour of Nigerians, especially in rural areas.

Respondents reported different ways that they used to prevent diseases. In the urban areas, about half of respondents mentioned that environmental sanitation and personal hygiene were the key means that they used to prevent diseases. Just over a third of respondents in urban areas mentioned that maintaining a healthy nutrition was a means to prevent diseases, whereas only about a tenth of respondents in the rural areas mentioned this.

Just over half of the respondents in urban areas mentioned that someone in their household had previously received a vaccine, and this compares to just over two fifth in rural areas. Side effects from vaccines are not uncommon as two fifths of respondents in the urban areas mentioned that they had not experienced any side effects. About two fifths of respondents in urban areas indicated that their information about vaccines came from a health centre (including hospitals, PHCs, clinics, etc), this compares to just about a tenth of respondents in rural areas.

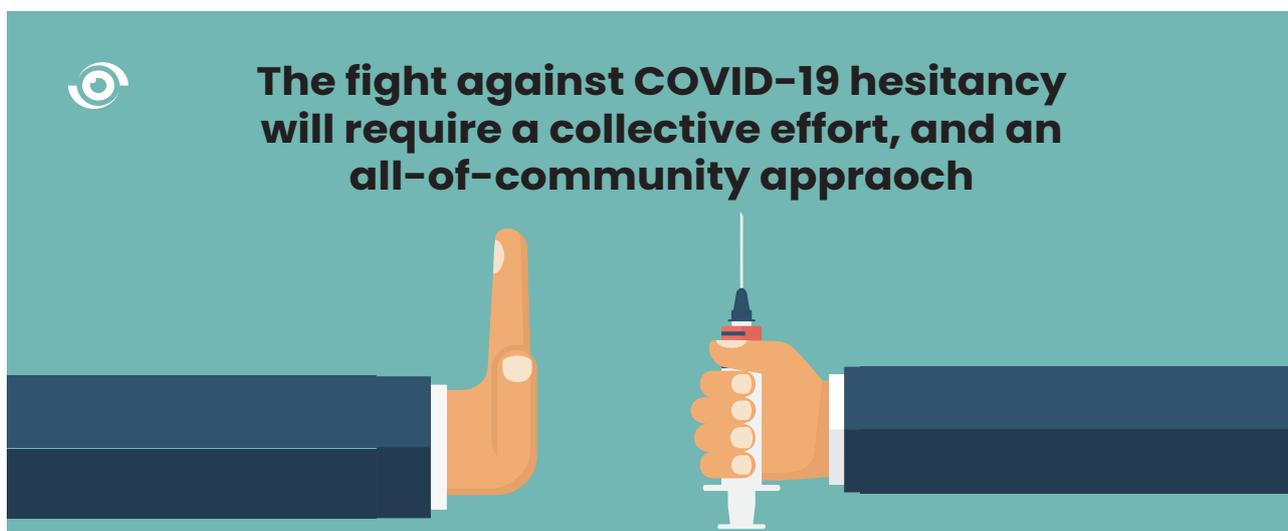
To understand the impact of myths and misconceptions around COVID-19 on citizens, survey respondents were asked if they believe COVID-19 exists. An analysis of the results shows that just under two thirds of respondents in urban areas believe that COVID-19 exists. Findings from a COVID-19 population-based serosurveillance¹ study carried out in Nasarawa, Enugu, Gombe and Lagos by the Nigeria Centre for Disease Control (NCDC), Nigerian Institute of Medical Research (NIMR) and partners found that large sections of the Nigerian population remains at risk of COVID-19, especially with the slow roll-out of vaccines.

Despite the current roll-out of vaccines, the use of face masks and adherence to the public health measures is still mandated. In a country like Nigeria where the country is not likely to meet its vaccine target till 2023, mandates to adhere to the public health and social measures have remained in place. About two fifth of urban dwellers have fears that a COVID-19 vaccine could lead to death and this should inform advocacy about the health risks that people could face if they become unwell, more so if they are from vulnerable populations of over-60 or have pre-existing health conditions.

Conclusions and Recommendations

Findings from the survey reveal the critical need for community engagement to address hesitancy towards the COVID-19 vaccine. Community mobilisation and engagement with the support of religious and traditional institutions to pass the right message about the vaccine, at the grassroots is key. These institutions are very influential and are in a position to empower people with the knowledge and information to protect themselves, their communities and loved ones. Religion plays an important role in the Nigerian society and culture and should be leveraged. In addition, influencers and celebrities can be used to actively advocate for the vaccine. They should be provided with accurate information and encouraged to lend their voices in encouraging people to get vaccinated.

While fact-checking organisations and government institutions continue to support by debunking rumours and misinformation, more can be done in providing additional avenues and innovatively opening new channels to engage correct misinformation. This task isn't only the responsibility of government institutions, but requires everyone to do their part—from religious leaders to medical professionals, debunking and fact-checking information before disseminating should rationally become everyone's duty. This survey provides critical evidence to guide interventions developed by Nigerian government institutions and its partners for the optimization of the COVID-19 vaccine uptake across the nation. The fight against COVID-19 vaccine hesitancy will require a collective effort, and an all-of-community approach.



1. <https://ncdc.gov.ng/news/323/ncdc-and-nimr-release-findings-of-covid-19-household-seroprevalence-surveys-in-four-states-of-nigeria>

ACKNOWLEDGEMENTS

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This study was conducted by the EpiAFRIC team who put together the study methodology and survey instrument. Special thanks to the Nigeria Health Watch team for their contribution in compiling the report.

Most importantly, we are grateful to respondents who took their time to be part of the focus group discussions and the stakeholders who were interviewed as key informants, taking time from their schedule to share their opinion on vaccines and health care access, providing vital information for the vaccine perception survey.



Although 84.9% of the respondents had heard about the COVID-19 vaccine, only 68.3% were willing to take it.



Source: NHW COVID-19 Vaccine Perception Survey, 2021

BACKGROUND

Why we are doing the survey?

A cluster of cases of pneumonia was first reported in Wuhan, China on the 31st December. The World Health Organisation (WHO) office in China carried out a risk assessment and provided a summary of their findings to the internal WHO disease surveillance system on the 5th January 2020. The first case of the coronavirus was first reported on the 7th of January 2020 in Wuhan, China. Coronaviruses are zoonotic, meaning they are normally transmitted between animals and people. The 2019 novel coronavirus disease (COVID-19) is a new strain of coronavirus that had not been previously identified in humans.

On the 30th January 2020, the Director General of the WHO declared the COVID-19 outbreak a Public Health Emergency of International Concern (PHEIC), and on the 11th March 2020, WHO declared the novel coronavirus (COVID-19) outbreak a global pandemic, a few months after the emergence of the disease in Wuhan, China. As at the 25th April, the total number of COVID-19 deaths worldwide has exceeded just over 147 million. In containing the pandemic, the initial public health response was to promote non-pharmaceutical measures among the general population, including frequent hand washing, physical distancing and the use of face masks in public spaces. The pandemic caused a great deal of disruption and impacted almost every aspect of life. Governments around the world were forced to implement stringent restrictions on human activity to prevent the spread of the virus.

The African continent was slow in experiencing COVID-19 cases, the lower travel density of passengers to the African countries compared to Europe, North America and Asia led to predications that the continent would be the epicentre for COVID-19, after the initial lag in virus transmission, especially due to the poor health care system in many countries. As a means to mitigate the spread of coronavirus, Nigeria stopped international flights into the country on the 23rd March 2020. At the time, the country had less than 50 confirmed cases. This was followed up with a lockdown of the Federal Capital Territory, Lagos and Ogun States for an initial period of 14 days from the 30th March, with a subsequent further 14 day lockdown declared by President Buhari. The purpose of the lockdown was to limit the spread of the virus by keeping people physically apart. It was found in China that the virus was mainly being transmitted within families.

The development of vaccines

The rapid spread and infection rate of COVID-19 worldwide stimulated global efforts and led to immense scientific progress and the rapid development of vaccines. The fastest ever vaccine developed in a short space of time, was the mumps vaccine, developed in about 4 years in the 1960s. Several vaccines went through clinical trials and in December 2020, a vaccine developed by Pfizer/BioNTech was approved for emergency use authorisation (EUA). Vaccines are one of the most cost-effective ways to prevent diseases. According to the World Health Organization, vaccines help protect against more than 20 life-threatening diseases, helping people of all ages live longer, healthier lives. With the development of safe and effective COVID-19 vaccines in record time, countries started procuring vaccines. The demand for vaccines has been unparalleled. Given the inequity in access to vaccines when the avian influenza A (H5N1) affected many Southeast Asian countries in 2006, and Indonesia suspended the sharing of virus samples, some lessons were learnt. This led to the setting up of COVAX, the vaccine pillar of the Access to COVID-19 tools (ACT) Accelerator, co-lead by Gavi, World Health Organization (WHO) and Coalition for Epidemic Preparedness and Innovations (CEPI). The first vaccines, 3.92 million doses were delivered to Nigeria on the 2nd March 2021, through the COVAX facility to stop the spread of the coronavirus and save lives.

The Demand for vaccines

While the COVID-19 vaccine availability and supply is key to obtaining high vaccination levels in Nigeria, so is the population's demand and willingness to receive a vaccine. The effective roll-out of the vaccines in Nigeria requires widespread willingness to accept it, to successfully protect populations at large. WHO identified vaccine hesitancy as one of the [top 10 threats](#) to global health. Vaccine hesitancy and misinformation has grown in the last few years and has threatened herd immunity for some vaccine-preventable diseases, like measles and it has led to [deaths](#).

As the COVID-19 disease has spread, so has misinformation. Many conspiracy theories have persisted and grown, notably, people not believing that COVID-19 is real and as a result not taking the necessary precautionary measures. Misinformation about the vaccine is not left out. Misinformation about vaccines is not new in Nigeria. For example, the polio campaign in Kano State experienced a [step back](#) in 2003 when rumours about the polio vaccine being unsafe spread. More recently, during the monkeypox outbreak in 2017, there was a [widespread rumour](#) that the military was injecting school children with the monkeypox virus. This fake news led to the closure of schools, low immunisation rates for other vaccine-preventable diseases during the period, and general widespread panic.

Several factors contribute to the public acceptance of vaccines including concerns about safety and efficacy (Purgliese-Garcia et al, 2018), as well as the spread of misinformation – which is particularly rampant in the context of the COVID-19 pandemic. High acceptance of the COVID-19 vaccine in Nigeria is instrumental to ending the pandemic. In light of this, Nigeria Health Watch conducted a survey to understand the perception of Nigerians towards the COVID-19 vaccine in order to guide needed communications and engagement strategies to support its rollout. The survey sought to investigate public knowledge and perceptions of both the vaccine and its acceptance.

Objectives of the survey

The objectives of the survey were to:

- investigate public knowledge, awareness and perceptions about the COVID-19 vaccine, thus identifying knowledge gaps, cultural beliefs, and attitudes to inform interventions for roll-out.
- identify barriers that stop Nigerians from engaging in positive behaviours towards the vaccine.
- understand myths and misconceptions around the vaccines.
- understand the drivers of vaccine hesitancy in Nigeria.
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The overall goal of this study is to understand the behavioural and cultural insights of the public on COVID-19 vaccines and to use the findings to guide advocacy and social mobilization interventions towards the acceptance of vaccines in Nigeria.

LITERATURE REVIEW

The theory in the literature review will outline the factors that influence attitudes to seeking health, attitudes to vaccines and the available literature on how these factors impact on COVID-19 and vaccine uptake.

Factors influencing health seeking behaviour

Health seeking behaviour is situated within the broader concept of health behaviour, which encompasses activities undertaken to maintain good health, to prevent ill health, as well as dealing with any departure from a good state of health. Several studies have identified factors such as socio-economic status, sex, age, the social status, the type of illness, access to services and perceived quality of the service as the major influences on health seeking behaviour (Latunji, & Akinyemi 2018).

The health seeking behaviour of individuals is also influenced by their household behaviour, as well as community norms and expectations (Oberoi et al, 2016). Health seeking behaviour can be further explained by the health belief model which has been used to explain, predict and influence behaviour. This model proposes self-efficacy as well as traditional health beliefs as explanatory factors to explain the perceived susceptibility, severity, benefits and barriers to individuals adopting a health seeking behaviour (Rosenstock et al, 1988). The decision people make when seeking healthcare also requires understanding some of the underlying issues and social determinants of health which impact their living conditions. These determinants encompass the role of education of the mother, lifestyle and economics of the household and community (Shaikh, 2008). In Nigeria, several studies have linked health seeking behaviour to decision making, socio-economic status, quality health care availability and traditional practices. (Ogunkorode et al 2021)

Attitudes to Vaccines

Vaccines are one of the most life-saving public health interventions that have saved the lives of millions and protected many from disability associated with disease (2017, 2018). However, global uptake of infant and childhood vaccines are not where they need to be to control the spread of vaccine preventable diseases (MacDonald et al, 2018). Public trust in vaccines and health systems is an important barrier in some settings, preventing children from receiving life-saving immunizations (Ozawa & Stack, 2013). Understanding the range of attitudes and decision making towards vaccines is complex because decision making is often rooted in social, cultural, political factors (Dube et al, 2013).

The determinants of vaccine decision making can be looked at by examining acceptance and resistance to vaccines. There is a distinction between passive acceptance which is as a result of compliance by the public, which differs from active demand – adherence from an informed public (Dube et al, 2013). Resistance to vaccines has been linked back to the smallpox vaccine in the United States in the 1850s and the introduction of multiple vaccines to reduce childhood morbidity, mortality and disease outbreaks saw a growing number of parents and patients being vaccine hesitant (Kestenbaum et al, 2015).

An attitude of hesitancy differs from an action of vaccine refusal. A lot of the time even those who are vaccinated can harbour hesitancy towards certain aspects of vaccination (MacDonald, 2015, Yaqub et al 2014, Larson et al 2012). Traditional remedies, alcohol use and religious beliefs emerged as drivers of vaccine hesitancy in a study looking at factors influencing vaccine hesitancy in Zambia (Pugliese-Garcia et al 2018). In other African studies distrust of western medicine and low education were barriers to the uptake of the vaccines in urban and peri-urban settings, distance to health services, poverty, low health literacy and perceptions on accessibility (Vogt, 2017) also impacted vaccine uptake.

Vaccine hesitancy has also been attributed to factors including the layperson's heuristic thinking when it comes to balancing the risks and benefits (Jacobson et al, 2015) as well as the influence of others, like healthcare providers on vaccine hesitancy (Paterson et al, 2016). Healthcare workers are often seen as trusted sources of information about vaccines (Karafiliakis et al, 2016) and data shows that self-vaccination among healthcare providers has an influence on their willingness to recommend vaccines to others (Paterson et al, 2016). Therefore, their important role in vaccine uptake is critical and this requires them to be supported and a relationship of trust built between them and policymakers in order to build public confidence in vaccines.

Responses to COVID-19

Infectious disease outbreaks elicit a variety of responses from different population. The onset of COVID-19 pandemic was met with uncertainty. Several psychological responses were identified including anxiety/fear, depression, anger, guilt, grief and loss (Chew et al, 2020). These responses have had an impact on how people seek healthcare, especially older adults who are vulnerable populations due to their higher risk of serious illness or death if they are infected with the COVID-19 virus and so have been advised to stay home (Wong et al, 2020).

Many developed nations where the healthcare system is more advanced were better able to roll out mass community testing for the virus, alongside restrictions on population mobility to curb the fast spread of the virus (Nachega et al 2020). These measures would have added to the anxiety and fear experienced by many population groups, especially older adults. In developing nations where the healthcare system could have become over-burdened if the spread of COVID-19 was left to get out of control, the initial lockdown measures helped mitigate the rapid spread of the virus. However, older populations faced barriers accessing healthcare due to challenges in physical access because of the distance and time required to reach the health facilities (Geldsetzer et al, 2020). This would also have had an impact on their ability to get tested for COVID-19.

The lack of health professionals, limited financial resources for health care, and the under-developed health infrastructure were challenges in implementing mass testing of COVID-19 in the community in developing countries (Habib et al 2021, Dror et al 2020) and so adding to the anxiety felt by people and their health seeking behaviour, especially for older populations.

Understanding the health seeking behaviour of populations can result in effective strategies for detecting and controlling the COVID-19 virus. While most people in Western countries visit health clinics or family doctors when perceiving a health problem, previous studies have described various contextual factors and barriers that shape access and utilization of health care services in resource-scarce settings. (Tran et al 2020). It is perceived that pharmacies, patent medicine vendors, traditional healers, village health collaborators, private clinics, or mobile independent health workers are considered as gatekeepers in communities for health care. A well-determined mechanism for timely information sharing between these first contact points and higher-level and specialized taskforces should be established for any COVID-19 interventions and in turn the roll out of vaccines (Tran et al, 2020).

A perception study highlights that Nigerians have relatively high knowledge, mostly derived from traditional media, about COVID-19. Their perceptions of COVID-19 bear implications across public health initiatives, compliance with precautionary behaviour. It also suggests that evidence-based campaigns should be intensified to remove misconceptions and promote precautionary measures in preparations for the vaccine (Olapegba et al, 2020). This would be very important among older populations who would have been isolating due to fears of the virus and they may feel reluctant to visit health facilities or encounter challenges accessing them due to distance and poor transportation options.

Results from a study carried out earlier on in the pandemic implied that vaccination compliance, even among medically informed individuals and vulnerable groups would rely primarily on a personal risk–benefit perception that may be influenced by misinformation regarding vaccine safety and health seeking behaviors around COVID-19 (Dror et al 2020).

Attitudes to the COVID19 vaccine

Concerns about vaccine hesitancy has continued to grow worldwide, and the WHO identified it as one of the top ten global health threats in 2019 (WHO, 2019). Governments, public health officials and advocacy groups must be prepared to address hesitancy and build vaccine literacy so that the public will accept immunization when appropriate (Lazarus et al 2021, Sallam et al 2021). For the COVID19 vaccine, activists are already campaigning in multiple countries against the need for a vaccine, with some denying the existence of COVID-19 altogether (Enserink. & Cohen 2020). Misinformation spread through multiple channels could have a considerable effect on the continued acceptance of a COVID-19 vaccine (Sallam et al 2021, Malik et al 2020). The accelerated pace of vaccine development has further heightened public anxiety and has challenged acceptance among some sections of the population. In the UK, Black and Minority Ethnic populations are at an elevated relative risk of COVID-19 mortality (Vepa, Bae et al, 2020).

A global study on COVID-19 vaccine acceptance rate showed that low rates of COVID-19 vaccine acceptance were reported in the Middle East, Russia, Africa and several European countries (Sallam et al 2021). This could represent a major problem in the global efforts to control the current COVID-19 pandemic as the vaccine rollout continues. More studies are recommended to address the scope of COVID-19 vaccine hesitancy. Such studies are particularly needed in the Middle East and North Africa, Sub-Saharan Africa, Eastern Europe, Central Asia, Middle and South America.

Identifying, understanding, and addressing vaccine acceptance (i.e. a position ranging from passive acceptance to active demand), and vaccine hesitance and resistance (i.e. the positions where one is unsure about taking a vaccine or where one is absolutely against taking a vaccine) to a vaccine for COVID-19 is, therefore, a potentially important step to ensure the rapid and requisite uptake of the COVID-19 vaccine (Murphy et al, 2021).



METHODOLOGY

Desk Review

In order to gain an in-depth understanding about attitudes and perceptions towards vaccines, an indepth desk review was carried out to comprehensively analyze existing studies, data, publications and reports on health systems and service delivery, focusing on the following issues;

- Health Seeking Behaviors in Nigeria (What influences where Nigerians Seek Care)
- Attitude to Vaccine
- Health seeking behavior for COVID-19
- COVID-19 Vaccines (Attitude to the COVID-19 Vaccine)

The appropriate data sources such as published studies, research and survey reports and relevant grey literatures were reviewed. Also, notable news update websites and online and print media. The research was carried out in February 2021.

Household Interviews

An electronic structured community-based household survey was carried out in six states in Nigeria with one state selected per geopolitical zone. To achieve this, we employed a multistage random sampling technique where 2 LGAs were randomly selected per state; one urban and one rural Local Government. The objective was to select representative sample households in each of the Local Government Areas (LGAs), selected to represent fully both rural and urban perceptions of COVID-19 vaccines.

MagPI, a cloud-based data collection tool was used to collect and analyse the data.

Sample Framework

The sample size for the study was calculated using the formula: $n = (Z^2pq)/B^2$

Where;

n = desired sample size (when the population > 10,000)

Z = number of normal deviation from the mean; set at 1.96 for a level of 95%

p = proportion (prevalence) in the target population estimated to have particular characteristics. This is set at 0.5 (50%) because of non-availability of survey data

q = $1-p$ (proportion in the target population not having the particular characteristics)

B = Margin for random error set at 0.05 (5%)

n = minimum sample size

Substituting, $n = 1.96 \times 1.96 \times 0.5 \times (1 - 0.5) / 0.05 \times 0.05$

$= 3.84 \times 0.5 \times 0.5 / 0.0025$

$= 384$ participants.

Actual sample size

| | | Bauchi | Bayelsa | Ebonyi | FCT | Kebbi | Lagos | Niger |
|----------------|-------------|--------|---------|--------|-----|-------|-------|-------|
| Community Type | Urban | 106 | 120 | 126 | 82 | 121 | 78 | 97 |
| | Rural | 54 | 50 | 28 | 67 | 24 | 85 | 51 |
| Total | 1089 | | | | | | | |

In-Depth Interviews

In-depth interviews (IDIs) with key stakeholders at the state, LGA and community levels were conducted. In order, not to miss any essential information, an interview guide with open-ended questions was developed to further explore information from all respondents.

Focus Group Discussions

Focus Group Discussions (FGDs) allowed participants to discuss topical issues in detail, explore and clarify their points of view, thus enhancing in-depth discussions. The focus group discussions mainly involved community members. The FGD sessions enabled exploratory and confirmatory questions to be asked from participants to achieve deeper understanding on their interests and needs. We ensured homogeneity of participant groups that captures the key attributes of the target population. We also constituted groups in ways that will not hamper the discussion of sensitive topics due to differences in, occupation, lifestyle, roles, and status in the community. We maintained manageable group (6-8 people) sizes and strived to achieve saturation of the responses.

| Levels /categories | Representative | No of IDI /FGDs |
|--------------------|--|-----------------|
| State Level | Commissioner for Health Executive Secretary State PHCDA Chairman House committee on Health <i>(1 per geopolitical zones)</i> <i>(we ensured that no state in each geopolitical zone was picked more than once.)</i> | 12 |
| Community (FGD) | Community/Religious Leaders Women Groups Youth Groups Traders Taxi Drivers Farmers/Artisans Keke Napep Riders | 42 |

| | | |
|-----------------------------|--|-----------|
| Health workers (Clinicians) | Tertiary Health Care Consultants Secondary Health Care Matron Nurses Pharmacists Lab Technicians Midwives Primary Health Care In-charges Midwives Chews (1 per geopolitical zones) (we ensured that no state in each geopolitical zone was picked more than once.) | 30 |
| Total | | 84 |

Demographics

| Variables | | Bauchi | Bayelsa | Ebonyi | FCT | Kebbi | Lagos | Niger |
|-----------------------|--------------|--------|---------|--------|-----|-------|-------|-------|
| Sex | Male | 103 | 102 | 94 | 86 | 116 | 86 | 95 |
| | Female | 51 | 67 | 42 | 65 | 32 | 77 | 55 |
| Community Type | Urban | 106 | 120 | 126 | 82 | 121 | 78 | 97 |
| | Rural | 54 | 50 | 11 | 67 | 24 | 85 | 51 |
| Age Limit | 17-25 | 36 | 17 | | 6 | 28 | 25 | 34 |
| | 25-35 | 39 | 80 | 25 | 38 | 69 | 61 | 73 |
| | 35-45 | 29 | 48 | 61 | 16 | 23 | 47 | 37 |
| | 45-65 | 38 | 19 | 46 | 7 | 26 | 28 | 4 |
| | 65 and Above | 18 | 7 | 9 | | 2 | 1 | |

| Occupation | Frequency | Percentage(%) |
|---------------------------------------|-------------|---------------|
| Artisan(Mechanic, carpenter, plumber) | 122 | 11.2 |
| Businessman | 195 | 17.9 |
| Civil Servant | 184 | 16.9 |
| Farmer | 119 | 10.9 |
| NYSC | 26 | 2.4 |
| Other | 99 | 9.1 |
| Religious Leader | 13 | 1.2 |
| Student | 178 | 16.3 |
| Trader | 153 | 14.0 |
| Total | 1089 | 100.0 |

A total of 1089 respondents were interviewed in the survey. The demographic distribution of the respondents was categorised into the following: Gender, age-group, occupation and geo-political zones as defined above.

- **Gender:** A total of 103 male and 51 female respondents were interviewed. This shows a 50.5% disparity in the proportion of male versus female respondents.
- **Age-Group:** With 75 respondents, the age-group with the highest representation was 17-35 collectively, as they represented 46.8% of the respondents interviewed. The 35 – 65 age group had 67 respondents and the 65+ group had the lowest representation with 18 respondents.
- **Occupation:** Most of the respondents surveyed were businessmen (17.9%); followed by civil servants (16.9%). The lowest represented occupation in the survey was Youth Corper and Religious Leader/Missionary at 2.4% and 1.2% respectively. Other occupations include, artisan, farmer, trader, etc.

Ethical Considerations:

For both quantitative and qualitative data collection approaches, verbal and written informed consent was obtained from all the respondents and participants. The research assistants explained in detail the consent forms, providing information on the objectives of the study and the benefits of the research.

Furthermore, all the respondents were permitted to ask the researcher and the research assistants' questions to clarify any grey areas related to the study before and or during the interviews. They were also made to understand that they have the right and option of withdrawing from the study at any time.



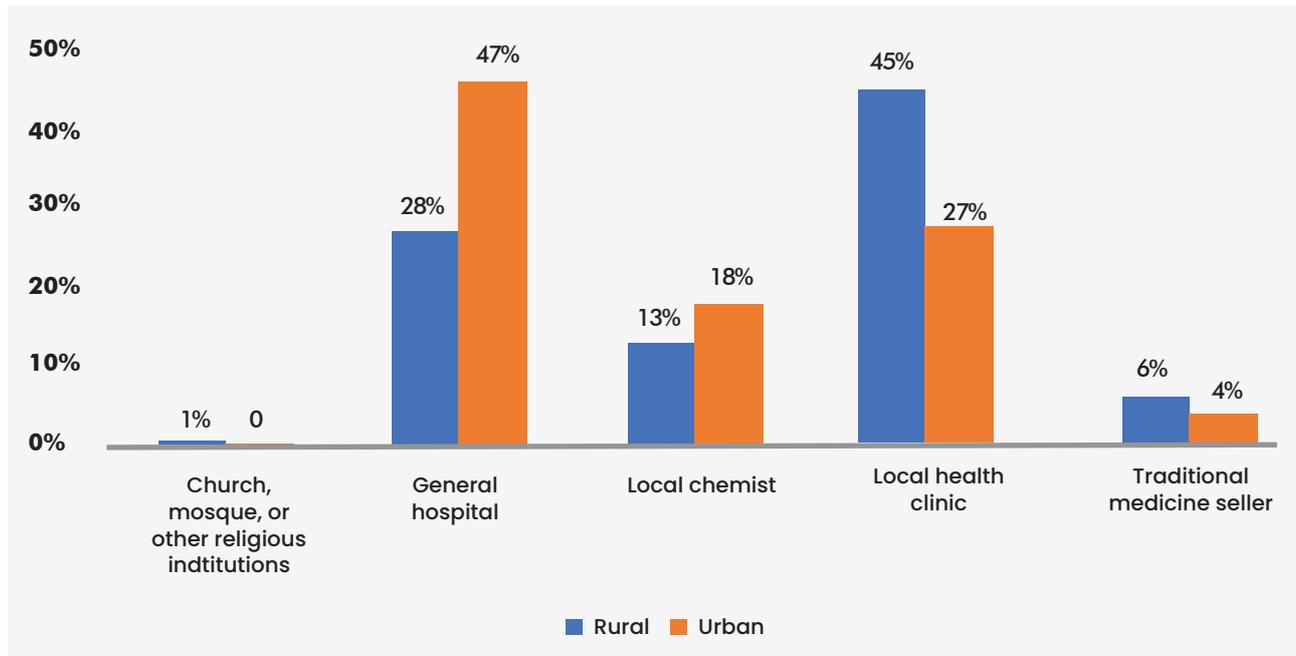
RESULTS

Health seeking behavior of Nigerians

The survey first sought to understand the general health seeking behaviour of Nigerians. What actions do they take to maintain an optimal state of health, prevent illness and injury, as well as their health practices during illness? Respondents were asked where they sought healthcare if they or a family member was unwell. There were clear differences in where respondents in the urban and rural areas sought care. Just over two fifths of respondents in urban areas indicated that they visit the General Hospital, while just over a quarter in rural areas indicate that they do the same. Respondents in the rural areas are far more likely to seek care at the local health clinic with the General Hospital being the second more used option for accessing healthcare when they or a family member is unwell. This compares to about a fifth of respondents in the urban areas who visit the local chemist.

Despite scientific advances in healthcare, the use of traditional medicine remains deeply rooted in the culture and health seeking behaviour of Nigerians. This can be shown by the fact that just under a tenth of respondents in rural areas indicated that they patronise traditional medicine sellers. The inequitable access to healthcare facilities has an impact where communities seek healthcare. The 2018 Demographic and Health Survey found that when looking at problems that women aged 15 – 49 reported when accessing healthcare, a higher percentage of women in the rural areas were likely to report that they had at least one problem accessing health care such as distance to the health facility or getting money for treatment. The same can be said when looking at vaccination rates for children 12 – 23 months and children 24 – 35 months, where urban dwellers recorded much higher immunization rates.

If a family member is unwell, where do you seek care first?

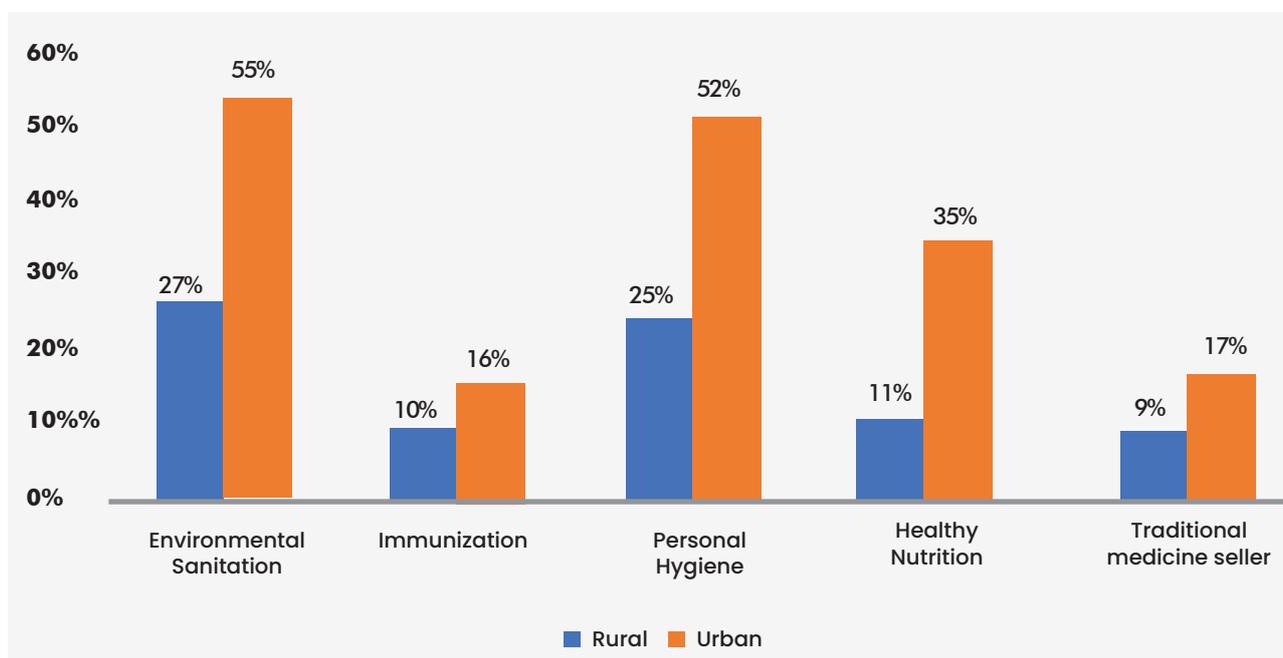


Prevention of diseases

Respondents reported different ways that they tried to prevent themselves from catching diseases. In the urban areas, about half of respondents mentioned that environmental sanitation and personal hygiene were the key means that they used to prevent diseases. Similarly in the rural areas, just over a quarter of respondents mentioned that they tried to keep their environment clean as well as maintaining personal hygiene in order to prevent diseases. Respondents in the rural areas are more likely to suffer from infectious diseases due to their lower income status as they are more exposed to the risk factors associated with infectious diseases. In Nigeria where Lassa fever is endemic, populations in rural areas have inadequate water, sanitation and hygiene facilities as well as living in poor sanitary conditions. As a result, they are more susceptible to infectious disease outbreaks and illnesses like diarrhoea which remains a leading cause of death for children under the age of five years.

Just over a third of respondents in urban areas mentioned that maintaining a healthy nutrition was a means to prevent diseases, whereas only about a tenth of respondents in the rural areas mentioned this. This indicates a heightened level of awareness about the nutritional qualities of food and its ability to enable people to maintain better health. However, less than a fifth of respondents in urban areas and only a tenth of rural dwellers stated that immunization was a way to prevent diseases. This indicates a need for greater sensitization about the benefits of vaccines in preventing diseases as it appears that respondents are more comfortable trying to prevent diseases through means they may feel they have greater control over.

How do you prevent diseases?



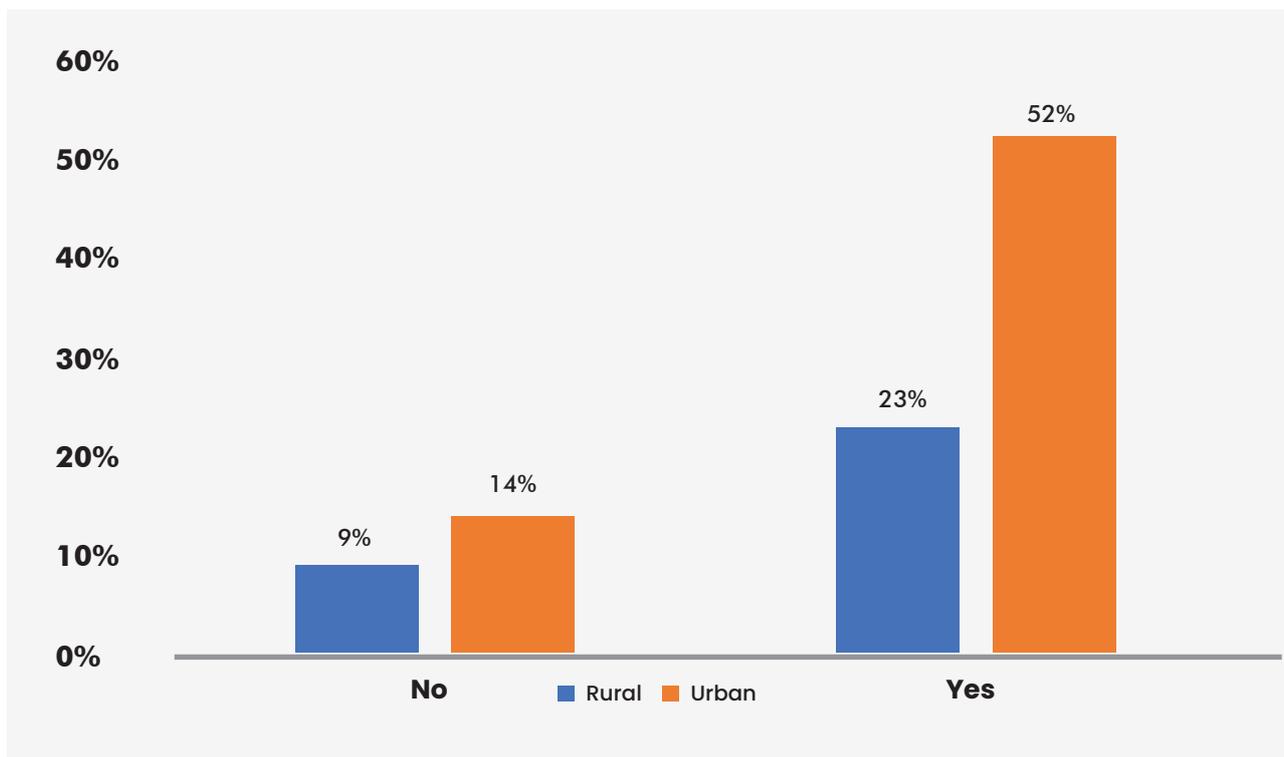
Prior experience receiving vaccines

In order to get a better idea of the perception of respondents and their acceptance of vaccines, based on their prior experience with vaccines, respondents were asked if anyone in their household had previously received a vaccine.

Just over half of the respondents in urban areas mentioned that someone in their household had previously received a vaccine, and this compares to just over two fifth in rural areas. Data from

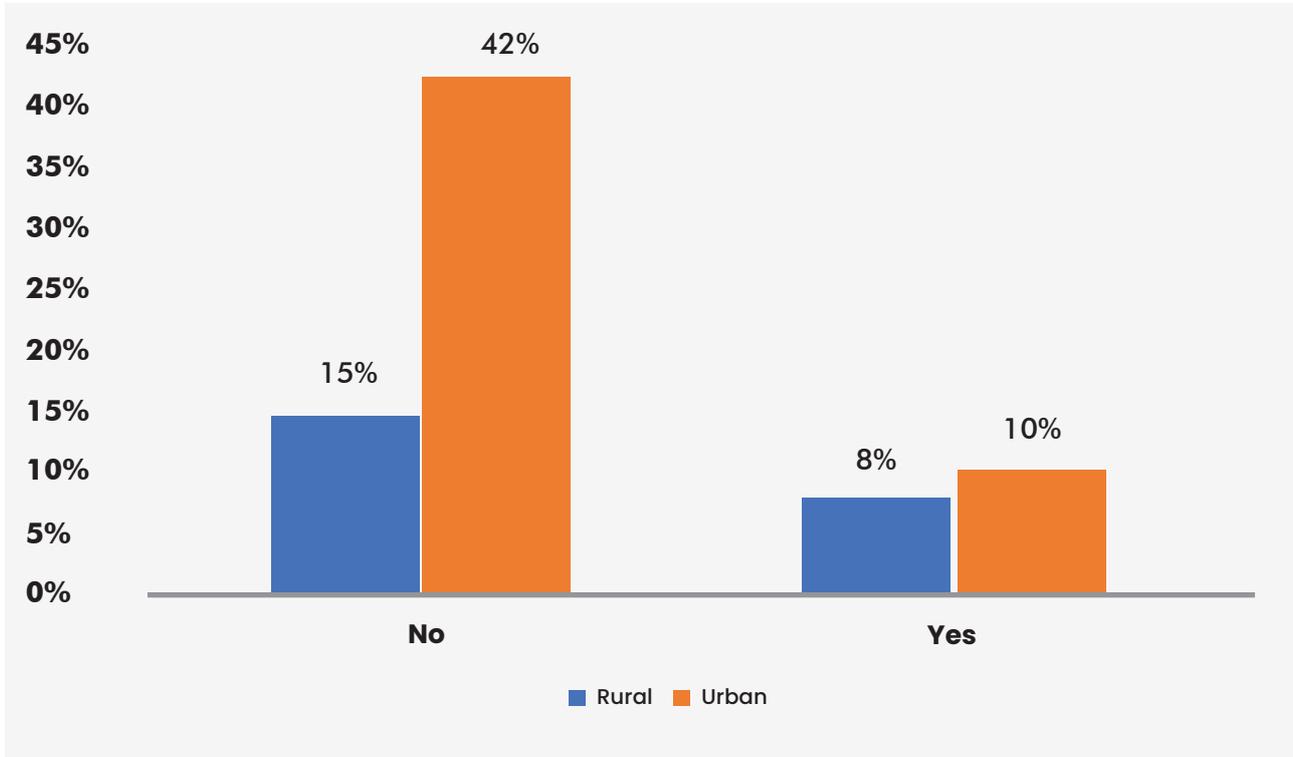
the Nigeria Demographic and Health Survey has indicated that the routine immunization rate in urban areas is far higher than in rural areas. This is likely to be a function of the availability of healthcare facilities and the educational status of mothers. This would have an impact on how much health care facilities are accessed for family members and the vaccine rates in urban and rural settings.

Have you or anybody in this household received a vaccine?



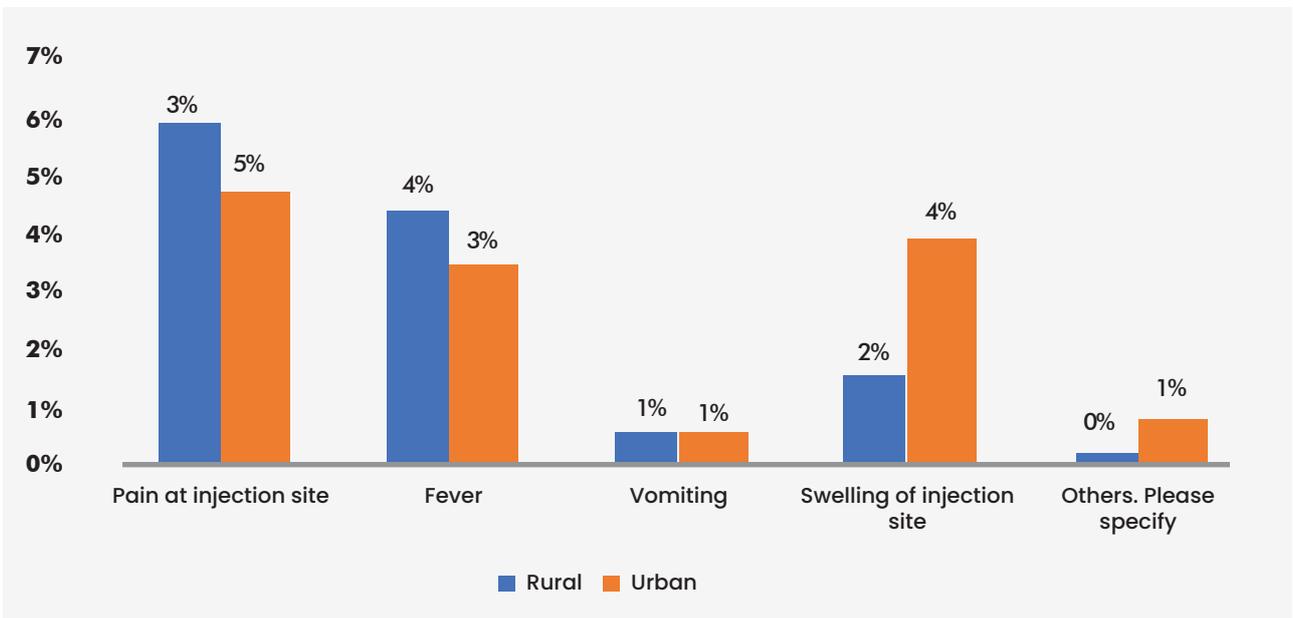
When questioned further whether any side effects were experienced when a family member received a vaccine in the past, side effects from vaccines are not uncommon as two fifths of respondents in the urban areas mentioned that they had not experienced any side effects. In the rural areas, this figure is as low as just over one in ten respondents. The use of traditional medicine and lower levels of health literacy in the rural areas might have meant that even where the response may have had a brief reaction to a vaccine, they may not always have picked up on the signs. It is not uncommon for people to have a mild reaction to vaccines, however any side effects do not tend to be very long lasting. In administering the COVID-19 vaccines, the National Primary Health Care Development Agency (NPHCDA) has set up a platform to register vaccines and recipients are also able to log any adverse events following the administering of vaccines.

Did you have any side effects?



Respondents who had indicated they had experienced side effects were further asked to describe the side effects. Respondents indicated that they had experienced – pain at injection site, fever, vomiting, swelling of injection site and others. The most common side effect experienced by about one in twenty respondents was pain at injection site. This was followed by fever and then swelling of the injection site.

What were the side effects?



Sources of information about vaccines

Seeking to explore the different sources through which respondents received information on vaccines, they were asked the question, “How did you find out information about the vaccines?” About two fifths of respondents in urban areas indicated that their information about vaccines came from a health centre (including hospitals, PHCs, Clinics, etc), this compares to just about a tenth of respondents in rural areas. The second most widely used means of finding out information about vaccines was through adverts and sensitization with about a fifth of respondents in urban and rural areas respectively using this as a source of information about vaccines.

Other sources of information about vaccines include radio and television, especially in the urban areas. The proliferation of media channels has meant that people have access to various sources of information from different platforms and social media has democratized access to information. However, the spread of social media has also exacerbated the inability to control the spread of misinformation and disinformation. Traditional media, including radio, television and newspaper are critical sources of information and should play a vital role in correcting misinformation and disinformation about COVID-19.

In the rural areas, with less access to different mediums, community sensitization and health workers are the key means that people can have access to information about vaccines and other health information.

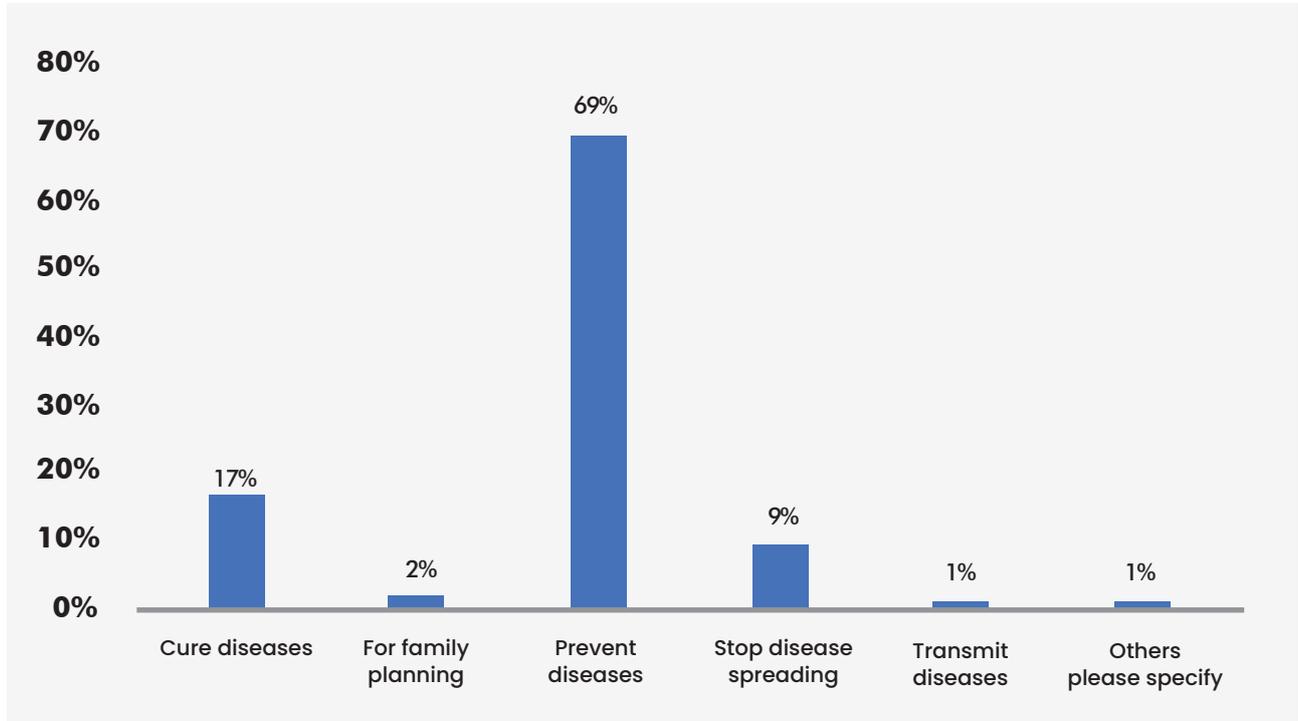
How did you find out information about the vaccine?

| If yes how did you find out information about the vaccine? | | |
|---|-------|-------|
| | Urban | Rural |
| Healthcare Center (including hospitals, PHCs, Clinics etc.) | 21.0% | 7.8% |
| Advert and Sensitization Programs (including Community outreaches) | 10.6% | 12.0% |
| Radio | 8.4% | 6.3% |
| Media (including Social media and other forms of media such as print media) | 5.0% | 1.4% |
| Television | 4.1% | 2.6% |
| Healthcare Worker | 2.3% | 8.0% |
| Polio and other Immunization programs | 1.3% | 0.5% |
| Church | 0.8% | 0.3% |
| Friends and Family | 2.8% | 1.0% |
| Mosque | 0.1% | 0.1% |
| Traditional leader | 0.1% | 0.2% |
| Town crier | 0.1% | 0.5% |
| Colleague at work | 0.5% | 0.1% |

Level of understanding about vaccines

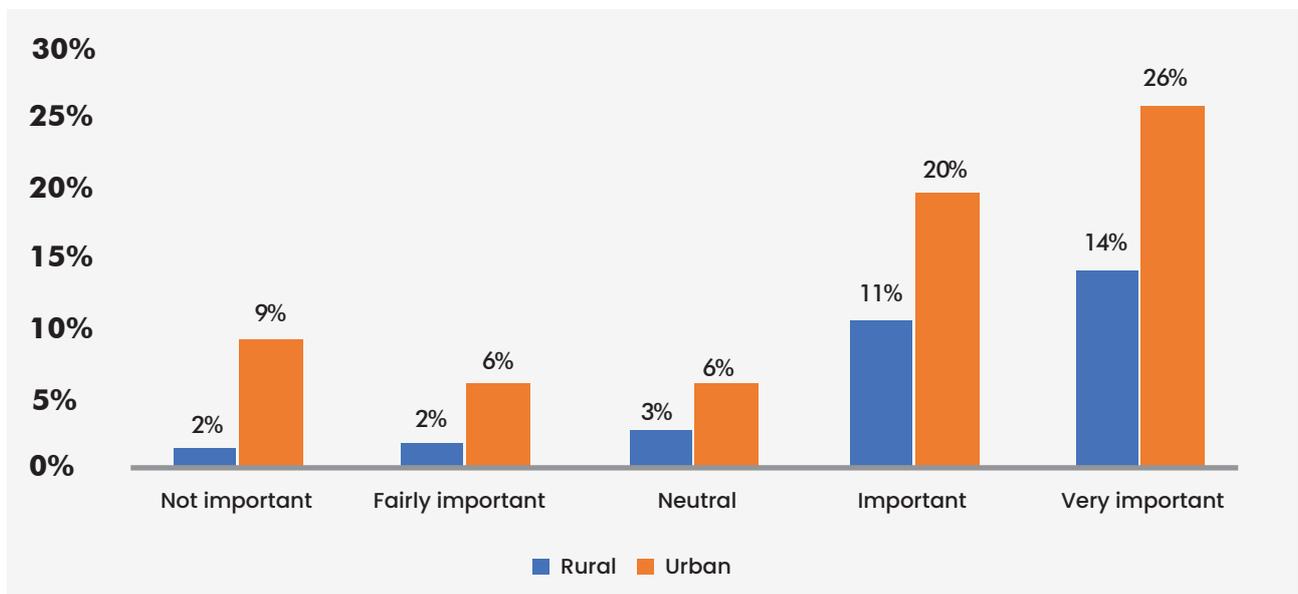
There appears to be a clear understanding of what vaccines are used for, with almost seven out of ten respondents stating that vaccines are used for preventing diseases, whereas about a fifth state that they are used to cure diseases. It aligns with the findings stated earlier that less than a fifth of respondents felt that immunization was a way to prevent diseases. About a tenth of respondents stated that vaccines were used to stop diseases from spreading.

What are vaccines used for?



To understand their level of understanding and perception of vaccines, respondents were asked to rate the importance of vaccines. Results revealed that about a quarter of respondents in urban areas believe that vaccines are important and a further quarter of respondents believe them to be very important. This compares to a tenth in rural areas that feel that vaccines are important compared to just over a tenth that believe them to be very important. Response rates on the importance of vaccines was much higher in urban compared to rural areas.

How important are vaccines?

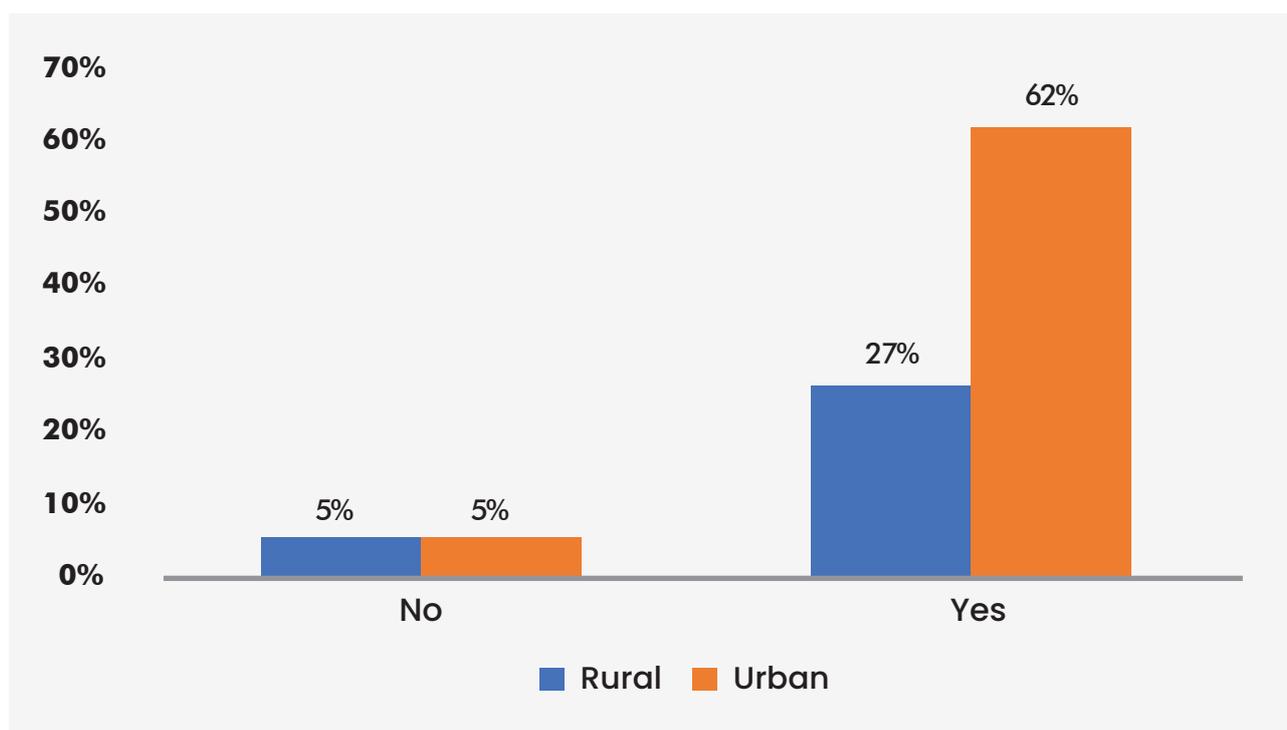


Knowledge and awareness about COVID-19

To understand the impact of myths and misconceptions around COVID-19 on citizens, survey respondents were asked if they believe COVID-19 exists. An analysis of the results shows that just under two thirds of respondents in urban areas believe that COVID-19 exists, compared to about a quarter of rural dwellers who believe that COVID-19 exists. In view of the fact that the vast majority of confirmed cases of COVID-19 have been in urban areas, it is more likely that urban dwellers would have encountered a person who may have tested positive for COVID-19. In addition, laboratories for getting COVID-19 tests are concentrated in the urban areas limiting the ability of rural dwellers to get tested if there is any suspicion that an illness they have may be COVID-19.

Findings from a COVID-19 population-based serosurveillance² study carried in out in Nasarawa, Enugu, Gombe and Lagos by the Nigeria Centre for Disease Control (NCDC), Nigerian Institute of Medical Research (NIMR) and partners found that large sections of the Nigerian population remains at risk of COVID-19, especially with the slow roll-out of vaccines.

Do you believe that COVID-19 exists?



To explore the willingness of different groups of Nigerians (social, ethnic and religious variations) to take a COVID-19 vaccine, questions were asked about COVID-19 prevention and understanding about COVID-19.

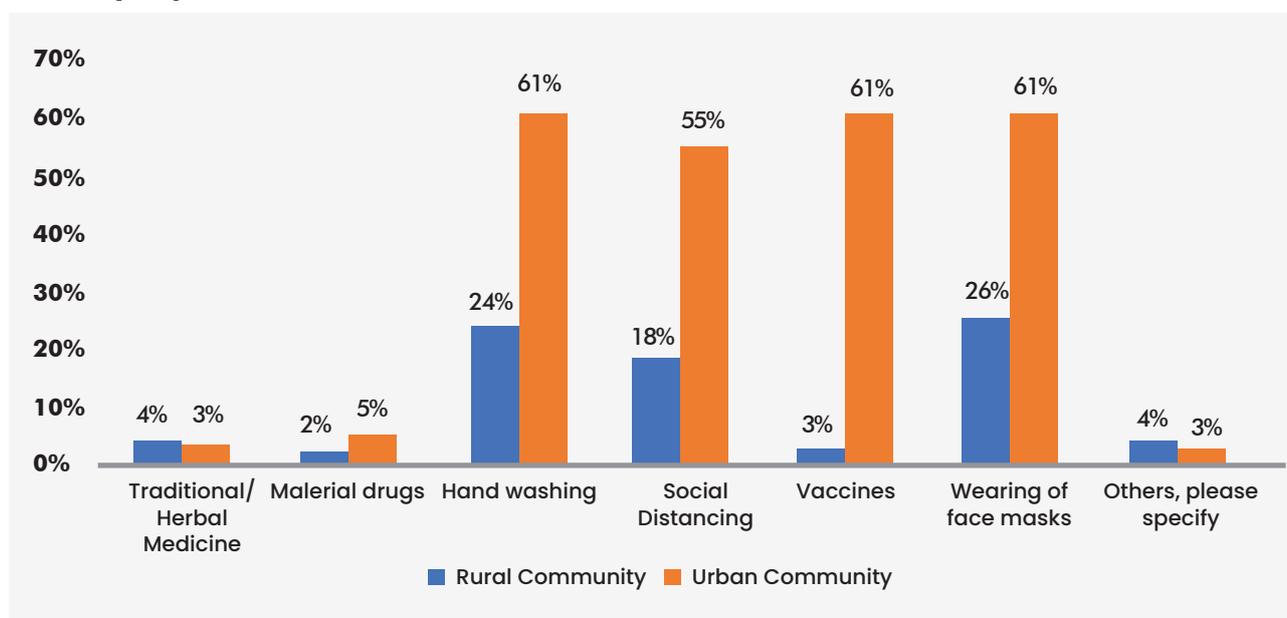
To deepen understanding of respondents' knowledge of COVID-19, they were asked how COVID-19 could be prevented. Responses from respondents revealed that all respondents, at different levels, indicated that COVID-19 can be prevented by adhering to the public health measures mandated by the Ministry of Health through the Nigeria Centre for Disease Control, as well as WHO and all

2. <https://ncdc.gov.ng/news/323/ncdc-and-nimr-release-findings-of-covid-19-household-seroprevalence-surveys-in-four-states-of-nigeria>

other national public health institutes in Nigeria. This remains one of the key ways to prevent the spread of COVID-19, however, in locations where water, sanitation and hygiene facilities are limited this has been and remains a challenge. In addition, in major high density locations, social (physical) distancing has been problematic as the limited available space forces people to be in close proximity to others.

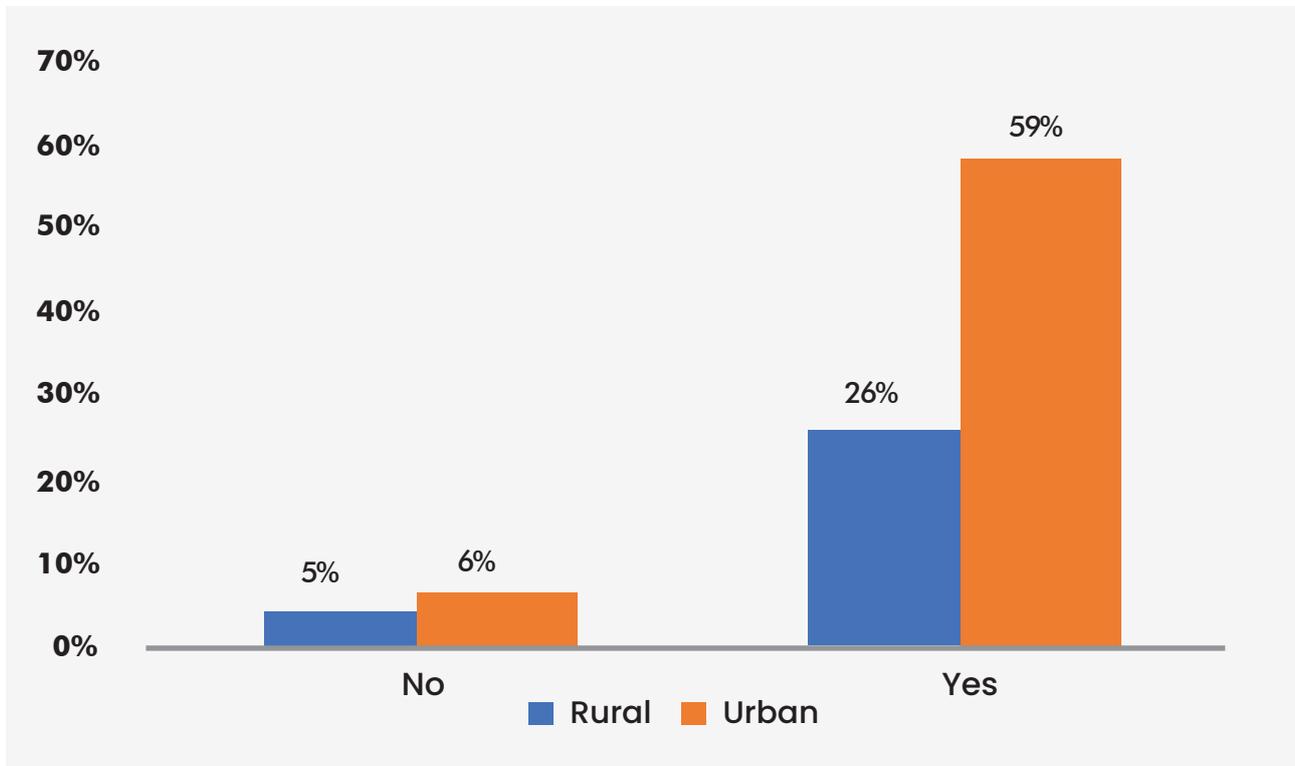
There is a clear difference in the level of understanding of how to prevent COVID-19 between urban and rural locations and there are also differences in lifestyles between the two locations. The rural areas are less likely to be as densely populated, levels of health literacy and access to health care is more limited. To date, in Nigeria, the spread of COVID-19 has been largely driven by the larger urban centres, such as Lagos and the Federal Capital Territory. Despite the current roll-out of vaccines, the use of face masks and adherence to the public health measures is still mandated. In a country like Nigeria where the country is not likely to meet its vaccine target till 2023, mandates to adhere to the public health and social measures have remained in place.

How do you prevent COVID-19?



Just over half of respondents mentioned that they had heard about the COVID-9 vaccine. This was far greater among respondents in urban areas compared to rural areas. The spread of COVID-19 has been primarily concentrated in urban areas and to date due to the relative lower number of COVID-19 cases, skepticism has remained about the existence of COVID-19. Unlike in developed countries where health facilities have been strained and countries are experiencing second and third waves of COVID-19, there is a greater understanding of the risks posed by the virus. This will have an impact on vaccine uptake when the roll-out becomes more widespread as the health authorities will face an uphill task convincing people to accept the vaccine when they are not fully convinced about the existence of the COVID-19 virus and the possible risks they may face if they become infected with the virus.

Have you heard about the COVID-19 vaccine?



Fears about the vaccine

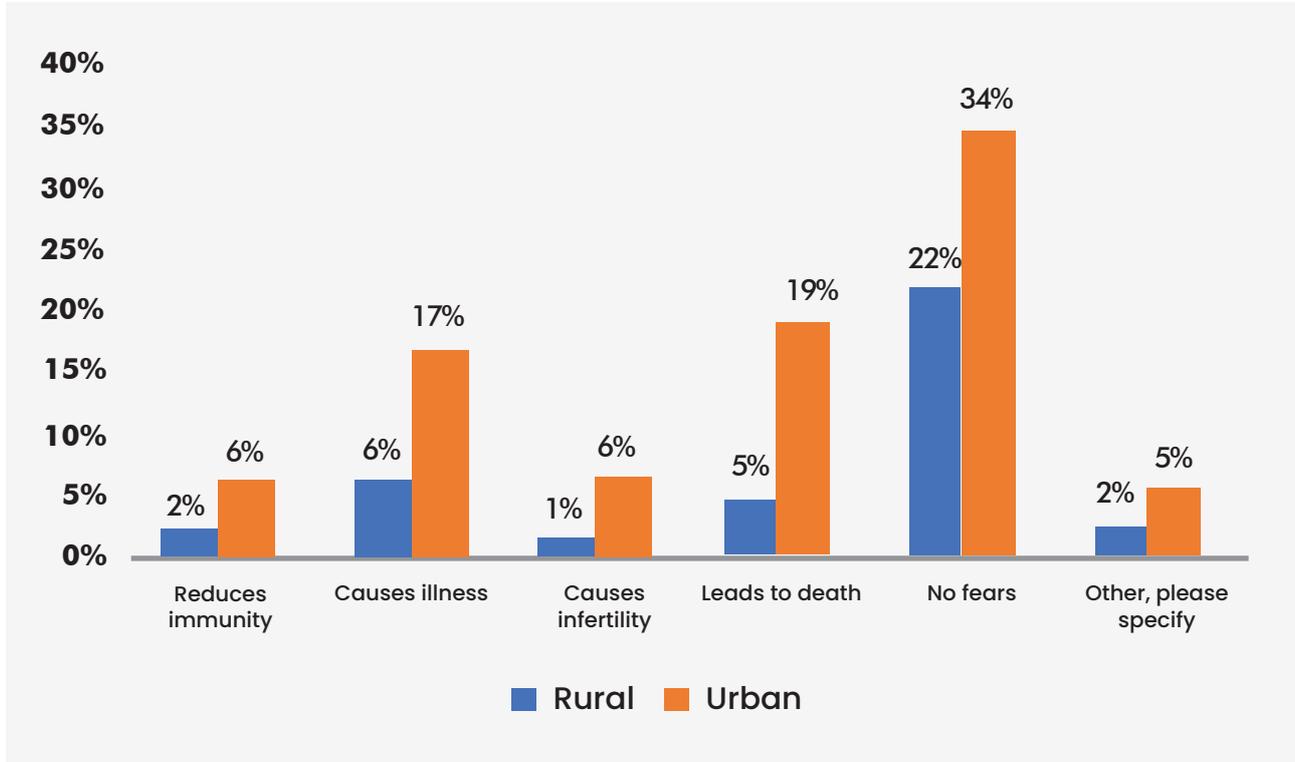
To deepen understanding of perception of COVID-19, respondents were asked the question, “What are your fears about the COVID-19 vaccine?” Responses from respondents show that about a third of respondents in urban areas state that they have no fears about the COVID-19 vaccine, with just under a fifth in urban areas being fearful that a COVID-19 vaccine causes illness. About two fifth of urban dwellers have fears that a COVID-19 vaccine could lead to death. This should inform advocacy about the health risks that people could face if they become unwell, moreso if they are from vulnerable populations of over-60s or have pre-existing health conditions

About two fifth of rural dwellers have no fears about a COVID-19 vaccine. Nigeria has experienced concerns with vaccine hesitancy as the country had tried to get to a zero polio status. However, fears in the northern state of Kano about the polio vaccine in 2004 led to a halt in vaccine uptake. This linked to unfounded rumours that the polio vaccine could lead to infertility. Following community engagement especially with religious leaders, the polio vaccine programme was able to continue. At present, less than one in twenty respondents in urban areas have voiced concerns that the COVID-19 vaccine could cause infertility.

In March 2021, Nigeria received 3.94 million doses of the Oxford-AstraZeneca COVID-19 vaccine.

Source: UNICEF

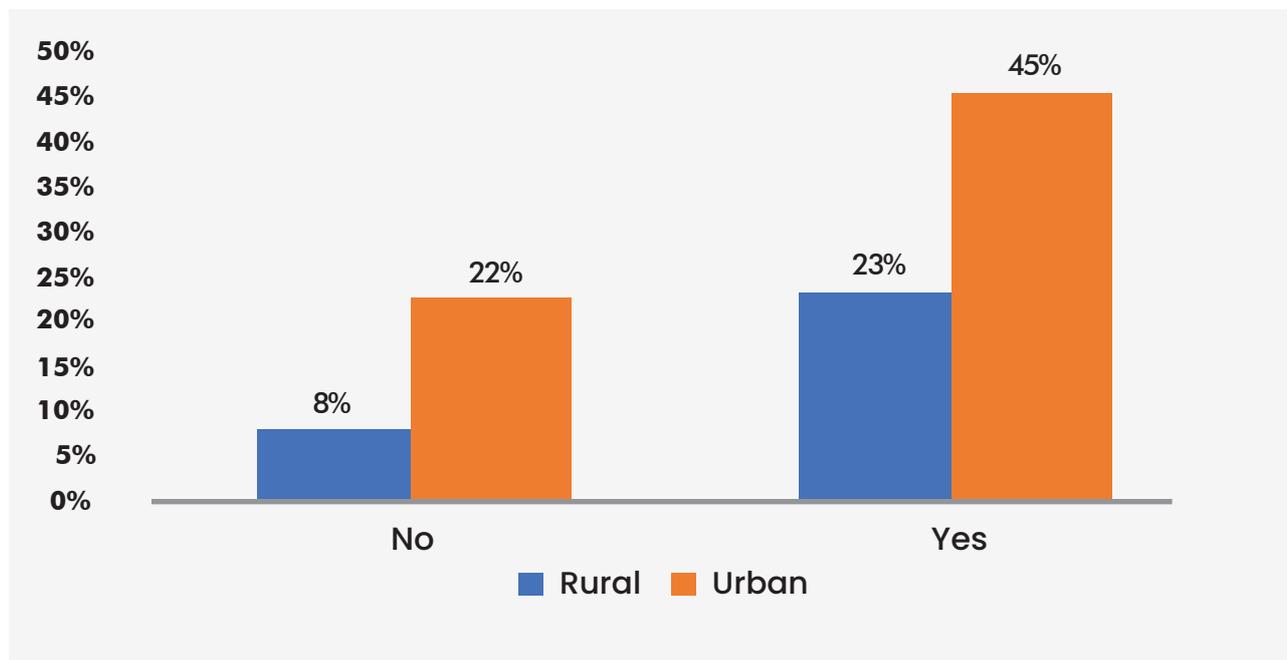
What are your fears about the COVID-19 vaccine?



Willingness to take a COVID-19 vaccine

The survey also sought to determine the willingness of respondents to take the COVID-19 vaccine. Ascertaining whether respondents would be willing to take a COVID-19 vaccine, just under half of respondents in urban areas stated that they would be willing to take a COVID-19 vaccine with about a fifth stating that they would not be willing to accept a vaccine. Willingness to take the vaccine was far lower in the rural areas, with only a fifth being willing to take the vaccine. The COVID-19 pandemic has led to the development of vaccines at breakneck speed. Prior vaccines for diseases have taken no less than 10 years to develop. This has therefore led to anxiety and uncertainty that the same rigorous standards were put in place to develop a COVID-19 vaccine. This has also thrown up questions about whether vaccines can prevent the transmission of COVID-19, how long vaccine-induced immunity would last for, possible long term safety concerns and whether the vaccine would be effective against variants of concern. As the COVID-19 pandemic has continued to spread, some vaccines have now been found to be resistant against certain variants of concern and this remains a challenge as country health authorities are pushing to increase vaccine acceptance while also pushing for access to the available vaccine supply.

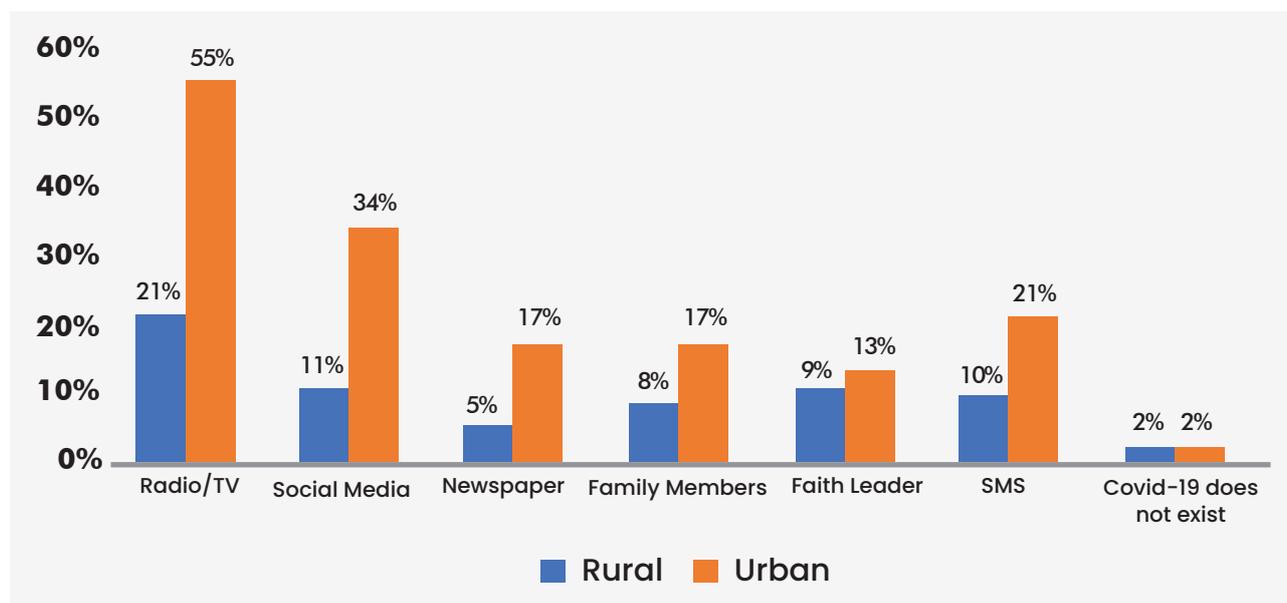
Are you willing to take a COVID-19 vaccine?



Sources of information about COVID-19 vaccines

Seeking to explore the different sources through which respondents access information about COVID-19 and the vaccine, they were asked the question, “Where do you get health information about COVID-19 vaccine?” An analysis of the results revealed that just over half of all respondents in urban areas get health information about COVID-19 vaccines from Radio/TV. This is followed by social media for urban dwellers for about a third of respondents. At the onset of the pandemic in Nigeria in 2020, telecommunication companies started sending out COVID-19 health advisory messages to their subscribers and this was a source of information about COVID-19 for about a fifth of urban dwellers. In rural areas, radio remains an important source of information followed by SMS for about a tenth of respondents. Despite possible fatigue in hearing the public health advisories, the media plays a critical role in keeping Nigerians alert about the continued threat of COVID-19.

Where do you get health information about the COVID-19 vaccine?



Discussion of Results

Health Seeking Behaviour

People differ in their willingness to seek help from health care services. Some go readily for treatment while others only go when in great pain and at an advanced state of ill health.

Access to healthcare is a fundamental human right, but the strain that the COVID-19 pandemic has placed on healthcare systems everywhere has, in turn, affected many people's primary care provision.

To explore their health seeking behaviour, the survey sought to know the first thing people do when they fall sick. Results revealed that while a category of respondents prefer to take local herbs first, another category would rather visit the traditional healers, yet another prefers to go to a chemist/pharmacy first and a very small number chooses to go to the hospital first. There was an agreement however that all respondents eventually go to the hospital when their conditions get worse.

*"In this community what they do to prevent any illness, majority of them I know when they get any illness what they do instead of visiting a doctor, they go for herbs, 'agbo', after using that, if it is not working they visit a chemist. Maybe if the sickness persists, they will now insist on seeing a doctor." **Midwife, FCT.***

*"The hospital tends to be the last resort for most people. They either try to self-medicate by going to the pharmacy or go to traditional healers and when there's no response they come to the hospital or sometimes to spiritual homes." **Consultant, Bauchi State.***

*"We dey use native herbs mostly or we go take all these English ones as the case may be for chemist." **Artisan, Bayelsa State.***

*"If malaria catch you, look for a lime tree and other herbs, mix them and drink, you'll feel strong. The next step is if you don't feel strong, you now decide to approach chemist for self-medication. When there is complications, they will now decide to get to some private hospital, when the complications are still there, you now decide to go to big hospitals." **State level Health officer, Ebonyi State.***

Most common Diseases

Responding to the question about the most frequently occurring health issues in their respective communities, most respondents mentioned 'malaria and typhoid'. According to the World Report 2019^(Dror et al.,2020), six countries accounted for more than half of all malaria cases worldwide with Nigeria leading at 25%. Nigeria also accounted for almost 24% of all global malaria deaths in 2019.

*"Majority of the illnesses that are very common in our area are mostly Malaria and Typhoid. Most people I come in contact with who are ill, when they come back from the hospital and you ask what happened, it's either Malaria or Typhoid." **Taxi Driver, Bauchi State.***

*"Before it was ringworm but now it is malaria." **Trader, Ebonyi State.***

3. The "World Malaria Report 2019" at a glance. World Health Organisation 2019. Assessed March 07, 2021. <https://www.who.int/news-room/feature-stories/detail/world-malaria-report-2019>

“For us here in this community the most predominant of all of this is malaria and typhoid.” **Religious Leader, Kebbi State.**

“Because of the region we find ourselves, most of the illness most people always come up with is malaria, because of the rate at which they experience mosquito bite. And then also typhoid because of the bad water, the contaminated food we eat.” **Pharmacist, Lagos State.**

In addition to malaria and typhoid, respondents also mentioned other health conditions,

“Most common illness we have depends on the age group...we also have gastroenteritis...High BP and they also have high blood sugar and also kidney diseases as well.” **Executive Secretary, NPHCDA, Niger State.**

“...but we still have other illness like diabetes. It’s still common too. It still boils down to the food we eat and hypertension.” **Pharmacist, Lagos State.**

“In some cases when an individual visit the Hospital thinking it’s just Headache or fever, then u may realize that your diagnosed with High Blood Pressure, or Diabetes, or something more than you expected, this is because individuals presume any fever that comes to the body as Malaria or cold.” **Traders, Bauchi State.**

Disease prevention

Prevention, as it relates to health, is really about avoiding disease before it starts. It has been defined as the plans for, and the measures taken, to prevent the onset of a disease or other health problem before the occurrence of the undesirable health event. The survey sought to understand disease preventive measures that community members practice to prevent disease outbreaks.

“We don’t have any preventive methods in this community, the only way is for you to get drugs from the pharmacy or you take herbs.” **Youth, Niger State.**

“We use herbs and also we go to the hospital. We also practice personal hygiene, like washing our hands before and after using the toilets and we use sanitizers in washing our clothes and when taking our bath.” **Women, Kebbi State.**

“I spray mosquito insecticide at night. I don’t sleep in a mosquito filled house. Sometimes, when malaria comes, I go get herbs, cook and use it generally. Like lemon grass, pawpaw, orange and others.” **Taxi Driver, Ebonyi State.**

*“We dey cook agbo, leaves from the bushes, gather them use cover body. There is herbal medicine. By keeping our environment clean, tidy our areas. We cover our food and massage our body too.” **Trader, Bayelsa State.***

*“We educate our patients to be consistent in their personal hygiene, their environmental hygiene and to report promptly, any illnesses that come around. We discourage self-medication, we encourage them to come to the hospital where they would be properly seen...But basically, they prevent their illness by personal and environmental hygiene.” **Midwife, Niger State.***

Results revealed that community members apply different methods of prevention tailored to the most common health issues they experience. Most common preventive measures practiced across all states surveyed is the use of herbs. While some others use mosquito nets, spray insecticide, alongside the herbs.

Understanding (and perceptions) of vaccines

Vaccination is without doubt one of the most outstanding health inventions, saving millions of lives every year, and sparing children and adults from painful disease and absence from education and work^(Enserink & Cohen, 2020). Despite the successes however, when situations occur in which events are rightly or wrongly connected with vaccination, people form their own perceptions. In view of the mixed reception to the COVID-19 vaccine, the survey sought to explore respondents' understanding and perception of vaccines and immunizations, in general.

*“Immunization is a global health and development success story, saving millions of lives every year. Vaccines reduce risks of getting a disease by working with your body's natural defenses to build protection. When you get a vaccine, your immune system responds.”
– **State Level Official Bauchi***

*“I think vaccine is to prevent the coming of a new disease, while immunization is an injection given to an individual – it could be a child or an adult – to prevent it if its already in town.” **Women, Niger State.***

*“Immunization is a means of protecting or preventing oneself from various diseases...Immunizations are done before certain diseases attack your immune system, so after one is being diagnosed negative from a disease, the next step is to be immunize from such diseases.”
Traders, Bauchi State.*

*“Because you don't know how the reaction would be and what would be the side effect, that is why people are finding it difficult to accept the vaccine. But for immunization, people know already what immunization is for and the importance of the immunization so they don't find it difficult to accept immunization.” **Women, Niger State.***

4. Vaccination and trust. World Health Organisation. Accessed March 07, 2021. https://www.euro.who.int/__data/assets/pdf_file/0004/329647/Vaccines-and-trust.PDF

“Immunization is a key component of primary health care and an indisputable human right. It’s also one of the best health investments money can buy. Vaccines are also critical to the prevention and control of infectious-disease outbreaks”. – **State Level Official Bauchi**

“There are people that don’t allow their children to be immunized but I will urge them to allow as it goes a long way in protecting our offspring.” **Women, Niger State.**

COVID-19 and Health Information sources

From the onset of the COVID-19 pandemic, there has been a surge of new information which has left people feeling overwhelmed, the WHO called it an infodemic. An infodemic is a massive amount of information—some accurate, some not— which spreads widely and rapidly during an epidemic, which, if not managed accordingly, can have direct negative impacts on the health of populations and the public health response by undermining the trust in science and interventions^(Gautam et., 2020). To combat the infodemic in Nigeria, the Nigeria Centre for Disease Control (NCDC) launched a misinformation campaign aimed at providing Nigerians with timely and accurate information on COVID-19. To understand the factors that influence people’s opinion on COVID-19 and general health matters, the survey asked respondents’ sources of health information.

The most common sources of health information were the media – radio, television and social media – and gossip or information relayed by word of mouth.

“Most reliable source of information regarding Corona Virus is from the Radio or Tv Stations.” **Taxi Drivers, Bauchi State.**

“I think most people have radios. No matter how poor they are, they can afford to buy radios. And with the invention of cell phones, most people in the comfort of their homes can listen to news on their phones or read news on their phones. I think they get health information online.” **Lab Technician, Federal Capital Territory.**

“We mostly rely on gossips from some members of the community that have access to informative news about some of these diseases.” **Youth, Niger State.**

“information we get is through networks like radio, TV and this social media. One of us might say, ‘this is what they are saying o’, another will browse it and show us”. **Taxi Drivers, Ebonyi State.**

“We get major information about corona Virus from Radio, TV, Sensitization about Corona, and from people around.” **Traders, Bauchi State.**

“The major source of health information in this community is from the

5. Call for Action: Managing the Infodemic. World Health Organisation 2020. <https://www.who.int/news/item/11-12-2020-call-for-action-managing-the-infodemic>

radio, TV, and the local information sharers like the town criers those that go around the community to inform people about the happenings in town. Also, from billboards and fliers that are being printed and distributed round.” **Consultant, Bayelsa State.**

Other sources of health information that are not so commonly mentioned include, NCDC text messages, health workers and religious institutions.

“They hear on radio, they see on Television, in churches and mosques, at workplaces and NCDC text messages.” **Officer-In-Charge, Bauchi State.**

“...Once in a while we hear from the hospitals and the agents that administer the polio vaccine for children.” **Youth, Niger State.**

“The preventive measures most often are actually been spoken about most often in the hospitals...sometimes even in gathering, religious gathering and all that.” **Pharmacist, Bauchi State.**

“They can get health information maybe from radio, from television, maybe through jingles, or even from people around them, maybe health workers around them.” **Midwife, Bayelsa State.**

Perception of COVID-19

Perception of risk of COVID-19 is driven by factors including partial mistrust and complete disbelief; hazard, as well as outrage^(Habib et al., 2021). For this survey, respondents gave their perspectives about whether they believe COVID-19 exists. Recurring themes from responses were the general mistrust of public information as well as a ‘seeing is believing’ perception. People who believe, do so because they have experience with COVID-19 or have a close contact who has experienced the disease. People who do not believe COVID-19 exists, claim not knowing anyone affected by the disease as their reason for not believing.

“Sincerely, even the COVID 19 itself in this my environment we find it difficult to believe that it exists because in this country now, according to the record, we have more than 100,000 person who contracted the disease but up till today I have never seen whether physically or on television that this person is in an hospital because of COVID, but we do see figures. So that is why the COVID-19, we do not really believe in it before you even talk of the vaccine.” **Artisan, FCT**

“Yes, I believe it exists because I have heard about a lot of people being tested positive. I think that is the little I can say so I believe.” **CHEW, Niger State**

6. Int. J. Environ. Res. Public Health 2020, 17(9), 3114; <https://doi.org/10.3390/ijerph17093114>

"I don't think it is real. Because I have not seen anyone that has COVID-19 with my eye like this oh. I only see them on television in fact it's even recently, that they started showing us those that are in hospitals suffering from COVID-19. As at last year that COVID-19 started, they were not showing anything, they were only showing numbers on television." **Businesswoman, Niger State.**

Partial mistrust involves citizens believing some aspects of public information regarding the pandemic and not believing others. For instance, some respondents believe the existence of the virus but do not believe it exists in Nigeria, others believe it exists in Nigeria but do not believe the number of infected patients to be correct – postulating higher or lower numbers than publicised, still some others believe conspiracy theories about the origin and ulterior agenda for the virus.

"Yes, we believe the virus exists and it is killing a lot of people, even though I do not know anyone that had the virus, but what I do not believe is the number of cases that is recorded in Nigeria." **Youth, Niger State.**

"It is a chemical weapon they spread in the air which affected the breath, just cold in that environment can affect you easily but in Africa countries, it does not work like that. What I am saying about COVID 19 is that for sure that it exists, but the producers had something in mind before producing it. They are using to deceive Nigerians." **Transport worker, Ebonyi.**

"The only reason why me I want to agree that it actually exist is because it is a virus and just like we have heard of other virus the acquired immune deficiency virus (AIDS) it is a virus so let us assume that it exists. But all the information they are giving about it and the way they are doing about it, me I do not believe all those ones, I just feel that they are manipulating their numbers and all of that." **Businesswoman, Niger State.**

Another factor shaping citizens' perception of COVID-19 is that unlike many common diseases affecting the general populace in Nigeria, COVID-19 patients have been treated with some dignity and privacy in news reportage. This has played a role in deepening people's disbelief about the existence of the virus.

"Sincerely, even the COVID 19 itself in this my environment we find it difficult to believe that it exists because in this country now, according to the record, we have more than 100,000 persons who contracted the disease but up till today, this morning, I have never seen whether physically or on television that this person in an hospital contracted this, but we do see figures." **Artisan, FCT.**

Prevention of COVID-19

Perception of the disease plays a large role on people's perception of risk and thus preventive measures. Respondents were asked what how they protect themselves to prevent against COVID-19 and disbelief about the existence of the virus had a negative impact on perception of risk and thus preventive measures.

*"It is fake, so me I do not see need for any preventive measures." **Male, FCT***

*"We just told you that COVID-19 is a scam, and you are still asking us how we prevent scam." **Taxi Driver, Lagos State.***

A recurring pattern from responses was that citizens seemed to pay more attention to extra-guideline protocol for the prevention of the disease. This means that where Nigeria's public health institute advices that people stay indoors, wash hands often, wear masks in public and other untrusted sources suggest ingesting certain foods to prevent the virus, then citizens seem more inclined to pay more attention to suggestions from untrusted sources on how to prevent the virus. This is evident in responses about measures citizens assessed take to protect themselves from the virus.

*"Drinking of hot water regularly, using face mask, washing of hands regularly, and social distancing are some of the methods we adopt here in this community." **Youth, Niger State.***

*"...You can also use multivitamin drugs, just as a preventive measure, take calcium and so on. As well, when you know you really need to talk to somebody, wear a face mask..." **Health worker, Lagos State.***

*"By drinking hot water and by taking agbo." **Trader, Bayelsa State.***

*"We go do long distance greeting, like one and half feet. No shake me o because I no go shake you. Bath regular, that one dey, take hot water. Dem say take warm water regular like no allow your throat to dry." **Artisan, Niger State.***

Reflecting positively on the widespread risk communications around COVID-19, citizens assessed seemed to understand basic concepts in the prevention of the disease although knowledge base for prevention among many respondents was incomplete. There also seemed to be some resigned, almost reluctant trust among respondents in public information. This may be an outcome of consistent, continuous, and extensive messaging from public health sources for the prevention of COVID-19.

*"We use face mask, wash our hands, and maintain social distancing, then we do not have much to do apart from what the government tells us to do." **Trader, Niger State.***

"We prevent COVID-19 by washing our hands regularly and also, we cover our nose with face mask and also, we should observe social distance. I think that is how we prevent COVID-19." **Market Woman, Niger State.**

"By following COVID-19 protocols laid down by the government." **Health worker, Lagos.**

"Well, to prevent COVID-19, any disease, or any respiratory disease you have, either catarrh or whatever. Don't do self-medication, come to hospital to see doctors, let them run an investigation on you and confirm is it catarrh or is it COVID. Because the sign and symptoms they gave us for COVID, it is like the symptoms of catarrh." **Health worker, Kebbi.**

"Well to prevent COVID-19 is very simple of course we've been told by the government to prevent COVID-19 at least you ensure you wash your hands and all that and then social distancing..." **Youth, FCT.**

"How best I know to prevent COVID 19 is regular washing of hands, keeping our environment clean, wearing of nose mask, and staying in social distance when in public." **Farmer, Ebonyi State.**

"We are told to wash our hands when we want to go to somewhere or when we go to somebody's house or even when we come back, we can wash our hands." **Health worker, Bayelsa State.**

COVID-19 Myths and misconceptions

Different myths and misconceptions exist globally and among Nigerians around COVID-19. Common misconceptions around the pandemic are that it is not a pandemic at all, it is a 'rich man's disease' and the misconception around the virus not being able to spread in hotter climates as well as using heat to prevent contracting the disease.

"My view about COVID 19 is that it is a sickness that comes from overseas, that's abroad. The best solution is if they can stop abroad people not to come to Africa for now. And if they can stop the Africa people not to go abroad for now at least maximum six months. Then we find the solution to one that is in Africa then solve it." **Artisan, Lagos State.**

"I think it is also heat resistant, so taking warm water and keeping warm is also very important at this time. Hot water inhalation, hot steam inhalation also helps a lot to kill the virus when they are on the respiratory tracks. I think that is very effective." **Health worker, FCT.**

“For us as Africans, our weather helps us to a large extent to prevent it. The temperatures here are high. What we try to do is to make sure that in the morning, you take hot water. In the evening when you get home, like me now, when I get home the first thing is go straight, remove my clothes, take my bath then I get a glass of hot water or tea and just take. That is what we do as our own preventive measures. When entering public places, we put on our face mask.” **Public Servant, Ebonyi State**

“The disease is for the rich people.” **Respondent, Bayelsa.**

COVID-19 Vaccine perceptions

Many Nigerians cannot wait to see the end of the pandemic and the restrictions it has brought to lives. It may thus be expected that the possibility of the introduction of a vaccine will be met with widespread acceptance. This is not the case as many respondents’ perception towards the vaccine are influenced by their ingrained beliefs and behaviours around the disease itself. General issues of public mistrust stemming from long term perception of government disservice and deception is reflected in respondents’ fear of the vaccine. The general human wariness of the unknown reflected as a factor influencing respondent’s perception about the vaccine.

“Some of our people think that maybe they are using the immunisation to gain something else, that’s why they don’t want to take it.” **Trader, Niger State.**

“Some people dey fear because dem think say the think go affect dem say the thing get side effects. And base on say dem never take am before too, so dem dey fear for all those kin things.” **Artisan, Niger State.**

“Yes, the COVID-19 vaccine now it’s a new thing, nobody has tested it, that is why people are finding it difficult. So, because you don’t know how the reaction would be and what would be the outcome, the side effect and all that. So that is why people are finding it difficult to accept the vaccine.” **Businesswoman, Niger State.**

There is also the question of quality of the vaccines. Respondents questioned the quality of current vaccines and certification in Nigeria.

“They said someone produced a fake vaccine for COVID-19. And it has killed about so many numbers sha, no accurate number on it. So, to that I think COVID-19 will take a long way before people really accept their vaccine for now.” **Businesswoman, Niger state.**

“Our government should be straight forward, let them make sure these vaccines are right, real and are good.” **Health worker, Niger State.**

*"I worry that because of the electricity problem that Nigeria has as a whole, it's impossible to store vaccination at a very good temperature. Then sometimes, vaccines are expired as well. Those are the two problems that we face." **Health worker, Lagos.***

There are valid opinions questioning the equity of the speed with which the COVID-19 vaccine was produced. Respondents say, the world has gone through many illnesses for years which are more deadly than Corona, but no vaccine were produced, but these COVID-19 vaccines were produced in less than a year. This may be an indictment on the global lack of political will for research and development around diseases that almost exclusively affect people in lower income groups. Sectors in Nigeria, especially the private sector who are uniquely positioned to quickly drive change need to prioritise research into local development of quality health commodities including vaccines. Many respondents do not trust the agenda of large, foreign pharma and do not feel they have the power to hold them accountable.

Willingness to Use the COVID19 vaccine

Spread of misinformation has played a large role in shaping people's preliminary decision about whether they will take the vaccine or not. Many respondents say they will not take the vaccine based on hearsay, images and videos of adverse reactions on traditional and social media.

*"We saw a woman on television that was administered the vaccine and then she fell and died, that is why we won't accept the vaccine here, until there has been an enhancement on the vaccine before we will take it too." **Trader, Niger State.***

*"I heard that America collected the vaccine some are dying. The gave them COVID-19 vaccine some people died at that spot. So, like me, I even said if I see that vaccine, I will run. I would not collect it." **Businesswoman, Niger State.***

A recurring theme affecting willingness or unwillingness to take the COVID-19 vaccine was the misconception that it interacts with and affect people's DNA and thus their behaviour. However, evidence shows this belief to be incorrect as none of the vaccines approved for use interact with the DNA in any way^(Larson et al., 2014).

*"I will not take it due to the information about the possibility of the vaccine altering someone's genes." **Respondent, Kebbi.***

Religious beliefs showed up strongly as a reason why respondents said they were unwilling to take the vaccine. Comments such as, "it is the plan of the devil to insert something in our body..." were some of reasons respondents gave for not being willing to take the COVID-19 vaccine.

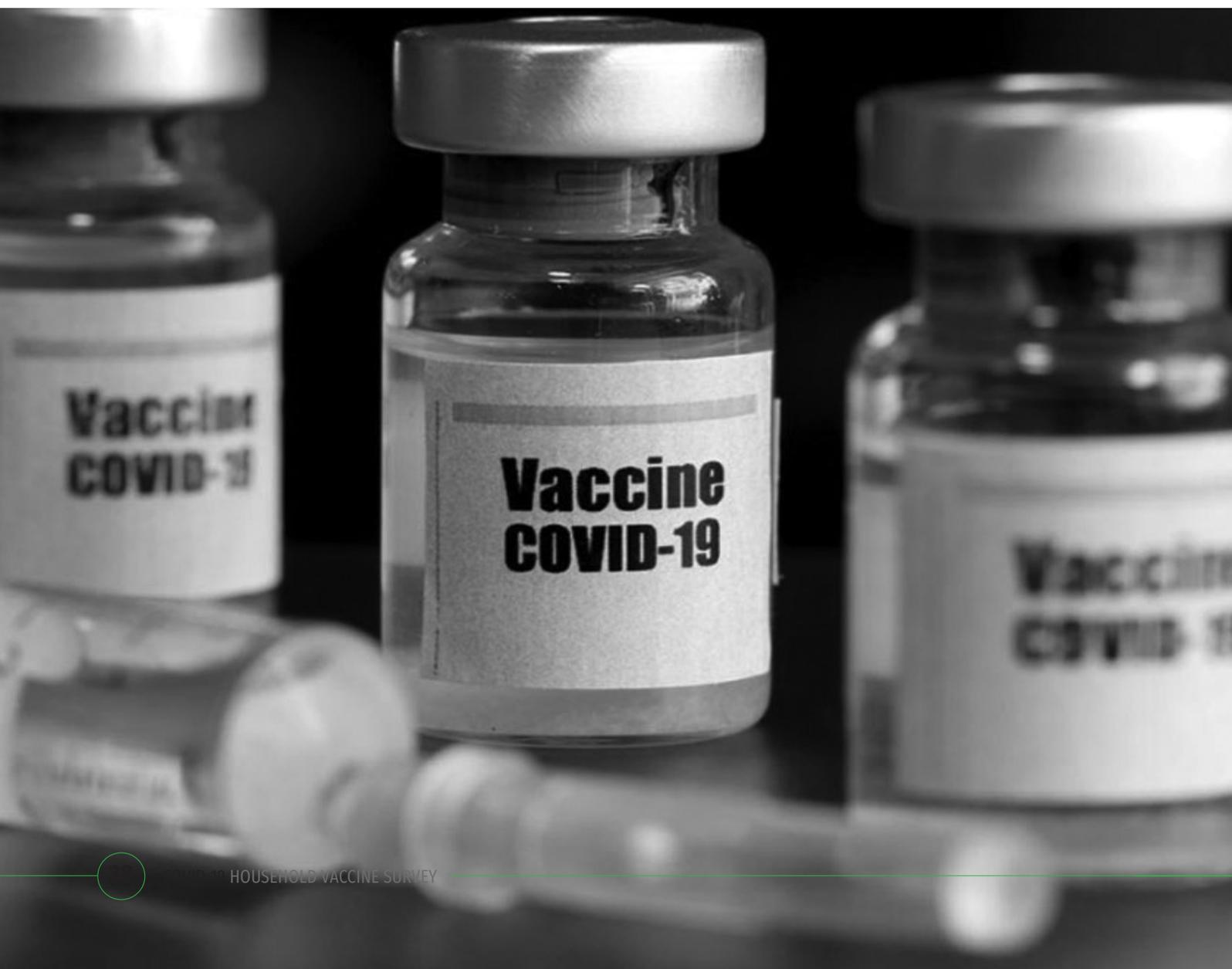
*"Why will I take a vaccine that I'm sure and I'm praying not to come in contact with that disease? So, I don't need the vaccine." **Health worker, Niger State.***

7. Myths and Facts about COVID-19 Vaccines. Centres for Disease Control and Prevention, 2021. Assessed March 03, 2021. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/facts.html>

Ironically, most of the side effects respondents had experienced from taking other vaccines are similar to the ones they expect to experience from the COVID-19 vaccine. However, theories such as COVID-19 does not exist, pharmaceutical companies abroad have ulterior motives, it may alter my genes – impact negatively on people’s willingness to even consider the vaccine. Much of these perceptions may be regurgitated unwillingness from the global north as evidenced by people citing videos they watch as reasons why they will not take the vaccine. Some other respondents say that they will not take the vaccine simply because no one has explained how it works to them.

Accurate information unique to Nigeria’s peculiar landscape needs to be developed and extensively disseminated to help Nigerians differentiate between fact and myth so they make informed decisions about their health.

Generally, popular perception from this survey is that citizens want some time and testimonials to help them make up their mind to take the vaccine. More people said they are willing to take the vaccine after they have seen various people take the vaccine and come out with no side effects. Leveraging off this same ‘seeing is believing’ mindset, public health authorities can start vaccine roll-out with the willing and publicly document as well as disseminate their reactions, if any, to the ‘jab’.



LIMITATIONS

- All the data shown in this study was self-reported and partly dependent on the respondents' honesty and recall capability; and so some of the results may be subject to recall bias.
- As this study was conducted in only 7 states out of 36 states in Nigeria, greater the diversity in the socio-demographic characteristics of the study participants, especially in occupation, religion and geographical representation, this may have influenced some of the results in this survey.
- The conspiracy theories surrounding COVID-19 and vaccines at the time of the study, made some respondents decline participation in the survey.
- Some respondents especially in the rural areas required incentives before participating in the study. Also, due to the closure of all educational institutions in Nigeria amidst the COVID-19 outbreak, the institutional health research and ethics committee was not approached. Despite these limitations, our findings provide valuable information about the perceptions and willingness to use the COVID-19 vaccine.



About 1,717,515 million Nigerians have been vaccinated meaning that 58.2% of the vaccine shots received have been administered.

Source: NPHCDA COVID vaccination update, 25th April, 2021

CONCLUSIONS AND RECOMMENDATIONS

Findings from the survey reveal the critical need for community engagement to address hesitancy towards the COVID-19 vaccine. Community mobilisation and engagement with the support of religious and traditional institutions to pass the right message about the vaccine, at the grassroots is key. These institutions are very influential and are in a position to empower people with the knowledge and information to protect themselves, their communities and loved ones. Religion plays an important role in the Nigerian society and culture and should be leveraged. In addition, influencers and celebrities can be used to actively advocate for the vaccine. They should be provided with accurate information and encouraged to lend their voices in encouraging people to get vaccinated.

The survey found that traditional media – radio and TV, are the most popular sources of information nationwide. Therefore, it is recommended that these media outlets are used as a medium to reinforce key messages to motivate families and communities to take the COVID-19 vaccine when made available to them. This can be done via jingles, advertisement and live or recorded programmes where health experts or influencers join to discuss and answer questions from the public on vaccines. These outlets can provide up-to-date information on the vaccine and vaccination exercise to the public.

Although 85% of the respondents have heard about the COVID-19 vaccine, only 68% are willing to take it. As the vaccines are being administered to members of the public, it is key for Nigerians to understand the benefits of the vaccine and why they greatly outweigh the risk of not taking it, mild potential side effects or inconvenience that may be associated.

Rejection of the vaccine appears to be linked to misinformation and disinformation. As many as 23% of respondents believe that the vaccine “leads to death” while others fear it may cause illness and infertility. This shows that despite several attempts to address COVID-19 misinformation in Nigeria, a wide gap still exists in knowledge and understanding. While fact-checking organisations and government institutions continue to support by debunking rumours and misinformation, more can be done in providing additional avenues and innovatively opening new channels to engage correct misinformation. This task isn't only the responsibility of government institutions, but requires everyone to do their part—from religious leaders to medical professionals. Debunking and fact-checking information before disseminating should rationally become everyone's duty.

A key recommendation from this survey is the need for constructive education and awareness to provide essential information that will allow individuals to make informed decision to accept a COVID-19 vaccine. Before the arrival and administering of the vaccine, a lot more could have been done by governments and advocacy groups to address hesitancy and build vaccine literacy so that the public will accept it. Misinformation spread through multiple channels may have had a considerable impact on the willingness to accept the COVID-19 vaccine.

Due to the low level of health literacy in Nigeria, effective vaccination campaigns should aim to carefully explain in simple language, a vaccine's level of effectiveness, expected side-effects and the importance of population-wide coverage to achieve herd immunity. These key messages should be passed in local languages through appropriate channels to key audiences. It is important that health institutions and the government build trust among people through clear and transparent communication about the vaccines.

This survey provides critical evidence to guide interventions developed by Nigerian government institutions and their partners for the optimization of the COVID-19 vaccine uptake across the nation. The fight against COVID-19 hesitancy will require a collective effort, and an all-of-community approach. Government, religious and traditional institutions will need to work together to help build trust in the society and provide clear guidance on the way forward. Community mobilisation with the support of religious institutions to train community leaders at the grassroots is key in vaccine acceptance.

The combination of getting vaccinated and following the NCDC guidelines is our best bet out of the COVID-19 outbreak. Ending the COVID-19 pandemic will halt the growing negative impact the virus has on almost all areas of a functioning society.

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APPENDIX (FULL QUESTIONNAIRE)

Form: COVID 19 Vaccine Willingness to Use Survey

Questions

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1. EpiAFRIC, a public health consultancy, and research organization is conducting this survey to explore the perception of Nigerians towards a COVID-19 vaccine and the willingness to use COVID-19 vaccines of the different groups of Nigerians (Social, ethnic, and religious variations. This questionnaire will not take more than 15 minutes of your time. This research is not compulsory. You are free to withdraw from participating in the research anytime you want. The answers you provide are anonymous. Please feel free to ask any questions about the research. Thank you.

2. Respondent's Name

3. Respondents Phone No

4. Socio-Demographics

5. State

Choose one response

- Kebbi State
- Bauchi State
- Ebonyi State
- Niger State
- Lagos State
- Bayelsa State
- FCT

6. Local Government Area

7. Community Type

Choose one response

- Rural Community
- Urban Community

8. Pin Location

9. Respondent's AGE (Kindly pick an adequate range)

Choose one response

- 17-25
- 25-35
- 35-45
- 45-65
- 65 and above

10. Respondent's Gender

Choose one response

- Male
- Female

11. Respondent's Occupation

Choose one response

- Civil Servant If this response, jump to 13
- Trader If this response, jump to 13
- Businessman If this response, jump to 13
- Farmer If this response, jump to 13
- Artisan (mechanic, carpenter, plumber etc.) If this response, jump to 13
- Religious Leader If this response, jump to 13
- NYSC If this response, jump to 13
- Student If this response, jump to 13
- Other (Please Specify

12. Others Please specify

13. Health Seeking Behaviors

14. How do you prevent illnesses in your household? (*the interviewer should allow the respondent to mention and tick as appropriate) (Please tick all that apply)

Choose all that apply

- Environmental Sanitation If this response, jump to 16
- Personal Hygiene If this response, jump to 16
- Immunization If this response, jump to 16
- Healthy Nutrition If this response, jump to 16
- Traditional Medicine If this response, jump to 16
- Others, please specify

15. Other, please specify

16. If a family member is unwell where do you seek care?

Choose one response

- Local health clinic If this response, jump to 18
- General hospital If this response, jump to 18
- Local chemist If this response, jump to 18
- Traditional medicine seller If this response, jump to 18
- Church, mosque or other religious institution If this response, jump to 18
- Other, please specify

17. Other please specify

18. Use of Vaccines

19. Vaccines (Immunization) are used to (*the interviewer should allow the respondent to mention and tick as appropriate)

Choose one response

- Cure diseases If this response, jump to 21
- Transmit diseases If this response, jump to 21
- For family planning If this response, jump to 21
- Prevent diseases If this response, jump to 21
- Stop diseases spreading If this response, jump to 21
- Others, please specify

20. Please specify

21. Have you or anybody in this household used a vaccine?

Choose one response

- Yes
- No If this response, jump to 26

22. If yes, how did you find out information about the vaccine?

23. If yes, where there any recorded side-effects from the vaccine by you or any member of this household?

Choose one response

- Yes
- No If this response, jump to 26

24. If Yes, what were the side effect? (Please tick all that apply)

Choose all that apply

- Pain at injection site If this response, jump to 26
- Fever If this response, jump to 26
- Vomiting If this response, jump to 26
- Swelling of injection site If this response, jump to 26
- Other. Please specify

25. Other. Please specify

26. On the scale 1-5, how important do you think vaccines are? (where 5 is very important and 1 not important at all)

Choose one response

- 1
- 2
- 3
- 4
- 5

27. Willingness to Use COVID-19 Vaccines

28. Do you believe Covid-19 exists?

Choose one response

- Yes If this response, jump to 30
- No

29. If no, why do you believe COVID-19 is not real?

30. Are you willing to take the Covid-19 vaccine when available?

Choose one response

- Yes If this response, jump to 32
- No

31. If No, Why?

32. How do you prevent covid-19? (Please tick all that apply)

Choose all that apply

- Traditional/ Herbal Medicine If this response, jump to 34
- Malaria drugs If this response, jump to 34
- Hand washing If this response, jump to 34
- Social Distancing If this response, jump to 34
- Vaccines If this response, jump to 34
- Wearing of face masks If this response, jump to 34
- Others, please specify

33. Kindly specify

34. Have you heard about the COVID-19 vaccine?

Choose one response

- Yes
- No

35. What are your fears about the COVID-19 vaccines? (*the interviewer should allow the respondent to mention and tick as appropriate) (Please tick all that apply)

Choose all that apply

- Reduces immunity If this response, jump to 37
- Causes illness If this response, jump to 37
- Causes infertility If this response, jump to 37
- Leads to death If this response, jump to 37

- No Fears If this response, jump to 37
- Other, please specify

36. Specify Please

37. Where do you get information you trust about COVID19 from? (Please tick all that apply)

Choose all that apply

- Radio/TV
- Social Media
- Newspaper
- Family Members
- Faith Leader
- SMS
- Covid-19 doesn't exist

QUALITATIVE GUIDE

- What illnesses occur the most often in this community?
- How do people in this community prevent diseases or illnesses?
- Where do people in this community get health information from?
- When you hear "vaccine", what comes to your mind?
- Do you have concerns about vaccines in this community?
- What is your view about Covid-19?
- How do you prevent Covid-19?
- What information have you heard about COVID- 19 vaccines
- What are the reasons why you would or would not take a COVID vaccine?(the interviewer should ask whether they would use or not first before asking for reasons)



Pfizer-BioNTech COVID-19
After dilution, vial contains 5 doses
For intramuscular use. Contains no preservatives.
For use under Emergency Use Authorization.
DILUTE BEFORE USE.
Discard 6 hours after dilution when stored at 2 to 25°C (35 to 77°F).
Dilution date and time:
LOT/EXP: PAA156571



**NIGERIA
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Informed commentary, intelligence and insights on the Nigerian health sector

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