### Awareness and Response to Avian Influenza Media Campaign Messages Among Residents of North-West Nigeria

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#### ABSTRACT

Avian Influenza (AI), or bird flu, is a viral infection that primarily affects birds but can occasionally infect humans and other animals. Caused by influenza A viruses such as H5N1, H7N9, and H5N8, AI poses significant risks to poultry and public health. This study examined Awareness and Response towards media campaign messages on AI among residents of North-West Nigeria. Using a survey approach to assess public engagement with AI campaign messages, a multistage sampling technique was used to select 405 respondents, with data collected through structured questionnaire. Descriptive statistics were employed to address the research questions, while standard deviation was used to measure the extent of variation or dispersion within the dataset. Findings indicate high awareness levels, with television and social media being sources of information. the primary However, social media emerged as the most comprehensible and influential medium. The findings also indicate that respondents have a high level of positive influence from the various factors related to the Avian Influenza campaign messages. This consistent influence aspects across various demonstrates the importance of these factors in shaping residents' attitudes. The study recommends that residents actively seek credible health information to improve disease prevention efforts and counter misinformation.

*Keywords:* Avian Influenza (AI) Virus, Media Campaign, Awareness, Pandemic, Public Health,

#### **1 INTRODUCTION**

Over the past two decades, the avian influenza virus has swept through most of Asia, Europe, and even some parts of Africa. It has in fact spread to the point of becoming endemic in various nations, including Vietnam, Egypt, Bangladesh, Nigeria, China, and Indonesia (Scoones & Forster, 2008; Harfoot, & Webby, 2017). Avian influenza (AI), often referred to as bird flu or avian flu, is a collective term for several influenza viruses adapted to especially chickens, waterfowl, beach birds, turkeys, waders, starlings and ratites (Simancas-Racines Cadena-Ullauri. Guevara-Ramírez, Zambrano, & Simancas-Racines, 2023). According to Simancas-Racines et al., (2023) the disease is transmitted to humans by direct contact with sick birds (dead or alive) or their bodily fluids (such as blood, mucus, saliva, and faeces). According to Swayne and Sims (2021), it is a viral respiratory infection brought on by the influenza A virus that

affects poultry and a few other bird species, including ostriches, imported pet birds, migratory water birds among others, as well as humans. It may be contracted by direct contact with infected birds and the subsequent inhalation of dust or droplets carrying the viruses. Consequently, it can be transmitted between domesticated and wild birds as well as from poultry to poultry and, on rare occasions, from poultry to people. This condition is very deadly and results in death in about 48 hours. Hence, it is a major public health risk that emanated from the animal reservoir.

In light of this, Catalan-Matamoros (2011) believes that media initiatives are used at all tiers of public health with the hopes of achieving three goals: the dissemination of accurate health information, the modification of pre-existing health attitudes and values, and the introduction of novel health behaviours. Media campaign is a coordinated series of communication strategies and activities designed to deliver specific messages to a target audience through various media channels. Media campaigns often utilize behaviour change communication strategies to encourage protective actions. Rimal and Real (2005) noted that campaigns can leverage social norms to promote behaviour change. By portraying positive behaviours-such as vaccination and hygiene practices-media can influence community attitudes and actions towards AI prevention (Rimal & Real, 2005). The aim is to influence public perceptions, change behaviours, or increase awareness about particular issues, products, or services (Catalán-Matamoros, 2011; Durkin, Brennan, & Wakefield, 2012). Given this, Wakefield, Loken, and Hornik (2010) concluded in their research that mass media campaigns might result in beneficial changes in health-related behaviours or prevent unfavourable changes from occurring in large populations.

While there must be a population-wide focus on avian flu prevention and control, this should be a central consideration when formulating public health plans and constructing public service announcements or media campaigns to ensure widespread awareness and preparedness. Neupane et al. (2012) argue that people who work with animals, such as poultry or pig farmers, are at a disproportionately high risk of catching the illness, making them a critically important category to educate and reach. This is in line with the opinions of other authors who have pointed out that those whose livelihoods depend on the poultry industry-such as butchers and traders in Live bird markets (LBM)-are at an increased risk of contracting avian flu because of their constant contact with birds during the processes of rearing, killing, and processing (Paudel, Acharya & Adhikari, 2013; Elelu, 2017; Cui et al., 2017; Gupta, Henning Fournié, Hoque 2022). & Moreover, some other scholars have argued that women, notably married women, are also at danger, particularly in rural regions, since they are the ones who often do the bulk of the housework, including but not limited to, caring for children, cooking, and raising chickens in rural regions (Khun et al., 2012; Klein, Hodgson & Robinson, 2012). The spread of such diseases, however, has been proven to be exacerbated by several factors such as living in rural regions, poverty, illiteracy, and ignorance about the issue, according to a number of studies (Adhikari & Bagale, 2019; Qucuo et al., 2020; Khan et al., 2021).

Notwithstanding continuous media efforts on avian influenza in Nigeria, research indicates that public understanding and behavioural adherence remain uneven and sometimes inadequate (World Health Organisation [WHO], 2021; Nigeria Centre for Disease Control [NCDC], 2022). In the North-West area, the efficacy of these messages may be affected by the public's information sources, along with cultural, educational, and socioeconomic variables that impact attitudes and behaviours (Adebayo & Yusuf, 2020). This gap obstructs the advancement of more precise and effective communication tactics designed to enhance disease preventive measures. The ineffectiveness of media

initiatives on avian influenza in Nigeria can be attributed to factors such as limited public awareness, limited funding, inadequate rural outreach, cultural barriers, socioeconomic considerations, and infrastructural challenges, particularly limited access to communication channels in rural areas. Inadequate road infrastructure hinders campaign teams and health workers from providing information, resources, and support to remote and rural communities, while limited internet penetration and poor mobile networks exacerbate the impact. Moreover, the efficacy of these campaigns is diminished by scepticism about governmentsponsored efforts and conflicting health priorities.

The general objective of the study is to examine the awareness level, sources of information, attitudinal factors, and behavioural influence of Avian Influenza campaign messages among residents of North-West Nigeria.

#### **Research Objectives**

- Examine level of respondents' awareness of the campaign messages on Avian Influenza among residents in North-West, Nigeria
- Determine the major source of information on Avian Influenza campaign messages among residents in North-West, Nigeria
- 3. Determine the factors that influence respondents' attitudes toward campaign messages on Avian Influenza among residents of North-West, Nigeria.

#### **Research questions**

- 1. What is the level of awareness among residents in North-West, Nigeria regarding campaign messages on Avian Influenza?
- 2. What are the major sources of information on Avian Influenza campaign messages among residents in North-West, Nigeria?
- 3. What factors influence residents' attitude of Avian Influenza campaign messages in North-West, Nigeria?

#### **2 LITERATURE REVIEW**

## 2.1: Media as a vital source of health information.

Given this context, it is imperative that measures for transmitting health information during major disease outbreaks constitute an integral element of containment strategies. It has been demonstrated that the dissemination of information through a variety of mass media outlets is an effective method of conveying and enhancing people's knowledge, attitudes, and health-protective behaviours (Li et al., 2009; Wakefield, Loken and Hornik, 2010; Ghio et al., 2021). This implies that a mix of media is ideal, since diverse forms of media may work together to reach a wider variety of people with the same public health messages. Weng (2014) notes that Messages on health that are widely disseminated via the media have a significant impact on people's knowledge and attitudes about these topics. For instance, results from a study by Bertrand and Anhang (2006) on the effectiveness of the media to influence public opinion and alter attitudes and behaviours around HIV/AIDS among young people in developing countries showed that the media were effective in achieving this objective though not all media campaigns.

Marrie et al. (2013) in her study on "preferred sources of health information in persons with multiple sclerosis: degree of trust and information sought" found that people turn to the media for guidance on health-related matters when they want to improve their health. On the other hand, findings from Pitigraisorn, (2021). suggest that there is a decline of trust in conventional forms of media by people since they have lost credibility with regards to health-related matters. While this may be true, Simou (2015) argues that the media, in conjunction with other online resources and websites, still play a significant role in the distribution of health-related information. Research has also demonstrated that the media may be used to transmit healthy lifestyle messages and discourage unhealthy ones across the population. For instance, in light of the fact

that spreading information is crucial to preventing and treating deadly illnesses like polio, measles, malaria, and others, and improving public health overall. International Organisations including the Nations, the World United Health Organisation, and other relevant agencies have all made considerable use of the media to educate the public and advocate for stronger measures to prevent the spread of these fatal illnesses (Tsegyu, 2015). Similar to this, the immunisation programme and the Roll Back Malaria campaigns are examples of initiatives where the media played a significant role in popularising the necessity for immunisation and the fight against malaria, respectively, in Nigeria (Bello, 2012). Since there is currently no cure for avian flu and the disease easily spreads from birds to birds and from birds to humans, it is vital to educate the most susceptible populations about the disease through the media.

However, many of the most vulnerable individuals affected by avian influenza are either illiterate or economically disadvantaged. This suggests that even with sufficient awareness campaigns, reaching and protecting these groups may remain a significant challenge. This is due to the fact that an uneducated poultry farmer, butcher, or trader will not comprehend the gravity of the danger posed by avian influenza regardless of how much you explain it to them, especially if it prevents them from maximising profit. Instead, they will be preoccupied with generating sales. In a similar vein, it doesn't matter how much a poor housewife listens to campaign messages-if she has the opportunity to do so on her radio-highlighting the hazards associated with slaughtering chickens infected with avian influenza; the only thing that will be on her mind is feeding her family and not incurring needless financial losses by throwing away the birds that she managed to get. In addition, all of the aforementioned patterns hold true in the context of the ruralurban dichotomy, with the added dimension that metropolitan regions are often more inundated with campaign messages and public service announcements from the mainstream media than rural areas.

## 2.2: Awareness level towards avian influenza

The awareness level regarding Avian Influenza varies among populations and is influenced by factors such as geographic location, education, media exposure, and public health campaigns. Some individuals may have a high level of awareness, understanding the risks associated with the disease, transmission modes, preventive measures, and the importance of early detection (Baldassarre et al., 2020). Others may have limited awareness, lacking comprehensive knowledge about Avian Influenza and its potential impact on human and animal health. With regards to avian influenza, Wong and Sam (2010) assert that in the event of a public health emergency, such as a pandemic, having access to accurate and fast data is crucial to effectively controlling the epidemic. This is in agreement with Voeten et al. (2009) who argued that if people are aware of a disease epidemic early, they may take precautions against it. In accordance with some healthbehaviour theories like the health belief model (Rosenstock, 1974) and the protection motivation theory (Rogers, 1975), public health communication campaigns often centre on educating the public about dangers involved with a particular health issue and protective behaviours against it.

In the context of SARS, H5N1, and the H1N1 pandemic in 2009, the vast majority of available data supports the hypotheses of these models on the importance of risk perceptions and beliefs in the success of preventative measures (Lau et al., 2004; Tang and Wong, 2005; Rubin et al., 2009; Bish and Michie, 2010; Setbon et al., 2011; Kuo, Huang and Liu, 2011). A study by Rimi et al. (2016) looked into why a behaviour change intervention did not work to stop backyard chicken keepers in rural Bangladesh from doing things that could spread avian influenza. They used a focused

ethnography to find that the intervention made villagers more aware of avian influenza, but it did not change their behaviour in any way that could be measured. In a like manner Roy et al. (2020) conducted a study on the knowledge, attitude, anxiety, and perceived mental needs among healthcare the Indian population during the COVID-19 pandemic. The authors' findings emphasize the urgency of intensifying awareness efforts and addressing mental health issues amidst the ongoing crisis. This suggests that public health efforts should not only focus on physical health aspects of the pandemic but also address the psychological impact and well-being of individuals.

# 2.3: Factors that influence respondent's attitude towards campaign messages on Avian Influenza

Further, there are factors that can impact the participants perceive campaign way messages regarding Avian Influenza (AI). include demographic, These factors psychological, cultural, and contextual dimensions. An analysis of demographic responses to campaign messages usually entails examining how different demographic parameters, such as age. gender, education, income, ethnicity, and geographic location influence individuals' reactions to and involvement with campaign messages. Thus, various demographic data segments have been the subject of numerous studies on media campaign messages (Durkin, Brennan, & Wakefield, 2012; Martin, 2015; Lazarus et al., 2020). Gaining knowledge of these demographic disparities essential developing efficient is for communication strategies that connect with varied audiences and accomplish intended objectives. Positive attitudes, characterized by a recognition of the seriousness of the disease and willingness to adopt preventive measures, can facilitate early detection, rapid response, and effective control of outbreaks (Bults et al., 2015; Ahmad, et al., 2021; Ning, et al., 2020). Conversely, negative attitudes, such as denial or complacency, may hinder

disease surveillance, impede the implementation of preventive measures, and increase the risk of transmission (Scoones. 2010; Ahmed, 2021). According to the World Bank's compilation of development indices, drawn from credible authorities, approximately 48% of Nigerians live in rural areas; 52% of that population of that population lived below the international poverty line of \$2 per person a day (World Bank, 2018) and 87% of them were mostly in the northern region (World Bank, 2020). Moving forward, literacy rates may be very different depending on factors such as location, degree of economic hardship, gender, and age. There was a 10.94% growth in Nigeria's literacy rate between 2008 and 2018, bringing the total to 62.02% (Macro Trends, 2016). Generally speaking, the South east has the greatest literacy rates and the smallest gender gap in education (Sasu, 2018). In 2018, the literacy rate for males in urban and rural areas were 86.4% and 59.5% respectively while the literacy rate for women in urban and rural areas was 74% and 35.4% respectively (Sasu, 2022).

Consider this: "young women from the richest 20% of families are four times more likely to be literate than young women from their counterparts" (UNICEF, 2016). For women specifically, "Nigeria has one of the highest literacy rates in West Africa." Nonetheless, there is a significant gap between male and female literacy levels in both urban and rural regions (Sasu, 2022). It is also important to note that the rate of literacy also varies greatly with age. A UNESCO survey from 2016 found that although the literacy rate for those over the age of 15 was 62% (70% for males and 53% for females), the literacy rate for those over the age of 65 was just 28% (40% for males and 18% for females). This is in line with the federal government's estimate that 32% of individuals (15 years and older) were illiterate in 2021 (Idoko, 2021). The following conclusions were made based on a report published in 2014 by the Broadcasting Board of Governors (BBG) on the contemporary media use in Nigeria:

Over two-thirds of Nigerians (66.6%) claim to access the news at least once every day, making them ardent news consumers. However, males (72.8%), particularly city dwellers (72.4%), are more likely to engage in this behaviour. On the other hand, at least seven in ten Nigerians across all major demographics report listening to the radio at least weekly for news, making it the country's most popular news source by a wide margin. Following the radio are personal conversations (66.1% weekly) and television (64.0%) as prevalent ways of learning about current events. For news, 28.2% of Nigerians turn to the Internet at least once a week, placing it in fourth place. One possible explanation for this is that only 32% of the population of Nigeria actually own a smartphone (Silver & Johnson, 2018) while many others still rely on feature phones, which have limited features and can only be used for voice calls and text messages.

Then again, at least half of Nigerians under the age of 34 and more than three quarters of those with a secondary education or above in the country get their news through short message service (SMS). The Internet, social networking sites, and mobile applications are increasingly popular among the young and college-educated citizens in Nigeria, but they are still underutilised by the country's population as a whole for news consumption. Over 83% of homes in Nigeria have a radio, and nearly as many (74.6%) also have a television. Although TV ownership rates vary little across demographics, individuals living in metropolitan areas are more likely to possess a TV (83.7%), while those with just a high school degree or less are far less likely to own a TV (60.6%).

After digesting the BBG report, it seems fitting to examine the ideas that served as the study's theoretical foundation. In a nutshell, the health belief model (HBM) and the Diffusion of Innovations Theory (DOI), served as the theoretical frameworks for this investigation.

This study used the Health Belief Model (HBM), developed in the 1950s by social

psychologists Hochbaum, Rosenstock, and Kegels, due to its strong alignment with the study's objectives. HBM explains health behaviours through perceived susceptibility, severity, benefits, and barriers to action. It also highlights the role of cues to action and self-efficacy in influencing individuals' decisions. The model helps explain why people adopt or avoid preventive health behaviours, such as vaccinations. Campaign messages serve as cues, with varying effectiveness across age and demographic groups. Education and training can boost self-efficacy and promote healthy practices. Using HBM, public health campaigns can be tailored to address specific beliefs and motivators, improving avian influenza prevention.

This study also applied the Diffusion of Innovations Theory (DOI), developed by Everett Rogers in 1962, to understand how new health behaviors spread within a population. The theory outlines five stages of adoption: knowledge, persuasion, decision, implementation, and confirmation. Rogers categorized adopters into five groupsinnovators, early adopters, early majority, late majority, and laggards-each adopting innovations at different times. Key factors adoption include influencing relative compatibility, complexity, advantage, trialability, and observability. DOI helps explain how awareness, influencing factors, and sources of information related to avian influenza prevention spread through media campaigns. By leveraging early adopters, simplifying messages, and showing visible results, campaigns can effectively promote the adoption of preventive behaviours.

#### **3 MATERIAL AND METHODS**

The study adopted descriptive survey research design and was conducted in Northwest, Nigeria. projected The populations for 2024 in the North-West region of Nigeria are estimated to be: Kano State (16, 205, 402),Katsina State (10,573,958), Kaduna State (9,464,196), Jigawa State (7,707,394), Sokoto State (6,666,080), Zamfara State (6,046,001), and

Kebbi State (5,686,520) giving a total of population figure of 62,349,551.

A multistage sampling technique was employed to obtain a representative sample. Out of the seven states in the North-West region of Nigeria, three states were selected through a simple random sampling method involving balloting. The states selected were Kano, Kaduna, and Sokoto. Research indicates that these regions have also experienced severe outbreaks of Avian Influenza, leading to substantial economic losses and highlighting the critical need for effective campaign messages. To further narrow down the study area, one Local Government Area (LGA) was selected from each state using simple random sampling, ensuring that each LGA had an equal chance of being chosen.

In each LGA, two communities—one urban and one rural—were selected purposively. depending on their features and relevance to the research objectives. This selection aimed to ensure the inclusion of diverse living conditions, population densities, and varying degrees of access to campaign messages. The communities were chosen in consultation with local health officials and community leaders, who provided insights into the areas most affected by Avian Influenza.

State	LGA	<b>Urban Community</b>	<b>Rural Community</b>
Kano	Nasarawa	Nasarawa	Afura
Kaduna	Chikun	Sabon Tasha	Gwagwada
Sokoto	Wamako	Kalambaina	Gumbi

Within these communities, respondents were randomly selected. A total of 67 respondents were chosen from each of the three rural communities while 68 respondents were selected from each of the three urban communities due to higher number of the population, giving a total of 405. The sample technique was done through these stages: Stage one

## Using Cochran's Formula (for large populations)

Confidence level =  $95\% \Rightarrow Z=1.96$ Proportion p=0.5 (maximum variability) Margin of error e=0.05

$$n_0 = rac{Z^2 \cdot p \cdot (1-p)}{e^2} \ rac{(1.96)^2 imes 0.5 imes (1-0.5)}{0.0025} \ = rac{3.8416 imes 0.25}{0.0025} \ = rac{3.8416 imes 0.25}{0.0025} \ = rac{3.84 imes n_0 = 385}{0.0025}$$

Step 2: Finite Population Correction (FPC) Substitute:

$$n = \frac{385}{1 + \frac{384}{62,349,551}} = \frac{385}{1 + 0.0000061588}$$

$$\frac{385}{1.0000061588} = 334.9976 \approx 385$$
  
n = 385

Stage two

Design Effect (DEFF) was used to adjust the sample size which accounted for increased variance due to these methods.

Formula:

nadjusted=n0×DEFF

Where:

n0 = initial sample size (from Cochran's formula)

DEFF = design effect (typically between 1.0 and 2.0)

n0=385

DEFF = 1.05

n0 adjusted= $385 \times 1.05 = 404.25 = n0$  adjusted  $\approx 405$ 

While Cochran's formula recommended a base sample size of 385, a design effect of 1.05 was applied to account for clustering and stratified sampling procedures, resulting in a final target of approximately 405 respondents. This adjusted sample size ensures more reliable subgroup estimates.

#### **4 RESULTS**

**Research Question 1:** What is the level of awareness among residents in North-West,

Nigeria regarding campaign messages on Avian Influenza?

Table 1: Mean and Standard Deviation of Responses on the Level of Awar	eness A	Among Re	sidents in
North-West, Nigeria Regarding Campaign Messages on Avian Influenza			

S/N	Item Statement	X	Std.	Remark
			Dev.	
1	How would you rate your level of awareness regarding campaign	3.08	1.09	Very Much
	messages on Avian Influenza?			Aware
2	How would you rate your level of awareness regarding campaign	2.99	0.85	Very Much
	messages on Avian Influenza?			Aware
3	How aware are you of the local health authorities' guidelines on	2.71	0.93	Very Much
	Avian Influenza?			Aware
4	How aware are you of the symptoms and transmission methods of	2.83	0.88	Very Much
	Avian Influenza based on the campaign messages?			Aware
5	How clear and understandable do you find the campaign messages on	2.91	0.85	Very Much
	Avian Influenza?			Aware
6	How relevant do you find the information provided in the Avian	2.92	0.87	Very Much
	Influenza campaigns to your daily life?			Aware
7	How well do you understand the symptoms and transmission	2.85	0.98	Very Much
	methods of Avian Influenza based on the campaign messages?			Aware
8	Cluster Mean and Standard deviation	2.90	0.69	Very Much
				Aware

#### Note: $\overline{X}$ = Mean, Std. Dev. = Standard Deviation

Data presented in Table 1 show the mean responses and standard deviation of respondents on level of awareness among residents in North-West, Nigeria regarding campaign messages on Avian Influenza. Table 1 shows that the respondents are very much aware of campaign messages on Avian Influenza. The item statements on Avian Influenza campaign knowledge has a mean range of 2.71 - 3.08. Item statement 1 with a mean of 3.07 has the highest level of awareness while item statement 3 with a mean of 2.71 has the lowest level of awareness. The overall analysis, represented by the cluster mean and standard deviation of 2.90 and 0.69 respectively, confirms that the respondents are very much aware of the campaign messages on Avian Influenza. This

consistent awareness across various aspects demonstrates the effectiveness of the campaign in raising awareness among the residents of North-West Nigeria. The standard deviation ranged from 0.62 - 0.73indicating that the responses of the respondents were close to one another in their opinion on the knowledge level on campaign messages on Avian Influenza. This continuous awareness across several dimensions illustrates the campaign's efficacy in enhancing consciousness among the inhabitants of North-West Nigeria.

**Research Question 2:** What are the major sources of information on Avian Influenza campaign messages among residents in North-West, Nigeria?

 Table 2: Mean and Standard Deviation of Responses on the Major Sources of Information on Avian

 Influenza Campaign Messages Among Residents in North-West, Nigeria

S. No	Sources	$\overline{X}$	Std. Dev.	Remark
1	Television	2.59	0.70	Frequently
2	Radio	2.57	0.89	Frequently
3	Newspapers/Magazines	2.50	0.74	Frequently
4	Social media	2.67	0.97	Frequently
5	Community meetings	2.25	0.88	Rarely
6	Health workers	2.61	0.83	Frequently
7	Friends/Family	2.43	0.67	Rarely
8	Cluster Mean and Standard deviation	2.52	0.55	Frequently

Note:  $\overline{X}$  = Mean, Std. Dev. = Standard Deviation

Data presented in Table 2 show the mean responses and standard deviation of respondents on the frequency of receiving information about Avian Influenza from various sources in North-West Nigeria. Table 2 shows that the respondents frequently receive information from Television, Radio, Newspapers/Magazines, social media, and Health Workers. The mean responses range from 2.50 to 2.67. Item statement 4 (social media) with a mean of 2.67 has the highest while frequency, item statement 3 (Newspapers/Magazines) with a mean of 2.25 has the lowest frequency. However, respondents rarely receive information from

community meetings and friends and families with a mean of 2.25 and 2.43. The overall analysis, represented by the cluster mean and standard deviation of 2.52 and 0.55 respectively, confirms that the respondents frequently receive information from these sources. This consistency in frequency across various sources highlights the widespread dissemination of information about Avian Influenza in North-West Nigeria.

2b. Which source of information do you consider the most reliable for Avian Influenza campaign messages?

S. No	Source	Frequency	Percentage
1	Television	119	29.4
2	Radio	63	15.6
3	Newspapers/Magazines	68	16.8
4	Social media	97	24.0
5	Community meetings	33	8.1
6	Health workers	25	6.2
7	Friends/Family	0	0
	Total	405	100.0

 Table 3: Frequency and Percentage of Most Reliable Source for Avian Influenza Campaign Messages

The data on table 3 indicates that 119 respondents regard television as the most reliable source of information for Avian Influenza campaign messages, which represents 29.4% of the total. 63 respondents (15.6%) consider radio reliable, while 68 respondents, comprising 16.8% of the sample, trust newspapers and magazines. 97 respondents, accounting for 24.0%, deem social media reliable. 33 respondents (8.1%) regard community meetings as reliable. whereas 25 respondents, representing 6.2%, trust health workers. This indicates that television is the most reliable source of information (29.4%) for Avian Influenza campaign messaging, followed by social media (24.0%) and newspapers/magazines (16.8%). Radio (15.6%) is also a prominent medium, while community gatherings (8.1%) and health workers (6.2%) are the least-used resources. This indicates that mass media, especially television and social media, are the primary media for public health communication in this study. 2c. Which source of information do you think provides the most comprehensive coverage

of Avian Influenza campaign messages?

 Table 4: Frequency and Percentage of Most Comprehensive Coverage Source for Avian Influenza

 Campaign Messages

S. No	Source	Frequency	Percentage
1	Television	63	15.6
2	Radio	26	6.4
3	Newspapers/Magazines	67	16.5
4	Social media	182	44.9
5	Community meetings	21	5.2
6	Health workers	46	11.4
7	Friends/Family	0	0
	Total	405	100.0

Table 4 reveals that 63 respondents (15.6%) believe television provides the most comprehensive coverage of avian influenza campaign messages. Meanwhile, 26 respondents (6.4%) and 67 respondents, making up 16.5% of the sample, trust newspapers and magazines and regard radio as comprehensive. thereby 182 respondents, representing 44.9% of the sample, consider social media to be the most comprehensive. 21 respondents (5.2%) deem community comprehensive, whereas meetings 46 respondents, constituting 11.4%, regard health workers as comprehensive. This implies that social media (44.9%) is viewed as the most comprehensive source for Avian Influenza campaign messages, followed by newspapers/magazines (16.5%)and television (15.6%). Radio (6.4%). community meetings (5.2%), and health workers (11.4%) are considered less comprehensive. This suggests that digital platforms play a dominant role in delivering in-depth health information, while traditional and interpersonal sources still contribute but to a lesser extent.

2d. How much do you trust the information about Avian Influenza from the following sources?

 Table 5: Mean and Standard Deviation of Responses on the Level of Trust in Information About Avian

 Influenza from Various Sources

S. No	Sources	$\overline{X}$	Std. Dev.	Remark
1	Television	2.73	0.72	A lot
2	Radio	2.67	0.73	A lot
3	Newspapers/Magazines	2.63	0.80	A lot
4	Social media	2.57	0.85	A lot
5	Community meetings	2.55	0.81	A lot
6	Health workers	2.66	0.84	A lot
7	Friends/Family	2.53	0.77	A lot
8	Cluster Mean and Standard deviation	2.62	0.55	A lot

Note:  $\overline{X}$  = Mean, Std. Dev. = Standard Deviation

Data presented in Table 5 show the mean responses and standard deviation of respondents on the level of trust in information about Avian Influenza from various sources in North-West Nigeria. Table 5 shows that the respondents trust the information from all sources a lot. The mean responses range from 2.53 to 2.73. Television with a mean of 2.73 has the highest level of trust, while Friends/Family with a mean of 2.53 has the lowest level of trust. The overall analysis, represented by the cluster mean and standard deviation of 2.62 and 0.55 respectively, confirms that the respondents trust the information from these sources a lot. This indicates a high level of credibility associated with the information sources.

2e. How often do you actively seek out information on Avian Influenza from the following sources?

 Table 6: Mean and Standard Deviation of Responses on How Often Respondents Actively Seek Out

 Information about Avian Influenza from Various Sources

S. No	Sources	$\overline{X}$	Std. Dev.	Remark
1	Television	2.57	0.75	A lot
2	Radio	2.52	0.82	A lot
3	Newspapers/Magazines	2.42	0.81	A little
4	Social media	2.59	0.85	A lot
5	Community meetings	2.31	0.77	A little
6	Health workers	2.59	0.85	A lot
7	Friends/Family	2.52	0.77	A lot
8	Cluster Mean and Standard deviation	2.50	0.55	A lot

Note:  $\overline{X}$  = Mean, Std. Dev. = Standard Deviation

Data presented in Table 6 show the mean responses and standard deviation of respondents on how often they actively seek out information about Avian Influenza from various sources in North-West Nigeria. Table 6 shows that the respondents actively seek information a lot from Television, Radio, social media. Health Workers. and Friends/Family, but only a little from Newspapers/Magazines and Community Meetings with mean of 2.42 and 2.31

respectively. The mean responses range from 2.31 to 2.59. The overall analysis, represented by the cluster mean and standard deviation of 2.50 and 0.55 respectively, respondents confirms that the seek information a lot from these sources. This demonstrates an active engagement in seeking information about Avian Influenza. Research Question 3: What factors influence residents' attitude of Avian Influenza campaign messages in North-West, Nigeria?

 Table 7: Mean and Standard Deviation of Responses on the Factors Influence Residents' Attitude of

 Avian Influenza Campaign Messages in North-West, Nigeria

S/N	Item statements	$\overline{X}$	Std.	Remark
			Dev.	
1	How susceptible do you believe you are to contracting Avian Influenza?	3.03	0.93	High
2	How serious do you believe Avian Influenza is as a health issue?	3.21	0.85	High
3	How confident are you in your ability to take preventive measures against	3.17	0.81	High
	Avian Influenza?			
4	How much do you trust public health campaigns related to Avian Influenza?	3.04	0.84	High
5	How clear do you find the messages in Avian Influenza public health	3.01	0.71	High
	campaigns?			
6	How relevant are the Avian Influenza public health campaign messages to	3.18	0.75	High
	your life?			
7	How much do the Avian Influenza public health campaign messages evoke	3.01	0.73	High
	an emotional response from you?			
8	How credible do you find the sources of the Avian Influenza public health	3.02	0.78	High
	campaign messages?			
9	How much do the opinions of your family, friends, and community leaders	2.90	0.91	High
	influence your perception of Avian Influenza campaign messages?			
10	Based on your previous experiences, how would you rate the effectiveness	2.85	0.87	High
	of public health campaigns you have encountered?			
	Cluster Mean and Standard deviation	3.04	0.59	High

Note:  $\overline{X}$  = Mean, Std. Dev. = Standard Deviation

Data presented in Table 7 show the mean responses and standard deviation of respondents on the factors influencing their attitudes towards Avian Influenza campaign messages in North-West Nigeria. Table 7 shows that respondents have a high level of positive influence from various factors, with item statement means ranging from 2.85 to 3.21. Item statement 34 (seriousness of Avian Influenza as a health issue) has the highest mean of 3.21, indicating the highest level of influence, while item statement 42 (previous experiences with public health campaigns) has the lowest mean of 2.85. The overall analysis, represented by the cluster mean and standard deviation of 3.04 and 0.59 respectively, confirms that respondents have

a high level of positive influence from the various factors related to the Avian Influenza campaign messages. This consistent influence across various aspects demonstrates the importance of these factors in shaping residents' attitudes. The standard deviation ranged from 0.71 to 0.93, indicating that the responses of the respondents were close to one another in their opinion on the factors influencing attitudes towards Avian Influenza campaign messages.

#### **5. DISCUSSIONS**

The data in research question 1 presented in Table 1 on the level of awareness among residents in North-West Nigeria regarding

campaign messages on avian influenza reveals that the respondents are highly aware of these messages. This indicates a continuous awareness across several dimensions, demonstrating the campaign's effectiveness in enhancing consciousness among the inhabitants of North-West Nigeria. The findings of this study align with Baldassarre et al. (2020), who observed that awareness levels vary, with some individuals possessing comprehensive knowledge about avian influenza while others remain uninformed about its risks and transmission. This corroborates Wong and Sam (2010), who emphasise the importance of timely and accurate information in managing public health emergencies. Similarly, Voeten et al. (2009) argue that early awareness of an epidemic enables individuals to take necessary precautions, reinforcing the of role effective information critical dissemination in disease prevention and control.

The data in research question 2 presented table 2 reveals that respondents in North-West Nigeria frequently receive information about avian influenza from various sources, including television. radio. newspapers/magazines, social media, and health workers. This consistent frequency across various sources highlights the widespread dissemination of information about avian influenza in the region. The findings of this study align with Marrie et al. (2013), who found that people often rely on the media for guidance on health-related matters when seeking to improve their health.

Findings also reveal that 119 respondents regard television as the most reliable source of information, followed by social media for Avian Influenza campaign messages, which represents 29.4% of the total. This indicates that mass media, especially television and social media, are the primary media for public health communication in this study. Despite this, Simou (2015) argues that media, alongside online resources and websites, continue to play a crucial role in disseminating health information.

In addition, findings show that people view social media (44.9%) as the most comprehensive source for avian influenza campaign messages, followed bv newspapers/magazines (16.5%)and television (15.6%). Radio (6.4%), community meetings (5.2%), and health workers (11.4%) are considered less comprehensive. This suggests that digital platforms play a dominant role in delivering in-depth health information, while traditional and interpersonal sources still contribute but to a lesser extent. The study is in line with Simou (2015), who emphasizes that the media, alongside online resources and websites, continue to play a crucial role in disseminating health information, ensuring widespread awareness and accessibility.

Findings also indicate that the respondents trust the information from all sources a lot. This indicates that the respondents possess a significant degree of confidence in the information disseminated via all sources, reflecting the robust credibility and trustworthiness of the Avian Influenza campaign themes.

Findings further reveals that the respondents actively seek information from various sources such as television, radio, social media, health workers, and friends/family. but they rely less on newspapers/magazines and community meetings. The overall analysis, as represented by the cluster mean and standard deviation of 2.50 and 0.55, respectively, confirms that the respondents actively seek information from these sources. This indicates a constant predilection for digital and interpersonal media, underscoring their significance in delivering Avian Influenza campaign messaging. The findings of this study align with Weng (2014), who observed that widely disseminated health messages significantly influence people's knowledge and attitudes. Similarly, Bertrand and Anhang (2006) found that media campaigns effectively shaped public opinion and behavior regarding HIV/AIDS among young people in developing countries, but not all campaigns achieved the desired impact. Additionally, Ghio et al. (2021)

demonstrated that using multiple mass media channels is an effective strategy for enhancing knowledge, shaping attitudes, and promoting health-protective behaviours.

Findings on research question 3 found that Avian Influenza campaign messages have strong positive influence had а on respondents, as indicated by the cluster mean (3.04) and standard deviation (0.59). The consistent impact across various factors highlights the effectiveness of the campaign in shaping public attitudes and awareness. This suggests that the key message elements played a crucial role in influencing residents' perceptions and responses to Avian Influenza. Weng (2014) and Bertrand & Anhang (2006), who found that media significantly influence health knowledge and behaviours, support the findings of the study. However, Ghio et al. (2021) further confirmed that mass media enhances awareness and protective actions. Similarly, Bults et al. (2015), Ahmad et al. (2021), and Ning et al. (2020) highlighted the role of positive attitudes in disease prevention. Consequently, Rimal and Real (2005) highlighted how media campaigns promote behavioural change by modeling positive practices and fostering supportive environments. The findings imply that media campaigns play a crucial role in shaping public attitudes and awareness, reinforcing the need for strategic messaging promotes preventive behaviours. that Effective campaigns should leverage social norms, model positive practices, and provide accurate information to enhance public engagement.

#### 6. CONCLUSIONS

This study investigated Awareness, and response to media messages on Avian Influenza across selected states. The findings reveal that while general awareness of Avian Influenza is relatively high among respondents, the depth of knowledge and understanding of transmission, symptoms, and preventive measures varies significantly. The mass media—particularly radio and television were as the primary sources of information, underscoring their critical role in public health communication. However, social media and community-level communication channels (e.g., town criers, religious leaders) also play a growing role in information dissemination.

such as educational Factors level. occupation, rural-urban location, and prior exposure to health campaigns were found to significantly influence not just awareness but also the perception levels and behavioural response to media messages. In some cases, misinformation or lack of contextual relevance reduced message effectiveness, particularly in rural communities.

#### **Declaration by Authors**

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