

# **Influencing Factors and News Coverage of Cyclone in the Leading Newspaper of Bangladesh: A Study on Cyclone Bulbul**

Besu Das<sup>1</sup>, Md. Shariful Islam<sup>2\*</sup>

<sup>1</sup>MSS Student, Mass Communication and Journalism Discipline, Khulna University, Khulna.

E-mail: besumcj17ku@gmail.com,

<sup>2</sup>Mass Communication and Journalism Discipline, Khulna University, Khulna. E-mail: sharif@mcj.ku.ac.bd

\*Correspondence: E-mail: sharif@mcj.ku.ac.bd

**Abstract:** Bangladesh, being a country prone to cyclones, experiences the occurrence of cyclone, which has emerged as a significant concern. The media plays a crucial role in reducing cyclone-related losses, thereby playing a pivotal role in mitigating the impact on affected communities. This paper explores the cyclone news coverage with the particular focus on recently experienced cyclone Bulbul in Bangladesh to assess the role of media. Content analysis and interview methods have been applied to comprehend the complete scenario of news treatment and factors of cyclone news coverage. A total of 1253 news articles from two leading newspapers were scanned and manually inputted into a coding sheet. These codes were analyzed with Microsoft Excell-16 and news-theme was presented with NVivo-20. This study found that newspapers focus more on post-disaster news items than pre-disaster and during-disaster news. Front page coverage (26%) is comparatively lower than the inside page coverage (67%). Authority (68%) gets more priorities than victims (32%) as news source. Damages oriented news is the mostly cited theme during cyclone which is about 24%. Interview result showed that economic, political, logistic and organizational factors influence the news coverage on disaster news. Future study might be conducted through survey among affected people to understand the victim's perspectives.

**Keywords:** Cyclone, Disaster journalism, Natural disaster, News coverage, Print media.

## **Introduction**

Natural disasters smash people's lives through eradication, defeat of livelihoods, property, deaths, and injuries (Maina, et al., 2013). Each year over 45000 people globally died from natural disaster which is around 0.1% of global deaths (ADRC, 2019).

Bangladesh's geographical condition makes it one of the most disaster-vulnerable countries in the world. It becomes the worst oblation of natural disaster especially tropical cyclone (Rahman, et al., 2017). A study on the impact of natural disaster on people's livelihood in Bangladesh revealed that the severity, frequency, and destructive consequences of cyclones and other natural disasters have a substantial impact on people's livelihoods. The findings further indicated that various aspects of people's livelihoods have been negatively influenced by natural disasters. These include a scarcity of clean drinking water, malnutrition, extreme poverty, health issues, and overall disruptions to livelihoods (Sabrina, et al., 2018).

Almost every year, Bangladesh gets into trouble highly to different kinds of disasters. As a result, the media cover the disaster report with a full acquaintance. Within a year, Cyclone Fani on May 4, 2019, cyclone Bulbul on November 10, 2019 and cyclone Amphan on May 20, 2020 were landed (Dhaka Tribune, 2021). According to UNESCAP (2015) about 13% household and 12.64% population live in disaster prone area in Bangladesh. During late November 2019, cyclone Bulbul made landfall in Bangladesh, causing significant impact across thirteen southern districts. The cyclone was characterized by powerful winds reaching speeds of up to 120 km/h, with gusts reaching as high as 130 km/h. It was one of the longest-stable cyclones that Bangladesh has ever faced in the last 52 years. It stayed in Bangladesh for around 36 hours (IFRC, 2015).

It killed 25 people and displaced 2.1 million people across Bangladesh, destroying over 18,000 mud dwellings (The Daily Star, 2019) counting two deaths in each of Khulna, Barguna and Gopalganj districts, and one each in Patuakhali, Bhola, Shariatpur, Pirojpur, Madaripur, Barishal and Bagerhat district (Bdnews24, 2019). Despite the Sundarbans being the largest mangrove forest in Bangladesh and known for its ability to mitigate damages caused by natural disasters, a total of 4,589 trees in the Sundarbans have been uprooted by Cyclone Bulbul as a measure to safeguard the country. (Daily Prothom Alo, 2019).

In the pre-monsoon and retreating monsoon cyclone visit in Bangladesh due to climate change (Alam & Ahmed, 2009). Media cover the entire disaster by dividing the period into three stages, such as pre-disaster, during-disaster, and post-disaster (Hassan & Islam, 2014). The coverage is always proactive in disseminating information and creating awareness for the people (Hasan & Islam, 2014). However, print media coverage is vital for raising awareness, alerting government officials, and informing people and authorities (Miles & Morse, 2007). Print media in Bangladesh is powerful enough to explain disaster issues and influence policies (Islam, 2014). Bacon, et al., (2009) mentioned, environmental reporting is developing gradually as a sub-field of journalism, and it constructs its own validity in ways that reflect the social, economic, and political contexts.

Print media played a significant role in the three phases of disaster period as pre-disaster, during-disaster and post-disaster in the aftermath of Aila 2009 (Hassan and Islam, 2014). Though Guion (2007) stated that both print and electronic media play a significant role in the dissemination of knowledge about specific risks and dangers to people and are heavily utilized throughout the course of a catastrophe. Those living in distant areas and storm victims are not blessed with the benefits of electronic media; instead, they must rely solely on print media at such time. Ahsan and Khatun (2019) demonstrated that listening to hazard-related programs on both state-operated and community radio has played a significant role in cyclone-related disaster preparedness. They discovered that the unique characteristic of disseminating early warnings in local languages and targeting specific local areas has enhanced the credibility of these warning messages, and this has helped at-risk people to make proper preparations for cyclone risks. Therefore, radio appears to help the people at risk to enhance their knowledge and awareness on hazard preparedness, which has made them more experienced to lessen disaster loss over last decade. Ullah (2023) revealed that coastal people have reliability to community radio campaign in preparedness and evacuation activities to avert deaths and property losses from cyclone. In this regard, Leitch and Bohensky (2014) suggest that media could also support preparedness on an individual and communal level, assist in identifying potential dangers, and allow communities to draw on their own resources and experiences.

Several research have been conducted on the three-stages of natural disaster. Giri & Vats (2018) categorized the disaster period among three phases as pre-disaster, during-disaster and post-disaster. Nabbuzale, et. al., (2016) also identified, media plays broader role in pre-disaster and post-disaster coverage. Rausch (2011) specified that the coverage of post event is clearly significant rather than pre-disaster. It is also necessary for raising awareness to people before cyclone gets landed. The coverage of pre-disaster reduces the losses of lives and resources.

On the other hand, over-reporting of post disaster creates fear and anxiety among affected people as well as health problems (Holladay, 2009). However, Sonet (2018) observed that during disasters, print media may have difficulty covering news from outlying areas. As a result, their coverage is decreasing.

There has been notable academic interest among researchers focusing on disasters and climate in exploring the impact of media framing. Parida et al. (2021) examined the relationship between media framing of disasters and risk communication as well as preparedness. They analyzed the media coverage of eleven national and international newspapers during the occurrence of cyclone Amphan in South Asia, specifically in Bangladesh and discovered that the journalistic response to the cyclone framed it as a "natural" event. This framing, in turn, reinforced a predominant focus on short-term response and recovery measures such as evacuation, rescue, and relief, rather than emphasizing long-term strategies like disaster preparedness, prevention, adaptation, mitigation, and resilience. Similarly, Miah et. al., (2011) examined the major themes under climate change covered by the daily newspapers of Bangladesh. They found natural disasters was the major climate change issue that received the most coverage among human health, global warming, water scarcity, agriculture, food security, politics, tourism and crime etc.

However, Tobias (2019) found 28 climate change-related themes under four major categories in a study of Indian newspaper coverage. Eight topics were put together under the theme of "Climate Change Impacts" while agriculture is the most cited theme among them. In the context of the theme "Climate Science", climate change is presented in two topics. Seven further topics were categorized into the theme "Climate Politics". The respective coverage is driven by political events. The last theme covers 11 subjects that are collectively referred to as "Climate Change and Society" and discuss the wider societal effects of climate change and awareness campaigns.

Elia (2019) examined the themes covered by the media and the factors determining how climate change information was reported in Tanzania. It was shown that weather and climate trends and climate effect and adaptation received the highest coverage from journalists (49.3% and 33.8%, respectively), while renewable energy and climate and poverty received the least coverage.

Hase et al. (2021) demonstrate that news media do not just cover ecological changes or climate science; rather, they place a strong emphasis on the societal impact of climate change, emphasizing how people are aware of, affected by, battling, or even benefiting to it.

Poberezhskaya (2015) explores the actors and factors that influence how climate change is reported in Russian media. The three events being examined are the Russian heatwave, the Copenhagen Conference, and the Kyoto Conference. This study found that the majority of newspapers rely on the Russian government as their information source, with almost no media criticizing Russian climate policy.

Some major studies analyze the coverage based on climate conference events but this study will demonstrate news coverage of the cyclone which identifies the treatment of cyclone news and explore the themes and sources cited in cyclone news. Previous studies have mostly been examined the role of media thorough pre-defined theme but this study explored the influencing factors and the trend of news coverage on disaster with particular focus on cyclone event.

### ***Research Questions***

1. How much priorities have been given on cyclone news coverage?
2. Which disaster-phase has received the highest and least coverage among the pre-disaster, during-disaster, and post-disaster news coverage?
3. What themes and sources are cited in the cyclone news?
4. Which factors influenced how cyclone news is reported in the media?

### Materials and Methods

This study is followed both quantitative and qualitative approaches. Content analysis and interview method are applied to understand the coverage, theme, factors, meaning and message. Generally, researcher used content analysis method to quantify and analyze the existence, meaning, themes or concepts (Kothari, 2013). This method was formerly utilized in numerous domains, including climate change and global warming research (Chandelier et al., 2018).

However, there have 1253 articles have been found in print version of selected newspapers from 7 November, 2019 to 13 November, 2019. Of the 1253 articles, only 54 article was cyclone related news. This study analyzed the cyclone news (n=54) from ‘The Daily Prothom Alo’, and ‘The Daily Star’, the most circulated and leading newspaper in Bangladesh. They are among the top ten widely circulated newspapers in Bangladesh (Department of Film and Publications, 2022). Articles that appeared in print in each newspaper were selected for analysis. Data were collected from 7 November, 2019 to 13 November, 2019 as the news coverage on cyclone Bulbul has been found in this period of time.

Based on primary reading of the news stories and relevant academic literature a coding system was developed. Using existing theory or prior research, researchers begin by identifying key concepts or variables as initial coding categories (Potter & Levine, 1999). Firstly, first author categories the coding then second author checked and approved it inspired by the similar study conducted by Hassan & Islam (2014). The coding characteristics of this study include (i) Covered Pages including front page, inside pages and back page, (ii) Coverage on Cyclone Stages including pre-stage, during-stage and post-stage, (iii) Special Coverages including photo, editorial, box story, data visualization and others, (iv) Theme of news including Awareness, Damages, Human Interest, Life Style, Environment, Education, Health, Agriculture, Relief, NGO, Development and others, (v) Source cited in newspaper including Authority-expert and victim. These codes were manually inputted into a coding sheet where the codes were analyzed with Microsoft Excell-16 and news-theme was presented with NVivo-20.

Moreover, to support the quantitative data six in-depth interview are conducted for qualitative analysis. Morse (1991) mentioned in the phenomenological study and interviewing, therefore, needs fewer participants in the study, perhaps only 6 to 10.

Finally, the authors conducted six separate, semi structured in-depth interviews with journalists and an expert. The size of the sample was determined on the basis of data saturation, which is the point at which the interviews no longer provide any new insights or information.

SL No	Pseudonym	Designation	Organization	Length of Interview (mins.)
1	Mondal	Correspondent (Khulna)	Daily Prothom Alo	00:23:00
2	Nandi	Correspondent (Khulna)	The Daily Kalerkantha	00:26:10
3	Roy	Correspondent (Khulna)	The Daily Star	00:20:40
4	Rahman	Correspondent (Khulna)	The Daily Purbanchal	01:05:00
5	Hasan	Correspondent (Khulna)	Khulna Gazette	00:45:00
6	Rashid	Faculty (MCJ Discipline)	Khulna University	00:40:00

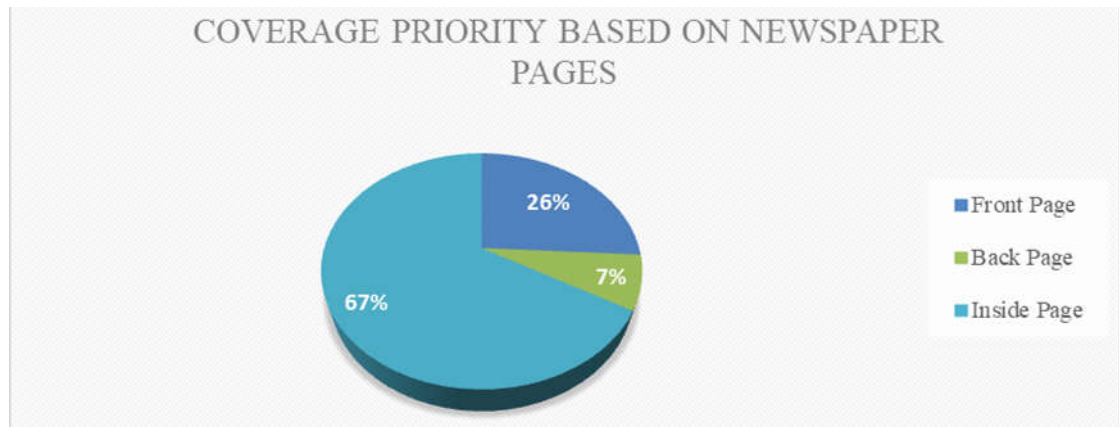
**Table 1. Background information of the interviewee.**

Three interviews were conducted in person and another over Zoom. All interviews are recorded transcribed. The interviews lasted, on average, half an hour and followed a semi structured questionnaire inquiring about the coverage of local media. After going over the script, we presented to each participant the results of the content analysis. This way, we gathered from them possible explanations of news coverage identified in the quantitative analysis. The transcripts were then textually analyzed, searching for common themes. The result was finally presented under some major codes. To protect respondent confidentiality, the names of the participants were anonymized.

### Results and Discussion

Coverage Priority based on Newspaper's Pages		(n=54) % (n)
Front Page	Most priority in coverage	14 (25.92%)
Back Page	Second most priority in coverage	04 (7.41%)
Inside Page	Comparatively less priority in coverage	36 (66.67%)

**Table 2: Frequency and Percentage of Cyclone News Coverage on Different Pages**

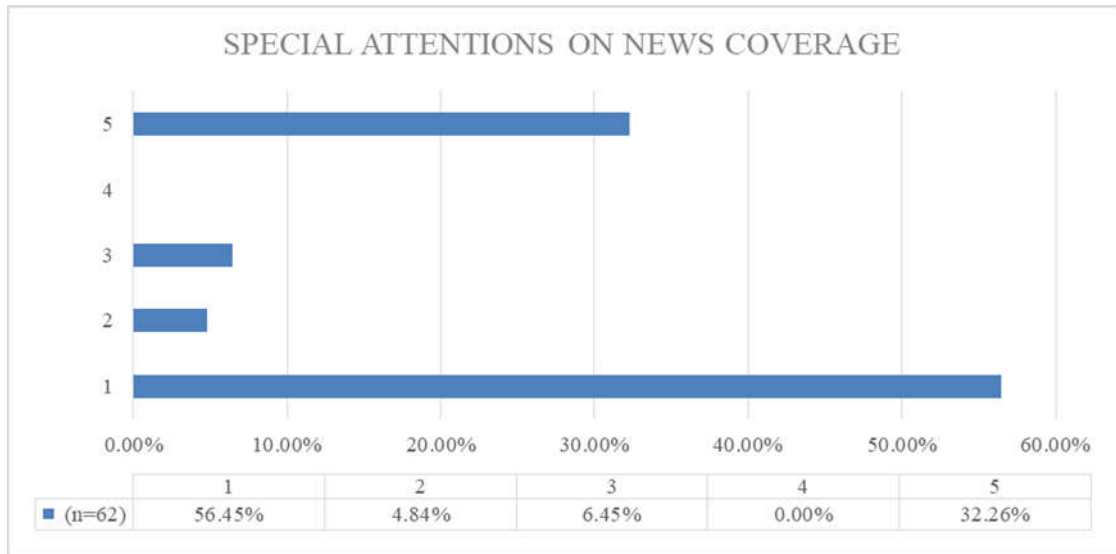


**Figure 1: Ratio of Cyclone News Coverage Priority on Newspaper's Different Pages**

Coverage priority of newspaper has been measured on the basis of different pages' coverage including front page, back page and inside pages. The result indicated that several articles were placed prominently, with 25.92% of articles placed on front page of the newspapers. Highest coverage has given on inside page which is 66.67% which indicated less priority where lowest coverage is 7.41% on back page.

Special Attentions on News Coverage		(n=62) % (n)
Photo	Images on Bulbul, especially on uprooted trees, satellite image of cyclone, cyclone shelters and damages of road and construction etc.	35 (56.45%)
Editorial	Editorial statement on the overall scenario, causes and effects, government policy and recommendation	03 (4.84%)
Box story	Special focus with box visualization	04 (6.45%)
Visualization	Data visualization with chart, graph, map etc.	00 (0.00%)
QR Code & Others	Usage of QR code, Tagline, Bulletin	20 (32.26%)

**Table 3: Frequency and Percentage of Special Attention on News Coverage on Cyclone**

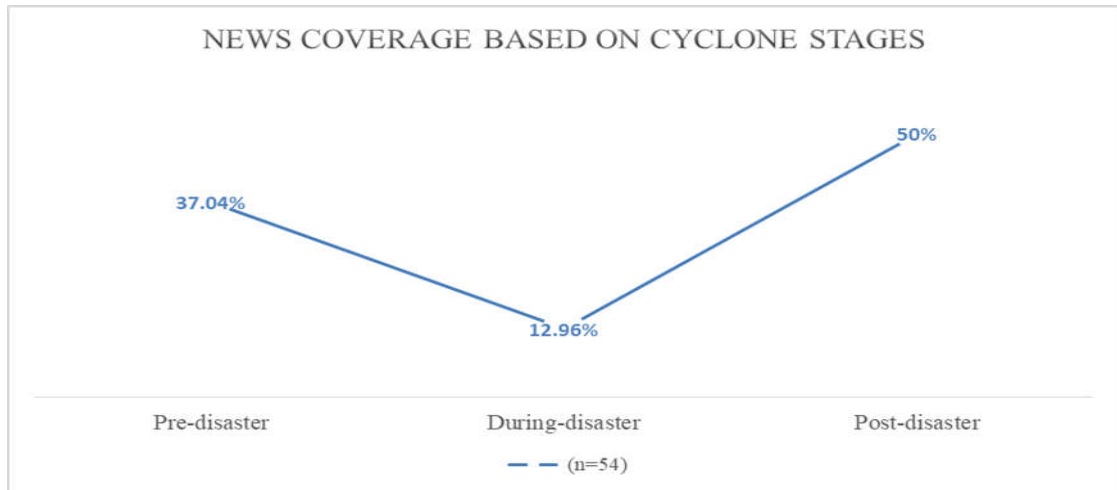


**Figure 2: Ratio of Special Attentions on News Coverage on Cyclone**

The result indicates some special attentions on news coverage including photo, editorial, box story, QR code and data visualization coverage. Though there have no data journalism practice with graph or chart visualization on disaster news coverage, usage of QR code, Tagline and Bulletin type coverage get a significant attention which is 32.26%. Among other special coverage categories, photo coverage gets highest priority which is about 56%, there have four box story which is about 6% and three editorials has been publishes which is about 5% of the total special coverage.

<b>News Coverage Based on Cyclone Stages</b>		<b>(n=54) % (n)</b>
Pre-disaster	<i>The preventive state for reducing the losses occurred due to natural disasters</i>	20 (37.04%)
During-disaster	A sudden accident or a natural catastrophe that causes great damage	7 (12.96%)
Post-disaster	The state when disaster has already occurred	27 (50%)

**Table 4: Frequency and Percentage of News Coverage based on Cyclone Stages**



**Figure 3:** Ratio of News Coverage based on Cyclone Stages

News Coverage has been measured based on different cyclone stage including pre-disaster, during-disaster and post-disaster. The highest coverage is given at post-disaster stage which is 50% while lowest coverage has been found in during disaster which is about 13%. Pre-disaster stage get a moderate coverage which is 12.96%.

Theme of Cyclone News		(n= 54) % (n)
Awareness	The knowledge and preparedness of cyclone	07 (12.96%)
Damages	The danger of destruction, death and physical injury	13 (24.07%)
Human-Interest	Problems and concerns of people and cattle presented in emotional way to get humanitarian attention	05 (9.26%)
Life-Style	Way of living during cyclone	05 (9.26%)
Environment	State of water, air, land and atmosphere	05 (9.26%)
Education	State of educational institutions, strategy of education and academic atmosphere	02 (3.70%)
Health	State of physical and mental health and diseases	00 (0.00%)
Agriculture	Farming, cultivation, crops, foods and other products	03 (5.56%)
Relief	Financial and technical support from governmental or non-governmental organization	02 (3.70%)
NGO	The contribution of Non-Government Organization on relief rescue and other activities	01 (1.85%)
Development	Structural and infrastructural development	04 (7.41%)
Others	Corruption, new policy adoption, commitment of political leaders etc.	07 (12.96%)

**Table 5: Frequency and Percentage of Cyclone News Theme**



**Figure 4: Visualization of Frequent Cited Theme**

Content of news has been presented thematically based on the ration of coverage. The mostly cited theme of cyclone is damages (24.07%) and the second most is awareness which is about 12.96%. Human Interest, Life Style and Environment relates news get the same coverage which is 9.26%. Relief and education related cyclone news have also got similar treatment which is about 4%. Therefore, Agriculture, NGO, Development and other cyclone related news get a mentionable coverage.

Source Cited in News		(n=200) % (n)
Authority and Expert	Disaster management related ministry, department, directorate, NGO, civil society, police, local representative and administration	136 (68%)
Victims	Affected people who get injured and lost their life and property	64 (32%)

**Table 6: Frequency and Percentage of Sources cited in news**

Different sources including victim, authority and expert have been interviewed in cyclone news. A total 200 sources were cited in news where most of them are authority and expert which is about 68% and victim were cited only 32% of the total which indicates victim’s perspectives is relatively ignored in news source.

Five reporters who covered the news throughout the cyclone period are interviewed, along with a media specialist. They are asked similar questioning approach based on content analysis while interviewing the respondent with a sequential research design. Interview has been noted down on paper and recorded. Then, the transcription has been summarized. Finally, interview has been analyzed under some major codes and presented as bellows.

**Priorities on Cyclone News:** Majority of the interviewee stated that damage related news should receive the highest priorities. Interviewee opined that the coverage of damages makes the policy makers alert for relief. It also motivates them to take necessary steps. Interviewee believe disaster affects the people much who are in remote area. So, their hazard, sufferings, misery, interruption in education, travels, health get more coverage during disaster. Interviewee express that strong coverage could create secondary trauma for victim. The quotes below represent this priority:

*“Our focus is to represent the real scenario of damage and the sufferings of people.”*  
[Interviewee 1]

*“In my view, excessive coverage could raise the panic. So, it should be minimized with sensible report”* [Interviewee 6]

**Coverage on Cyclone Stages:** Most of the interviewee are not satisfied with the coverage ratio of disaster issues in the three stages. They argue that pre-stage, during-stage and after-



stage should get equal emphasis. They stated that the coverage began to fade away after-disaster stage. As a result, the secondary damages don't get adequate coverage. Interviewee indicates the central decision or house policy is responsible for insufficient coverage. Though some interviewee argues that both house policy and reporters are responsible. Sometimes reporters don't want to go the affected areas in this stage. For Example:

*"When some of my story on post disaster is not published in newspaper for editorial decision, I lost my interest to do special report on post-disaster stage rather focusing on daily event."*

[Interviewee 4]

**Special Coverage:** Interviewee indicates that page layout, treatment, graphical presentation, photos and headlines are the essential object of disaster news. Interviewee suggested that technical support should be available for data journalism in this regard. This is exemplified by the quote below:

*"If we put the photo and graph with news, it might help the readers to visualize the real scenario of disaster."* [Interviewee 3]

**News Theme:** Interviewee stated that they don't focus on theme rather that daily event. They believe that they should prepare special reports on different theme like awareness, weather update, environment, relief, infrastructure and other cyclone related news. For example, interviewee said:

*"We should ensure the news coverage that it must persuade the victim to go to cyclone shelter and raise awareness among themselves."* [Interviewee 5]

**Source Cited in News:** Most of the reporters prefer authority sources for authentic information while a few prefers victims as a source in this regard. Interviewee stated that they use expert as source in special report. This opinion was expressed as follows:

*"I preferer authority as source for reliable, accurate and official information"*

[Interviewee 2]

**Challenging Factors:** Interviewee broadly opined that economic, political, technological, logistic and organizational factors influence the news coverage on disaster news. They stated that the biggest challenge is to collect information about cyclone from field visit. But they believe it is the best way to collect accurate information. Generally, news has been covered by local correspondent as local correspondents are always alert and much attached to remote areas. In serious cases, the senior reporters are assigned to the affected area with local correspondent. There have several challenges about electricity, communication, source maintaining, safety and network related issues. Poor internet connection also interrupts the reporters to send news by deadline. Pressure for daily event, deadline pressure, overload assignments, new environment, new people, physical injury risk, etc. are some significant challenges. The quotes below represent these challenges:

*"Local representatives or political leaders requested us to cover the relief activity with special coverage"* [Interviewee 2]

*"It is true that sometimes we don't want to go the affected areas for physical risk factors, house (Media outlet) doesn't provide the adequate financial and logistic supports."*

[Interviewee 4]

This study found that most of the news on cyclone placed on inside pages while several articles were placed prominently, with 25.92% of articles placed on front page while Reisner (1992) suggested that front page is the most important page and it highlights the day's most critical stories.

Tobias (2019) identified 28 climate change-related topics within four major themes—"Climate Change Impacts," "Climate Science," "Climate Politics," and "Climate Change and Society". Eight topics were put together under the heading "Climate Change Impacts" while agriculture is the most common of them, appearing as the main topic in 5.02% of all articles. Our study explored 11 specific theme. The mostly cited theme of cyclone is damages which is about 24% and the second most cited theme is awareness. Human Interest, Life Style, Environment, Relief, Education, Agriculture, NGO, Development and other cyclone related news get a significant coverage.

However, studies in Bangladesh and other countries (Hassan & Islam, 2014; Nabbuzale, Mberia & Namusonge, 2016; Rausch, 2011) identified, print media plays broader role on pre-disaster and post-disaster phases. Despite the post-disaster management operation are complex and information-intensive (Bigley & Roberts, 2001; Meissner et al, 2002). This study found that the selected print media covered the highest news in the post-stage which is about 50%.

Miles & Morse (2007) indicates that print media are raising awareness, alerting government officials, and informing people and authorities. News on raising awareness mitigate the losses of lives and resources. This study found that the second most covered topic was awareness related news which is about 12.96%.

A content analysis of a conservative and a liberal newspaper about media coverage of climate change in Chile, Devin. et al. (2012) found that government sources frame dominated both newspapers. Similarly, this study also identified that most cited sources are authority.

Holladay (2009) stated that over-reporting of post disaster creates fear and anxiety among affected people as well as health problems. Interview result of this study replicate this finding that strong coverage could create secondary trauma for victim.

However, Parida et. al., (2021) explored media framing of disasters, and risk communication and preparedness around the event of cyclone Amphan in South Asia including Bangladesh, they revealed that the journalistic response to cyclone Amphan framed the disaster event as 'natural'. But Interviewee of this study stated that they are not aware about media framing including news placement and focus. Sonet (2018) found that media have a unique role in catastrophe mitigation. Although the goals of the media and disaster mitigation organizations are not the same, however, it has been observed that during disasters, print media may have difficulty covering news from outlying areas. As a result, their coverage is decreasing. Interview result of this study demonstrate that the biggest challenge is to collect information about cyclone from field visit. Though news has been covered by local correspondent as local correspondents are always alert and much attached to remote areas, while senior reporters are assigned to the affected area with local correspondent in a significant event.

Gibson (2016) found that many news organisations have reduced their newsroom workforce to a small core of multi-tasking reporters in an effort to cut expenses. In this process, the environment beat is often the first to go, with environmental specialists among the first to be reassigned or downsized. There is growing pressure on all reporters to deliver more news in less time on multiple media platforms. Result from interview indicates the similar challenges like pressure for daily events, deadline pressure and overload assignments are the major challenges to cover climate news effectively.

## Conclusion

This study tends to focus on news coverage of a particular climate concern in Bangladesh over a limited period of time. The coverage cyclone Bulbul in the leading newspaper lasts for seven days only. This study determines news treatment within these limited time period of the coverage. The study also considered the trend of news presentation in disaster events with particular focus on cyclone. It primarily examines the ratio of pre-disaster, during-disaster, and post-disaster news coverage of selected newspapers and explore several major themes. The study's interview findings revealed the factors that influence how cyclones are covered in the news. The outcome of this research will help media outlets and policymakers to be conscious from their own place. This study will also contribute in the theoretical domain of journalism studies to understand the factors and tendencies of news coverage on a particular disaster context.

**Acknowledgement:** We express our sincere gratitude to the authorities of The Daily Prothom Alo and The Daily Star for providing open-source data, which served as the primary source for our data collection in conducting the content analysis. We would also like to extend our thanks to the reviewers and the editorial board of the *Journal of Patuakhali Science and Technology (JPSTU)* for their guidance and constructive feedback, which greatly assisted us in improving the quality of our manuscript.

**Declaration of Funding:** None

**Conflict of Interest:** The author declares no conflict of interest.

## References

- ADRC (2019) 'Information on Disaster Risk Reduction of the Member Countries'. Available at: <https://www.adrc.asia/disaster/> (Accessed: 08 June 2023)
- Ahsan, Md.N. and Khatun, A. (2020) 'Fostering disaster preparedness through community radio in cyclone-prone coastal Bangladesh', *International Journal of Disaster Risk Reduction*, 49, p. 101752. doi:10.1016/j.ijdr.2020.101752.
- Alam, S. M. and Ahmed, R. (2009) 'Tropical Cyclone in Bangladesh', *Transactions of the Institute of Indian Geographers*, 31(1), pp. 37-47.
- Bdnews24 (2019, 10 November). 'Cyclone Bulbul claims 13 lives, leaves a trail of destruction in Bangladesh'. Available at: <https://bdnews24.com/bangladesh/four-dead-as-cyclone-bulbul-lashes-bangladesh-coast> (Accessed: 10 June, 2023).
- Bhatia, S., Athreya, V., Grenyer, R. and Macdonald, D.W. (2013) 'Understanding the role of representations of human-leopard conflict in Mumbai through media-content analysis', *Conservation Biology*, 27(3), pp. 588-594.
- Bigley, G.A. and Roberts, K.H. (2001) 'The incident command system: High-reliability organizing for complex and volatile task environments', *Academy of Management Journal*, 44(6), pp. 1281-1299.
- Chandelier, M., Steuckardt, A., Mathevet, R., Diwersy, S. and Gimenez, O. (2018) 'Content analysis of newspaper coverage of wolf recolonization in France using structural topic modeling', *Biological Conservation*, 220, pp. 254-261.
- Daily Prothom Alo (2019, 25 November) 'Cyclone Bulbul: 4 thousand 589 trees uprooted in Sundranban'. Available at: <https://www.prothomalo.com/bangladesh/environment/ঘূর্ণিঝড়-বুলবুল-সুন্দরবনের-৪-হাজার-৫৮৯-গাছ> (Accessed: 10 June 2023).
- Daily Star (2019, 10 November) 'Weaked Bulbul Crosses Coast'. Available at: <https://www.thedailystar.net/frontpage/news/bracing-bulbul-1825369> (Accessed:10 June 2023).

- Das, J., Bacon, W. and Zaman, A. (2009) 'Covering the environmental issues and global warming in Delta land: A study of three newspapers', *Pacific Journalism Review*, 15(2), pp. 10-33.
- Department of Film and Publications (2022) 'Newspaper circulation number and advertisement rates'. Dhaka, Bangladesh. Available at: <http://www.dfp.gov.bd/site/page/6469f3ce-a47b-453f-84e6-c60e3732bae5> (Accessed: 8 March 2021)
- Dhaka Tribune (2021, 21 May) 'Major Cyclones in the History of Bangladesh'. Available at: <https://archive.dhakatribune.com/bangladesh/2021/05/24/major-cyclones-in-the-history-of-bangladesh> (Accessed: 10 June 2023)
- Dotson, D.M., Jacobson, S.K., Kaid, L.L. and Carlton, J.S. (2012) 'Media coverage of climate change in Chile: A content analysis of conservative and liberal newspapers', *Environmental Communication: A Journal of Nature and Culture*, 6(1), pp. 64-81.
- Elia, E.F. (2019) 'Media coverage of climate change information in Tanzania', *Global Knowledge, Memory and Communication*, 68(4/5), pp. 258-274.
- Gibson, T.A. (2016) 'Economic, technological, and organizational factors influencing news coverage of climate change', *Oxford Research Encyclopedia of Climate Science*.
- Giri, D. and Vats, A. (2018) 'Natural Disasters in India: A Comparative Study of Print Media's Approach of Top Four English Dailies' Coverage of Uttarakhand Floods, 2013', *Indian Journal of Public Administration*, 64(1), pp. 73-86.
- Guion, D.T., Scammon, D.L. and Borders, A.L. (2007) 'Weathering the storm: A social marketing perspective on disaster preparedness and response with lessons from Hurricane Katrina', *Journal of Public Policy & Marketing*, 26(1), pp. 20-32.
- Hasan, A.S.M., and Islam, T.M. (2014) 'Role of Print Media in Disaster in Bangladesh: An Evaluation in the Light of Cyclone Aila', *The Journal of People's University of Bangladesh*, 7(21), pp. 1812-4747.
- Hase, V., Mahl, D., Schäfer, M.S. and Keller, T.R. (2021) 'Climate change in news media across the globe: An automated analysis of issue attention and themes in climate change coverage in 10 countries (2006–2018)', *Global Environmental Change*, 70, p. 102353.
- Holladay, S.J. (2009) 'Crisis communication strategies in the media coverage of chemical accidents', *Journal of Public Relations Research*, 21(2), pp. 208-217.
- Hossain, S., Hossain, M.A., Hazra p. (2018) 'Impact of natural disaster on people's livelihood and their adaptation strategies in selected areas of Barishal district', *Journal Patuakhali Science and Technology University*, 2018, 9 (1&2), pp. 275-290.
- IFRC (2015) 'Bangladesh: Cyclone Bulbul. International Federation of Red Cross and Red Crescent Societies'. Paris: IFRC. Available at: <https://reliefweb.int/report/bangladesh/bangladesh-cyclone-bulbul-final-report-operation-dref-n-mdrbd023> (Accessed: 10 June 2023).
- Islam, S. M. (2014) 'Print Media Coverage on Climate Change Issues in Bangladesh', *Journal of Humanities and Social Science*, 2(12).
- Kothari, C.R. (2004) *Research methodology: Methods and techniques*. 2nd edn. New Age International Publishers, New Delhi.
- Leitch, A.M. and Bohensky, E.L. (2014) 'Return to 'a new normal': Discourses of resilience to natural disasters in Australian newspapers 2006–2010', *Global Environmental Change*, 26, pp. 14-26.
- Maina-Gichaba, C., Kipseba, E.K. and Masibo, M. (2013) 'Overview of landslide occurrences in Kenya: causes, mitigation, and challenges', *Developments in Earth Surface Processes*, Vol. 16, pp. 293-314. Elsevier.
- Meissner, A., Luckenbach, T., Risse, T., Kirste, T. and Kirchner, H. (2002) 'Design challenges for an integrated disaster management communication and information system', *The First IEEE Workshop on Disaster Recovery Networks (DIREN 2002)*, Vol. 24, pp. 1-7. New York: IEEE.
- Miah, M.D., Kabir, M.H., Koike, M. and Akther, S. (2011) 'Major climate-change issues covered by the daily newspapers of Bangladesh', *The Environmentalist*, 31(1), pp. 67-73.

- Miles, B. and Morse, S. (2007) 'The role of news media in natural disaster risk and recovery', *Ecological Economics*, 63(2-3), pp. 365-373.
- Morse, J.M. (1991) 'Strategies for sampling in qualitative nursing research: a contemporary dialogue', in Morse, J.M. (ed.), *Qualitative nursing research: A contemporary dialogue*, pp. 127-146.
- Nabuzale, C., Mberia, D., and Namusonge, P. (2016) 'Print Media Role in Communicating the Key Crisis Events of Natural Disasters in Uganda', *International Journal of Advanced Research*, 4(10), pp. 12-15. DOI: 10.21474/ijar01/1756.
- Parida, D., Moses, S. and Rahaman, K.R. (2021) 'Analysing media framing of Cyclone Amphan: Implications for risk communication and disaster preparedness', *International Journal of Disaster Risk Reduction*, 59, p. 102272. doi:10.1016/j.ijdrr.2021.102272.
- Poberezhskaya, M. (2015) 'Media coverage of climate change in Russia: Governmental bias and climate silence', *Public Understanding of Science*, 24(1), pp. 96-111.
- Potter, W.J. and Levine-Donnerstein, D. (1999) 'Rethinking reliability and validity in content analysis', *Journal of Applied Communication Research*, 27(3), pp. 258-284.
- Rahman, M.H., Rahman, M.S. and Rahman, M.M. (2017) 'Disasters in Bangladesh: Mitigation and management', *Barisal University Journal*, 4(1), pp. 139-163.
- Rausch, A.S. (2013) 'The regional newspaper in post-disaster coverage: trends and frames of the Great East Japan Disaster, 2011', *Keio Communication Review*, 35, pp. 35-50.
- Reisner, A.E. (1992) 'The news conference: How daily newspaper editors construct the front page', *Journalism Quarterly*, 69(4), pp. 971-986.
- Sonet, M.S. (2018) 'The Role of Mass Media in Disaster Management of Bangladesh', *Journal of Disaster and Human Security Management*.
- Tobias, R., Kellertobias K., Valerie H., Jagadish T., Daniela M. and Mike S. (2019) 'News Media Coverage of Climate Change in India 1997–2016: Using Automated Content Analysis to Assess Themes and Topics', *Environmental Communication*, DOI: 10.1080/17524032.2019.1643383.
- Ullah, M.S. (2023) 'Keep me safe from cyclones: Community Radio and disaster campaign in the coastal areas of Bangladesh', In *International Handbook of Disaster Research*, pp. 1–19. doi:10.1007/978-981-16-8800-3\_80-1.
- UNESCAP (2015) 'Disaster-related statistics-Bangladesh experience'. Bangkok: ESCAP. Available at: [https://www.unescap.org/sites/default/d8files/10\\_Bangladesh\\_Showcase-Disaster\\_Statistics.pdf](https://www.unescap.org/sites/default/d8files/10_Bangladesh_Showcase-Disaster_Statistics.pdf) (Accessed: 10 June 2023).