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GENDER AND RELIGION DIFFERENCES IN VACCINE-RELATED COMMUNICATION BEHAVIOURS AND COVID-19 VACCINE HESITANCY AMONG STUDENTS IN SOUTHWEST NIGERIA

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Abstract
This study focuses on how gender and religion account for variations in COVID-19 vaccine-related communication behaviours and COVID-19 vaccine hesitancy among Christian and Muslim students in southwest Nigeria. While many studies exist on COVID-19 vaccine hesitancy in Nigeria, none of them focus on the subject of religion, which is crucial in designing programmes to address the challenge of vaccine hesitancy in Nigeria. The study adopted a quantitative design, using the survey method and questionnaire as the instrument. 286 students were sampled for the study via a convenience sampling technique. The instrument fielded questions on participants' demographic characteristics, COVID-19 vaccine-related communication behaviours and COVID-19 vaccine hesitancy (using the validated Oxford COVID-19 vaccine hesitancy scale). The T-tests results showed that there is no statistically significant difference in the levels of males and females information searching ($t = -.37$ ($p > .05$)), information forefending ($t = .38$ ($p > .05$)) and vaccine hesitancy ($t = .18$ ($p > .05$)). However, the results showed that Muslim participants had higher levels of COVID-19 vaccine-related information searching behaviour ($t = -2.55$ ($p < .05$)), higher levels of COVID-19 information forefending behaviour ($t = -2.33$ ($p < .05$)), and lower levels of vaccine hesitancy ($t = 2.65$ ($p < .01$)) than the Christian students who participated in the study. The study concluded that religion is an important demographic variable to consider when formulating health promotion and education policies and designing programmes to reduce COVID-19 vaccine hesitancy among young people in Nigeria.
Keywords: COVID-19 vaccine hesitancy, Vaccine-related communication actions, Nigerian students.

Introduction

Vaccine hesitancy is a notable threat to global health (Chen et al., 2024). It is described in the literature as involving a delay in accepting or refusing an available vaccine for a vaccine-treatable disease (MacDonald 2015; Male 2023). Currently, it ranks ninth among the threats to global health (Liu et al. 2022), with numerous debilitating consequences**.** While vaccine hesitancy exists among different people in various parts of the world (Sallam, 2021), its prevalence in Africa has been described as worrisome (Figueiredo et al., 2023). Literature has affirmed that vaccine hesitancy in Africa is deepening, and many Africans are losing confidence in vaccines. Unfortunately, though vaccine hesitancy in Africa is deepening, studies on vaccine hesitancy are not concentrated on Africa. Instead, they are concentrated on the Global North, especially on the developed nations of the world (Cooper et al., 2018). Among studies that focused on vaccine hesitancy in Africa, a handful utilised validated scales, as validated tools are scarce in the region (Cooper et al., 2018). Therefore, this study was conducted to deepen the conversation around vaccine hesitancy in Africa, with a focus on Nigeria, the continent's largest country. Specifically, the study assessed COVID-19 vaccine hesitancy, one of the newest types of vaccines rolled out to mitigate the situation caused by the COVID-19 pandemic. Subsequently, studies focusing on COVID-19 vaccine hesitancy are reviewed, gaps in the existing research are identified, and the study's aim and hypotheses are presented.

The rampaging, destructive impact of the COVID-19 pandemic (Contreras et al., 2025; Elom et al., 2021; Obasi & Anierobi, 2021; Tee et al., 2020) necessitated a global concerted effort to develop a vaccine to arrest the pandemic and prevent its occurrence; thus, the COVID-19 vaccines were rolled out in 2020 (Gordon et al., 2022; Levin-Zamir, 2020; Nattrass & Seekings, 2022), and people were persuaded to be vaccinated with it, despite its novelty and probable risks. Different reactions were elicited by the rollout of the COVID-19

vaccines, with some viewing it as a threat and others embracing it. In Nigeria, a study conducted among healthcare workers in northern Nigeria found that female healthcare workers had higher levels of COVID-19 vaccine hesitancy than their male counterparts (Iliyasu et al., 2022). Also, another study among women concluded that women who were exposed to gender-based violence, and who had low income and low social statuses, had higher COVID-19 vaccine hesitancy than women who were not exposed to gender-based violence (Folayan et al., 2022). In addition, in one of Nigeria's most populous cities, Kano, a low level of trust in authorities and fear of the risks involved in taking the vaccine have a positive association with COVID-19 vaccine hesitancy (Iliyasu et al., 2021). In addition, many studies on COVID-19 vaccine hesitancy in Nigeria pointed out religion and religious beliefs as one of its correlates (Agbede et al. 2024; Sadiq, Croucher, and Dutta 2023; Uroko and Nche 2024). Lastly, a study among Nigerian students in southwest Nigeria revealed that lack of trust in government and fear of adverse side effects had a positive association with the students' COVID-19 vaccine hesitancy.

Beyond the shores of Nigeria, COVID-19 vaccine hesitancy was also studied. For example, two studies conducted among US students (Gold et al., 2025; Umucu et al., 2022) concluded that the fear of the pain of the vaccine injection, access to sources to verify claims about the COVID-19 vaccines, vaccination cost, and students' frequency of social media use were positively associated with COVID-19 vaccine hesitancy. In Greece, women, young people, and individuals with lower levels of education exhibited higher levels of COVID-19 vaccine hesitancy compared to men, older individuals, and those with higher levels of education (Costarelli & Michou, 2024). Among the Chinese, COVID-19 vaccine hesitancy is associated with trust in institutions, and it varies in different regions of the nation (Chen et al., 2024). In different parts of the world, socio-demographic factors, such as gender, age, biological sex, religion, ethnicity, education, level of income, etc are related to people's levels

of COVID-19 vaccine hesitancy (Akrong et al., 2024; Alie et al., 2024; Rogers & Powe, 2022; Troiano & Nardi, 2021). Hence, the study is hedge on six hypotheses, which are stated below:

H_0: There is no significant difference between the levels of COVID-19 information searching among male and female students.

H_0: There is no significant difference between the levels of COVID-19 information forefending among male and female students.

H_0: There is no significant difference between the levels of COVID-19 vaccine hesitancy among male and female students.

H_0: There is no significant difference between the levels of COVID-19 information searching among Christian and Muslim students.

H_0: There is no significant difference between the levels of COVID-19 information forefending among Christian and Muslim students.

H_0: There is no significant difference between the levels of COVID-19 vaccine hesitancy among Christian and Muslim students.

Literature Review

From the foregoing review of studies on COVID-19 vaccine hesitancy in Nigeria and other nations of the world, we observed two gaps, which concern us in this study. The first gap that we observed was that no study has attempted to assess whether or not differences in people's religions account for variations in their COVID-19 vaccine hesitancy. While the studies showed that vaccine hesitancy is associated with demographic characteristics of people, including their religion, no one mentioned how it varied with religion, and such knowledge is important. In countries and locations where one religion is predominant, there may not be need to such interreligious comparison, of COVID-19 vaccine hesitancy. However, in such countries as Nigeria, whose demography is almost of equal volume of Christians and Muslims, with

marginal percentage practicing African Traditional Religion, and whose regions have different mix of Christians and Muslims, knowledge about how differences in religion account for variations in vaccine hesitancy is needful. Without such knowledge, it will be difficult to formulate policies and strategies to drive efforts at reducing vaccine hesitancy in the country.

Another gap that we found in the study is that none of the studies evaluated the relations between public communication actions and their COVID-19 vaccine hesitancy, and that ought not to be so. Why? As the proponent of Situational Theory of Problem Solving (STOPS) and Communication Actions in Problem Solving (CAPS) theory (Kim & Grunig, 2011) posited, humans take communication actions while solving their problems. Such communication actions are in three dimensions: information seeking, information selecting, and information transmitting (Kim & Grunig, 2011; Krishna, 2017). And, many studies have shown that humans' communication actions influence other behaviours (Chon, 2019; Kim et al., 2018; Krishna & Thompson, 2019). Based on earlier studies, we opine that people's communication actions about the COVID-19 vaccine will influence levels of their vaccine hesitancy. One of the reviewed studies, though not framed with CAPS, alluded to this in our opinion in a way. The study, conducted among physically challenged students in the US, concluded that students who had sources from which they could verify the accuracy of information about the COVID-19 vaccine had lower levels of vaccine hesitancy than students who did not have such sources. Within the CAPS framing of communication actions, the students with low vaccine hesitancy would be said to have higher levels of information forefending, which is construed as the ability to select helpful information in solving a particular problem.

Based on the identified knowledge gaps, this study aimed to assess whether or not gender and religion accounted for variations in Nigerian students' levels of COVID-19 vaccine-related communication actions and COVID-19 vaccine hesitancy. The two vaccine-

related communication actions focused on were information searching on the COVID-19 vaccine and information forefending.

The theoretical framework for this study is the Health Belief Model (HBM), a foundational framework in health behaviour research, particularly for explaining and predicting preventive health practices. The theory was conceptualised in the 1950s and suggests that people's health behaviours are influenced by their perceived susceptibility to a disease, the perceived benefits of taking action, and the perceived barriers to taking action (Alyafel & Easton-Carr, 2024). These cognitive constructs assess the probability of acquiring an undesirable outcome, such as individual susceptibility to viral infection, which is higher in crowded public spaces during a pandemic like COVID-19. However, there is a considerable range in how people perceive the severity of an illness, which they often consider both the medical and the social implications, such as religious factors, when assessing it. Other constructs include perceived benefits, perceived barriers and cues to action. Khormi (2025) explained that HBM explored how individuals assess their susceptibility to a disease and its severity, weigh the benefits of taking a health action against the barriers, identify cues that would trigger them to take a health action, and believe they need to make a good health decision. Hence, perceived susceptibility may encompass students' beliefs about their likelihood of contracting COVID-19, shaped by social roles or cultural expectations. This can only be achieved based on students' religious beliefs about COVID-19, their beliefs about obstacles to vaccination, such as religious or cultural beliefs about the vaccine's safety, and taking action influenced by social media, family, or healthcare providers' messages about COVID-19 vaccination.

Materials and Methods

Consistent with earlier studies on vaccine hesitancy (Almoayad et al., 2024; Costarelli & Michou, 2024), the study adopted a quantitative design, using the survey method. The study was conducted in Ede town of Osun State with the population, 159.866. Among them, the convenience sampling technique was used to recruit 286 undergraduate students who reside in Ede for the study. The sample for the study consisted of 169 (59.1%) males and 117 (40.9%) females who were studying in different universities (197, 68.9%), in polytechnics (85, 29.7%), and in colleges of education (4, 1.4%). Muslims among the participants were 44,15.4%), while Christians were in the majority (238,83.2%). The age range of the students participating in the study was 16–35 years.

Besides the demographic variables, the study also measured participants' COVID-19 vaccine hesitancy and their COVID-19 communication behaviours (information searching and information forefending). The scales used to measure the three variables were adopted from the literature. The scale that was used to measure COVID-19 vaccine hesitancy was adopted from a study conducted in the UK during the COVID-19 pandemic (Freeman et al., 2022). The scale had seven items which measured different dimensions of vaccine hesitancy. Because the scale is novel, we conducted Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) on it to ensure that it is valid for the study context, and we also assessed its Cronbach's alpha coefficient to ensure that it is reliable. The EFA analysis results revealed that all the scale's items loaded on one factor which accounted for 73.62% variance in the dataset, and, in addition, it revealed that all the scales items had a good loading on the one factor extracted, with the least loading being .78. Equally, the CFA results showed that the model had good fit criteria; the Chi Square was 41.124 ($\mathbf{c}^2$ (14) = 41.127, $p < .001$), the CFI was .984, the TLI was .976, and the RMSEA was .082. Comparing the results of the EFA and the CFA acceptable standards in the literature (Hu & Bentler, 1999), we concluded that the scale is valid

and therefore used it. Similarly, the scale had a Cronbach's Alpha value of .94, which was excellent.

The scales that were used to measure participants' COVID-19 information searching and COVID-19 information forefending behaviours were adopted from a study conducted in the US (Krishna, 2017). The scales had statements that measured different activities people engage in while searching for and selecting information about the COVID-19 vaccine. The responses to each item ranged from 1 (Strongly disagree) to 5 (Strongly agree), and the higher the value of the response to an item, the more involved the participant was in it. The scales' Cronbach alpha's reliability coefficient values were .86 (COVID-19 information searching) and .72 (COVID-19 information forefending), which were considered very good values.

Table 1: Validated and Adapted Oxford COVID-19 Vaccine Hesitancy Scale

		Scale Mean (SD)	Scale Cronbach Alpha
All seven (7) scale items		2.64 (1.13)	.94
Scale Items/questions	Options to scale items/questions (The higher the value of the options, the higher the COVID-19 vaccine hesitancy)	Item mean (SD)	Cronbach Alpha if item deleted
1. Would you take a COVID-19 vaccine (approved for use in Nigeria) if offered?	1. Definitely 2. Probably 3. I may or I may not 4. Probably not 5. Definitely not Don't know	2.85 (1.40)	.94
2. If there is a COVID-19 vaccine available	1. I will want to get it as soon as possible 2. I will take it when offered 3. I'm not sure what I will do 4. I will put off (delay) getting it 5. I will refuse to get it Don't know	2.62 (1.42)	.92
3. I would describe my attitude towards receiving a COVID-19 vaccine as:	1. Very keen 2. Pretty positive 3. Neutral 4. Quite uneasy 5. Against it Don't know	2.84 (1.21)	.94
4. If a COVID-19 vaccine was available at my local pharmacy (chemist shop in my area), I would:	1. Get it as soon as possible 2. Get it when I have time 3. Delay getting it 4. Avoid getting it for as long as possible 5. Never get it Don't know	2.51 (1.50)	.94
5. If my family or friends were thinking of getting a COVID-19 vaccination, I would:	1. Strongly encourage them 2. Encourage them 3. Not say anything to them about it 4. Ask them to delay getting the vaccination 5. Suggest that they do not get the vaccination Don't know	2.54 (1.36)	.92
6. I would describe myself as:	1. Eager to get a COVID-19 vaccine 2. Willing to get the COVID-19 vaccine 3. Not bothered about getting the COVID-19 vaccine 4. Unwilling to get the COVID-19 vaccine 5. Anti-vaccination for COVID-19 Don't know	2.57 (1.36)	.93
7. Taking a COVID-19 vaccination is:	1. Really important 2. Important 3. Neither important nor unimportant 4. Unimportant 5. Really unimportant Don't know	2.27 (1.14)	.93

Data Collection and Ethical Considerations

Data for the study were collected with a pen-and-paper questionnaire, which was distributed to the students in the town's neighbourhood. It was a face-to-face data collection procedure where participants were asked if they are undergraduate students of any Nigerian university, and if the respond in the affirmative before they will be issued the questionnaire. The questionnaire had two sections; one section had items on participants' demographic characteristics, while the other section had items on the study's variables. This study was conducted during the COVID-19 pandemic, which poses a health risk to the participants and the researchers; therefore, a high ethical standard was upheld. First, the research assistants who went around the town's neighbourhoods to collect data observed the COVID-19 regulations and precautions. The data were collected only at locations considered safe for the researchers and from participants who were willing to participate in the study. Additionally, the study's instrument included an introductory section that explained the study to potential participants and provided an opportunity for them to give their consent before participating. Only participants who voluntarily consented to participate in the study were recruited. Their responses were anonymised, and the researcher ensured that no harm was done to anyone involved in the study.

Analysis

This study assessed how gender and religion accounted for variations in COVID-19 vaccine-related communication behaviours and COVID-19 vaccine hesitancy among the Christian and Muslim youths who participated in the study. The study had six hypotheses ($H_0$1–H06), which were tested using a T-test. However, before conducting the T-tests on the dataset, we assessed it for normality, a requirement for the T-test analysis. The Kolmogorov-Smirnov and Shapiro-Wilk tests of normality results showed that the dataset was normally distributed as the rhos for the three variables were significant (*P Covid 19* info searching < .001), *P Covid*

19 info forefending < .001, and $p_{\text{COVID-19}}$ vaccine hesitancy < .001). As shown in Table 2, hypotheses H01, H02, and H03 stated that gender, measured as being self-identified as a biological male or female, does not account for variations in participants' COVID-19 information searching, COVID-19 information forefending, and COVID-19 vaccine hesitancy, respectively. All the null hypotheses were accepted because the rhos were all greater than .05 ($p > .05$), showing that there is no statistically significant difference in the levels of males and females information searching (t = -.37 ($p > .05$)), information forefending (t = .38 ($p > .05$)) and vaccine hesitancy (t = .18 ($p > .05$)).

In the same vein, as shown in Table 2, hypotheses H04, H05, and H06 stated that the participants' religion did not account for variations in their information searching and information forefending, as well as vaccine hesitancy. All the null hypotheses were rejected as the rho values for all the three T-tests were less than .05. Specifically, the test results showed that Muslim participants had higher levels of COVID-19 vaccine-related information searching behaviour (t = -2.55 ($p < .05$)), higher levels of COVID-19 information forefending behaviour (t = -2.33 ($p < .05$)), and lower levels of vaccine hesitancy (t = 2.65 ($p < .01$)) than the Christian students who participated in the study.

Table 2: Independent-Samples T tests

Hypothesis	Sample Mean (SD)	t (*p*)
$H_0$1: There is no significant difference between the levels of COVID-19 information searching among male and female youth.	Male: 2.77 (.98) Female: 2.81 (1.02)	-.37 *(p > .05)*
$H_0$2: There is no significant difference between the levels of COVID-19 information forefending among male and female youth.	Male: 2.92 (.94) Female: 2.88 (.89)	.38 (*p > .05)*

$H_0$3: There is no significant difference between the levels of COVID-19 vaccine hesitancy among male and female youth.	Male: 2.65 (1.09) Female: 2.62 (1.18)	.18 (*p* > .05*)*
$H_0$4: There is no significant difference between the levels of COVID-19 information searching among Christian and Muslim youth.	Christian: 2.71 (.97) Muslim: 3.16 (1.04)	-2.55 (*p* < .05*)*
$H_0$5: There is no significant difference between the levels of COVID-19 information forefending among Christian and Muslim youths.	Christian: 2.84 (.92) Muslim: 3.19 (.84)	-2.33 (*p* < .05*)*
$H_0$6: There is no significant difference between the levels of COVID-19 vaccine hesitancy among Christian and Muslim youths.	Christian: 2.73 (1.13) Muslim: 2.24 (1.05)	2.65 (*p* < .01*)*

Discussion of Findings

This study examines vaccine hesitancy, a topic that has garnered global attention, ranking ninth among the identified threats to global health. Specifically, the study investigated whether gender and religion account for differences in COVID-19 vaccine-related communication behaviours and COVID-19 vaccine hesitancy among a student sample in southwest Nigeria. The focus of this study is important because studies with such a focus are rare in the literature, yet necessary, as more research on vaccine hesitancy among Africans is needed, especially those conducted using validated scales (Renzi et al., 2025), as ours did. Policy makers, practitioners, and researchers concerned about vaccine-related health issues need reliable evidence, such as the study provided, to inform their important decisions.

This study had six hypotheses: three assessed whether gender accounted for the variations, and three assessed whether religion accounted for variations in the participants' COVID-19 vaccine-related information searching behaviour, COVID-19 vaccine-related information forefending behaviour, and COVID-19 vaccine hesitancy among the study participants who were students in tertiary institutions in Nigeria. The results showed that gender did not account for variations in any of the measured variables, as male and female participants had equal levels of information searching, information forefending and vaccine hesitancy. The findings of our studies, which examined vaccine hesitancy at the same levels among male and female participants, did not align with those of some earlier studies, which suggested that females have higher vaccine hesitancy than males (Costarelli & Michou, 2024; Iliyasu et al., 2022). We presumed that the difference in our findings and those of the earlier studies in the literature was due to the age range of the participants. While our study focused only on youths between the ages of 16 and 35, the studies focused on both youths and adults. This highlights the need to segment the population when conducting a vaccine hesitancy study, as youths' perceptions often differ from those of adults and must be taken into consideration when designing health promotion and education strategies to reduce vaccine hesitancy among the populace.

Besides assessing whether gender accounted for variations, this study also assessed whether religion accounted for variations in the study participants' COVID-19 vaccine-related communication behaviours (information searching and information forefending) and COVID-19 vaccine hesitancy. And the study found that religion accounted for variations in all the assessed variables, with the Muslim students having higher levels of both communication behaviours and lower levels of vaccine hesitancy than their Christian counterparts. Studies comparing vaccine hesitancy among Christians and Muslims are scarce in the literature; this study appears to be the first of its kind in Nigeria. However, literature has established that

Nigerians are predominantly religious, and religion significantly influences many of their perspectives. While we did not empirically investigate further on why the Muslim students had lower levels of hesitancy than the Christian students, we presumed that it may be due to some religious teachings. We suspect that the Christian students were exposed to some teachings on faith, which made them believe that COVID-19 cannot infect them, and consequently had higher levels of COVID-19 vaccine hesitancy than their Muslim counterparts. Considering the volume of Christians in Nigeria, we suggest that more studies be conducted on how religion accounts for variations in vaccine hesitancy in Nigeria. Such studies may be conducted in different geopolitical zones of Nigeria and could employ various study design approaches, particularly the mixed-methods design.

Conclusion

This study has implications for health-related policy-making, practice and research. The study's findings suggest that young people, especially students, deserve attention to understand their perceptions on vaccine hesitancy, which can inform policy formulation and promote COVID-19 vaccine uptake among them. Similarly, among Nigerians, religion should be taken into consideration when formulating COVID-19 vaccine-related policy or designing programmes to promote the right attitude to vaccination or educate people on vaccines and vaccination. As the study findings showed, people’s vaccine-related communication behaviours and vaccine hesitancy varied inversely with their religion. For researchers, this study has demonstrated that the COVID-19 vaccine hesitancy scale developed in the UK is also valid for assessing COVID-19 vaccine hesitancy in Nigeria. We suggest that researchers utilise it for related studies, thereby facilitating informed conversations based on the validated scale. The current challenge of not measuring vaccine hesitancy with validated scales makes it difficult to initiate nationwide conversations about vaccine hesitancy. Our study had some limitations, which may be addressed in further studies. One, it was conducted in southwest

Nigeria when the COVID-19 vaccine was just introduced. Similar studies conducted in other geopolitical zones, and those currently being conducted (years after the vaccine's introduction), are needed. Additionally, we employed a survey method, which is susceptible to respondent social desirability bias and other limitations. Further studies could adopt qualitative methods or a mixed-methods design to broaden the scope and depth of the research. The study's limitations notwithstanding, we believe that the study has contributed to knowledge and that its findings will be useful to policymakers, practitioners, and researchers concerned about health promotion and education locally and globally.

References

Agbede, G. T., Emezirinwune, D., Adedokun, T., & Idowu-Collins, P. (2024). Vaccine Hesitancy in Nigeria: Overcoming Cultural, Linguistic and Religious Obstacles. *Information Impact: Journal of Information and Knowledge Management*, *15*(1), 153–168. https://doi.org/10.4314/iijikm.v15i1.12

Akrong, G. B., Hiadzi, R. A., Donkor, A. B., & Anafo, D. K. (2024). COVID-19 vaccine acceptance and hesitancy in Ghana: A systematic review. *PLOS ONE*, *19*(6), e0305993. https://doi.org/10.1371/journal.pone.0305993

Alie, M. S., Abebe, G. F., Negesse, Y., Adugna, A., & Girma, D. (2024). Vaccine hesitancy in context of COVID-19 in East Africa: systematic review and meta-analysis. *BMC Public Health*, *24*(1), 2796. https://doi.org/10.1186/s12889-024-20324-z

Alyefel, A. & Easton-Carr, R. (2024). *The Health Belief Model of Behaviour Change*. National center for Biotechnology information. http://www.ncbi.nlm.nih.gov

Almoayad, F., Bin-Amer, L. A., Althubyani, N. T., Alajmi, S. M., Alshammari, A. A., & Alsuwayal, R. A. (2024). The general public's intent to receive a COVID-19 vaccine in Saudi Arabia. *International Journal of Health Promotion and Education*, *62*(5), 412–427. https://doi.org/10.1080/14635240.2022.2047094

Chen, G., Yao, Y., Zhang, Y., & Zhao, F. (2024). The impact of risk perception and institutional trust on COVID-19 vaccine hesitancy in China. *Human Vaccines & Immunotherapeutics*, *20*(1). https://doi.org/10.1080/21645515.2024.2301793

Chon, M. (2019). Government public relations when trouble hits : exploring political dispositions , situational variables , and government – public relationships to predict communicative action of publics. *Asian Journal of Communication*, *0*(0), 1–17. https://doi.org/10.1080/01292986.2019.1649438

Contreras, I., Pieters, J., Oseni, G., Palacios-lopez, A., & Weber, M. (2025). *Inequalities in job and income loss in countries with high prevalence of informal employment in Sub-Saharan Africa during the COVID-19 crisis*. *40*(4), 890–907. https://doi.org/10.1177/18747655241301981

Cooper, S., Betsch, C., Sambala, E. Z., Mchiza, N., Wiysonge, C. S., Cooper, S., Betsch, C., Sambala, E. Z., Mchiza, N., Cooper, S., & Betsch, C. (2018). Vaccine hesitancy – a

potential threat to the achievements of vaccination programmes in Africa. *Human Vaccines & Immunotherapeutics*, *0*(0), 1–3. https://doi.org/10.1080/21645515.2018.1460987

Costarelli, V., & Michou, M. (2024). Predictors of COVID-19 vaccine hesitancy and prevention practice in Greece. *International Journal of Health Promotion and Education*, *62*(2), 98–113. https://doi.org/10.1080/14635240.2022.2073554

Elom, N. A., Nwimo, I. O., Elom, S. O., Alegu, D. N., Afoke, E. N., Okpata, O. O., Ogodo, J. O., Ilo, C. I., Okeworo, C. G., & Elom, C. O. (2021). *Emotional impact of COVID-19 lockdown and mitigation options : A cross-sectional survey of households in Ebonyi State , Nigeria*. https://doi.org/10.1177/20503121211032477

Figueiredo, A. De, Temfack, E., Tajudeen, R., & Larson, H. J. (2023). Declining trends in vaccine confidence across sub-Saharan Africa : A large-scale cross-sectional modeling study cross-sectional modeling study ABSTRACT. *Human Vaccines & Immunotherapeutics*, *19*(1). https://doi.org/10.1080/21645515.2023.2213117

Folayan, M. O., Arije, O., Enemo, A., Sunday, A., Muhammad, A., Nyako, H. Y., Abdullah, R. M., Okiwu, H., Lamontagne, E., Oluwatoyin, M., Arije, O., Enemo, A., Sunday, A., Muhammad, A., Nyako, H. Y., Abdullah, R. M., Okiwu, H., & Group, F. (2022). *Associations between COVID-19 vaccine hesitancy and the experience of violence among women and girls living with and at risk of HIV in Nigeria*. *5906*. https://doi.org/10.2989/16085906.2022.2118615

Freeman, D., Loe, B. S., Chadwick, A., Vaccari, C., Waite, F., Rosebrock, L., Jenner, L., Petit, A., Lewandowsky, S., Vanderslott, S., Innocenti, S., Larkin, M., Giubilini, A., Yu, L., Mcshane, H., Pollard, A. J., & Lambe, S. (2022). COVID-19 vaccine hesitancy in the UK: the Oxford coronavirus explanations, attitudes, and narratives survey (Oceans) II. *Psychological Medicine*, *52*, 3127–3141. https://doi.org/10.1017/S0033291720005188

Gold, J. M., Amuta, A. O., & Cisneros, Y. L. (2025). A multidimensional approach to understanding vaccine hesitancy among first generation college students. *Journal of American College Health*, *73*(8), 3239–3244. https://doi.org/10.1080/07448481.2024.2394795

Gordon, S. F., Sawmy, E. V., Duckworth, E., Wolthuizen, M., Clothier, H. J., Chea, M., Tenneti, N., Blow, N., Buttery, J. P., Luca, J. De, Korman, T. M., Barnes, S., Slade, C., Giles, M. L., Teh, B. W., Aboltins, C., Katherine, M., Diemen, A. Van, Crawford, N. W., … Diemen, A. Van. (2022). Victorian Specialist Immunisation Services (VicSIS) – bolstering adult clinics for COVID-19 vaccines. *Human Vaccines & Immunotherapeutics*, *18*(5). https://doi.org/10.1080/21645515.2022.2052701

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1–55.

Iliyasu, Z., Garba, M. R., Gajida, A. U., Amole, T. G., Umar, A. A., Abdullahi, H. M., Kwaku, A. A., Salihu, H. M., & Aliyu, M. H. (2022). 'Why Should I Take the COVID-19 Vaccine after Recovering from the Disease?' A Mixed-methods Study of Correlates of COVID-19 Vaccine Acceptability among Health Workers in Northern Nigeria. *Pathogens and Global Health*, *116*(4), 254–262. https://doi.org/10.1080/20477724.2021.2011674

Iliyasu, Z., Umar, A. A., Abdullahi, H. M., Kwaku, A. A., Amole, T. G., Tsiga-Ahmed, F. I., Garba, R. M., Salihu, H. M., & Aliyu, M. H. (2021). "They have produced a vaccine, but we doubt if COVID-19 exists": correlates of COVID-19 vaccine acceptability among adults in Kano, Nigeria. *Human Vaccines \& Immunotherapeutics*, *17*(11), 4057–4064. https://doi.org/10.1080/21645515.2021.1974796

Khormi, Y.H. (2025). The health belif model: A framework for understanding health behavior. *Journal of Community & Public Health Nursing,* 11: 625

Kim, J., & Grunig, J. E. (2011). *Problem Solving and Communicative Action : A Situational Theory of Problem Solving*. *61*, 120–149. https://doi.org/10.1111/j.1460-2466.2010.01529.x

Kim, J., Oh, Y. W., Krishna, A., Kim, J., Won, Y., & Krishna, A. (2018). Justificatory Information Forefending in Digital Age : Self-Sealing Informational Conviction of Risky Health Behavior Justificatory Information Forefending in Digital Age : Self-Sealing Informational Conviction of Risky Health Behavior. *Health Communication*, *33*(1), 85–93. https://doi.org/10.1080/10410236.2016.1242040

Krishna, A. (2017). *Motivation with misinformation : Conceptualizing lacuna individuals and publics as knowledge- deficient , issue-negative activists Motivation with misinformation : Conceptualizing lacuna individuals*. *November*. https://doi.org/10.1080/1062726X.2017.1363047

Krishna, A., & Thompson, T. L. (2019). *Misinformation About Health : A Review of Health Communication and Misinformation Scholarship*. https://doi.org/10.1177/0002764219878223

Levin-Zamir, D. (2020). Communication, Health Literacy and a Systems Approach for Mitigating the COVID-19 Pandemic: The Case for Massive Vaccine Roll-out in Israel. *Journal of Health Communication*, *25*(10), 816–818. https://doi.org/10.1080/10810730.2021.1884773

Nattrass, N., & Seekings, J. (2022). High Modernist Hubris and its Subversion in South Africa ' s Covid – 19 Vaccination Roll-Out High Modernist Hubris and its Subversion in South Africa ' s Covid – 19 Vaccination Roll-Out. *Journal of Southern African Studies*, *48*(5), 765–785. https://doi.org/10.1080/03057070.2022.2108249

Obasi, C. O., & Anierobi, C. M. (2021). *The Homeless-Poor and the COVID-19 Stay-at-Home Policy of Government : Rethinking the Plight of Homelessness in Nigeria*. https://doi.org/10.1177/21582440211045078

Renzi, E., Panattoni, N., Simone, E. Di, Riccio, M., Conti, A., Albanesi, B., Luciani, M., Fabrizi, D., Ausili, D., Clari, M., Vito, C. De, Massimi, A., Renzi, E., Panattoni, N., Simone, E. Di, Riccio, M., Conti, A., Albanesi, B., Luciani, M., … Massimi, A. (2025). *How should vaccine hesitancy be measured in healthcare workers ? A systematic review of the measurement properties of validated tools*. *5515*. https://doi.org/10.1080/21645515.2025.2520057

Rogers, R. L., & Powe, N. (2022). COVID-19 Information Sources and Misinformation by Faith Community. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, *59*. https://doi.org/10.1177/00469580221081388

Sadiq, M., Croucher, S., & Dutta, D. (2023). COVID-19 Vaccine Hesitancy: A Content Analysis of Nigerian YouTube Videos. *Vaccines*, *11*(6), 1057. https://doi.org/10.3390/vaccines11061057

Sallam, M. (2021). COVID-19 Vaccine Hesitancy Worldwide: A Concise Systematic Review of Vaccine Acceptance Rates. *Vaccines*, *9*(2), 160. https://doi.org/10.3390/vaccines9020160

Tee, M. L., Tee, C. A., Anlacan, J. P., Aligam, K. J. G., Wincy, P., Reyes, C., Kuruchittham, V., & Ho, R. C. (2020). Psychological impact of COVID-19 pandemic in the Philippines. *Journal of Affective Disorders*, *277*(May), 379–391. https://doi.org/10.1016/j.jad.2020.08.043

Troiano, G., & Nardi, A. (2021). Vaccine hesitancy in the era of COVID-19. *Public Health*, *194*, 245–251. https://doi.org/10.1016/j.puhe.2021.02.025

Umucu, E., Lee, B., & Bezyak, J. (2022). Measuring COVID-19 vaccine hesitancy among

college students with disabilities : Sociodemographic and psychological correlates of COVID-19 vaccine hesitancy. *Journal of American College Health*, *0*(0), 1–7. https://doi.org/10.1080/07448481.2022.2071619

Uroko, F. C., & Nche, G. C. (2024). Myths and misunderstandings: how religious Education contributed to vaccine hesitancy among Nigerian Christian students. *British Journal of Religious Education*, *46*(3), 257–270. https://doi.org/10.1080/01416200.2023.2282930