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RESEARCH PAPER



# Expanding the boundaries of vaccine discourse: impact of visual illustrations communication intervention on intention towards COVID-19 vaccination among victims of insecurity in Nigeria

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**ABSTRACT**

Research on how to promote vaccination among victims of conflict is scarce. In this study, we conducted an experiment to determine how an artistic illustration communication intervention delivered alongside counseling will influence the behavior intention toward COVID-19 vaccination. The study involved 470 respondents (n = 235 control) and (n = 235 treatment). Variables from social cognitive theory and theory of planned behavior were used to develop the study hypotheses. The result of the study showed that victims of conflict who are exposed to visual messages on COVID-19 vaccination reported greater self-efficacy than those who are not. Also, victims of conflict who are exposed to visual messages on COVID-19 vaccination reported greater task efficacy than those who are not. Furthermore, victims of conflict who are exposed to visual arts on COVID-19 vaccination reported more positive outcome expectancy from the vaccine than those who are not. Finally, the result showed that victims of conflict who are exposed to visual messages on COVID-19 vaccination reported intention to make themselves available for vaccination than those who are not. We discussed these findings and highlighted the nexus between insecurity and health promotion.

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## Introduction

Attempts at providing a link between victims of insecurity and vaccination campaign globally is scarce. This is despite the fact that vaccination efforts have often faced serious resistance even among people who are not victims of insecurity. In Nigeria, for instance, each time government authorities approve a vaccination programme for a particular outbreak, the problem of compliance usually mars the success of the programme. A study corroborates that vaccination coverage is one of the problems limiting efforts at fights diseases and outbreaks in Nigeria. For example, in Nigeria, religious and cultural reasons have been cited as serious limitations toward the success of vaccination campaigns[1]. Additionally, another study shares a similar view regarding the challenges associated with the attitude of Nigerians regarding vaccination efforts.[2] Attitude to COVID-19 vaccination is particularly important because of the rumors and unconfirmed reports about it among Nigerians.

One of the problems that limited the adoption of health behavior related to COVID-19 in Nigeria is rumor and myth about it. Some Nigerians do not believe that the virus is actually in Nigeria. Their thinking is that the virus may be present in other parts of the world but certainly not Nigeria. A study reported that such thinking significantly plays a role in determining the adoption of health behavior Related to COVID-19.[3] There is also the thinking that even if the virus were present in Nigeria, it could only affect rich people because the poor are not vulnerable to it. One of the claims about COVID-19 vaccine is that it is aimed to inject a microchip into Africa countries under the cover of vaccination. The rumor had it that Bill Gates was behind the plan. Bill himself has debunked it as untrue.[4] Such rumor about COVID-19 vaccine as containing a microchip was shared among social media platforms. The information was also circulated among family members and friends. As at the time of this study, the World Health Organization was yet to approve any COVID-19 vaccine but some companies have reported that their vaccines had success rates of up to 95%. Despite this, there is the need to take steps and ensure that members of the society are positively disposed toward an approved COVID-19 vaccine.

COVID-19 is currently one of the high-risk public health emergencies threatening human existence globally. COVID-19 is used in reference to the outbreak of severe respiratory disease which broke out in 2019 in China. The quickness with which the disease spreads together with the fact that it is a killer disease raised feeling of fear across the world. COVID-19 has had a significant impact on people's lives and livelihood. Academic and business activities have been grately affected in addition to the restrictions on movements.[5] Globally, as 16 January 2021, a total

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of 92,506,811 cases of COVID-19 have been confirmed with 2,001,773 reported deaths.[6] Examining how to promote positive attitudes about COVID-19 vaccination among victims of insecurity is an important area of research in three ways. First, literature on victims of insecurity pays little or no attention to the health issues of the victims. Therefore, by doing this, the current study is opening a new vista in the study of issues related to security challenges in Nigeria and the world at large. In the second place, victims of insecurity are typically vulnerable. They need help from government as well as well-to-do individuals so that they can leave a better life. Providing empirical evidence on how to encourage them to develop positive attitude to COVID-19 vaccine is essential because it will ensure that they make themselves available for vaccination when the process starts. IDPs need a COVID-19 vaccine to build body immunity to enable them better face the challenges associated with displacement. Thirdly, studies on vaccine rarely pay attention to how to promote vaccine among vulnerable groups such as those who are displaced as a result of insecurity. In this wise, the current study has expanded literature on vaccination as well as security discourse.

## Objective of the study

This study aimed to test the effectiveness of art work that were designed to communicate health messages and counsel victims of insurgency on the need to make themselves available for COVID-19 vaccination when eventually a vaccine is approved by the relevant authorities.

## Literature review

We reviewed literature in this study under the following subheadings:

### *Nigeria and the burden of insecurity*

Nigeria has been facing different security challenges for some time now. Researchers[7–10] agree that Nigeria is bedeviled with different security challenges such as communal clashes, farmers-herdsmen conflict, Niger Delta militancy, Boko Haram insurgency, among others. These security challenges have led to lose of lives and properties while many people have been displaced in the process. For example, a study notes that Southern Kaduna in North West Nigeria has been experiencing ethno-religious conflict at regular intervals from 1970s to date. However, since 2016, conflict has continued to rare its head in the area.[8] Another study attributed the conflict in Southern Kaduna to a deep-rooted sense of division that has been in existence among people of the area for ages, thus leading to mutual distrust.[11]

According to report,[12] the 2016 conflict in Southern Kaduna was a result of the killing of Christian farmers from the area said to be perpetuated by Muslim herders who attacked them in their farm. World Watch Research adds further that between 2016 and 2017 only, the conflict has led to the death of 711 persons. A total of 204 persons from Southern Kaduna have been killed between October and December 2016 alone with many people displaced from their ancestral homes, thus making them homeless in their country.[13]

Nigeria is also battling with the problem herdsmen-farmers conflict in many parts of the country. A study[14] avers that almost every part of Nigeria has experienced the conflict between farmers and herdsmen in country. Another study[15] avers that the conflict between farmers and herdsmen is responsible for 35% of conflict instances that are reported in Nigerian newspapers. The implication here is that this particular insecurity scenario is fast spreading to different parts of the country. A study[16] argues that the conflict between farmers and herdsmen in Nigeria is now deadlier than even Bokoro Haram. A research[17] reported that clashes between farmers and herdsmen have significantly and negatively affected food production. More than 40 million worth of crops are normally destroyed on a yearly basis in South–South Nigeria as a result of this conflict. Many people have also lost their lives as a result of the conflict.[18] According to the report[19] between January 5, 2016 and October 5, 2018, herdsmen have been responsible for up to 310 attacks resulting to the death of 3,641 persons in states like Edo, Enugu, Adamawa, Kaduna, Benue, Ondo, Taraba, Oyo Plateau, as well as Delta. As this is happening, people are displaced in the process. Up to 400,000 persons have been displaced in Nigeria in the last five years as a result of the conflict between farmers and herdsmen.[20] These displaced persons need help. They are vulnerable and can easily be manipulated. They also need access to appropriate health information so as to take informed decisions.

Another instance of insecurity in Nigeria is the Niger Delta militancy. The Niger Delta militancy is an agitation for resource control among people of the area who think that they should be allowed to control the natural resources deposited in their domain. A study[21] notes that Niger Delta region has an estimated 37.2 billion barrels of proven oil reserves as well as 188 trillion standard cubic feet of natural gas thus making it the largest hydrocarbon deposits in the whole of Africa. Although this is supposed to be a blessing, it has become a reason for constant attacks in the area. Such attacks result to displacements and disruptions in economic activities. Another study[22] compared militant activities in Niger Delta to cutting of the head as cure for headache and reported that such activities have serious negative impact on the area.

Another serious security challenge confronting Nigeria is the Boko Haram insurgency. The insurgency began as an opposition to western civilization and a move to replace it with the tenets of Islam. The killing of its founder, Mohammed Yusuf is believed to have triggered the current wave of attacks. According to a report[19] Boko Haram is among the first four deadliest terrorist groups in the word. The other three are Taliban, ISIL and the Khorasan Chapter of the Islamic State. The report adds that Boko Haram is the deadliest terror group in sub-Saharan Africa. Boko Haram has continued it attacks which come in different formats like bombing, ambush, among others. Global Terrorism Index says that cases of female suicide attacks attributed to Boko Haram have been on the steady increase. According to the report, since 2009 when Boko Haram activities were on the increase, the group attacks have led to the death of 35,000 combat-related deaths and 18,000 deaths from terrorism since 2011, mainly in Nigeria. Many people have also been displaced as a result of Boko Haram

attacks. Some of the displaced persons have been in Internally Displaced persons' camps while others have been forced to migrate to other places perceived to be safer. Providing health services to such displaced persons is essential because the overall conditions which they leave is poor and are more vulnerable than those who leave in better locations .

### *The Nexus between insecurity and health promotion*

A break down in security, law, and order will most likely affect health care delivery. This could happen in several ways. In the first way, a situation of insecurity results in the description of health facilities. For example, Boko Haram insurgency has resulted to the destruction of health care facilities in some parts of North East Nigeria. Health workers have also been attacked. Some have even lost their lives due to activities of the insurgents. A study[23] avers that there is a significant relationship between human security and health care delivery. Zaryab further adds that when conflict breaks out, whether among states or within states, it slows down the delivery of public health services in affected areas. The second way that insecurity affects health care delivery is the ability of the victims to access health care services. Another study[24] reported that insecurity has slowed down progress in health care in Napal.

Evidence in literature[25,26] suggests that insecurity poses a serious threat to health systems in addition to resulting to the death of people. Researchers[27,28] also agree that people who are affected by insecurity also face severe negative health consequences. Some researchers[29,30] argue that vulnerability to diseases and outbreak largely due to displacements. Considering the vulnerability of victims of conflict, they can be easily manipulated through wrong information on serious public health issues like COVID-19 vaccine. Victims of conflict have already gone through emotional trauma that will naturally cause anxiety in them.[31]corroborates that insecurity has a serious negative impact on the mental health of victims. When people' mental health is not balanced, it will likely influence their thinking. As such, any information about the disadvantages of a COVID-19 vaccine will discourage them from making themselves available for vaccination.

## Theoretical framework and study hypotheses

Social cognitive theory was applied to articulate the study. The theory was suggested by Albert Bandura in 1986[32] to provide explanation on the relevance of accepting health behavior as a result of observing others demonstrate such behavior. The social cognitive theory places attention on the relevance of visual messages in influencing health behavior. The theory is suitable for examining health behavior of people because it provides explanations regarding the effectiveness of seeing actions on the adoption of such actions.[33] There are some constructs regarding the social cognitive theory that are worth examining here. These constructs include self-efficacy, which is used about the belief that a person has regarding his or her ability to efficiently carry out a defined behavior and achieve the required outcome. The second construct is task efficacy; it describes the confidence that a person has to implement an action. The third construct of the theory is outcome expectancy; it describes beliefs that are linked with certain behavior which lead to definite outcome.[34,35] Looking at these variables from the perspective of the study, it can be argued that victims of conflict who are exposed to visual messages on COVID-19 vaccination will report greater self-efficacy and task efficacy than those who are not. Also, it can be argued that victims of conflict who are exposed to visual arts on COVID-19 vaccination will report more positive outcome expectancy from the vaccine than those who are not. This argument is further hypothesized thus:

**H1**: Victims of insecurity who are exposed to visual messages on COVID-19 vaccination will report greater self-efficacy than those who are not.

**H2**: Victims of insecurity who are exposed to visual messages on COVID-19 vaccination will report greater task efficacy than those who are not.

**H3**: Victims of insecurity who are exposed to visual arts on COVID-19 vaccination will report more positive outcome expectancy from the vaccine than those who are not. `

One aspect that was not addressed by the social cognitive theory above was behavior intention. To look at this aspect, the researchers made use of the theory of planned behavior. Icek Ajzen suggested the theory of planned behavior in 1986 to explain human behavior. The theory argues that the intention concerning a behavior significantly predicts intention that a person has to get execute an action. Additionally, three variables predict behavior intention. These are: attitude concerning an action, subjective norms, and perceived behavioral control.[36,37] In the Intention describes a person's readiness to carry out a defined behavior.[38] Attitude is defined as the assessment that a person makes regarding the behavior to be taken. Such a judgment may be for or against the action. For this study, it refers to the attitude that a person has regarding COVID-19 vaccine. On the other hand, subjective norms define the views a person's peers have concerning an issue. For this study, it explains the opinion that a person's close associates have regarding COVID-19 vaccine. Perceived behavioral control (PBC) explains how easy or difficult it is for a person to carry out an action. Based on this theory, the researcher hypothesized:

**H4**: Victims of insecurity who are exposed to visual messages on COVID-19 vaccination will report intention to make themselves available for vaccination than those who are not.

## Methodology

A quasi-experimental design was applied to interrogate the effectiveness of artistic illustrations on intention toward COVID-19 vaccination among victims of insecurity in Nigeria. The decision to make use of a quasi-experimental was because it enabled the researchers to test the effectiveness of an artistic intervention. To determine the adequacy of our sample size, we made use of a G*power programme and set the

parameters with power (1 − β) at 0.90, 0.30 effect size f, and α = .05. The analysis suggests that a sample size of 470 participants was required to ascertain statistical differences at .05 level of significance. After the sample size was ascertained, the researchers then assigned the respondents into experiment and control group. Each group had 235 participants.

## Sampling procedure

To select the participants for this study, the researchers made use of three sampling strategies. These sampling techniques are: quota sampling, simple random sampling, and snowball sampling. The three sampling techniques were applied in stages as explained below:

**Stage 1**: Quota sampling was utilized to categorize the respondents into control (n = 235) group and treatment (n = 235) group. The respondents were randomly assigned to the groups.

**Stage 2**: This stage involved the selection of the IDP camps were the study was conducted. Therefore, the control participants were drawn from Lugbe IDP Camp while the treatment participants were from Area One IDP Camp, both from the Federal capital territory, Abuja. The Choice of IDPS camps in Abuja was because the area is one of the most read with confirmed cases of COVID-19 that also has IDP camps.

**Stage 3**: The third and last stage of the sampling was the selection of the study participants. Therefore, announcements were made at the camps and those who were willing to take part in the study were told to contact camp officials and indicate their details.

The questionnaire was used at the instrument for data collection. The choice of the questionnaire was because of its ability to general large amount of data. It should be noted that the instrument was drafted in English but interpreted in the local languages so that the respondents could understand the contents. The content of the questionnaire was validated by three experts at the Department of Mass Communication, University of Nigeria Nsukka. The comments of the experts were utilized in drafting the final version of the instrument. The Cronbach's Alpha was used to determine the reliability of the instrument and this resulted to coefficient Alpha α = .71 an indication that the instrument was reliable.[10]

## Experiment procedure

The experiment in this study was carried out by exposing the treatment group to visual illustrations on the importance of COVID-19 vaccination. As the respondents were exposed to the visuals, they were also counseled on the need to accept a COVID-19 vaccine when it is finally approved. The experiments had one experts in fine and applied arts, guidance and counseling, and mass communication. The experiment was conducted in 10 days. Each session lasted for one hour. On the other hand, the control group did not get exposed to the treatment. The research team collaborated with the camp officials to ensure that the control and the treatment group camps did not mix up during the time of the study.

## Data analysis

The analysis for this study was done using simple percentages, mean and standard deviation among the descriptive statistics. Among the inferential statistics, the researchers made use of t-test to compare the mean response of the respondents from the treatment and control group. The results were presented in tables.

## Results

A total of 470 victims of conflict completed the copies of the questionnaire. The sample was made up of 51% male and 49% female for the control group. This means that there was no dominance of any particular gender in the sample. Concerning age, the mean age was 32 (range 22 and 42 years). On the other hand, the treatment group had 53% male and 47% female. Their mean age was 40 years (range 25 and 55 years). The results of the hypotheses testing are presented based on the hypotheses tested thus:

**H1**: Victims of insecurity who are exposed to visual messages on COVID-19 vaccination will report greater self-efficacy than those who are not.

We computed Table 1 to determine the effectiveness of artistic illustrations on the self-efficacy of victims of conflict regarding COVID-19 vaccination. At the pre-treatment level, both groups did not significantly differ in their mean scores regarding self-efficacy on COVID-19 vaccination. However, after the treatment, the experiment group scored higher in self-efficacy in relation to COVID-19 vaccination. This means that the treatment was effective and the first assumption was supported. We concluded with 95% confidence that using artistic illustrations to counsel victims of insecurity will help them develop self-efficacy regarding COVID-19 vaccination.

**H2**: Victims of conflict who are exposed to visual messages on COVID-19 vaccination will report greater task efficacy than those who are not.

Table 2 is computed to test the effectiveness of our treatment on task efficacy of the respondents who took part in the study. We found that at Time 1 (pre treatment), both the treatment and the control groups did not significantly differ in their mean scores on task efficacy of COVID-19 vaccine.

**Table 1.** Mean and t-test results on self-efficacy of COVID-19 vaccination among participants at baseline (Time 1) and post treatment (Time 2) according to group.

| | Pre-treatment (baseline-Time 1) (self-efficacy of COVID-19 vaccination) | | | | Post treatment (Time 2) | | | |
|---|---|---|---|---|---|---|---|---|
| Groups | Mean | SD | df | Not Sig | Mean | SD | Df | Sig |
| Control group | 1.3 | .27 | | | 1.4 | .63 | | |
| Treatment group | 1.4 | .34 | 14 | .70 | 3.3 | .85 | 14 | .02 |

Note: n = 235 for both groups.

**Table 2.** Mean and t-test results on task efficacy of COVID-19 vaccination among participants at baseline (Time 1) and post treatment (Time 2) according to group.

| | Pre-treatment (baseline-Time 1) (self- task efficacy COVID-19 vaccination) | | | | Post treatment (Time 2) | | | |
|---|---|---|---|---|---|---|---|---|
| Groups | Mean | SD | df | Not Sig | Mean | SD | Df | Sig |
| Control group | 1.5 | .98 | | | 1.4 | .54 | | |
| Treatment group | 1.6 | .76 | 14 | .66 | 3.6 | .76 | 14 | .01 |

Note: n = 235 for both groups.

**Table 4.** Mean and t-test results on intention toward COVID-19 vaccination among participants at baseline (Time 1) and post treatment (Time 2) according to group.

| | Pre-treatment (baseline-Time 1) (intention toward COVID-19 vaccination) | | | | Post treatment (Time 2) | | | |
|---|---|---|---|---|---|---|---|---|
| Groups | Mean | SD | df | Not Sig | Mean | SD | Df | Sig |
| Control group | 1.2 | .11 | | | 1.3 | .23 | | |
| Treatment group | 1.1 | .21 | 14 | .69 | 3.8 | .98 | 14 | .01 |

Note: n = 235 for both groups.

However, after the treatment (Time 2), the experiment group scored higher regarding task efficacy of COVID-19 vaccine. As result of this outcome, the second hypothesis was accepted and the researchers concluded that victims of conflict who are exposed to visual messages on COVID-19 vaccination will report greater task efficacy than those who are not.

**H3**: Victims of conflict who are exposed to visual arts on COVID-19 vaccination will report more positive outcome expectancy from the vaccine than those who are not.

The results in Table 3 reveal the effectiveness of our analysis concerning the victims' views on the performance expectancy of COVID-19 vaccine. The analysis showed that before the treatment, both the treatment and the control groups scored low regarding the positive outcome of receiving COVID-19 vaccination. But after the treatment, the experiment group scored higher while the control group did not significantly change. Based on this result, the third assumption was also supported and it is concluded victims of conflict who are exposed to visual arts on COVID-19 vaccination will report more positive outcome expectancy from the vaccine than those who are not.

**H4**: Victims of conflict who are exposed to visual messages on COVID-19 vaccination will report intention to **make** themselves available for vaccination than those who are not.

In Table 4 above, was computed to determine the effectiveness of our treatment on behavior intention toward COVID-19 vaccination among the sample who took part in the study. Our result showed that before the treatment, both the treatment and the control group scored lower regarding their intention toward making themselves available for COVID-19 vaccination. However, after the intervention the treatment group scored higher regarding their readiness to receive a COVID-19 vaccine when it is made available to them. Based on this outcome, it is concluded that victims of conflict who are exposed to visual messages on COVID-19 vaccination will report positive intention to make themselves available for vaccination than those who are not.

**Table 3.** Mean and t-test results on outcome expectancy of COVID-19 vaccination among participants at baseline (Time 1) and post treatment (Time 2) according to group.

| | Pre-treatment (baseline-Time 1) (self- outcome expectancy COVID-19 vaccination) | | | | Post treatment (Time 2) | | | |
|---|---|---|---|---|---|---|---|---|
| Groups | Mean | SD | df | Not Sig | Mean | SD | Df | Sig |
| Control group | 1.1 | .13 | | | 1.2 | .50 | | |
| Treatment group | 1.2 | .22 | 14 | .62 | 3.7 | .43 | 14 | .01 |

Note: n = 235 for both groups.

## Discussion of findings

In this study, the researcher examined the effectiveness of an intervention on intention toward COVID-19 vaccination among victims of insecurity in Nigeria. The researchers made use of variables from Social cognitive theory and theory of planned behaviour to test the effectiveness of our intervention. Together, a total of four hypotheses were tested at 0.05 level of significance.

In the first hypothesis, it was assumed that victims of conflict who are exposed to visual messages on COVID-19 vaccination will report greater self-efficacy than those who are not. This assumption was supported. It the second hypothesis, it was assumed that victims of conflict who are exposed to visual messages on COVID-19 vaccination will report greater task efficacy than those who are not. This assumption was equally supported. In the third hypothesis, it was argued that victims of conflict who are exposed to visual arts on COVID-19 vaccination will report more positive outcome expectancy from the vaccine than those who are not. This assumption was equally supported. In the last assumption, it was argued that victims of conflict who are exposed to visual messages on COVID-19 vaccination will report intention to make themselves available for vaccination than those who are not. Our findings also supported this assumption.

These findings have extended studies[39–41] related to vaccination on one hand; studies[42–44] related to insecurity on the other hand as well as studies[45,46] related to behavior change communication. For example, concerning studies related to vaccination, the current study has shown that promoting vaccination efforts could be effectively done with the utilization of artistic illustrations together with counseling. This is an area that has not been examined by previous studies. For a country like Nigeria that has battled to resolve the challenges that usually characterizes vaccination campaigns, it is hoped that these results will provide a blueprint on how to promote positive attitudes toward vaccination. With regards to studies on insecurity, this study has made a strong case for the need to look at the health victims of insecurity to encourage them to adopt life-saving health behavior. This is an aspect that has rarely been examined by previous studies. The current study has also extended studies on health communication. Previous researchers[45,47] hardly pay attention to suggesting ways of improving health promotion efforts among victims of insecurity. This is despite the fact that insecurity is on the increase

while diseases and outbreaks have continued to define the 21st century society.

The current study has theoretical implications with particular reference to social cognitive theory and theory of planned behavior. Concerning social cognitive theory, this study has shown how its variables such as self-efficacy, task efficacy, and outcome expectancy can be determined by a carefully planned and implemented communication intervention. Therefore, our result showed that this theory can be a useful framework in campaigns aimed at influencing the behavior of victims of insecurity. Additionally, the current study has implications on theory of planned behavior by revealing how behavior intention toward vaccination among victims of insecurity can be influenced.

## Implications of the study on security and health promotions

This study has dual implication on security and health promotion campaigns. Concerning security, the result of this study has expanded discourse on security issues by highlighting the need to also consider the health condition of victims of insecurity. This is essential because when people are displaced as a result of violent attacks, they become vulnerable to different health challenges. Therefore, designing approaches on how to effectively communicate health messages to them is important, hence the unique contribution of this study.

## Limitations and recommendations for further studies

Although this study has provided evidence on the effectiveness of communication intervention on intention toward vaccination among victims of insecurity, it has some limitations. One of the limitations of the current study is that it focused only on those in internally displaced persons camps; victims of conflict who are not at IDP camp also deserve attention. The study also examined only victims of conflict. Other people are displaced by natural disaster like flood. These sets of people equally deserve attention in literature. Finally, the current study has made use of one intervention, there is a need to consider other intervention strategies such as theater for development. Therefore, it is recommended that further studies should be conducted to address these identified limitations.

## Disclosure of potential conflicts of interest

Authors declare no conflict of interest

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