

Drivers of Covid-19 Vaccine Hesitancy in Southern Nigeria

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Abstract

Hesitancy against the Covid-19 vaccines cuts across all nations of the world, but this may not be unconnected to the trolls of misinformation and politicization surrounding the Covid-19 science. Findings from this study reveal that 84.7% of the study population lacks adequate information about the Covid-19 vaccines. 50% of the study population is skeptical about the safety of the Covid-19 vaccines. 100% of the study participants make use of the internet and other social media platforms for their sources of news information. 55.3% of the study population would follow the advice of their healthcare workers pertaining to the Covid-19 vaccines. 26.7% of the study population would listen to instructions given by their parents pertaining to the Covid-19 vaccines, while 20.7% of the study population would follow the guidance of their religious leaders respectively. Thus, the main drivers of Covid-19 vaccine hesitancy in Southern Nigeria are a lack of correct information about the Covid-19 vaccines, misinformation on social media platforms, resistance from religious leaders and parents, and a lack of support for the Covid-19 vaccine uptake on the part of healthcare workers. It is, therefore, imperative that in order to overcome the present challenge, the population of Southern Nigeria should be educated on Covid-19 related subjects and engaged with health promotion initiatives. While accepting the Covid-19 vaccines by the hesitant populations in Southern Nigeria is largely dependent upon the attitudes and influences of religious leaders, parents, and healthcare workers, a much larger study is required to fully establish the ramifications of these important findings.

Keywords: Covid-19, Healthcare Workers, Immunization, SARS-CoV-2, Southern Nigeria, Vaccine Hesitancy.

Introduction

Vaccines and Immunization efforts remain one of the greatest achievements in Public Health in recent times. It is also of note that tremendous achievements and progress have been made in recent years in Nigeria regarding routine childhood immunizations. This is largely attributed to the successful introduction and implementation of the National Program on Immunization (NPI) at all levels of the Nigerian Healthcare System [1]. The routine immunization of small children and the occasional vaccination of the general population against some vaccine-preventable diseases has brought much wellness and health to the citizens of Nigeria, thereby drastically reducing the

average annual cost expended on healthcare by households [2]. Despite these commendable achievements however, Nigeria has remained one of the countries in the world with a protracted history of vaccine hesitancy and resistance [3]. The tremendous successes and achievements recorded in public health within the past decades have been largely attributed to the beneficial effects of vaccines on the health of populations [4]. Hesitancy to vaccine administrations has always been in history, but at no point in recorded human history has there been so much controversy and politicization of vaccine science as currently being recorded with the Covid-19 vaccines [5]. Covid-19 Vaccine Hesitancy in Nigeria poses a big challenge to the

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fragile Nigerian health system and the country's economy. Since March 2020, when the WHO declared Covid-19 as a global pandemic [6], all economies in the world have suffered a massive dip in their internal Gross Domestic Product (GDP) and revenue generation. The Nigerian economy is still struggling due to the impact of the Covid-19 pandemic.

The rapid development of the Covid-19 vaccines and their availability for public administration, though not equitably distributed to countries like Nigeria [7], has brought a measured relief to wearied economies and health systems. The possibility of reduced case fatalities reduced mortalities, and reduced chances of hospitalization, especially when complete doses of these vaccines are taken, makes a case for its universal acceptance. However, the wave and barrage of skepticism and social misinformation surrounding the Covid-19 vaccines has led to an alarming level of hesitancy. The unwillingness on the part of the Nigerian population to take the few available doses of the Covid-19 vaccines is fueling a Covid-19 Epidemic and the chances of mutated variants of the SARS-CoV-2 virus thriving among the population. The already weakened health system in the country is overwhelmed, and the government is already over-stretched economically. The poor state of the global economy and the massive debts the country owes mean that the country may not be able to survive another phase of general lockdowns in order to curb the spread of evolving variants of the SARS-CoV-2 virus [8].

The Nigerian population needs to accept and take the Covid-19 vaccine in order for the economy to recover and also in order for the Nigerian health system and structures can be better re-engineered and equipped to meet the 21st-century health challenges. Accepting these vaccines is, however, premised upon understanding the drivers of the Covid-19 vaccine Hesitancy among the population. Identifying these drivers will help to guide our Covid-19 vaccine administration strategies.

Covid-19 Vaccine Hesitancy remains a major problem in Nigeria [9]; hence, an understanding of the drivers of Covid-19 vaccine Hesitancy among the Nigerian population is needed to prevent a possible resurgence of SARS-CoV-2 infections in the country [10].

While various studies have been conducted among the general populations of Nigeria on subjects relating to Covid-19 vaccine hesitancy, none of these studies have specifically focused on identifying the drivers of Covid-19 vaccine hesitancy among cohorts of the Covid-19 vaccine hesitant population. This study seeks to address this gap by identifying the specific drivers of Covid-19 vaccine hesitancy among the adult populations of Southern Nigeria. The identification of these drivers will help in devising strategic and tailored Covid-19 vaccine implementation science approaches to these specific populations and groups.

Theoretical Framework

The problem of vaccine hesitancy in Nigeria is protracted as witnessed by the polio vaccine resistant in some parts of Nigeria. However, while this challenge and resistant against the polio vaccine have been largely mitigated after years of efforts and community engagements, the resurgence of vaccine hesitancy associated with the Covid-19 vaccines in recent times have brought back a familiar problem. Several studies in Nigeria have all indicated the lack of willingness on the part of the Nigerian population to accept the Covid-19 vaccines.

The objective of this study is to identify the drivers of Covid-19 vaccine hesitancy among the Covid-19 vaccine hesitant population of Southern Nigeria. *Problem Statement:* With the rapid availability of the Covid-19 vaccine for public administration, many members of the population in Southern Nigeria are still hesitant to take these vaccines. *Research Question:* What are the specific drivers of Covid-19 vaccine hesitancy among the Covid-19 vaccine hesitant population in Southern Nigeria?

Materials and Methods

Study Site and Population

This study is a randomized and clustered cross-sectional survey among the population of three (3) mega cities in the three (3) geo-political zones of Southern Nigeria. The geo-political zones are South-West, South-East, and South-South, respectively. The study was conducted between the months of January 2022 to June 2022 at the three mega cities of Lagos, Enugu, and Port Harcourt, respectively. The target population were Nigerian citizens of 18 years of age and above. Participation in the survey was voluntary and consensual, with a semi-structured questionnaire randomly administered to presenting and consenting individuals who affirms their unwillingness to take the Covid-19 vaccine. Expert volunteers who helped in the administration of the questionnaires also helped in bridging the language barrier encountered by a few of the study participants who could not speak fluent English.

Determination of Sample Size

After pulling the total number of study participants from all relevant studies relating to this subject in Nigeria to date, the sample size was determined using the Online “*Creative Research Systems®*” (CRS) sample size calculator at a 99% Confidence Level (CL) and at 1% Confidence Interval (CI). A convenience sampling method was applied in the administration of the questionnaire at the study sites.

Measures and Data Collection

The administered questionnaire was designed to identify the drivers of Covid-19 vaccine hesitancy among the population of Southern Nigeria. Questions addressed relates directly to the participant’s level of knowledge about the Covid-19 vaccines, sources of news information, possible reasons for not taking the Covid-19 vaccines, and identifying individuals that could help influence the decisions to accept the Covid-19 vaccines. Basic social demographics relating

to age, gender, religion, education, and housing were also captured in the questionnaire. The questionnaire was piloted with 100 participants in a bid to test the simplicity of the tool and to validate the study questionnaire. These initial 100 participants were later excluded from the study upon perfecting the use of the tool.

Data Analysis

Data collected in this study were analyzed with simple descriptive statistics and the Pearson Correlation Analysis, Regression Analysis, and ANOVA using the Excel Data Analysis Tool Pack. All collected data were securely encrypted and archived in a backup folder.

Ethical Considerations

In this consensual and totally voluntary study, Informed Consent was duly sought from each of the participants. All participants gave both verbal and written consent or thumb print before participating in this study. Information given are treated with absolute confidentiality and complete anonymity. The questionnaire contains simple, non-invasive measurements and questions dealing with basic variables relating to Covid-19 Vaccine Hesitancy. The study also focuses mainly on the vaccine-hesitant population of Southern Nigeria; hence, information or responses that could be linked to any participant or individuals were not required.

Results

A total of 1,500 questionnaires were successfully administered and answered from Southern Nigeria. From the three (3) selected mega cities at each of the three (3) geo-political zones in Southern Nigeria, 500 duly filled questionnaires were returned for analysis. The multi-lingual expert volunteers who helped in the administration of the questionnaires also helped in closing the language barrier gaps encountered by a few of the study participants by interpreting the content of the questionnaire to the participants and translating and transcribe some responses from the participants as necessary.

Table 1. Participants Need for More Knowledge about the Covid-19 Vaccines

| Yes | No |
|---------------|-------------|
| 1,270 (84.7%) | 230 (15.3%) |

Data presented in the above table shows 84.7% (n=1,270) of the study participants require more knowledge and education about the Covid-19 vaccines. The massive knowledge gap about the Covid-19 vaccines could help explain the reason for the current wave of hesitancy being experienced in Southern Nigeria. The Pearson Correlation Analysis of the primary data reveals a perfect negative ($r=-1$) correlation between the level of knowledge about the Covid-

19 vaccines among the study participants and Covid-19 vaccine hesitancy. This clearly indicates that the lower the level of knowledge about this vaccine, the higher the level of hesitancy experienced. A further ANOVA of the same data indicates that there is a significant positive relationship between Covid-19 vaccine knowledge and Covid-19 vaccine hesitancy, with a p-value = 0.000778 [$F_{sta} (84.5) > F_{crit} (7.709)$], at 95% Confidence Level (CL).

Table 2. Participants' Primary Sources of News Information

| Radio | Television | Internet/Social Media Platforms |
|-----------|-------------|---------------------------------|
| 390 (26%) | 380 (25.3%) | 1,500 (100%) |

While some of the study participants still listen to news information via traditional radio and television stations (51.3%), all participants in this study actively make use of the internet and other social media platforms for their news information sources (100%). The dynamic use of mobile and other hand-held devices has made possible the availability of new information on the go. This data shows that the young and vibrant youth of Southern Nigeria is actively engaged on social media and on the internet. The Correlation analysis of the primary data indicates a strong negative correlation ($r=-0.90784$) between sources of news information

and Covid-19 vaccine hesitancy in Southern Nigeria. This shows that the barrage of information received via the media platforms, especially the internet and other social media platforms, as seen in this data, has had some negative impact on the uptake of the Covid-19 vaccines among the study population. A further ANOVA of the collected data shows a very strong positive relationship (p-value = 0.000422) between sources of news information and Covid-19 vaccine hesitancy. This statistical record is highly significant at 95% CL, with an $F_{stat} 115.8474 > F_{crit} 7.708647$, respectively.

Table 3. Participants who are Skeptical About the Safety of the Covid-19 Vaccine

| Yes | No |
|-----------|-----------|
| 750 (50%) | 750 (50%) |

The data above shows that 50% (n=750) of the study participants are skeptical about the safety of the Covid-19 vaccines. These fears and skepticism may not be unfounded with the barrage of misinformation about the Covid-19 vaccines available especially on social media

and internet platforms. Despite a strong positive correlation between skepticism about the safety of the Covid-19 vaccines and Covid-19 vaccine hesitancy ($r=0.80$), a p-value= 0.40652 shows that there is no significant relationship between skepticism and Covid-19 vaccine hesitancy.

Table 4. I am Willing to take the Covid-19 Vaccine if Recommended by Any of the Following

| Imam | Pastor | Community Leader | Parents | Friends | Healthcare Workers | Teacher | Boss | Partner |
|-------------|---------------|-------------------------|----------------|----------------|---------------------------|----------------|-------------|----------------|
| 0 | 310 | 50 | 400 | 20 | 830 | 0 | 70 | 100 |
| (0%) | (20.7%) | (3.3%) | (26.7%) | (1.3%) | (55.3%) | (0%) | (4.7%) | (6.7%) |

Based on the information presented in Table 4 (above), an overwhelming majority of the study participants will listen to advice about the Covid-19 vaccines from healthcare providers (55.3%). While 26.7% (n=400) of the study participants will follow the guidance given by their parents, a further 20.7% (n=310) will also listen to advise from their religious leaders. The Pearson Correlation Analysis indicates a very strong positive correlation ($r=0.16$, $r=0.24$, and $r=0.79$) between the influence of religious leaders, parents, and HCWs on the study participants to accepting to take the Covid-19 vaccine.

Discussion

The advent of Covid-19 has brought so many changes to our common ways of life, and many gains made in our healthcare delivery systems for several decades have been reversed due to this development. The global lockdowns that followed the Covid-19 pandemic affected immunization programs and activities, which could potentially lead to the spread of many preventable diseases [11]. With the entire world in a state of pandemonium due to the rapid spread of the SARS-CoV-2 infections, the rapid roll-out of the Covid-19 vaccines was highly encouraging. However, the global wave of resistance and hesitancy against the Covid-19 vaccines remains a major cause for concern [12]. Many studies have been conducted in different parts of the world on the state of readiness of various populations to accept the Covid-19 vaccines when made available for public administration; findings, however, have been very alarming as these studies all indicate poor levels of acceptability [13, 14]. The level of acceptance of the Covid-19 vaccines ranges from 60 percent to 80 percent on average at

different part of the world. Studies conducted in Nigeria indicate about 30 percent to 40 percent of the population are unwilling to take the Covid-19 vaccines. While a study conducted by the African CDC in fifteen (15) African countries indicates that only 79% of the population is willing to accept the Covid-19 vaccines [15, 16]. It should be noted that the CDC study does not put into consideration the country-centric acceptance rate; thus, the 79% acceptance rate has largely shielded the low level of acceptance applicable to some of the countries in the study. Studies on the level of Covid-19 vaccine acceptability in Nigeria have yielded varied outcomes [15-17].

In Africa, there is a record of polio vaccine boycott in Northern Nigeria and parts of Cameroun due to fear that this vaccine might cause infertility [18]. Hesitancy and Resistance against the Covid-19 vaccine, however, cuts across all countries and different racial groups for different reasons. Studies conducted in the UK and Ireland have indicated some interesting psychosocial characteristics and demographics of the Covid-19 vaccine hesitant populations [19]. Studies conducted in the USA has also identified certain unique characteristics among the vaccine hesitant populations in the USA [20]. In Nigeria, there has been studies conducted among the general populations to ascertain the level of Covid-19 vaccine acceptance, of which the Covid-19 vaccine hesitant populations form a subset of the findings [21, 22]. There is, however not a single study conducted that exclusively focused on the Covid-19 vaccine hesitant populations in Nigeria until this study.

Skepticism is fostered by a lack of adequate information on a particular subject matter, and this study has revealed this challenge, with 50%

of the study population skeptical about the safety of the Covid-19 vaccines. This finding is corroborated in a study on the barriers of child immunization completion among parents. The study shows that some parents do not believe that vaccines are safe, while others do not believe that vaccines are necessary to protect their children from diseases [23]. From this study, 26.7% of the study population clearly indicated that they would follow the instructions of their parents regarding the Covid-19 vaccines. The influence that parents have on the decision of their wards in vaccine acceptance cannot be overemphasized. In a global overview of systematic reviews of parent-level barriers to the uptake of childhood vaccinations, the study identified health systems, access, beliefs and concerns, health perceptions and experiences, information and knowledge, and social or family influences as some of the major barriers to childhood vaccination uptake [24]. Additionally, in a systematic review on barriers to childhood immunization in Sub-Saharan Africa (SSA) in 2020, the review clearly identified the influence of parents/caregivers as a major barrier to childhood immunization uptake [25].

Despite the fact that the current study was conducted among the adult population of Southern Nigeria, the influence of parents on the participants' decision to accept the Covid-19 vaccines can be clearly seen in this study (26.7%).

84.7% of the study population indicate that they require more information about the Covid-19 vaccines. Thus, the government and donor/funding agencies will do well to further intensify efforts at engaging and properly educating HCWs and religious leaders about the safety and importance of the Covid-19 vaccines. With 100% of the participants in this study seeking information via online and social media platforms, studies have shown that the self-efficacy of individuals in assessing the relevance of digital or online information also plays a role in the acceptance or rejection of the Covid-19 vaccines [26]. The barrage of vaccine

misinformation and misconception has fueled the poor uptake of the Covid-19 vaccine globally [27-29]. Lack of trust in government and political leadership, coupled with the politicization of the Covid-19 science, has grossly undermined the efforts of the government to persuade citizens to take these vaccines.

55.3% of the participants in this study affirm they will follow the advice of their HCWs regarding uptake and acceptance of the Covid-19 vaccines. In a cross-sectional study on factors influencing the acceptability of Covid-19 vaccination in Malaysia, 97.3% of the study participants indicated that recommendations from their medical doctors would influence their decision [30]. Several other studies have indicated similar responses on participants' willingness to follow the recommendations of their healthcare provider regarding the Covid-19 vaccination [31-33].

20.7% of the study participants indicate that they will listen to the instructions of their religious leaders on the subject of the Covid-19 vaccines. Studies have shown that personal and religious beliefs and individual perceptions about the existence of Covid-19 is also affecting the current wave of Covid-19 vaccine hesitancy in Nigeria [9, 29]. A cross-sectional survey on Covid-19 vaccine hesitancy and confidence in the Philippines and Malaysia indicates a high prevalence of Covid-19 vaccine hesitancy. The same study also reveals that other factors negatively impacting confidence in the Covid-19 vaccines include rural dwellings, the Christian religion, and online information seeking [34].

Myriads of reasons for Covid-19 vaccine hesitancy abounds among the vaccine-hesitant populations; hence, reaching and persuading the Covid-19 vaccine hesitant populations in Nigeria is of paramount importance if the country is to move rapidly into the next phase of economic recovery, health systems strengthening and preparedness for the next pandemic. Coercing and passing uninformed unilateral policies aimed at forcing citizens to be

taking the Covid-19 vaccines could be tantamount to Health Imperialism which could further fuel fears of government and political conspiracies in the Covid-19 saga. Critical findings in this study indicate the need for the government of Nigeria to do more to educate the population about the Covid-19 vaccines. With 84.7% of the study population requiring more knowledge about the Covid-19 vaccines, it is imperative that the government and its agencies of health promotions actively engage the Nigerian population through all media and educational means.

The need for more knowledge about Covid-19 vaccines and the sources of news information utilized by the study participants have a direct correlation and a significant relationship with Covid-19 vaccine hesitancy in Southern Nigeria. Findings from this study has shown that the population in Southern Nigeria can be effectively reached through the internet and other social media platforms.

Therefore, the efforts of the government at mitigating the social disinformation about the Covid-19 vaccines through publicities and jingles should not be limited to traditional radio and television stations. The efforts of the government to re-orienting the Nigerian population about the safety of the Covid-19 vaccines should be scaled up to the internet and all other social media platforms where young Nigerians are mostly active. Social media platforms and groups can be used for youthful discourses on subjects relating to Covid-19 and the importance of vaccination among the population.

While HCWs, religious leaders, and parents remain the main drivers of Covid-19 vaccine hesitancy in Southern Nigeria, the government of Nigeria and its supporting partners will do well to design meaningful programs and policy advocacy forums geared at engaging these critical stakeholders on the Covid-19 vaccine roll-out and other related topics.

Strengths of the Study

This is the first time that a study focusing mainly on the Covid-19 vaccine hesitant populations will be conducted in the Southern geo-political zones of Nigeria. This study was also conducted at the three (3) mega cities located at these zones. This study has also clearly highlighted the drivers of Covid-19 vaccine hesitancy in Southern Nigeria.

Conclusion

Based on this study from Southern Nigeria, it can be concluded that the government's public health agencies, the National Orientation Agency (NOA), and other supporting donor partners should scale up efforts at curbing the spate of disinformation about the Covid-19 vaccines on all active social media platforms in Nigeria. Aside from continuing the Covid-19 vaccine campaigns and jingles on the traditional radio and television stations, the internet and social media platforms should also be seen as viable vehicles of communicating to the vibrant, youthful population of Southern Nigeria. Findings from this study has shown that active engagements, proper education, and advocacy efforts geared towards religious leaders, parents, and HCWs in Southern Nigeria can help encourage the rapid uptake of the Covid-19 vaccine among the population. The youth of Southern Nigeria also needs to be better engaged as critical stakeholders in the government's efforts at mitigating the impacts of the Covid-19 pandemic.

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Conflict of Interest

The author declares no conflict of interest.

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