

Article

Communicating COVID-19 vaccine uptake in the media: Insight from Nigerian newspapers

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Abstract: Many people rely on newspapers for their health information needs, making this mass medium a critical tool for disseminating and receiving information during public health emergencies like the COVID-19 pandemic. This study investigates how COVID-19 vaccination programs were reported by leading Nigerian newspapers to ascertain the prominence and sources of COVID-19 vaccination newspaper articles and the principal discursive resources deployed in the coverage of COVID-19 vaccination in Nigeria. The study adopted the purposive sampling technique to select 168 newspaper editions drawn from a population of 4380 issues published by four leading Nigerian dailies (*Vanguard*, *The Guardian*, *The Punch* and *Nigerian Tribune*) from 1 January 2021 to 31 December 2023. The study utilizes quantitative content analysis to ascertain the contributions of the four national tabloids towards the management of COVID-19 health emergencies. Findings show that COVID-19 vaccines-related discourse were prominently covered by the newspapers and the domestic sourcing pattern was utilized in curating information contained in newspaper articles on COVID-19 vaccination. Furthermore, vaccine acceptance/uptake, public perception, and vaccine hesitancy were the dominant discursive resources deployed by the newspapers in the coverage of the issue. Hence, the study recommends the continuous engagement of national newspapers in the management of future public health emergencies.

Keywords: health journalism; herd immunity; media agenda-setting; media coverage; media framing; public health

1. Introduction

Following the sudden outbreak of the deadly Corona Virus Disease (COVID-19) in December 2019, there was intense research effort to develop effective vaccines for the infectious pandemic [1]. However, the successful development of effective vaccines for respiratory disease was sharply met by a significant resistance to their uptake among the public [2]. Generally, vaccination is widely advocated as an effective strategy for preventing infectious diseases like the COVID-19 pandemic which has affected about 777,026,543 people and claimed 7,078,481 lives globally as of 7 December 2024 [3,4]. More so, immunization programs are not only cost-effective but also essential to public health interventions, especially when the intention is to establish herd immunity within large populations [5]. According to Biro and Szabo-Morvai [6], vaccines are considered one of the most promising solutions to curbing infectious diseases like the COVID-19 pandemic, considering that vaccination programs are estimated to prevent two to three million global deaths annually.

Contextually, vaccine uptake refers to the percentage of an eligible population that receives a specific vaccine during a designated vaccination period [7]. Previous

research suggests a significant global resistance to vaccine uptake [8], with challenges being particularly pronounced in developing and low-income countries where vaccination rates often fall below target levels [9]. Ultimately, the success of vaccination programs for infectious diseases like COVID-19 may be influenced by public perception of such medication, and this perception could be strongly influenced by social factors, including the mass media.

Newspapers have long been established as an essential means of informing and engaging the public, evolving from handwritten newsletters to digital platforms that shape societies globally. From the early days of Iwe Irohin (Nigeria's first newspaper established in 1859), Nigerian newspaper has been deployed to promote public awareness and knowledge on social issues, including politics and public health-related discourse [10]. Expectedly, the newspaper medium has been used to vigorously report and promote the uptake of COVID-19 vaccines since their early production and trial stages in 2020.

Generally, many people rely on newspaper contents for health information needs, especially in the times of public health emergencies such as the COVID-19 pandemic [11]. For example, approximately 31.83 million people in Nigeria were estimated to have used newspapers and magazines contents in 2024 [12]. Previous evidence supports the role of newspapers in promoting the acceptance and uptake of vaccines by publishing clear, accurate and timely information on their availability and efficacy [13]. As espoused in the tenets of the agenda setting theory, newspapers can influence public health behavior through the continuous reportage of critical health information that counters fake news and debunks vaccine-related conspiracy theories [14,15]. This expected influence is couched in the level of importance attached to vaccine-related newspaper articles and the angle from which they are reported. Therefore, this study investigates the level of prominence and dominant frames deployed in the communication of COVID-19 vaccine uptake by three major national dailies in Nigeria. Specifically, the study was guided by three main objectives: (i) determine the level of prominence attached to COVID-19 vaccines-related articles by Nigerian newspapers; (ii) ascertain the sources of COVID-19 vaccines-related articles in Nigerian newspapers; and, (iii) evaluate the dominant themes/frames in COVID-19 vaccines-related articles published by Nigerian newspapers. While many studies have investigated media performance during the outbreak of COVID-19 [2,6,14], limited empirical efforts have been devoted to newspaper coverage of vaccine uptake, particularly within the Nigerian media context. This knowledge gap necessitated this study.

2. Materials and method

2.1. Design and population

The study adopted the quantitative content analysis research method which is suitable for the objective and systematic evaluation of the manifest contents of the mass media [16]. The population of study consisted 4380 issues of four national dailies in Nigeria published between 1st of January 2021 to 31st of December 2023. The studied newspapers were *Vanguard*, *The Guardian*, *The Punch* and *Nigerian Tribune* which were purposively selected based on their well acclaimed wide patronage,

national outlook, broad readership and professionalism. The study timeframe was chosen to cover the waxing, maintaining and waning periods of media campaigns on COVID-19 vaccines uptake.

2.2. Sample size and sampling technique

In order to obtain an adequate sample for the study, we utilized the composite sampling technique to determine the required sample size for the study. This technique is popular among researchers and is widely considered objective and superior to both random and consecutive days sampling techniques when evaluating the manifest contents of newspapers [17]. Scholars posit that in the evaluation of health-related stories in newspapers, a minimum of six constructed weeks is widely considered efficient for longitudinal studies of one to five years scope [17,18]. Similarly, previous research has shown that one constructed week will offer an adequate representation of the entire population in a six-month duration, while two constructed weeks are adequate for the reliable estimation of newspaper articles published within a given year [16,19]. Therefore, a total of six constructed weeks were drawn from each of the newspaper through balloting without replacement, yielding a total of 168 newspaper editions for the period under review. To obtain this sample, the researchers recorded all the days in a given year on a piece of paper and, thereafter, placed the folded papers in separate baskets according to the distinct days of the week. From each basket, seven days were drawn through balloting without replacement to arrive at six constructed weeks for each of the studied newspapers.

2.3. Study variables

To properly contextualize the study and enhance the coding process, the analyzed variables were properly identified and defined concerning their content categories and units of analysis. We operationalized vaccine uptake as the availability and willingness/unwillingness of individuals to accept COVID-19 vaccines and their related messages, including their overall perception and behavior towards vaccines as depicted in newspaper stories. This included stories on vaccination status, vaccination venues, vaccine dosage, vaccine-related beliefs, and vaccination conspiracy theory, among others. To measure prominence, we assessed the frequency at which COVID-19 vaccines were mentioned in newspaper articles, the position/placement of such articles (whether it is front page, back page or inside pages) and the story type/genre (whether it is news, features, opinion or editorial articles).

Similarly, the story source was operationalized to mean the originator of COVID-19 vaccines-related information in a given newspaper article, and the possible units of analysis were the Nigerian Center for Disease Control (NCDC), Federal and State Ministries of Health, World Health Organization (WHO), Health professionals/experts, non-governmental organizations (NGOs), community-based organizations (CBOs), faith-based organizations (FBOs), journalists, and public affairs analysts among others. Likewise, we defined dominant themes/frames as the set of commonly coherent discursive contents such as words, storylines, illustrations, or images deployed in the description or representation of COVID-19 vaccines-related newspaper articles, including vaccine acceptance/uptake, vaccine hesitancy, vaccine efficacy, side effects,

availability, accessibility, and public perception. We also evaluated the discursive focus/direction of newspaper articles on COVID-19 vaccines (to determine whether such articles were given a positive, negative or neutral slant). Accordingly, newspaper articles that promoted COVID-19 vaccine acceptance/uptake were adjudged positive, while the ones in support of vaccine hesitancy, conspiracy theories or perceived side effects were considered negative. However, newspaper articles that portrayed COVID-19 vaccines as neither positive nor negative were considered neutral [18].

2.4. Coding and inter-coder reliability

Data were collected using a coding sheet which was designed to reflect the relevant content categories and units of analysis. To determine inter-coder reliability value, we adopted the Holsti formula which is a commonly used measure in behavioral and social science research [19]. Using this method, the second and last authors independently coded the 2022 issues of the four selected newspapers, representing approximately 33% of the total sample size of the study. The obtained values were thereafter calculated using the Hosti formula. The reliability test yielded coefficients of 0.86 for the first research objective, 0.91 for the second and 0.83 for the third. Overall, the obtained reliability values were well above the accepted 70% threshold recommended in previous studies [16].

3. Results

3.1. Prominence of COVID-19 vaccines-related articles in Nigerian newspapers

The data in **Table 1** indicate that issues relating to COVID-19 vaccines were given a considerable high level of prominence considering the adequate coverage and visible placement they enjoyed on the pages of the newspapers included in this study. Specifically, the results show that a total of 753 COVID-19 vaccines-related articles were published in the 168 editions of the four newspapers, with *Vanguard* ($N = 268$, 35.6%) and *The Punch* ($N = 245$, 32.5%) topping the chart, followed by *The Guardian* ($N = 148$, 19.7%) and *Nigerian Tribune* ($N = 92$, 12.2%). Furthermore, most of the articles were published on the inside pages ($N = 472$, 62.7%) and center pages ($N = 113$, 15%), while the others were published as lead or promo on the front page ($N = 97$, 12.9%) and back page ($N = 71$, 9.4%). Regarding the genres of the published articles, straight news ($N = 326$, 43.3%) was the common story type adopted by the four national newspapers, followed by opinion articles/letters-to-editor ($N = 271$, 36.0%), feature articles ($N = 143$, 19.0%) and editorial ($N = 13$, 1.7%).

Table 1. Prominence of COVID-19 vaccines-related articles in Nigerian newspapers.

Units of Analysis	Frequency	Percentage
Frequency of COVID-19 vaccines-related articles		
Vanguard	268	35.6
The Guardian	148	19.7
The Punch	245	32.5
Nigerian Tribune	92	12.2
Total	753	100
Placement of COVID-19 vaccines-related articles		
Front Page	97	12.9
Back Page	71	9.4
Centre Spread	113	15.0
Inside Pages	472	62.7
Total	753	100
Type/genre of COVID-19 vaccines-related articles		
Straight news	326	43.3
Features	143	19.0
Opinion/Letters	271	36.0
Editorial	13	1.7
Total	753	100

3.2. Sources of COVID-19 vaccines-related articles in Nigerian newspapers

Table 2. Sources of COVID-19 vaccines-related articles in Nigerian newspapers.

Sources	Frequency	Percentage
World Health Organization (WHO)	64	8.5
Africa Center for Disease Control (ACDC)	31	4.1
Nigerian Center for Disease Control (NCDC)	254	33.7
Ministry of Health	131	17.4
Health professionals/experts	83	11.0
non-governmental organizations (NGOs)	29	3.9
community-based organizations (CBOs)	13	1.7
faith-based organizations (FBOs)	10	1.3
Journalists/Public affairs analysts	138	18.3
Total	753	100

As shown in **Table 2**, the contents of the majority of COVID-19 vaccines-related articles published by the four Nigerian newspapers were sourced within the country, mainly from the Nigeria Center for Disease Control ($N = 254$, 33.7%), journalists/public affairs analysts ($N = 138$, 18.3%) and Ministries of Health at the federal and state levels ($N = 131$, 17.4%). Other sources were health professionals/experts ($N = 83$, 11.0%), non-governmental organizations ($N = 29$, 3.9%), community-based organizations ($N = 13$, 1.7%), and faith-based organizations

($N = 10$, 1.3%). Nevertheless, external sources like the World Health Organization ($N = 64$, 8.5%) and Africa Center for Disease Control ($N = 31$, 4.1%) also provided information published in COVID-19 vaccine related articles.

3.3. Dominant themes/frames and direction in COVID-19 vaccines-related articles in Nigerian newspapers

The results presented in **Table 3** show that most of the newspaper articles on COVID-19 vaccines focused on the level of acceptance/uptake of the various COVID-19 vaccines ($N = 189$, 25.1%), public perception of the recommended vaccination protocol ($N = 118$, 15.7%), and general vaccine hesitancy ($N = 105$, 13.9%). Furthermore, the data show that published newspaper articles also resonated with the themes/frames of Government Sanction ($N = 88$, 11.7%), vaccine side effects ($N = 73$, 9.7%), vaccine efficacy ($N = 65$, 8.6%), vaccine availability ($N = 61$, 8.1%), and vaccine accessibility ($N = 54$, 7.2%). On the direction of the articles, the majority of the analyzed newspaper articles tilted between a positive slant ($N = 378$, 50.2%) and negative slant ($N = 314$, 41.7%), while a few others took a neutral direction ($N = 61$, 8.1%).

Table 3. Dominant themes/frames and direction in COVID-19 vaccines-related articles in Nigerian newspapers.

Option	Frequency	Percentage
Dominant Themes/Frames in COVID-19 vaccines-related articles		
Vaccine acceptance/uptake	189	25.1
Vaccine Hesitancy	105	13.9
Vaccine efficacy	65	8.6
Vaccine Side effects	73	9.7
Vaccine Availability	61	8.1
Vaccine Accessibility	54	7.2
Government Sanction	88	11.7
Public perception	118	15.7
Total	753	100
Direction of COVID-19 vaccines-related articles		
Positive	378	50.2
Negative	314	41.7
Neutral	61	8.1
Total	753	100

4. Discussion

This paper investigates the communication of COVID-19 vaccines-related information by four major newspapers in Nigeria with the primary goals of determining the level of prominence attached to such articles, the distinct sources of the articles, and the dominant discursive resources evident in the articles. The results showed that a significant number of COVID-19 vaccines-related articles were published by the analyzed newspapers during the period under review and such articles

were given strategic placement, with a number of them featuring as lead or front page stories. Observably, this attention mirrors global media practice in prioritizing public health-related information during the COVID-19 pandemic as vaccine-related information was considered crucial for guiding public health decisions and overall response to the pandemic [20]. However, the finding is at variance with previous studies suggesting that newspaper do not pay adequate attention to common health issues [21]. Nevertheless, the observed level of prominence ascribed to COVID-19 vaccine-related newspaper articles is in tandem with previous studies suggesting high media attention to COVID-19 vaccines [14,15]. This high level prominence could be linked to the newspapers' general orientation towards health journalism and desire to satisfy the health information need of a sizeable chunk of their reading audience, especially in times of public health emergencies.

Nevertheless, consistent with previous studies [11,18], the majority of the analyzed articles were published in the straight news format and were also tucked in the inside pages. In determining media primacy, editors and newspaper page planners often place issues that are considered urgent or of significant public interest in more visible pages (like front and back pages) to attract public attention. Similarly, issues that are considered important are given in-depth coverage by discussing them in feature, opinion and editorial articles. Thus, the dominant use of the straight news format in the analyzed COVID-19 vaccines-related articles suggests that most of the reports were episodic and addressed the issue in isolation, without adequate focus on the clinical and epidemiological implication of the proposed vaccination programs. Scholars assert that the straight news format is often preferred for fast-moving topics like health crises due to its concise and factual format, while feature articles allow for deeper exploration of a given social issue [11,22]. Importantly too, the study finding show that opinion articles and letters-to-the-editor were widely noticeable among the articles, indicating a robust public discourse and engagement on COVID-19 vaccination efforts which might have inadvertently shaped the outcome of the exercise in Nigeria.

On the sources of vaccine-related information, the study outcome showed that most of the stories originated from domestic sources like the Nigeria Centre for Disease Control (NCDC), federal and state ministries of health, journalists, and public affairs commentators. This domestic sourcing pattern indicates that the Nigerian media largely relied on local experts during the pandemic, suggesting the adoption of local country-relevant initiatives to drive COVID-19 vaccine uptake. Accordingly, health professionals and public health analysts also made significant contributions to newspaper discourse on vaccine uptake perhaps as part of efforts to buttress the credibility of the published articles. Nonetheless, external sources like the World Health Organization and Africa Center for Disease Control also contributed to the pool of information on COVID-19 vaccines uptake, indicating a balanced mix of local and international perspectives. In reporting public health emergencies, it is generally effective to adopt mixed sourcing to reinforce information reliability and perceived credibility in health communication.

Regarding the dominant discursive resources deployed in the coverage of COVID-19 vaccination programs, the study results indicated that the analyzed national tabloids essentially focused on vaccine acceptance/uptake, public perception, and

vaccine hesitancy. This finding lends credence to previous research which observed that vaccine acceptance and hesitancy are central to public discourse on vaccination and public health misinformation [23–25]. Deductively, the newspapers' emphasis on vaccine acceptance/uptake suggests that the national dailies took a proactive stance in contributing to the national vaccination effort, thereby reinforcing the role of newspapers in shaping public health behaviors through adequate coverage and effective framing strategies [21,26].

Following the initiation of COVID-19 vaccination programs in Nigeria, the Nigerian government initiated policies aimed at enforcing vaccination compliance among the public. One of such policies required citizens to tender proof of COVID-19 vaccination in order to access major public places just as the government disclosed plans to make the vaccination mandatory for all civil and public servants. Judging by this government move therefore, it was not surprising that government sanctions, perceived side effects of COVID-19 vaccines and the corresponding public reactions were found to be prominent themes/frames deployed in the coverage of the pandemic. Ostensibly, the commonality of these themes among the published newspaper articles suggests the intense scrutiny of government health directives in Nigeria like other countries during the pandemic [27].

Finally, the direction of the coverage largely tilted towards a positive slant, suggesting that most of the newspaper articles endorsed COVID-19 vaccination, although a significant number of the articles maintained a negative direction. For example, while writing in support of vaccination, an article published on *Vanguard* newspaper on 13 April 2021 asserted that “*getting vaccinated against the corona virus is a service to humanity. The more people are vaccinated, the greater chance for herd immunity for the populace*” [28]. Conversely, another article also published in *Vanguard* newspaper on 12 January 2022 faulted the accelerated timeline of the vaccines, observing that “*given the accelerated development of these vaccines, concerns expressed in this study (such as side effects) are logical and if not properly addressed, could increase hesitancy*” [29]. This two-pronged approach affirms the balanced reporting strategies adopted by the newspapers. Most people rely on newspaper for public health information [11,21], thus, when newspaper articles offer diverse perspectives to a given social problem, they might ultimately enhance public understanding of complex issues. Overall, the findings show that Nigerian newspapers engaged in comprehensive reporting on COVID-19 vaccines and adopted story directions that were aimed at educating the public and promoting vaccine uptake while acknowledging vaccine hesitancy.

Therefore, the findings indicate that newspaper reports might have positively impacted vaccination rates among Nigerians given that the positive slant commonly adopted in the analyzed articles are indicative of the national dailies' explicit endorsement of COVID-19 vaccination efforts. Besides, statements like “getting vaccinated against the coronavirus is a service to humanity” clearly emphasize the societal and health benefits of vaccination, potentially encouraging higher uptake rates among Nigerians. Also, the practice of publishing information from publicly recognized credible organizations like the NCDC, WHO, and health professionals might have provided scientifically accurate information to readers and exposed them to trusted data on vaccine efficacy and safety, thereby mitigating vaccine hesitancy

and misinformation. In the same vein, by primarily focusing on themes such as vaccine acceptance and public perception, the newspapers might have played a crucial role in normalizing vaccination as a civic duty, just as the extensive use of straight news and opinion articles might have further fostered dialogue and community discussions, creating a ripple effect on public willingness to vaccinate.

5. Conclusion and limitations

Before concluding the findings of this study, it is imperative to highlight the possible limitations of the current study. First, the adopted sample size could impact the generalization of our study findings given that the administrative and operational headquarters of the four analyzed national newspapers are domiciled in Lagos, Southern Nigeria. Judging by this, there is a possibility that a considerable number of the sources and events related to COVID-19 vaccination might have originated from the southern Nigeria region. Consequently, this likely skewness might limit the generalization of the study findings to all parts of the country, especially the northern region. Nevertheless, it is important to state that the four newspapers included in our study sample are among Nigeria's leading national tabloids. More so, the major newspapers in the northern part of Nigeria are affiliates of the media houses in southern Nigeria, and there is no newspaper organization in Northern Nigeria with a recognized pan-Nigerian outlook, wide patronage, and distinct professionalism like the four newspapers evaluated in the current study.

Notwithstanding the potential limitations identified above, the findings of our study offer a nuanced empirical insight into how COVID-19 vaccination was reported by leading Nigerian newspapers to ascertain their contribution towards the management of public health emergencies. Based on the findings, it could be concluded that issues relating to COVID-19 vaccines were given a considerably high level of prominence considering the adequate coverage and visible placement they enjoyed on the pages of the newspapers included in this study. Also, it could be concluded, from the study findings, that most of the newspapers adopted the domestic sourcing pattern in curating information contained in newspaper articles on COVID-19 vaccination, suggesting that the national dailies adopted country-relevant initiatives to drive COVID-19 vaccines-related discourse. Finally, this study concludes that vaccine acceptance/uptake, public perception, and vaccine hesitancy were the dominant discursive resources deployed by the evaluated newspapers in their various COVID-19 vaccines-related discourse.

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