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The Role of Political Trust in the Uptake of COVID-19 Vaccine Among Three Geopolitical Zones in Nigeria: A Cross-Sectional Survey

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Abstract: There is growing evidence of vaccine delays or refusals due to a lack of trust in the importance, safety, or effectiveness of vaccines, alongside persisting access issues. Although immunization coverage is reported administratively across the world, no similarly robust monitoring system exists for vaccine confidence and acceptance. In this study, COVID-19 vaccine uptake will be mapped across 3 geopolitical zones in Nigeria. This study is aimed at determining and comparing the relationship between political trust and vaccine uptake in 3 geo-political zones in Nigeria in addition to establishing the factors leading to the current COVID-19 uptake and acceptability in the 3 geo-political areas under review. A cross-sectional study design was utilized, to quantify the prevalence of different views on COVID-19 vaccine acceptability, access, and political trust. The data was gathered utilizing a self-administered and online questionnaire, which were analyzed utilizing IBM SPSS version 23 software. Descriptive statistical tools were adequately employed to make sense of the data in addition to the grouping of responses from the interviews. The research found that there is little trust in COVID-19 vaccine in the southeastern part of Nigeria with 55.2% of the respondents from Southeast not accepting its safety as it is provided by the Nigerian Government. The Southwestern part had majority of trust in the vaccine (85.9%) while the Northern part of Nigeria seem to be marginally trusting in the safety of the vaccine with 56.4% agreeing to its safety. From the results, 83.3% of Southwestern respondents obliged to receiving a vaccine produced in Nigeria while 51.1% of Northeastern respondents agreed too, unlike the 36.4% of the Southeastern respondents. There is a significant statistical relationship between political trust and COVID-19 vaccine uptake. It was also discovered that there is a statistically significant relationship in the uptake of the COVID-19 vaccine in the 3 geopolitical zones in Nigeria.

Keywords: COVID-19 Vaccine Uptake, Political Trust, Vaccine Hesitancy, Vaccine Acceptance

1. Introduction

In the words of Rousseau et al [1], "trust is a psychological state consisting of the will to agree to a weakness on the grounds of positive belief of the agenda or attitude of someone else". This simply put, is the acceptance of a gesture with a strong expectation of a positive experience. Trust is a broad term however, in the health system, most services are accepted based on the terms of trust.

There are different sources of trust which include interactions between trustor and trustee, institutions with formal rules, informal routines, social norms, and then individual predisposition like their trust threshold.

The Concept of Trust

The trust in vaccine, consists of several interaction of profiles like vaccine safety issues [2] which has a lot to deal with the handling of the vaccines (quality assurance standards upon which available vaccines are maintained), projected side effects and conspiracy theories, issues about vaccine effectiveness, issues about the significance of vaccines and the degree of confidence in the safety and effectiveness of vaccines globally [3].

Healthcare Provider Trust

The trust in healthcare providers defines another bottleneck that could truncate the reach of vaccine because they constitute the major and most essential source of medical information [4, 5]. The society reveres health professionals especially due to their important role in delivering services through impacting knowledge on vaccination to the public, encouragement of the acts of vaccination through being vaccinated themselves and having simple and direct conversations about vaccination with their patients [6]. The major challenge regarding being in a position of trust is the ability to abuse it, and this is the situation of some healthcare workers who both intentionally and unintentionally disagree and discredit the science of vaccines. This culminates in the building of mistrust in vaccines within households and communities at large.

Political Trust and Trust in Policymakers

Trust in Governments and political system is the foundation through which systematic health interventions are provided to communities. Usually, it is a common knowledge that vaccines are regulated, endorsed, and mandated by Government through its health institutions. Larson et al [3] agreed that there is a direct relationship between the trust in political establishment and the uptake of vaccines from its institutions. He concluded that hesitancy to vaccines could emanate from distrust in Government. Vaccine information would receive same level of distrust as is given to the Government [7]; also, would there be lack of trust in the Government's technical and organizational efforts [8].

This study will be ascertaining how the 3 major tribes in Nigeria political trust affected their uptake of the vaccines. The understanding of the interplay between the political trust and vaccine uptake will help to provide an explanation of the current context of vaccination uptake in Nigeria. Diversity, no doubts, plays a role in the uptake of vaccines but when the factor of political affiliation is added and certain socio-cultural characteristics, a better picture will be created of the situation in Nigeria.

2. Methods

2.1. Study Setting

This research was conducted in three states in the three different Nigerian geo-political zones. For this study, Borno, Enugu, and Lagos state was used. This is especially considering the level of influence to the National Politics and the ethnical opinion in the geopolitical zones.

2.2. Data Collection Methods

This study utilized a cross-sectional questionnaire survey, to quantify the prevalence of different views on COVID-19 vaccine acceptability, access, and political trust.

2.3. Study Participant

The study population were consenting adults who reside either in Lagos, Enugu, or Borno state.

2.4. Sampling Frame

A Random sampling technique was used in the selection of participants. The selection of participants was mostly individual resident in either Borno, Enugu, or Lagos State.

2.5. Ethical Considerations

The Research approval was obtained from the Nigerian Health Research and Ethics Committee of the Federal Ministry of Health prior to the commencement of the data collection. Participants were made to give their consent or otherwise to the study. Only participants who consented were involved in this study and their anonymity, privacy and confidentiality was respected.

2.6. Data Analysis

The Data was analysed both manually and with SPSS program. It was then, presented in form of tables and pie charts. 95% confidence limit was applied in all the statistical tests.

For the research study, the data collation and editing were done manually to detect omissions and to ensure uniform coding. The data were entered into the computer software and analysis was done using Statistical Package for Social Sciences (SPSS) version 23 software package. Categorical variables were summarized as tables and proportions and compared between the 3 study populations. Continuous variables (example, age) and socioeconomic situation was summarized as means (standard deviation) and compared between study groups.

For questions that has the option of yes and no, frequency tables and cross tabulations were generated. All correct answers were scored one and incorrect answers zero. Chi-square tests were used to determine statistical significance of

observed differences in cross tabulated variables. Differences in mean and standard deviation (SD) cost will be compared between the study groups presented in tabular form and compared using student's t-test as a test of significance. P value will be set at 0.05 at 95% Confidence Interval and value of ≤ 0.05 were considered as statistically significant.

3. Results

This study enjoyed great interest from respondents, and this helped tackle the issue of participation reluctance. The response rate for this study stands at 173% (N=494) of the projected number which was 283. The sample proliferation has good outcome for the findings of the study and does not pose any negative influence in the conclusion of this study.

The calculated sample size for each of the groups were 283 and 283 questionnaires were administered to people in the geopolitical zones. Due to interest in the issues of vaccination, we had more respondents to the questionnaires (N=494). For the key informant interview, 5 people were interviewed in all the 3 geopolitical zones of interest.

Socio-Demographic Characteristics of Respondents

This study received more participation from more males (60.5%) than females (39.5%) across all the geopolitical zones under review. It is worthy to note that less participation was recorded among people above 50 years (1.8%) in all the geopolitical zones. The young people (>90%) were more interested and participated in the surveys for all the geopolitical zones.

Socio-demographic Data of Respondents

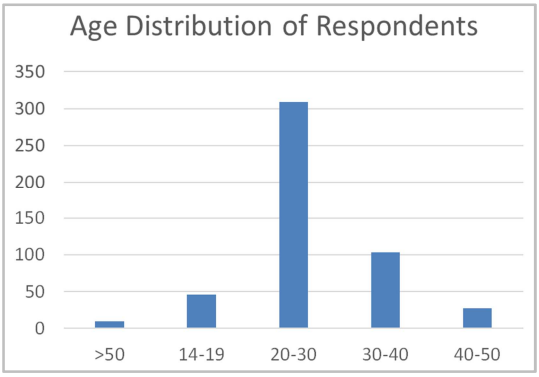

Figure 1. *Age distribution of respondents.*

Table 1. *Socio-demographic features of the respondents.*

Age (Years)	All		Northeast		Southeast		Southwest	
	N	%	N	%	n	%	n	%
14-19 yrs	46	9.3	30	16.3	4	2.6	12	7.7
20-29 yrs	309	62.6	84	45.7	121	78.6	104	66.7
30-39 yrs	103	20.9	48	26.1	27	17.5	28	17.9
40-49 yrs	27	5.5	17	9.2	1	0.6	9	5.8
50 or older yrs	9	1.8	5	2.7	1	0.6	3	1.9
Total	494	100.0						
Gender	N	%	N	%	n	%	n	%
Male	299	60.5	116	63.0	95	61.7	88	56.4
Female	195	39.5	68	37.0	59	38.3	68	43.6
Total	494	100.0						
Education Level	N	%	N	%	n	%	n	%
No formal education	40	8.1	25	13.6	2	1.3	13	8.3
Primary	20	4.0	16	8.7	0	0	4	2.6
Secondary	165	33.4	48	26.1	20	13.0	97	62.2
Vocational	15	3.0	5	2.7	2	1.3	8	5.1
Tertiary	254	51.4	90	48.9	130	84.4	34	21.8
Total	494	100.0						
Tribe	N	%	N	%	n	%	n	%
Hausa	121	24.5	115	62.5	2	1.3	4	2.6
Igbo	267	54.0	35	19.0	139	90.3	93	59.6
Yoruba	76	15.4	17	9.2	5	3.2	54	34.6
Others	30	6.1	17	9.2	8	5.2	5	3.2
Total	494	100.0						

The study recorded more participation among age groups between 20-30 years (N=309) which formed majority of the population under study. Least participation was observed among people above 50 years (N=9) of age.

Socioeconomic Characteristics of Respondents

Table 2. *Socioeconomic features of the Respondents.*

Family type	All		Northeast		Southeast		Southwest	
	N	%	n	%	n	%	N	%
Monogamy	311	63.0	122	66.3	142	92.2	47	30.1
Polygamy	183	37.0	62	33.7	12	7.8	109	69.9
Total	494	100.0						
Income Level	N	%	n	%	n	%	N	%
<15000 NGN	251	50.8	81	44.0	63	40.9	107	68.6

Family type	All		Northeast		Southeast		Southwest	
	N	%	n	%	n	%	N	%
15000-100000 NGN	179	36.2	74	40.2	69	44.8	36	23.1
101000-1000000 NGN	54	10.9	27	14.7	18	11.7	9	5.8
>1000000 NGN	10	2.0	2	1.1	4	2.6	4	2.6
Total	494	100.0						
Occupation	N	%	n	%	n	%	N	%
Unemployed/Housewife	62	12.6	40	21.7	14	9.1	8	5.1
Student	167	33.8	69	37.5	73	47.4	25	16.0
Trader/Farmer	76	15.4	36	19.6	14	9.1	26	16.7
Artisan/Technician	24	4.9	5	2.7	10	6.5	9	5.8
Civil servant/Professional	165	33.4	34	18.5	43	27.9	88	56.4
Total	494	100.0						

Interesting patterns were observed among the demographical classes. More polygamy was observed among the South westerner (69.9%) respondents while monogamous union was observed more among the Southeastern respondents (92.2%).

The income level of South westerners (N=4) was also observed to be the least despite pegging with Southeasterners (N=4) as one of the best earners. Majority of the respondents were students (33.8% of all respondents) and unemployed (12.6% of the entire respondents).

Best Source of Vaccination for Respondents

The chart below indicates the distribution of the best source of COVID-19 vaccine which seemed easily accessible to respondents.

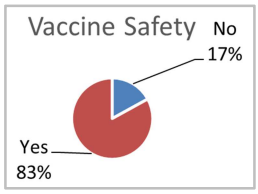

Figure 2. *Response to Vaccine Safety.*

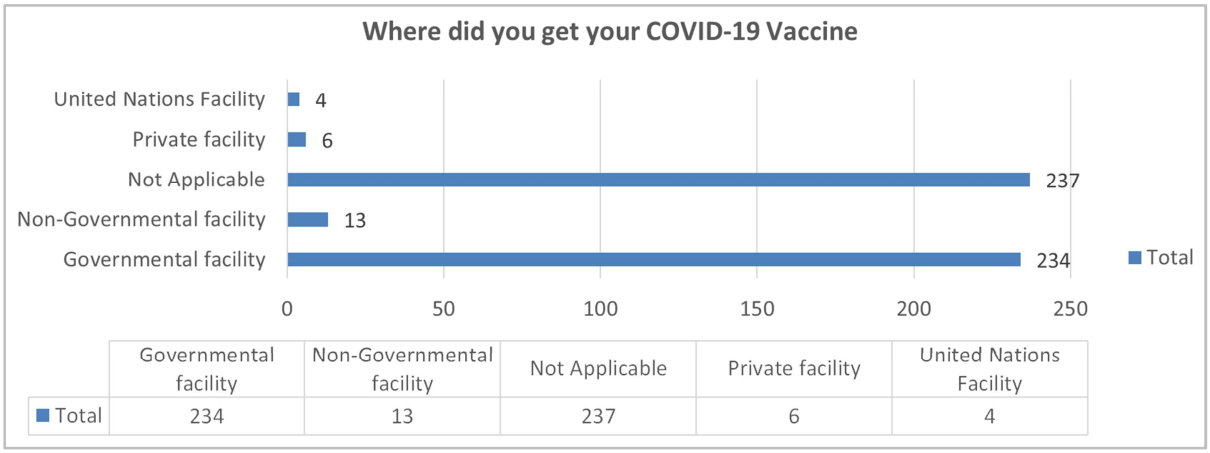

Figure 3. *Respondents Best Source for Vaccination.*

The vaccinated respondents got their vaccine mostly from government facilities accounting for 234 respondents out of 494 total respondents (just 47% of the total respondents). This is impressive when compared to other facilities providing similar vaccines. However, what was worrisome and is worthy of interest, is that over 50% of the study respondents were unvaccinated despite being aware of where to get the vaccine.

The table and chart below show the snapshot of the vaccination status of the study respondents.

Table 3. *Vaccination Status of Respondents.*

vaccination statuses	vaccination status count
Booster dose vaccinated	9
First dose vaccinated	145
Not vaccinated	286
Second dose vaccinated	54

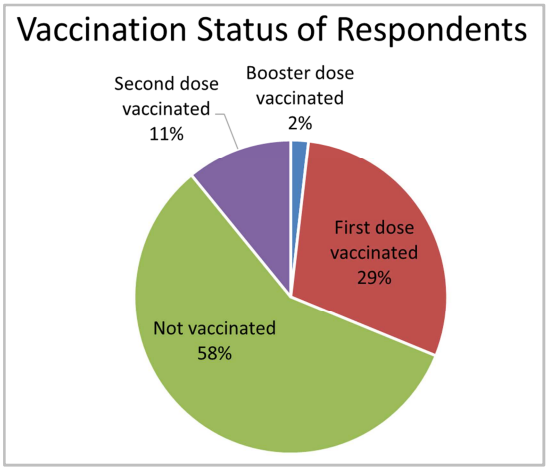

Figure 4. *Vaccination Status of Respondents.*

This chart shows the distribution of the vaccination status of the respondents and can provide the snapshot of what the vaccination situation of the areas under study.

The situation could be argued to be due to plethora of reasons however, one of the most essential factors in this current situation is the safety of the vaccine. A survey of the level of safety of the vaccines is depicted in the chart and table below.

Table 4. *Respondents' View on the COVID-19 Vaccine Safety.*

Is it safe to receive COVID-19 Vaccines?	Count
No	84
Yes	410

Most of the respondents from the table and chart showed 410 respondents out of 494 and 83% respectively, asserted to the safety of COVID-19 vaccine. This singular response would be insufficient to explain the reason for most unvaccinated respondents in this study.

A very concerning part of this study emanated from the percentage of health workers involved in this study and how they responded to this survey. The table and chart below depict the situation and how they responded.

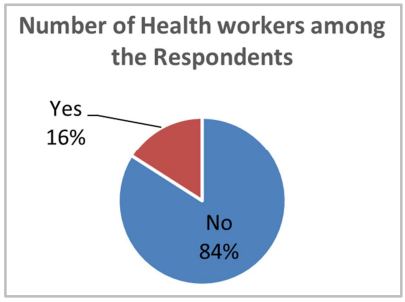

Figure 5. *Number of Health workers among Respondents.*

Table 5. *COVID-19 Vaccine Hesitancy among Health workers in the Study Respondents.*

			Do you trust the source of COVID-19 Vaccines in Nigeria		Total
			No	Yes	
Are you a healthcare worker	No	Count	172_a	243_b	415
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	92.0%	79.2%	84.0%
	Yes	Count	15_a	64_b	79
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	8.0%	20.8%	16.0%
Total		Count	187	307	494
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	100.0%	100.0%	100.0%

Table 6. *Number of Health workers among Respondents.*

Are you a healthcare worker?	Count
No	415
Yes	79

From the chart above, 16% of the 494 respondents were health workers and made up 79 of the total number of respondents.

Ordinarily, the findings from the survey will be expected to influence the outcome of the survey positively but on the contrary.

The willingness to get vaccinated was tested and below is the finding from this study.

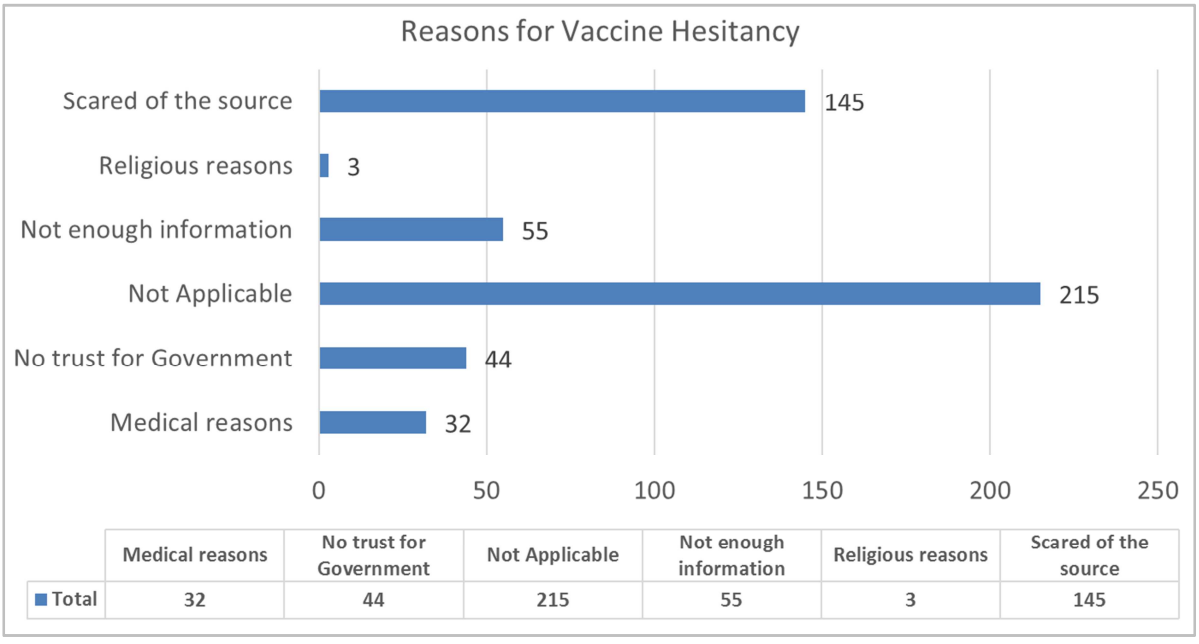

Figure 6. *Respondents Reason for Vaccine Hesitancy.*

From the table above, it can be found that 15 out of the 79 health workers do not trust the source of the COVID-19 vaccine. There seem to be lots of interest in the vaccine hesitance among non-health workers with little emphasis on the health workers who are vaccine hesitant. These health workers who are vaccine hesitant could massively affect how communities decide to get vaccinated. In the Nigerian and African context, almost all health workers irrespective of their cadre in the health strata, are considered as doctors. These people's opinion on health-related matters are respected and can be more relevant in the decision-making process of either getting vaccinated or not for most families.

While it is important to dwell on the vaccine hesitance among health workers, the respondents polled on the major reason for being unvaccinated.

The respondents from the chart above were mostly scared of the source of the vaccine (N=145). Vaccine safety seems to be an issue that is lightly addressed by public health professionals and a contextualized way to address them needs to be devised. Poor access to the relevant COVID-19 information (N=55) seemed to be the case when the issue of vaccine hesitance was enquired after.

The study tried understanding the available sources of information mostly useful to the respondents and the following were found. Internet and social media (65%) seemed to be the best source of information for the respondents.

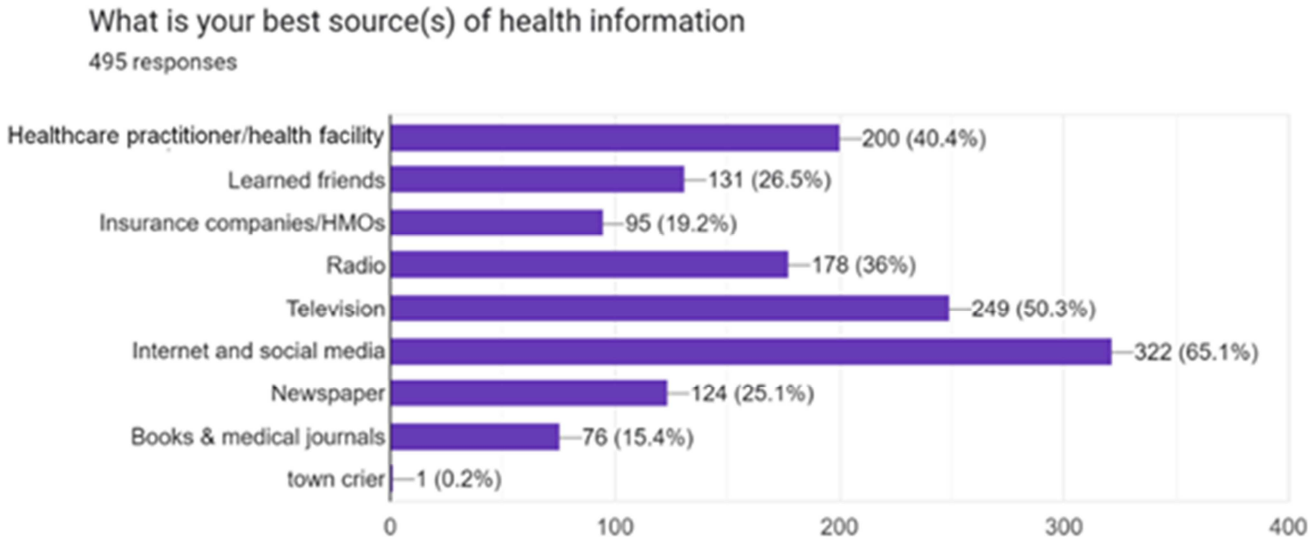

Figure 7. *Best Source of Health information.*

The level of education, age, level of income, place of residence and tribe, of the respondents were measured against their level of trust in the available COVID-19 vaccines in Nigeria. It showed the following result.

Table 7. *Education Level relative to COVID-19 Vaccine Hesitancy among Respondents.*

			Do you trust the source of COVID-19 Vaccines in Nigeria		Total
			No	Yes	
Highest Education	No formal education	Count	16	24	40
		% within Highest Education2	40.0%	60.0%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	8.6%	7.8%	8.1%
	Primary	Count	15	5	20
		% within Highest Education2	75.0%	25.0%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	8.0%	1.6%	4.0%
	Secondary	Count	32	133	165
		% within Highest Education2	19.4%	80.6%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	17.1%	43.3%	33.4%
	Vocational	Count	5	10	15
		% within Highest Education2	33.3%	66.7%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	2.7%	3.3%	3.0%
	Tertiary	Count	119	135	254
		% within Highest Education2	46.9%	53.1%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	63.6%	44.0%	51.4%
Total		Count	187	307	494
		% within Highest Education2	37.9%	62.1%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	100.0%	100.0%	100.0%

Table 8. *Age Distribution relative to COVID-19 Vaccine Hesitancy among the Study respondents.*

			Do you trust the source of COVID-19 Vaccines in Nigeria		Total
			No	Yes	
Age	14-19 yrs	Count	20	26	46
		% within Age	43.5%	56.5%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	10.7%	8.5%	9.3%
	20-29 yrs	Count	109	200	309
		% within Age	35.3%	64.7%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	58.3%	65.1%	62.6%
	30-39 yrs	Count	45	58	103
		% within Age	43.7%	56.3%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	24.1%	18.9%	20.9%
	40-49 yrs	Count	11	16	27
		% within Age	40.7%	59.3%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	5.9%	5.2%	5.5%
	50 or older yrs	Count	2	7	9
		% within Age	22.2%	77.8%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	1.1%	2.3%	1.8%
Total		Count	187	307	494
		% within Age	37.9%	62.1%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	100.0%	100.0%	100.0%

Most of the hesitancy was recorded among the highly educated respondents, with the above table indicating 63.6% of the respondents with tertiary education being vaccine hesitant.

For the level of hesitancy by age of respondents, below are the findings recorded.

Table 9. *How income of respondents was distributed relative to their COVID-19 Vaccine Hesitancy.*

			Do you trust the source of COVID-19 Vaccines in Nigeria		Total
			No	Yes	
How much do you earn per month	<15000 NGN	Count	81	170	251
		% within How much do you earn per month	32.3%	67.7%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	43.3%	55.4%	50.8%
	15000-100000 NGN	Count	78	101	179
		% within How much do you earn per month	43.6%	56.4%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	41.7%	32.9%	36.2%
	101000-1000000 NGN	Count	24	30	54
		% within How much do you earn per month	44.4%	55.6%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	12.8%	9.8%	10.9%
	>1000000 NGN	Count	4	6	10
		% within How much do you earn per month	40.0%	60.0%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	2.1%	2.0%	2.0%
Total		Count	187	307	494
		% within How much do you earn per month	37.9%	62.1%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	100.0%	100.0%	100.0%

It was found from this research that the respondents between the ages of 20-29 years (making up most of the entire respondents) were mostly vaccine hesitant with 58.3%.

The study went further to try understanding the level of income relative to vaccine hesitancy.

Most of the vaccine hesitancy was noted among the respondents earning <15,000 NGN (43.3%) while the least vaccine hesitancy was recorded among respondents earning >1000000 (2.1%). This indicates how much of an influence income has on the level of vaccine hesitancy.

Vaccine hesitancy based on tribe was also considered as one of the socioeconomic issues to be analyzed. Below were the findings,

The highest vaccine hesitancy was noted among the Igbos with 54% of the entire Igbo respondents indicating lack of trust for the COVID-19 vaccine.

Table 10. *Respondents' Tribe Distribution relative to level of Vaccine Hesitancy.*

			Do you trust the source of COVID-19 Vaccines in Nigeria		Total
			No	Yes	
What is your tribe	Hausa	Count	55	66	121
		% within What is your tribe	45.5%	54.5%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	29.4%	21.5%	24.5%
	Igbo	Count	101	166	267
		% within What is your tribe	37.8%	62.2%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	54.0%	54.1%	54.0%
	Yoruba	Count	22	54	76
		% within What is your tribe	28.9%	71.1%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	11.8%	17.6%	15.4%
	Others	Count	9	21	30
		% within What is your tribe	30.0%	70.0%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	4.8%	6.8%	6.1%
Total		Count	187	307	494
		% within What is your tribe	37.9%	62.1%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	100.0%	100.0%	100.0%

Based on place of residence, the vaccine hesitancy among residents was measured.

Table 11. *Vaccine Hesitancy relative to the Respondents' place of Residence.*

			Do you trust the source of COVID-19 Vaccines in Nigeria		Total
			No	Yes	
Where do you reside?	Rural	Count	41	88	129
		% within Where do you reside?	31.8%	68.2%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	21.9%	28.7%	26.1%
	Semi-rural	Count	47	110	157
		% within Where do you reside?	29.9%	70.1%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	25.1%	35.8%	31.8%
	Urban	Count	99	109	208
		% within Where do you reside?	47.6%	52.4%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	52.9%	35.5%	42.1%
Total		Count	187	307	494
		% within Where do you reside?	37.9%	62.1%	100.0%
		% within Do you trust the source of COVID-19 Vaccines in Nigeria	100.0%	100.0%	100.0%

Based on this result, 42.1% of the respondents reside in urban areas and records the highest level of vaccine hesitancy with 52.9% of the entire urban respondents being vaccine hesitant.

Majority of the respondents agreed that most of their information was gotten from the internet and social media 65%, television 50.3% while the least number (0.2%) prefer public outreach methods. This implies how much of an opinion from influential characters can have in the decision-making process of Nigerians.

The Politics in Nigeria can be touted to have influenced some of the crucial decision-making in citizens staying vaccine hesitant. The performance of the citizens was evaluated and the result below was thus,

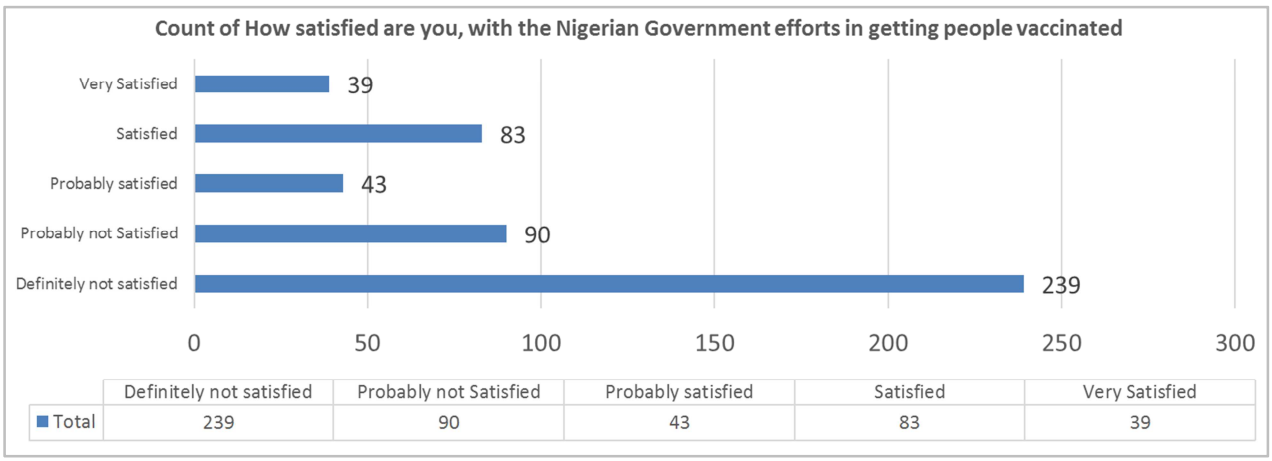

Figure 8. *Satisfaction Measurement of Nigerian Government Efforts.*

Majority of the respondents (N=329) seemed to believe that the Nigerian government has not done much to get people vaccinated.

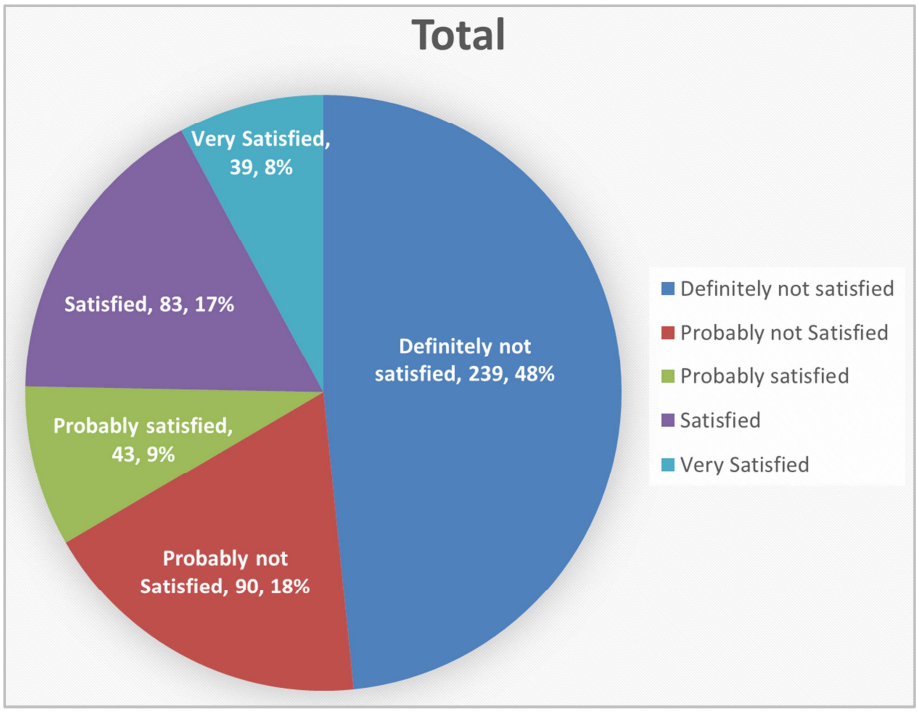

Figure 9. *Measurement of Satisfaction with the Nigerian Government COVID-19 vaccination Efforts*

From the chart above, on the satisfaction with the Nigerian Government intervention to get people vaccinated, only 25% of the total respondents seemed to believe that they are doing enough.

Table 12. *Geopolitical Stance of Respondents Relative to the COVID-19 Vaccine Hesitancy.*

			Geopolitical Zone of Location			Total
			Northeast	Southeast	Southwest	
Do you trust the source of COVID-19 Vaccines in Nigeria	No	Count	80_a	85_a	22_b	187
		% within Geopolitical Zone of Location	43.5%	55.2%	14.1%	37.9%
	Yes	Count	104_a	69_a	134_b	307
		% within Geopolitical Zone of Location	56.5%	44.8%	85.9%	62.1%
Total		Count	184	154	156	494
		% within Geopolitical Zone of Location	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Geopolitical Zone of Location categories whose column proportions do not differ significantly from each other at the .05 level.

It can be deduced that there is little trust in COVID-19 vaccine in the southeastern part of Nigeria with 55.2% of the respondents from Southeast not accepting its safety as it is provided by the Nigerian Government. The Southwestern part had majority of trust in the vaccine (85.9%) while the Northern part of Nigeria seem to be marginally trusting in the safety of the vaccine with 56.4% agreeing to its safety.

The significance of this finding can be related to the political interest by the people in these zones.

Based on the testing of the relationship between the political trust in these Geopolitical zones and their level of vaccine uptake, this research therefore rejects the Null hypothesis. This is due to the statistically significant difference ($P<0.05$) in the relationship between political trust and the uptake of the SARS-COV-2 vaccine in the 3 geopolitical zones.

Table 13. *Test of the Significance of Vaccine uptake Relative to the Geopolitical Zone of Respondents.*

	Value	df	P-value
Pearson Chi-Square	59.568[a]	2	<0.005
Likelihood Ratio	64.695	2	<0.005
Linear-by-Linear Association	28.166	1	<0.005
N of Valid Cases	494		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 58.30.

Further tests of the reception of the vaccine relative to the geopolitical zones were also checked. This was done to confirm the validity of the asserted relationship between uptake of vaccines and the geopolitical zones. The outcome was not very different from what was initially asserted.

Table 14. *Reception of COVID-19 Vaccines produced in Nigeria by Geopolitical zones.*

			Geopolitical Zone of Location			Total
			Northeast	Southeast	Southwest	
Would you receive COVID-19 Vaccine produced in Nigeria	No	Count	90_a	98_b	26_c	214
		% within Geopolitical Zone of Location	48.9%	63.6%	16.7%	43.3%
	Yes	Count	94_a	56_b	130_c	280
		% within Geopolitical Zone of Location	51.1%	36.4%	83.3%	56.7%
Total		Count	184	154	156	494
		% within Geopolitical Zone of Location	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Geopolitical Zone of Location categories whose column proportions do not differ significantly from each other at the .05 level.

The respondents from the Southeastern part of Nigeria seemed not to be interested in getting a vaccine produced in Nigeria with 63.6% of its respondents, while the other zones seemed motivated to. From the results, 83.3% of Southwestern respondents obliged to receiving a vaccine produced in Nigeria while 51.1% of Northeastern respondents agreed too, unlike the 36.4% of the Southeastern respondents.

These assertions mirrored and validated the relationship between the uptake of vaccines and political interest.

Table 15. *Test of the relationship between vaccine uptake and political interest.*

	χ^2 Value	df	P- Value
Pearson Chi-Square	73.367[a]	2	<0.005
Likelihood Ratio	78.530	2	<0.005
Linear-by-Linear Association	32.314	1	<0.005
N of Valid Cases	494		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 66.71.

Based on the findings from the Chi-square test above, again, this research work rejects the null hypothesis due to the statistically significant ($P<0.05$) relationship between uptake and political trust. There is a statistically significant relationship between vaccine uptake and political interest.

Table 16. *Vaccination Status relative to the Geopolitical Zone of Location.*

			Geopolitical Zone of Location			Total
			Northeast	Southeast	Southwest	
Vaccination Status	Not vaccinated	Count	156_a	96_b	34_c	286
		% within Geopolitical Zone of Location	84.8%	62.3%	21.8%	57.9%
	Vaccinated	Count	28_a	58_b	122_c	208
		% within Geopolitical Zone of Location	15.2%	37.7%	78.2%	42.1%
Total		Count	184	154	156	494
		% within Geopolitical Zone of Location	100.0%	100.0%	100.0%	100.0%

The vaccination status of the respondents seemed to show that most of the study population in the Northeastern and Southeastern part of Nigeria was unvaccinated. From the study, 84.8% and 62.3% respectively, in the Northeastern and Southeastern part of the respondents, were unvaccinated. The least unvaccinated study populations were in the Southwestern part of Nigeria at about 21.8%.

It was also found that just 15.2% of respondents in the Northeastern part of Nigeria were vaccinated while 37.7% of respondents were vaccinated in the Southeastern part of Nigeria. Impressively, 78.2% of respondents in the Southwestern part of Nigeria had most of the vaccinated study populace.

4. Discussions

The findings from this study which is aimed at evaluating the relationships in the uptake of COVID-19 vaccine among the inhabitants in 3 Geopolitical zones in Nigeria, provides enough evidence of the political and systemic decay in the approach to health interventions in Nigeria. Using the self-administered questionnaire survey and interview data, collected from 3 different states within 3 geopolitical zones mostly made up of the 3 major tribes in Nigeria, 494

respondents, were acquired. We found that, the pool of respondents was constituted by 24.5% were Hausas, 15.4% were Yoruba, and 54% were Igbos while the rest were from other tribes.

Contexts of Trust Measurement

Trust in the Vaccine Safety

The measurement of trust in the context of vaccine uptake within communities can indicate an obvious detachment between vaccine hesitance studies and health-related trust literatures [3]. The findings from this research indicated a much intrinsic understanding of vaccine hesitance among the 3 geopolitical zones which is stemmed from not just political trust.

From the results of this study, it was found that 58% of the total respondents were unvaccinated while others had some form of vaccination. The significance of this is that this study respondent's opinion was mostly where the Nigerian health system failed. It would be a great tool to vet the performance of the immunization systems in the 3 Geopolitical zones. For most respondents, the reason for being unvaccinated despite being willing to be vaccinated was basically due to unclear advisory about the disease and inadequate information about the safety of the vaccine.

Role of Political Trust in the level of uptake

Interesting patterns were unraveled by the findings from this research. The role of political trust played a key role in the decision to remain unvaccinated according to the findings recorded. The highest level of vaccine uptake was recorded by the Southwest and Northeast geopolitical zones with 83.3% and 51.1% respectively. The Southeast geopolitical zone respondents had vaccine uptake of just 36.4%. Olu-Abiodun et al [9] recorded similar pattern with their highest uptake of the COVID-19 vaccine being in the Southwest Geopolitical zone.

Further examination of the likely reason for the low uptake, incompetence of the Government was a reason provided. Research done by Amo-Adjei et al [10] revealed the critical role of mistrust in the political actors could lead to the low vaccine uptake. Their study adopted a mixed methodology to understand the relationship between trust and willingness to be vaccinated with the COVID-19 vaccine in Ghana. Their research result confirmed how trust rather than just socioeconomic indices, play critical role in the intent to be vaccinated.

5. Conclusion

In this broad community-based study on COVID-19 vaccine hesitancy in the 3 geo-political zones in Nigeria, it was found from this research that 84.8% and 62.3% respectively, in the Northeastern and Southeastern part of the respondents, were unvaccinated. The least unvaccinated study populations were in the Southwestern part of Nigeria at about 21.8%.

Differences in vaccine hesitancy were based on socio-demographic features like gender, tribe, educational level, income level, type of occupation, area of residence, and family type.

6. Limitations of the Study

The uneven distribution of some ethnic groups meant that there were more Igbo tribe respondents than other tribes. It would have been more beneficial to have a proper tribal mapping, to ensure that respondents are of targeted tribes in the expected location of their domicile.

Also, just a state in each Geo-political zone was utilized in this study. A better diversified result would have been obtained if it were all the states within the Geo-political zones were utilized in the research.

7. Recommendations

The research findings will highly recommend the following interventions to the Government:

1) More Inclusive health intervention:

The incorporation of properly articulated health policies, wholesome health services, and up-to-date research inculcates activities that will help in solving health and social inequalities in the society [11]. The adequate implementation of public health inclusion tools in the Nigerian state would accelerate the needed trust in health institutions.

2) Invest more in a proper public health enlightenment program

There has been a protracted poor investment in health by the Nigerian Government overtime. According to a 2021 World Bank report [12], Nigeria's health investments have been quite sub-optimal standing at just 4% of its GDP as of 2018. These are investments that could be the game changer in the strengthening of the Nigerian health system. This research sounds the alarm for more investments by Government into the health sector.

3) Eschew corruption from health and political governance

The presence of corruption in the health system would only mean that the little Government investments go to a personal pocket. According to research done by Downie R. [13], he agreed that the poor accountability in the Nigerian health system has led to its partial collapse. Mechanisms that will enable proper accountability in the Nigerian health system need to be enforced to ensure adequate management of the available scarce health resources.

4) Use publicly accepted means in health interventions

The issue of acceptability is a very important multifaceted public health topic. The acceptability of public health interventions reflects the degree to which people providing or receiving health services acknowledges its appropriateness, based on their understanding of these programs [14]. The design of health intervention should be assessed for its level of acceptance based on the culture and traditions of the people being targeted. For the introduced COVID-19 vaccine to be seen as effective in Nigeria, a certain degree of acceptance among all the Geopolitical zones would be required. The accepted level of herd coverage is put at 70% of the entire population [15].

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