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Full Length Research

Audience response to broadcast media reportage on flood forecasts in Nigeria

Kusugh Ternenge[1]*, Kente Josiah Sabo[2] and Suemo Jacob Shagbaor[3]

[1]Department of Mass Communication, Veritas University, Abuja, Nigeria.
[2]Department of Mass Communication, Nasarawa State University, Keffi, Nigeria.
[3]Department of Mass Communication, Nile University of Nigeria, Abuja, Nigeria.

*Corresponding author. Email: kusughternenge@gmail.com

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ABSTRACT: The issue of flooding is a major challenge that requires serious attention from relevant stakeholders, including the media. This study adopted a survey research design to investigate audience response to the broadcast media reportage of flood forecasts in Nigeria. Using a questionnaire as the instrument of data collection from the respondents who were sampled from three highly probable flood risk states (Adamawa, Benue and Lagos) of Nigeria, it was found that there was a great level of public exposure to the broadcast media, especially the radio for flood forecast based information. The involvement of the broadcast media in doing so as this finding indicated, was not significant enough as they do so to a little rather than to a great extent; thereby having little influence on the effective response to such information among the audience. It was concluded that the broadcast media reportage on flood forecasts is noticeable but lack of greater commitment in doing so reduces the level of effectiveness in responding to such forecasts among stakeholders. This study recommended the broadcast media continue the dissemination of flood forecast information to the people since such information largely assists in early preparation for prevention, mitigation, adaptation, and management of the flood among relevant stakeholders. The broadcast media, as recommended further, are to be more committed to the dissemination of flood forecast based information by doing timely to ensure early preparation and management of the situation among relevant stakeholders.

Keywords: Audience response, broadcast media responsibility, exploration, flood forecasts.

INTRODUCTION

Natural disaster is one of the most prominent attributes of human existence across the globe and it occurs in different forms. One of the ways natural disaster occurs is through flooding occasioned by climate change and human activities. Previously documented sources have shown that when flooding occurs, the impact on the socio-economic and livelihood of those affected is enormous (Duru *et al*., 2022, Nura and Alison, 2022; Olorunlana, 2022; Shuaibu, Hounkpè, Bossa and Kalin 2022). Flooding is said to be the third most damaging natural hazard globally in terms of the number of people exposed to it, economic implications, and fatalities (Loucks, 2015). The world is affected by natural disasters yearly, with flooding having one of the greatest damage potentials of them all (Akande *et al*., 2023; NDRC, 2021). It is estimated that about 800 million people live in flood-prone areas, and about 70 million of those people are exposed to floods each year (Ejem *et al*., 2023; Rentschler *et al*., 2022). Economic losses caused by floods are always millions of dollars each year, with the worst in recent history being the 2011 floods that accounted for a total loss of $US70 billion worldwide (Fernando *et al*., 2022). Evidence showed that between 1900 and 2015, there were more than 4,500 incidences of floods, accounting for about 90 million homeless people and 7 million deaths (Zhao *et al*., 2022).

According to the United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA, 2022), over 3.5 million people out of 5 million people affected by

the 2022 flooding in Africa were Nigerians.

A report revealed that the 2022 floods, which affected 34 out of the 36 states in Nigeria, displaced 1.3 million people. Over 600 people lost their lives and over 200,000 houses were being partially or fully damaged. Cases of diarrhoea and water-borne diseases, respiratory infections, and skin diseases were high in areas affected by the floods (Akindutire, 2022; Ejem *et al*., 2023; The Cable, 2022; Maclean, 2022; UNICEF, 2022). In 2023, a report indicated that 10 states were affected by the floods with 33,983 people affected; 7,353 people were displaced; 75 people injured, 5 people lost their lives, 1,679 houses were damaged and 866 hectares of farmlands were damaged (Chime, 2023). As affirmed by Amanawa and Amanawa (2023. p. 318):

> Globally, the impacts of natural disasters such as droughts, earthquakes, and floods include loss of livestock and farmlands, destruction of infrastructure, and the displacement of populations and human lives. It has now become a recurrent factor that Nigeria records flooding every year.

In 2024, the Annual Flood Outlook (AFO) reports indicated that 31 states and about 35,870,100 Nigerians are at a high risk of floods between April and November in what many have now called 'monster floods' months' (Ewepu**,** 2024; Nnodim and Salman, 2024).

However, "... poor housing development in flood-prone areas, deforestation, haphazard developments resulting in the blockage of drains, poor waste disposal practices, negligence by government in designing and implementing policies at various levels as well as poor environmental planning and weak enforcement of policies contribute to flood occurrence" (Mfon *et al*., 2022, p. 1777). Promoting the accessibility, awareness, understanding, sharing, and use of climate change information have been identified as some of the ways to address the menace of flooding. Awareness and understanding of climate change are fundamental in adopting innovations and adaptation programmes aimed at reducing the adverse effects of climate change such as flooding (Elia, 2021; Nkwunonwo, 2016). Also, public education and information (risk communication) have been acknowledged as veritable ways of helping citizens adopt appropriate behaviours before, during and after a natural disaster, to mitigate its impact and there has been continuous attention to the use of warnings to prevent hazardous circumstances (Nwafor, 2021). As affirmed by Dauda and Kolo (2022, p. 157) "early warning system empowers individuals, groups of individuals or businesses to respond timely and in an appropriate manner to hazards." The level at which such warnings are disseminated to the people for effective early preparation, prevention, control, adaption and intervention remains very crucial.

Interestingly, previous studies have shown that the mass media are involved in the dissemination of climate change related issues, including flooding. There are also indications that the mass media, by disseminating climate related information, help to influence the stakeholders in different ways towards climate change awareness, prevention, mitigation, adaptation and management (Governor *et al.*, 2024; Osakue and Guanah, 2022; Ozigbu *et al*., 2022). A study by Apata and Asadu (2024) revealed that the media's influence was evident in its extensive coverage, potentially impacting the public's understanding and engagement with NEMA's interventions during flood events.

In particular, the broadcast media, such as television stations, perform diverse roles in society. The fulfilment of such roles is embedded in the normative function linked to public services, such as informing, educating, and entertaining society to address issues that affect them (Governor *et al.,* 2024). Similarly, during the disaster period, the media play key roles by serving as an intermediary between the people and government before, during and after the disasters. The broadcast media also educates the masses and informs them of impending dangers; it also alerts the relevant government agencies (Akindutire, 2022). As noted, flood risk management depends on the provision of appropriate data and information to multiple stakeholders that need to take preventative and recovery actions and information availability and its dissemination greatly help affected persons, communities, and organizations (within and without) in environments where disasters happen, to adjust and explore ways of managing the unpalatable situation (Lamond *et al*., 2019; Okocha *et al*., 2023).

However, irrespective of the availability of some empirical studies on the role of the media in disaster awareness and management (Akande *et al*., 2023; Amanawa and Amanawa, 2023; Apata and Asadu, 2024; Okocha *et al*., 2023), there was no particular one on the audience response to broadcast media reportage on flood forecasts in Nigeria. Hence, a need to investigate how the broadcast media influences audience response to flood forecasts in Nigeria

Research questions

1. To what extent is the audience exposed to broadcast media for flood forecast related messages in Nigeria?
2. What kind of flood forecast messages are the audience exposed to through the broadcast media in Nigeria?
3. To what extent are the broadcast media involved in the dissemination of flood forecasts to the audience in Nigeria?
4. How does the involvement of broadcast media influence audience response to flood forecasts in Nigeria?

5. What challenges are involved in broadcast media messages on flood forecasts in Nigeria?

LITERATURE REVIEW

Flood hazard is a serious threat everywhere in the world, and there is an indication that it is likely to worsen globally. Research shows that flooding is the third most damaging natural hazard globally in terms of the number of people exposed to it, economic implications, and fatalities (Ejem *et al.*, 2023; Loucks, 2015). It is estimated that about 800 million people live in flood-prone areas, and about 70 million of those people are exposed to floods each year (Ejem *et al.*, 2023; Kundzewicz *et al*., 2019; United Nations Office for Disaster Risk Reduction). It was projected that the number of people exposed to floods globally will reach 1.3 million by 2050 (Ejem *et al.*, 2023; Rentschler *et al*., 2022). Economic losses caused by floods are in millions of dollars each year, with the worst in recent history being the 2011 floods that accounted for a total loss of 70 billion US Dollars worldwide (Ejem *et al.*, 2023; Fernando *et al*., 2022). Evidence shows that between 1900 and 2015, there were more than 4,500 incidences of floods, accounting for about 90 million homeless people and 7 million deaths (Federal Ministry of Environment, 2009; Fernando *et al*., 2022).

A report by the National Bureau of Statistics in 2022-2023 indicated that overall, 64 per cent of households were affected by flood in 2022, with impacts ranging from livelihood, housing, food sources and access to basic services, such as health facilities and schools. The impacts of the flood were significantly higher in rural areas (74 per cent) compared to about 40 per cent in urban areas. The overall impacts of the flood varied across selected states, with almost all (99 per cent) interviewed households in Bayelsa affected by the floods in one way or the other, followed by Jigawa (94 per cent), Nasarawa (70 per cent), Kogi (70 per cent), Delta (57 per cent) and Anambra (23 per cent). There is also gender disparity in the impact of the floods, with 66 per cent of male-headed households affected compared to 57 per cent of female-headed households. The majority of affected households experienced flooding between September - October 2022 (50.9 per cent), followed by 42.7 per cent recorded in July - August. The data also shows that most households (41.1 per cent) experienced floods lasting 1-11 days, while 39.9 per cent of respondent households experienced floods that lasted for 32 days or more. Findings indicated that across the six states, on average, about 57 per cent of households reported adverse impact due to the 2022 floods. Among those affected, 54.6 per cent of households were severely affected, while 34.2 per cent experienced moderate effect and the remaining 11.7 per cent reported a minimal impact. The most common impact recorded includes the following: the destruction of crops (67.9 per cent), loss of personal properties (56.1 per cent), loss of food stock (52.6 per cent), destruction of farmland (42.3 per cent) and loss of farm assets (40.0 per cent) (National Bureau of Statistics, 2023.

The basic causes of floods in Nigeria include heavy and intense rainfall associated with high run-off, while other causes of floods in the country include dam breaks, blockages in river channels, and population pressure due to increasing population, especially the poor, in flood-prone areas. In addition, some land use practices, tend to favour increased runoff and decreased infiltration of rainfall into the soils (Federal Ministry of Environment, 2009).

In Bayelsa State, Nigeria, a study conducted by Ozigbu *et al*. (2022) revealed that the effect of flooding on income, farmland and food security among others were very high; traditional crafts like boat building, houses, business centres, roadside businesses and pond fishing were high with 38.3%, 32.5%, 33.3%, 43.3% and 31.6% respectively; local industries like alcohol preparation, animal husbandry, training centres, fishery (artisanal), construction works and processing industries were average with 50.8%, 46.7%, 45.5%, 31.6%, 50% and 33.3% respectively; educational institutions, health, water, price of commodities (food produce), local marketing and transportation were very high with 46.7%, 33.3%, 43.3%, 32.5%, 39.4% and 46.7%; implying that their socio-economic variables output will be very low (an inverse relationship) as a result of flooding effect.

In Akure, Nigeria, a study conducted by Yoade *et al*. (2019) revealed that indiscriminate refuse dumping, poor town planning practices, poor drainage system, building too close to the river bank, high rainfall, blocked drainages and overpopulation are causes of flooding in the study area.

Early warning is said to be crucial in enhancing preparation and reducing the impact. A study by Okoroji (2018) revealed that the 2017 flood event was similar in effect to the 2012 event. Indeed, interestingly people failed to heed early warnings from authorities regarding impending floods and recommended actions. Early warning is a proactive mechanism in which certain recognized bodies or agencies take to the study of climate and human interactions with the environment towards foretelling the occurrences of floods and thus issue warnings to both individuals and government with a view to effectively curb the occurrence of floods, averting loss of lives and properties and checking the outbreak of epidemics (Agbonkhese *et al*., 2014).

Knowledge of early warning spread through the media to relevant stakeholders is therefore very essential as experts considered the enhancement strategies for flood risk awareness among community-dwelling adults appropriate (Izang *et al*., 2023). Similarly, the knowledge of how the public views flooding is considered a crucial aspect of modern flood management as it steers the development of effective and efficient flood mitigation strategies (Oyatayo *et al*, 2016).

It is acknowledged that the media plays an important

role in sensitizing people on important issues in society such as flooding. The media is one of the veritable agents of change and development in all spheres of life. It educates, informs, persuades, mobilizes, stimulates debates, interprets and entertains the public about events (Ganiyu, 2018). In recent times, disaster occurrences are one of the events that have become a source of worry for the public. Disasters" scales, frequencies and destructions are becoming alarming and threaten developmental strides recorded by nations. Expectedly, the media has been focusing attention on these man-made and natural disasters. Flood, a common and most devastating disaster, is one of them. The records of storms and the character of flood as well as what to do in case of a flood emergency would all form the basis of an enlightenment campaign on the television and radio in the form of paid advertorials and advertisements (Federal Ministry of Environment, 2009).

Similarly, it has been acknowledged that the broadcast media, including radio and television, have a lot of work to do in the area of early warning communication. As soon as the flood forecast indicates an impending flood, the National Flood Early Warning System (FEWS) Coordinating Centre informs the Ministry of Information and Communication which would in turn charge its affiliate broadcasting organisations with the responsibility to inform and alert the communities with the impending flood risk. The evacuation plans and the necessary emergency rescue instructions would also be passed across through this media.

There are various flood warning messages disseminated through mass media such as radio jingles, television announcements, the internet, fliers and billboards in Nigeria. The Nigerian media have been rated high in the dissemination of flood early warning messages (Okeke *et al*., 2023). Also, Town hall meetings with the members of a perceived flood prone community, as well as other outdoor media channels convey the flood early warning messages. All these are aimed at achieving a positive behaviour change among the people, especially the farmers whose products are heavily destroyed by the flood. The existing literature further suggests that exposure to these early warning messages may reduce damages associated with incidents of flood disasters among farmers in Nigeria. The exposure to such messages could engender positive responses among the people (Okeke *et al*., 2023).

A number of previous empirical studies have revealed a correlation between the media and climate change awareness campaigns around the world with varying degrees of results that worth reviewing here. For instance, in Kano, Nigeria, a study conducted by Balarabe and Hamza (2020) revealed that there was a very high level of media awareness about climate change issues in Kano; media coverage and representations about climate change have positively impacted and shaped individuals' understanding about climate change issue. The study also revealed that social media platform remains the predominant source of information about climate change issues in Kano, and the causes of climate change in Kano are deemed to be artificial rather than natural; while the change in weather patterns was the noticeable consequence of climate change in Kano.

In Port-Harcourt Nigeria, a study conducted by Eke *et al*. (2024) concluded that broadcast media messages in terms of awareness and knowledge are low due to limited information among residents. However, the little done was perceived by them to change their behaviour positively on climate change by taking preventive measures. In Anambra State, Nigeria, a study by Okeke *et al*. (2023) the exposure, believability and compliance of farmers in Anambra North to early warning messages on flood mitigations and it was revealed that 98% of the farmers were affected by flood during the years under review. The majority of them (73.2%) were exposed to early warning messages prior to the flood events but most of the farmers do not believe most of the measures advocated by the early warning messages. Findings further revealed that compliance to the flood early warning messages was generally low among the farmers as most of them did not relocate or observe other safety measures (Okeke *et al*., 2023).

In Southeast Nigeria, a study by Nwafor (2021) found that there was availability of flood risk awareness information which the majority accessed mainly through radio/TV in the form of early warning but limited or uneasy access to sources of flood risk awareness information hampers its diffusion which results to low adoption and affects their adaptive behaviour. In South-South Nigeria, Governor *et al.* (2024) in a study revealed that most respondents were often exposed to stories about flooding on NTA and AIT; viewers of both NTA and AIT Television Stations were exposed to the same content categories: compensation of flood victims, destruction of property, protests by flood victims, visits by government officials, and warnings about flooding. However, viewers, as indicated in the study have a negative assessment of the performance of NTA but a positive assessment of AIT regarding news reports on flooding in the South-South states.

A study by Ejem *et al*. (2023) in Southern states of Nigeria revealed that the broadcast media information and warnings were credible and increased public concerns but the amplification of flood risk perception in the broadcast media was not effective as the risk communication did not start in time and the impact of the messages was moderated by institutional, social, economic and psychological variables that affected how the communities perceived, managed, and responded to the flood risk messages. It concluded that flood risk messages should be timely to the severity of the threat of an impending flood, and sufficiently dramatize the message and the threat.

Another study conducted by Oladele *et al*. (2021) in South West Nigeria revealed that the broadcast channel

gave a fair degree of attention to climate change issues with much credence to climate change as regards sensitisation and coverage of human-induced climate change issues such as oil spillage, gas flaring and greenhouse emissions. However, they concluded that not enough coverage was allotted to reporting these issues given their relevance to the welfare of the citizenry and their implication on economic balance and imbalance.

In Pakistan, a study by Javed *et al*. (2020) revealed that newspapers highly covered climate issues like climate change & global warming, water scarcity, and floods in Pakistan but the other two remaining issues were neglected (Agriculture & Food Security and Drought in Pakistan). Dayo *et al*. (2014), in their study of two newspapers (the *Punch* and the *Guardia*n) in Nigeria, revealed that media did not give due prominence to environmental issues in that the spaces given to reports were not much and also there were more straight news than features or editorials meaning that the reporters did not do extensive research on the matter and reports only originated from events on environment issues. It also revealed that the major actors in these reports were non-governmental organisations which could mean that environmental issues matter more to them than even the leaders of the nation.

In Anambra State, a study by Ebeze *et al*. (2018) found that the respondents were exposed to flood campaign messages mostly through the television; that the media and the concerned agencies have carried out enough messages on the best possible ways to take measures against flood and dangers that come with it. Another study by Ajaero *et al.* (2016) in rural Nigeria revealed that more than 75% of the respondents received information about the flood from either radio or television, and there were significant spatial variations in perceptions of flood reportage. Furthermore, the study revealed that generally, mass media reportage of the flood was not too effective in influencing people's attitudes. Akpan *et al.* (2012) in a study of Nigerian media on public knowledge of climate change found that mass media did not rank the highest as sources of information for the audience on climate change, and they (media) did not significantly influence public knowledge of climate change.

Findings in the study of the Nigerian newspapers by Batta *et al*. (2013) have shown the dominance of climate politics/economics issues (61.2%), foreign sourcing of reports (63.4%), straight news formatting of reports (83.6%) and framing in terms of mitigation (55.2%) and concluded that the coverage and framing constrained opportunities for popular participation in climate change discourse. To improve the situation, it calls on Nigerian newspapers to broaden the scope of climate change coverage and framing, widen local sourcing of reports, diversify the formats of reporting, and frame the issues more in the mould of adaptation (activities and measures to reduce risks posed by climatic changes) to boost involvement of people in climate change discourse through monitorial, supportive and collaborative strategy in agenda setting agenda.

In another study of the Nigerian media, Nwabueze *et al*. (2015) found that the volume of coverage of the issue is poor and that the dominant form of presentation was feature stories. It was also found that most of the stories on climate change reported in the Nigerian media were based on climate change events. A study which analysed communication trends in flood-ravaged communities in Benue State, North Central Nigeria by Muritala *et al.* (2018) revealed that disaster information is delivered through radio and television and little attention was paid to the use of a community-based disaster risk management approach that involves use of informal communication channels such as town hall meetings, community-based seminars. However, timely and frequent sympathy messages from various stakeholders dominated the media content, which is a more top-bottom approach and not totally understood by the rural inhabitants, probably leading to high victim levels. It concluded that community-based communication processes using communication forms such as interpersonal, seminars, and town hall meetings should be used in creating disaster awareness and complementing the efforts of the media. Umar (2019) in a study found that there was a robust debate on climate globally, however, in Nigeria the issue was receiving lesser attention among media scholars and media reporters, concluding that climate change is an issue of concern only among environmental experts in Nigeria.

In the Federal Capital Territory, Nigeria, findings in a study by Osakue and Guanah (2022) revealed that the residents' awareness level of climate change in the area was generally low, whereas improvement in the awareness level will result in activities that reduce flash floods; they perceived the media as not creating adequate awareness about climate change and educating the populace enough on how to mitigate the flash flood problem. The study employed the media to partner more with relevant government agencies and traditional rulers to educate residents on safety issues, particularly human activities that tend to exacerbate flash floods in the area.

In Kenya, a study conducted by Mungai (2021) also revealed that the Kenyan print media does not use the placement of stories on front pages to set the climate change agenda. Media houses focus more on adaptation stories and they rarely cover mitigation stories. It also established that they frame climate change stories using disaster and that victims are the key actors in disaster stories while government officials feature prominently in events-driven stories. The study concluded that climate change coverage is not given prominence through placement of stories on key pages and recommended that media houses need to consider strategic placement for those stories on front pages (Mungai, 2021).

In Lagos, Nigeria, a study by Ogwezi *et al.* (2022) disclosed that the selected broadcast media in the area decreased their frequency of reportage of climate change

issues in the period under study; the selected broadcast media in Lagos, Nigeria again reduced time allocated in minutes for the reportage of climate change issues within the period of the study; there were similarities in the pattern of reportage of climate change issue from 2016 to 2018; and the different broadcast media had significant degrees of differences in time allocated for reporting climate change issues from 2016 to 2018.

In another study that was conducted in Nigeria by Kusugh *et al*. (2023), it was found that there was a great deal of early audience exposure to the 2022 broadcast media flood alert information in Nigeria as the majority (73%) out of the audience got early information on the impending danger compared to those who did not get it timely and others that were neutral. However, there was a low level of audience understanding of such information as the majority (75%) of the audience in the study found it difficult to understand the 2022 flood alert information in the broadcast media compared to those who understood it to a high level.

Findings in a study conducted by Akindutire (2022) exposed that the broadcast media in Nigeria has been instrumental in the coverage of floods, thereby bringing information to the audience as it unfolds; that both government and private media are committed to the coverage of flood disaster in the country; however, the dominant frame in the tone of reporting in the private media are government critique and capable of inciting fear and panic in the minds of the audience; government media style of reportage was mainly news report and opinion/interview accruing 42.1% and 42.1%, respectively while the private media format of reportage is being spread across, this shows that private media makes flood disaster an agenda for the audience to think and talk about in Nigeria. Although, the direction of the reportage of private media coverage of the flood had some unbalanced coverage, however, government and private media coverage of the disaster had over 50% balanced coverage of the disaster.

In Zambia, a study by Katendi (2017) established that the coverage of climate change was largely motivated by journalistic instincts. This arguably results in a lack of consistency with regard to the content being aired owing to the fact that climate change coverage by journalists at ZNBC TV1 is rather instinctive than systematic. More so, the study found that lack of variety with regard to information sources on climate change issues is a problem for the journalists at ZNBC. The study also revealed that climate change training was inadequate for the journalists, and hence attributed to their limited knowledge on climate change (Katendi, 2017).

A study of Nigerian media and disaster management in flood risk reduction by Ganiyu (2018) revealed that there was a low reportage of flood risk before occurrence. Only 90 out of 485 flood-related materials were published at the pre-disaster stage. The findings also indicated that the media were not actively involved in disaster communication before flood occurrences while disaster managers also need to work efficiently to engender relationships that will guarantee effective communication and collaboration.

Another study in Nigeria by Ifiokobong (2020) revealed there were two most commonly used themes by the newspapers (*Punch, Vanguard, Guardian*, and *ThisDay*) to present climate change issues such as the “effects” and “mitigation” themes. The study also found that as regards the use of tone in the newspapers’ presentation, a negative tone was most used. This is as a result of the dominant frame “effect frame” used in the reports. Similarly, it was revealed that the majority of the climate change issues were reported as straight news and the source of the news was largely the reporters themselves. The study concluded that climate change is not given enough attention by the Nigerian media which is to the detriment of the country and its citizens.

In Ibaji Local Government Area of Kogi State, Nigeria, a study conducted by Ottah (2017) found that all the people (100%) listened to the radio and the majority (86.7%) of them listened to the flood disaster warning on Radio Kogi, but 60% of the residents did not relocate away from the flood. While some (44.7%) said the impact of the message was average, others (25.7%) said it was too weak to cause an effect. The majority of the respondents (45.6%) felt that Radio Kogi should have adopted a communication strategy that would change people’s behaviour and attitude. It was concluded that the people of Ibaji are well exposed to Radio Kogi, but the 2012 flood disaster awareness did not create the needed impact on them (Ottah, 2017).

In Benin City, Edo State Nigeria, the level of media campaigns on flood prevention, according to a study by Unosha (2022), is critically low, concluding that media campaigns on flood prevention are seldom broadcast. While in Tanzanian, Elia (2021) explored journalists’ awareness and understanding of climate change and found that the majority (56; 70.9%) of journalists were aware of climate change. The study found no direct association among age, education, experience, training on climate change, skills, and climate change knowledge. However, there was a direct relationship between professional journalism education and understanding of climate change. The majority (57; 77%) of the journalists who reported an understanding of climate change rated such knowledge as inadequate. The challenges to effectively reporting climate change information, as found in the study, included editors rejecting climate change news stories and difficulties in comprehending scientific jargon. Overall, journalists’ access to online information, local content, and language fluency were found to be crucial in understanding, framing, and disseminating value-added information to readers, listeners, and viewers (Elia, 2021).

Danaa (2018) in assessing the knowledge and perception of climate change among environmental journalists found that environmental journalists in Ghana

lack the requisite expertise to efficiently and effectively report on climate change. Additionally, it was found that there is a low degree of coordination between journalists and the government in addressing climate change. These findings demand swift attention from all stakeholders if Ghana is really determined to achieve the Sustainable Development Goals, particularly, SDG 13.

Theoretical framework

This study is anchored on the Agenda Setting Theory and supported by the Agenda Building Theory and Knowledge Deficit Model (simply Deficit Model).

Agenda setting theory explains the persuasive role media has in influencing public awareness and understanding of an important topic such as flooding. The theory elaborates on the role of media in influencing public opinion through frequently covering an agenda for public discourse. Agenda setting not only promotes awareness of a topic but can also influence public follow-up and attachment to the matter (Elia, 2021; Kusugh *et al*., 2023). As relates to this study, public awareness, understanding, and perhaps adaptation to climate change such as flooding hinges on the role of the media in achieving that. This theory guided the work in understanding the framework within which the broadcast media are to respond to disaster warnings/alerts such as impending flooding.

Agenda building theory on the other hand is concerned with consolidating or building on an important issue that is in the public domain. This theory came out of the agenda setting to explain how the media are also interested in building on the public agenda (Kusugh *et al*., 2023). As related to this study, agenda building has guided this study in understanding how public agenda such as flooding can also become important agenda for the media.

Knowledge deficit model or deficit model: The term 'deficit model' was coined by social scientists in the 1980s and it captures the thinking of scientists that the public have knowledge deficit as far as scientific information is concerned and this has resulted in a gap that need to be filled by educating them. The model asserts that there is a knowledge divide between scientists (experts) and the public (non-experts) and that the scientists have information while the public does not. The effect is that there is the likelihood that each will have a different view of the same issue (Danaa, 2018). The Deficit Model argues that by providing the public with the requisite scientific information, they will have a change of mind about science and environmental issues and accept what scientists say as valid and well-grounded (Danaa, 2018). In the context of flooding, the application of the Deficit Model has provided evidence to show that those with more knowledge are more likely to accept that climate change is real and not hoax and admit that they have a duty to solve the problem. The role of the media is important here in reducing the knowledge deficit of the public (Kusugh *et al*., 2023).

METHODOLOGY

This study adopted a descriptive survey research design to investigate how the broadcast media influences audience response to flood forecasts in Nigeria. This research design was used because of its advantages over other designs which include: (a) Survey is relatively inexpensive when considered in terms of the amount of information it generates; (b) using this research method, a large amount of information is gathered from different people with ease (c) survey not limited by geographic constraints (d) it is reasonably accurate especially when the sampling is correct; (e) results gotten from surveys can be generalized because the sample population is large and very representative of the entire research population; (f) survey can be used to investigate problems in a realistic setting i.e. the problems can be examined where they exist or happen rather than in a laboratory or under an artificial condition (Kusugh and Kente, 2023). The questionnaire was used as the research instrument for data collection.

The population of the study comprised broadcast media audience from the highly probable flood risk states based on the 2023 Annual Flood Outlook from (Nigeria Hydrological Services Agency (NIHSA) (Vanguard, 2023) where Adamawa (North), Benue (Central), and Lagos (South) were sampled in the study. Consequently, the population of the three states based on the estimated population by the National Population Commission and National Bureau of Statistics (2016) is 22,540,849 with the following breakdown:

Adamawa	4,248,436
Benue	5,741,815
Lagos	12,550,598

The sample size was 1068 which was determined using *SurveyMonkey* online sample size calculator, under the population size of 22,540,849, a confidence level of 95% and an error margin of 3% respectively (the link: https://www.surveymonkey.com/mp/sample-size-calculator/). Respondents in the study were selected proportionate to the population size of each of the states sampled using the formula:

$$Respondents = \frac{S\ X\ n}{N}$$

Where: S = Size of the State; n = Sample Size; N = Population Size

Therefore,

$$Adamawa = \frac{4248436\ X\ 1068}{22540849} = 201$$

$$Benue = \frac{5741815\ \ X\ 1068}{22540849} = 272$$

$$Lagos = \frac{12550598\ \ X\ 1068}{22540849} = 595$$

Consequently, 201 respondents were sampled in Adamawa State, 272 respondents were sampled in Benue State, and 595 respondents were sampled in Lagos State respectively. Data collected was analysed through the use of descriptive statistics such as charts, frequency and percentages.

Data analysis

It is to be noted that a total of 1068 copies of the questionnaire were administered to the respondents upon which 1036 (97%) copies of the questionnaire administered were returned and found usable while 32 (3%) copies were invalid because they were wrongly completed by the respondents. However, since the proportion of usable questionnaire were very much higher than the number that was invalid, the analysis of quantitative data was therefore based on the total number of 1036 valid questionnaire while the 32 invalid copies were excluded in the analysis.

RESULTS

Figure 1a which is concerned about the extent to which the audience was exposed to broadcast media for flood forecast-related messages in Nigeria revealed that the majority (62%) of the respondents in the study were exposed to broadcast media to a great extent, followed by another 30% that was exposed to a very great extent as compared to the minority (5%) that was exposed to a little extent, another (2%) to a very little extent and the 1% who found it difficult to say. This implies that there is wider broadcast media coverage in Nigeria as the majority of the people are exposed to the platform which they can get flood alert-related information from if broadcast to them.

Figure 1b which is concerned with the broadcast media channel that the audience is exposed to more for flood forecast-related messages revealed that the majority (65%) of the respondents were exposed to the radio for flood forecast-related information as compared to 28% of the respondents that were exposed more to television and the 7% that was not sure. This implies that radio is more readily available and accessible to the people for flood forecast-related information as compared to television which is available but not as much as the radio.

Figure 2a which focuses on the kind of flood forecast messages in the broadcast media for the audience in Nigeria revealed by the majority (62%) of the respondents that impending flooding, prevention and control, evacuation for safety, adaptation and management, impact and damage, relief aids and support, fear and anxiety are some of the flood forecast messages in the broadcast media for the audience in Nigeria as compared to 10% of the respondents that only mentioned impending flooding, 4% respondents that said it was prevention and control, 4% respondents that said it was evacuation for safety, 3% respondents who said it was adaptation and management, 6% respondents that said it was only impact and damage, 3% respondents that said it was only relief aids and support, and 7% respondents who said it was only fear and anxiety. This implies that the kind of flood forecast-related messages in the broadcast media cover areas such as impending flooding, prevention and control, evacuation for safety, adaptation and management, impact and damage, relief aids and support, fear and anxiety.

Figure 2b which was concerned with the broadcast media programme format that the audience were exposed to more for flood forecast-related messages revealed that the majority (52.90%) of the respondents were exposed more to straight news followed by the jingle (20.56%) for flood forecast related messages as compared to other programmes like commentary (2.99%), interview (7.05%), phone-in-programme (3.96%), documentary (2.61%), drama (1.64%). This implies straight news and jingles are used more in the dissemination of flood forecast-related awareness messages to the audience as compared to other broadcast programmes.

Figure 3 which was concerned with the extent to which the broadcast media were involved in the dissemination of flood forecast-related awareness messages to the audience in Nigeria revealed by the majority (48%) out of the respondents that the involvement of the broadcast media in doing so was to a little extent as compared to the 32% of them who said it was to a great extent, 10% of the respondents who said it was to a very great extent, 6% respondents who said it was to a very little extent and 4% respondents who found it difficult to say. It shows therefore that the involvement of broadcast media in the dissemination of flood forecast awareness-related information to the audience in Nigeria is not significant enough because they are doing so to a little rather than to a great extent.

Figure 4a which was concerned with how the involvement of broadcast media influenced audience response to flood forecast awareness-related messages in Nigeria revealed that adaptation to the environment/ condition (36%) followed by the demand for relief aids and assistance (31%) were greater ways that the involvement of the broadcast media influenced the respondents while relocating to safer area(s) (17%) and engage in flood preventive measures (9%) were least ways that it has influenced them. This implies that the involvement of the broadcast media influences the audience to adapt to the environment and demand for relief aids and assistance more than to engage in measures that can prevent flooding or at least reduce it.

Figure 4b which is concerned with the extent to which the broadcast media influenced the audience in responding favourably to flood forecasts in Nigeria revealed by the majority (60%) of the respondents that it

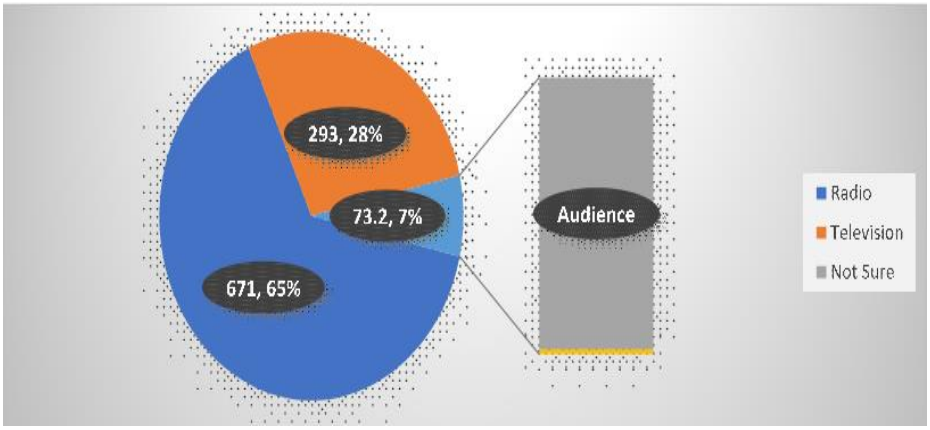

Figure 1b. Broadcast media channel the audience is exposed to more for flood forecast related messages (Source: Field Survey, 2024).

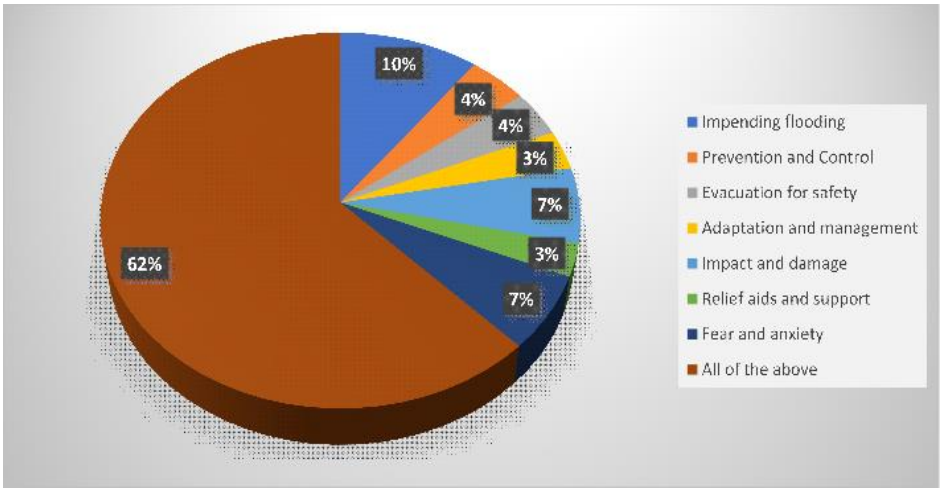

Figure 2a. Kind of flood forecast messages for audience in the broadcast media (Source: Field Survey, 2024).

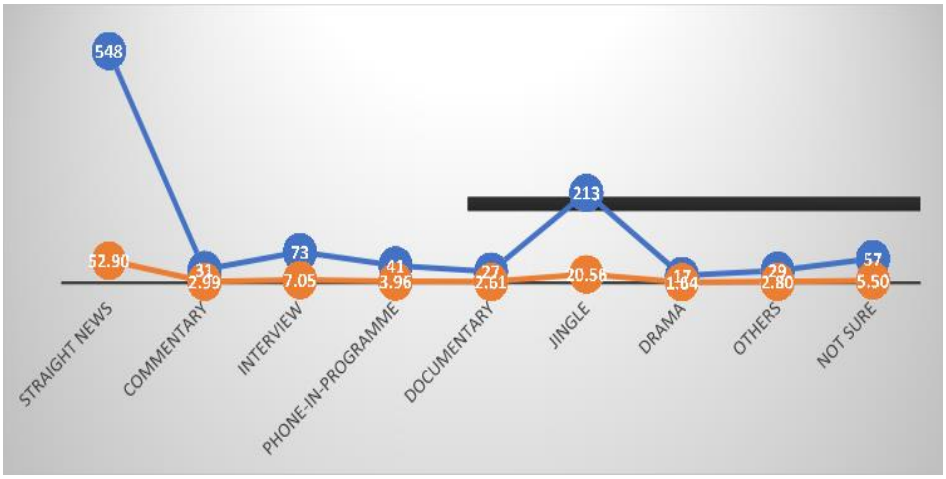

Figure 2b. Type of programme audience is exposed to more for flood forecast related messages in the broadcast media (Source: Field Survey, 2024).

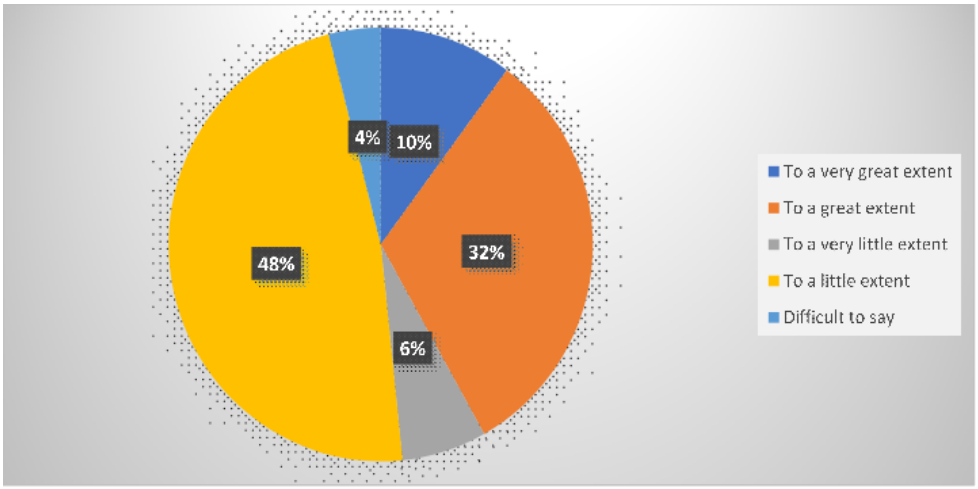

Figure 3. Extent of broadcast media involvement in the dissemination of flood forecast messages to the audience in Nigeria (Source: Field Survey, 2024).

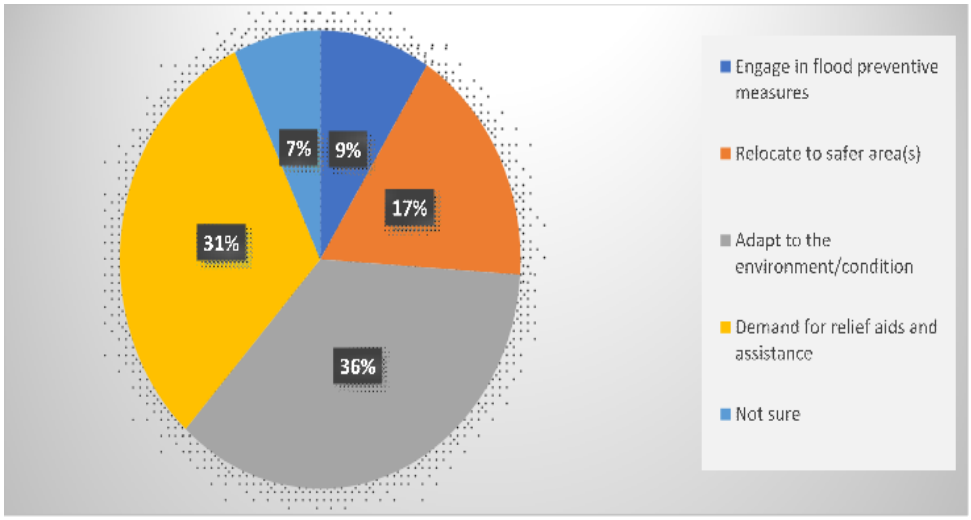

Figure 4a. How the involvement of broadcast media influence audience response to flood forecasts in Nigeria (Source: Field Survey, 2024).

was to a little extent that the influence of media favourably influenced the audience as compared to the 19% of the respondents who were of the opinion it was to a great extent, 6% who said it was to a very great extent, 9% of the respondents who said it was to a very little extent and 6% of the respondents who found it difficult to say. This implies that the broadcast media influences favourable responses to the flood forecast awareness-related messages/information to a little rather than to a great extent.

Furthermore, Figure 5 which is concerned with the challenges in broadcast media messages on flood forecast awareness-related messages among audience in Nigeria revealed that the elitist nature of flood forecast awareness programmes (37%) and poor signals (29%) were major challenges in broadcast media awareness messages on flood forecast, while others challenges include: poor programme presentation (7%), the predominant use of English for the programmes (8%), inappropriate time in the broadcasting of flood forecast based programmes (5%), and limited time for flood forecast based programmes (7%). This implies that the elitist nature of information and poor broadcast signals are the major challenges in broadcast media messages on flood forecast awareness among audience in Nigeria.

DISCUSSION

There is a wider broadcast media presence in Nigeria as

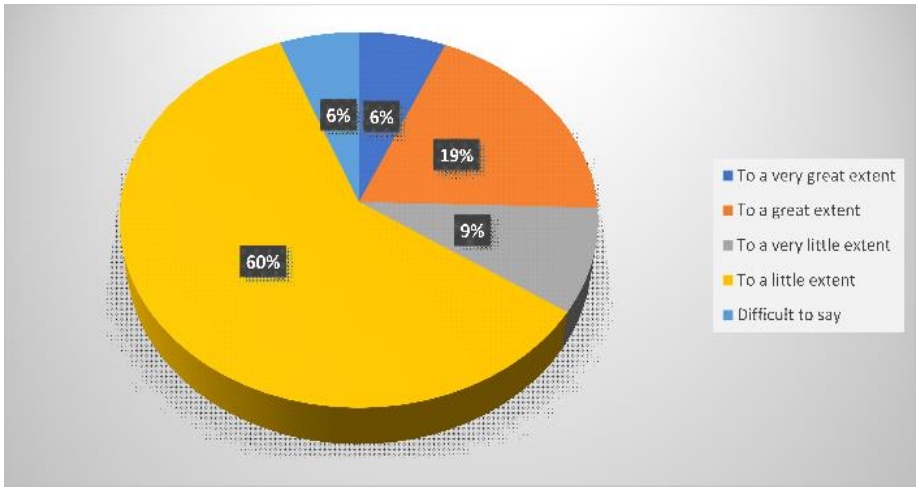

Figure 4b. Extent broadcast media influence the audience in responding favourably to flood forecasts in Nigeria (Source: Field Survey, 2024).

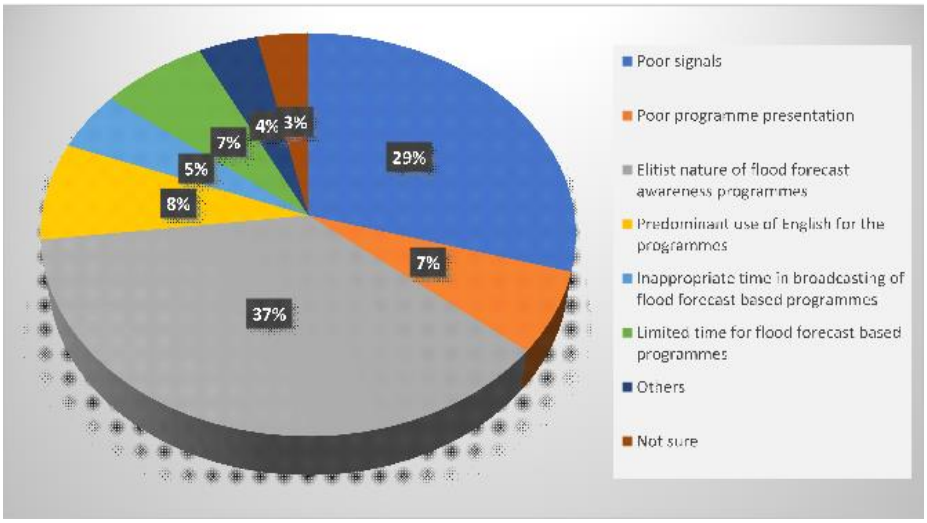

Figure 5. Challenges in broadcast media messages on flood forecast awareness related messages among audience in Nigeria (Source: Field Survey, 2024).

the majority of the people are exposed to the platform, especially the radio which can be used for flood forecast-related awareness information. This is evident as the majority (62%) of the respondents said they were exposed to broadcast media to a great extent, followed by another 30% of respondents who said they were exposed to a very great extent. The majority (65%) of the respondents said they were exposed to the radio as compared to 28% of the respondents who said it was television. This finding agrees with some of the findings from previous studies (Ebeze *et al*., 2018; Ejem *et al*., 2023; Kusugh *et al*., 2023; Okeke *et al*., 2023) which indicated audience high level of exposure to the broadcast media in Nigeria.

The kind of flood forecast awareness-related messages in the broadcast media cover areas such as impending flooding, prevention and control, evacuation for safety, adaptation and management, impact and damage, relief aids and support, fear and anxiety. However, these messages are broadcast to the people more in straight news and jingles as compared to other broadcast programme genres. This is evident as the majority (62%) of the respondents were of the opinion that impending flooding, prevention and control, evacuation for safety, adaptation and management, impact and damage, relief aids and support, fear and anxiety are some of the flood forecast messages in the broadcast media for the audience in Nigeria and the majority (52.90%) of the respondents who mentioned straight news followed by the jingle (20.56%) as used more for flood forecast related messages as compared to other programmes. This finding

aligns with the study of Batta *et al*. (2013) who showed dominance of climate politics/economics issues (61.2%), foreign sourcing of reports (63.4%), straight news formatting of reports (83.6%) and framing in terms of mitigation (55.2%) in climate change reporting and concluded that the coverage and framing constrained opportunities for popular participation in climate change discourse. According to the finding by Akindutire (2022), the government broadcast media style of reportage was mainly news reports and opinion/interviews. However, Nwabueze *et al*. (2015) found on the contrary that the dominant form of presentation of climate change issues was feature stories.

The involvement of broadcast media in the dissemination of flood forecast awareness-related information to the audience in Nigeria is not significant enough because they do so to a little rather than to a great extent. This is attested by the majority (48%) of the respondents in the study as compared to the 32% of the respondents who said the broadcast media were doing so to a great extent. This agrees with the finding in a study by Osakue and Guanah (2022) which perceived the media as not creating adequate awareness about climate change and educating the populace enough on how to mitigate the flash flood problem. Similarly, a study by Ogwezi *et al*. (2022) disclosed that the broadcast media decreased their frequency of reportage of climate change issues in the period under study. However, a study by Kusugh *et al.* (2023) revealed on the contrary that there was a great deal of early audience exposure to the 2022 broadcast media flood alert information in Nigeria as the majority (73%) of the audience got early information on the impending flooding compared to those who did not get it timeously.

Also, the involvement of the broadcast media influences the audience to adapt to the environment and demand for relief aids and assistance more than to engage in measures that can prevent impending floods or at least reduce them. As a result, the broadcast media influences favourable responses to the flood forecast awareness-related messages/information to a little rather than to a great extent. This was revealed by the 36% and 31% majority of the respondents in the study respectively who were of the opinion that adaptation to the environment/condition and demand for relief aids and assistance were ways that the involvement of the broadcast media influenced their response to the messages as compared to influencing their relocating to safer area(s) (17%) and engagement in flood preventive measures (9%). According to the majority (60%) of the respondents, it was to a little extent that the broadcast media favourably influenced their response to flood forecast-based information. This finding can be linked to one of the theoretical foundations of this study (The Knowledge Deficit Model) which believes that the public has a knowledge deficit as far as scientific information is concerned and this has resulted in a gap that needs to be filled by educating them. The model asserts that there is a knowledge divide between scientists (experts) and the public (non-experts) and that the scientists have information while the public does not. The effect is that there is the likelihood that each will have a different view of the same issue (Kellstedt *et al*., 2008 in Danaa, 2018). It believes that by providing the public with the requisite scientific information, they will have a change of mind about science and environmental issues and accept what scientists say as valid and well-grounded (Danaa, 2018; Kusugh *et al*., 2023).

Furthermore, the finding revealed that the elitist nature of information and poor broadcast signals are the major challenges in broadcast media messages on flood forecast awareness among audience in Nigeria. This was affirmed by the majority (37%) of the respondents that the elitist nature of flood forecast awareness programmes and poor signals (29%) were major challenges in broadcast media awareness messages on flood forecast, while other challenges include: poor programme presentation (7%), predominant use of English for the programmes (8%), inappropriate time in broadcasting of flood forecast based programmes (5%), and limited time for flood forecast based programmes (7%). This finding agreed with those of many scholars (Akpoghiran, 2015; Danaa, 2018; Elia, 2021; Katendi, 2017; Schäfer and Painter, 2021) the media were really facing a lot of challenges that hinder effective performance in society.

Conclusion

This study investigated the broadcast media responsibility in influencing audience response to flood forecasts in Nigeria. Consequently, there is great level of public exposure to broadcast media, especially the radio for flood forecast based information. The broadcast media are involved broadcasting flood forecast awareness related messages such as impending flooding, prevention and control, evacuation for safety, adaptation and management, impact and damage, relief aids and support, fear and anxiety. However, the broadcast media so more using straight news and jingles as compared to other broadcast programmes genres.

The involvement of broadcast media in the dissemination of flood forecast awareness related information to the audience in Nigeria is not significantly enough as they do so to a little rather than to a great extent. Also, the involvement of the broadcast media influence audience to adapt to the environment and demand for relief aids and assistance more than to engage in measures that can prevent the impending flood or at least reduce it. As a result, the broadcast media influence favourable response to the flood forecast awareness related messages/information to a little rather than to a great extent.

Furthermore, elitist nature of information and poor broadcast signals, however, are the major challenges in

broadcast media awareness on flood forecast among audience in Nigeria.

Finally, the broadcast media reportage on flood forecasts is noticeable but lack of greater commitment in doing so reduces the level of effectiveness in responding to such forecasts among stakeholders.

Recommendations

1. The broadcast media should continue to disseminate flood forecast information to the people since such information largely assists in early preparation for prevention, mitigation, adaptation, and management of the flood among relevant stakeholders.
2. The broadcast media are to be more committed to the dissemination of flood forecast-based information by doing so timeously to ensure more early preparation and management of the situation among relevant stakeholders.
3. While straight news and jingles are relevant for public awareness on flood issues, discussion, interviews and documentary programmes should be utilised more among broadcast media organisations since they can provide more in-depth knowledge about the issue for more appropriate action.
4. The public should make more effort to acquire broadcast media receiving platforms that can improve the signals they receive from the broadcast media. Technology such as the use of online radio apps can reduce the barrier of poor signal and enhance effective signal reception experience.

CONFLICT OF INTERESTS

The authors declare that they have no conflict of interest.

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