



Media and non-media sources for disaster risk reduction

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Citation: Ali, Z. S. (2023). Media and non-media sources for disaster risk reduction. *Online Journal of Communication and Media Technologies*, 13(3), e202322. <https://doi.org/10.30935/ojcm/13095>

ARTICLE INFO

Received: 7 Sep 2022

Accepted: 7 Mar 2023

ABSTRACT

Media and non-media sources are used for disaster risk reduction (DRR). This study aims to investigate the use of media such as social media, television, newspapers, radio and non-media channels such as mobile phone, family, friends, neighbors, co-workers, government and local authorities for DRR. A survey was conducted in order to obtain quantitative data; 384 respondents from various universities of Pakistan were asked to fill the questionnaire using random sampling. Focus groups with the faculty members of Pakistani universities were also conducted to support the quantitative data. Findings of the study indicate that all major forms of media, including radio, television, newspapers and social media were providing information about DRR. The women were more inclined to get information from social media about DRR and were less likely to use radio for the same purpose. Television was the second most important source regarding DRR. In comparison to the role of media in providing information about DRR, where social media was ranked first for getting information on DRR, television news overrides social media when it comes to effectiveness of media sources. While DRR prepares the public for challenges, which may arise before, during, and after a disaster, the respondents tend to only discuss environmental catastrophes with family, friends, neighbors or co-workers once a disaster occurs. Women use mobile phones to inform unaffected family members about the crippling effects of a specific disaster in their daily lives. Although the government is the primary stakeholder tasked with caring for the general public, it was not considered as valuable by the respondents when compared with other communication modes.

Keywords: disaster risk reduction, media, non-media, social media, women, Pakistan

INTRODUCTION

Climate change and natural hazards are two phenomena, which contribute to disaster risk. Disaster risk reduction (DRR) is an essential concept for third-world countries, which are victim to the vagaries of weather caused by climate change and natural hazards. DRR refers to “the concepts and practices of reducing disaster risk through systematic efforts to analyze and manage the casual factors of disasters, these include reducing exposure to hazards, lessening the vulnerability of people and property, skillful land and environmental management, and improving preparedness for adverse events” (United Nations International Strategy for Disaster Reduction [UNISDR], 2009). A community’s adoption of precautionary and preventive measures can reduce the dire consequences of a disaster (Glik et al., 2014; Okayo et al., 2015; Scolobig et al., 2015). Media and non-media sources play important role in preparing people for any disaster. Without DRR, populations are prone to widespread loss of livelihood, human lives and great financial loss (Mal et al., 2018). UNISDR (2004, 2009) presented the paradigm change from a reactive to a proactive tactic in the form of Hyogo Framework of Action (2005-2015) in which 168 countries including Pakistan were engaged. Hyogo Framework for Action (2005-2015), International Decade for Disaster Risk Reduction (1990-1999), and Sendai Framework for Disaster Risk Reduction (2015-2030) emphasized the active involvement of all necessary parties from non-government organizations (NGOs) to government agencies and community groups in coming together to achieve mainstream DRR. Keeping this thing in mind, the present study explores the role of media including

social media, television, radio, printed newspapers and online newspapers as well as non- media including mobile phone, family, friends, neighbors, co-workers, government and local authorities for DRR. Mobile phone falls in the category of media. However, the present study explores the use of mobile phone or short messages service (SMS) to connect family, friends, neighbors, colleagues, local authorities or government for DRR.

For effective DRR, public awareness is a key factor, which can be created through dissemination of information from media and educational channels, media, the establishment of information centers, networks, community participation, actions and advocacy by senior public officials and community leaders (Chagutah, 2009; Dufty, 2015; Garai, 2018; Marlowe et al., 2018; Rogayan Jr & Dollete, 2020; Seddiky et al., 2020; Shrestha et al., 2019). Improving public awareness has been recognized widely as a basis for reducing the risk for disasters (Baytiyeh, 2018; Drzewiecki et al., 2020; Parajuli, 2020; UNISDR, 2004). Awareness does increase significantly as a result of global education, awareness raising campaigns, public debate and media focus (Baytiyeh, 2018; Mc Donnell et al., 2003; Nifa et al., 2018). The extent of common knowledge about disaster risks, the factors that lead to disasters, the actions that can be taken individually and collectively to reduce exposure and vulnerability to hazards play effective role in DRR.

Generally speaking, everybody is affected by disasters, be it men, women or children. However, women and children are the most vulnerable in the face of disasters due to the existing socio-economic inequalities (Le Masson et al., 2016; Peterman et al., 2020; Sattar, 2016). The vulnerability of women can be reduced by enhancing their ability to prepare for disasters, their ability to cope with them, and their capacity to recover (Ramalho, 2020; Vaidya et al., 2019). Successful DRR actions emphasis on capacity building, inclusive knowledge and equity (Klein et al., 2019; Shah et al., 2019). According to Hamidazada et al. (2019), inadequate disaster education, insufficient disaster protection measures, poor coordination among DRR agencies and cultural and financial issues are the major contributors of Afghan women's vulnerability in disasters. Women's empowerment and capacity building is very much dependent on the commitment of authorities to incorporate the initiatives into policies and actions (Hanna et al., 2020).

Many media outlets such as newspapers, news agencies, broadcasters need to play a vital role during and after disasters by relaying information to the public about DRR. Timely and effective warnings about natural hazards through the media prior to a disaster can result in effective preparedness (Cretikos et al., 2008). Whichever media form is available to the majority of women is the best communication channel, but there is also much to be said for diversifying media channels to reach as many people as possible. In this way, media can play a pivotal role in creating awareness and helping women to actively participate in DRR through dissemination of information and education about climatic hazards (Reis et al., 2017). This can provide much needed impetus in risk mitigation and disaster preparedness. It can save lives and reduce economic losses to a considerable extent. However, the media needs to understand its responsibilities in DRR. Media can play at least two roles in the prevention of human and economic losses in cases of disaster. Firstly, media's ability to transmit warnings to a population at risk. Media disseminates information about hazards and offers services and guidance to a large heterogeneous population. However, media needs to consider the fact that disasters are not gender-neutral (Ahmad, 2018; Chung, 2017; Mršević & Janković, 2018). In order to uphold its social responsibilities, media needs to customize the information it provides to focus on the fact that the cultural responsibilities, access to information, education, socio-cultural taboos, and hindrances for women and girls make them a distinctive part of the society (Forbes-Genade & van Niekerk, 2017). If women are appropriately informed, trained and educated, they will be able to save their own and others' lives during disasters. The second role of media is to keep the population informed about disasters in other parts of the world. This will raise the public's disaster awareness in general and enable them to sense their own vulnerability. The common objective of these two media roles is that they address risks associated with disasters and use communication methods that increase prevention and preparation measures.

Media can ensure that the public understands the risk of natural and human-made disasters. Therefore, even if people have not personally been the victims of earthquakes or floods, they should still take DRR precautions. UNISDR (2004, 2009) has published a guidebook entitled "Disaster through a different lens", which has been compiled with a view to encouraging a greater role for the media in DRR. The media of a nation-state can be a pivotal motivator in making every individual a risk reducer and therefore creating a safer world, one which is armed against disasters (Leoni et al., 2011). In the eyes of the public, DRR is closely linked to climate change and natural hazards. In fact, awareness of these issues is directly proportional: the greater

the awareness of climate change and natural hazards, the greater the effect and functionality of DRR. The high community vulnerability and disaster risk is due to limited knowledge and awareness among people (Ndah & Odihi 2017).

Information management is a crucial component of any disaster response (Bharosa & Janssen, 2009; Muhren & van de Walle, 2009; van de Walle & Turoff, 2007; van de Walle et al., 2009). Communication among various stakeholders such as government functionaries, local populations, those who were affected by various disaster in Pakistan, and disaster relief agencies is necessary to facilitate coordination, address issues that emerge, and resolve inaccuracies when they exist.

Media, along with other non-media channels, are the primary sources of disaster communication. People need to know if they are at risk of disaster so they can access services that may help minimize their vulnerability as well as take actions to protect themselves. An affected community needs to be clearly informed about what has occurred in order to dispel or minimize rumors. Information plays a decisive role in addressing all the risks that accompany disasters, and spreading information broadly means using the media to educate people about DRR. However, the accessibility of media to everyone can play a role of either increasing or decreasing the rumors during disasters (Chen et al., 2017; Wang & Zhuang, 2018; Zhang et al., 2019).

The 2013 National DRR Policy in Pakistan

In Pakistan, the first concrete step in disaster management was taken in 2007 after the Kashmir earthquake of 2005. This was based on the establishment of National Disaster Management Commission. This institution was established on a national level and then gradually extended to Union Council level. The commission is the highest body of policy and decision-making with respect to disaster risk management. Amongst its various functions, one is to oversee and supervise the incorporation of disaster risk management issues into development plans and the management of this implementation through NDMA (2013), which is chaired by the Prime Minister.

The national disaster risk reduction policy was formulated by the NDMA in 2013 (NDMA, 2013). Articles 1.3.1 and the article 3.2.4 of the policy aim at reinforcing groups that are especially vulnerable, such as women and children. As mentioned in the policy, women and children are often overlooked, which further exacerbates their vulnerability and this in turn leads to more financial loss and loss of lives (NDMA, 2013). The policy asserts, the only way that DRR measures can be properly applied is if women are involved in the DRR process and data is directly acquired from them so that their problems are emphasized, and an effective response can be implemented. The policy also looks into the possible role played by women in addressing natural hazards/disasters at the local level and how they can be involved in DRR, specifically through their participation in DRR forums and other such platforms (NDMA, 2013). How much women are involved in DRR by the government needs to be investigated, but this is beyond the scope of the present study. It is important to note that there were hardly any women involved in the formulation of the DRR policy in Pakistan.

Disaster Management Infrastructure in Pakistan

Disaster risk and management cannot be limited to only one agency and thus should consist of the involvement of various sectors. NDMA is merely a focal point that facilitates the coordination of various institutions/bodies and the implementation of various disaster strategies related to addressing disasters. It has a direct line of communication with all immediate personnel, including ministries and agencies that would have an impact on disaster risk management. The provincial government then has the authority to form the PDMA (Provincial Disaster Management Authority), which is chaired by the Chief Minister. If a disaster occurs, this authority organizes emergency responses through a district emergency operation center. This center upholds the link with PDMA and corresponding departments. The town and tehsil¹ levels are of primary importance in such instances as these are primary administrative unit to address DRR and come up with a coping mechanism as well as directly communicating with the community.

¹ A tehsil is an administrative division in Pakistan. It is an area of land with a city or town that serves as its administrative center, with possible additional towns, and usually a number of villages.

Rather than depending on governmental policy only, one of the most important things is to create awareness among the people themselves about the effect of climate change and natural hazards and how to manage these risks. A vibrant Pakistani media can play an effective role in preparing the nation to encounter climatic-induced hazards. Thus, it is important to evaluate the role played by Pakistani media in the major disasters by analyzing the perception of those who were most affected as well as of the educated women in the society. This is the entry point for the media. This informs and educates the masses to help them play a constructive role in combating climatic-induced hazards and it can compel the government to make gender-sensitive environmental policies.

The main objective of the study is to explore the perception of Pakistani women about the role of media and non-media in DRR. It examines DRR by firstly exploring the opinions of women regarding the role of media in providing disaster risk information in Pakistan. Secondly, it will evaluate how effective the media, with other non-media sources of information, has been in the biggest disasters that occurred during 2005 to 2010. Pakistan faced its history's major disasters during this period of 2005-2010. This project aims to produce a reliable evidence base for gender-sensitive data in order to increase knowledge about DRR, and to better understand the role of media as well as non-media in this regard. The results of the study may be used to formulate policies that address a more constructive role for women in DRR.

MATERIAL AND METHODS

In order to solicit women's perceptions about the role of media in creating awareness about DRR, quantitative and qualitative methodologies were employed to collect the data. A number of measures were taken to ensure the validity of the instrument. Mixed methods approach allows to understand the perception of the respondents fully. It helps to combine the rich, subjective insight on complex realities from qualitative method with the standardized, generalizable data collected through quantitative method (Regnault et al., 2018). To establish face validity, a group of 10 post-graduate students studying at the University of the Punjab were provided with the instrument for giving comments on the clarity of items in it. Content validity is achieved by submitting the questionnaire to experts in the field to examine and evaluate the content and the format of the questionnaire before the final version was approved and sent out to the participants and respondents. To establish content validity, another group of five researchers from Bangladesh, Finland, Norway, Sweden, and the USA were provided with the instrument so as to ensure the clarity of items. All questions and responses in this survey were reviewed by experts who are well versed with gender, media, and DRR. A multistage sampling procedure was employed to select the sample for the study. In the first stage, four public sector general education universities were selected, keeping in view their geographical location for the maximum representation of the population of Pakistan. Pakistan has five provinces, namely Khyber Pakhtunkhwa (KP), Baluchistan, Sindh, Punjab, and a newly established province of Gilgit Baltistan. The total number of questionnaires distributed in all the universities were 400, i.e., 100 questionnaires were distributed in each university. 368 questionnaires were collected back. Of these, 32 questionnaires were not included as these were almost blank, and in some questionnaires, only a few items received responses from the students.

Eight focus groups involving educated women were conducted to collect qualitative data. Focus groups have been taken up as an appropriate method by both post-modernist and feminist researchers (Madriz, 2000; Olson et al., 2010; Wilkinson, 1999). Although, focus groups are not a "solution" for highlighting the views of oppressed or minority groups, they can, when used sensitively, help to facilitate listening to their narratives (Alasuutari et al., 2008). As far as framework for the qualitative research is concerned, a feminist approach is taken. Feminist researchers have over the years proven that certain structural attributes, such as location, age, ethnicity, class etc. can affect research and convolute the research process (Alasuutari et al., 2008). Many feminists have been apprehensive about using positivist frameworks and were hesitant to fully embrace the quantitative method because such a framework may be deficient in capturing women's experiences and the routine of their lives (Bowleg, 2008; Kara, 2015; Willis et al., 2007).

Consequently, qualitative methods were considered to be more female-friendly. However, a number of feminists criticized employing traditional qualitative methods (Harding, 1987; Nielsen, 2019; Sprague & Zimmerman, 1993; Wigginton & Lafrance, 2019; Westkott, 2019).

Table 1. Mean response values and standard deviation for role of media in DRR

Statements	Mean	Standard deviation
You get information about disaster from social media to reduce its risk.	3.99	1.72
You get information about disaster from television to reduce its risk.	3.79	1.48
You get information about disaster from newspaper to reduce its risk.	3.29	1.53
You get information about disaster from radio to reduce its risk.	3.02	1.66

As a result, many feminists have shunned specific methodological approaches. The most appropriate course was considered to employ research methods, which allowed particular research questions to be properly answered and feminist concerns to be addressed (Chafetz, 2004; Kelly et al., 1994; Maynard & Purvis, 1994). Open-ended questions allowed the participants to direct the narrative of the focus group.

FINDINGS AND DISCUSSION

The perception of women about DRR was studied in relation to the media and non-media role as sources of communication for DRR. The women were also asked about the effectiveness of media and non-media sources in creating awareness and educating them for DRR. Furthermore, the study examines the role of media during major disasters from 2005-2010 in Pakistan.

Role of Media in Providing Information About DRR

To explore the collective perception of women, they were asked to register the extent of their agreement or disagreement with four statements regarding the role of media in providing information about DRR (**Table 1**). The result shows the mean and standard deviations of the respondents regarding their level of agreement or disagreement with each item. Mean response values between one and two indicate strong disagreement, mean response values between two and three indicate disagreement, those between three and four agreement, and those between four and five strong agreement.

As all the mean response values are more than three, this indicates that the respondents agreed that all four media have a role to play in providing information about DRR. Mean response values for the four statements range from 3.02 to 3.99, which indicates that women have a positive perception about the role of newspapers, radio, television and social media to provide information. Social media scores highest with a mean response value of 3.99. The lowest mean value at 3.02 comes in response to radio. Taken together the data indicates that women are more inclined to get information from social media about DRR but are less likely to use radio for the same purpose. According to Ali (2012), radio listenership has decreased in Pakistan.

After social media, television is the second most important source regarding DRR. However, there are many studies that reveal television is typically the most common source for receiving warnings (Balluz et al., 2000; Brown et al., 2002; Schmidlin et al., 2009; Tuladhar et al., 2014).

The data in **Table 1** reveals that the respondents turn to newspapers and radio for DRR information the least. We can conclude from **Table 1** that all major forms of media, including radio, television, newspapers and social media, are seen to be providing information about DRR. This informational role of the Pakistani media during disasters matches the predominant role of media in the 2010 Haiti earthquake, the 2010 Chile earthquake, the 2010 Jamaica earthquake, and the 2010 Peru earthquake (Olson et al., 2010).

Women's Perception of Media Effectiveness for DRR

It is evident from **Table 1** given above that women were getting information about DRR from the media. The next question is to discover the women's perception about the effectiveness of these media in DRR. The summary of their responses regarding the effectiveness of different modes of mass media are presented below in **Figure 1**.

According to **Figure 1**, TV news was found effective by 37% of the respondents. By a substantial percentage, television news was considered the most effective source of information about DRR. In comparison to the role of media in providing information about DRR (as shown in **Table 1**), where social media was ranked first for getting information on DRR, television news outstrips social media when it comes to effectiveness of media sources. There could be many reasons why TV news was considered the most effective, but the likeliest is that, in the Pakistani cultural milieu, watching television is often a part of the daily household

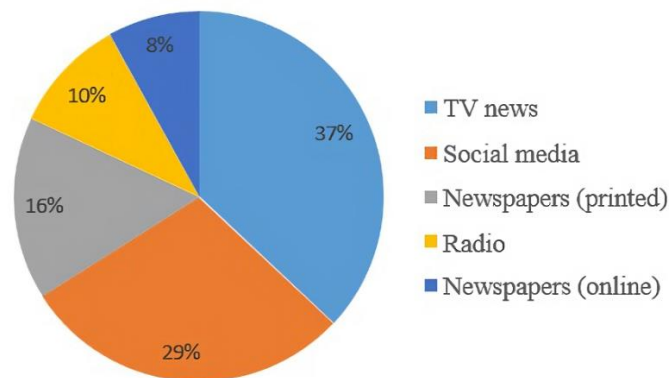


Figure 1. Effectiveness of various media about disaster risk reduction (Source: Author)

routine, including watching the news at a fixed time each day. In spite of being considered the most effective information source for DRR, the television news is event-based and tends to focus on the sensationalist aspect, which is the severity of the event (Monahan & Ettinger, 2018).

Therefore, the majority of the participants thought that the media was more active during disasters and not active enough when it came to helping the public prepare for disasters or providing post-disaster information, which would help them cope with such situations. About TV programs on DRR, one of the interview participants from Punjab said:

“There is dearth of programs on television about DRR. People need to be educated how to behave when they are struck with disasters. There should be educative programs about natural hazards telling audiences what is possible in the anticipation and mitigation of any natural hazard.”

This participant was strongly in favor of seeing television broadcasts, which would investigate the degree of DRR measures that have been undertaken, such as mitigation, adaptation, preparedness and recovery. This perception was echoed by one of other participants from Punjab who said:

“There is an abundance of information at the peak of the disaster, but the media has no program afterward. There should be programs based on a detailed study of what worked and what went wrong in a particular natural hazard, which will help people to be prepared for any future disasters.”

Social media has become such a powerful tool for DRR that the expected shift of public attention from awareness to preparation and then action seems to happen on social media (Kitazawa & Hale, 2021). Social media was considered the most effective source of DRR information by 29% of the female respondents. Social media can be used to help govern effectively in the DRR space (Rossiter et al., 2018).

Even so, only 8% of them considered online newspapers to be an effective source for DRR information. 16% considered printed newspapers to be more effective. A possible reason for this is that many of the women use the Internet to access video-sharing sites such as YouTube and social networking platforms such as Facebook, Instagram, and Twitter. They may therefore find online newspapers less attractive in comparison to the direct social interaction that these sites offer. Social media is not only limited to fraternizing; it also allows individuals to discuss and share their disaster experiences on a person-to-person level. Social media acts as a promising vehicle to capture dispersed community knowledge on disaster management by publishing posts with images and animated maps, which increases community awareness and engagement levels to handle disasters (Kankanamge et al., 2020).

YouTube provides access to disaster footage recorded by members of the public who are actually on-site and experiencing the disasters. Another reason for the discrepancy may be that online newspapers provide mainly written descriptions of events. Gaining information about the disasters through multi-media images and videos is likely to be more attractive to this cohort. Nevertheless, printed newspapers are still considered to be an effective source of information regarding DRR, even though they do not provide as much visual stimulation. Most of the sample group read print newspapers as part of their daily routine, since nearly every middle-class household and most academic institutions in Pakistan subscribe to several newspapers.

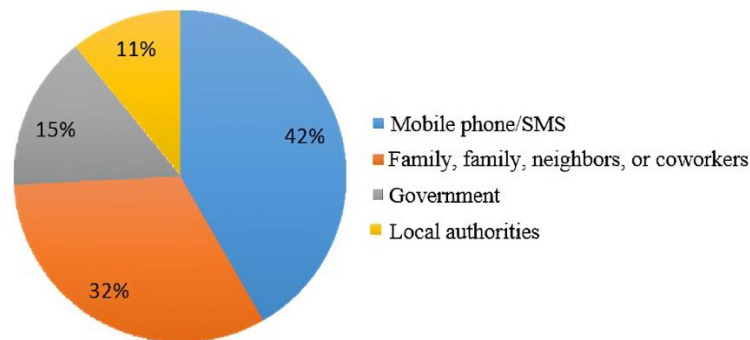


Figure 2. Perceived effectiveness of non-media sources for DRR (Source: Author)

Radio was considered the effective source of information about DRR for 10% respondents only. A major reason for this could be that radio listenership is low in urban areas (Riismanedel, 2020). Thus, as indicated in **Table 1**, educated women receive less DRR information from the radio, which in turn leads them to consider it less effective.

Effectiveness of Non-Media Sources for DRR

During major natural hazards, people make decisions about risk management based on myriad sources of information. For example, they may receive warning messages from government and local authorities, from the mass media, and from family, friends, and relatives. It is recognized that institutional partnerships can be effective when they involve all stakeholders—government, local communities, NGO/ CBOs, media, the private sector, academia, neighboring countries, and donor communities (Haque & Uddin, 2013).

Figure 2 compiles the results of the perceived effectiveness of non-media sources among the sample group. Mobile phone is considered as a media. However, the respondents were asked about the use of mobile phone to contact family, friends, neighbors, colleagues, government or local authorities for DRR. The non-media sources surveyed were mobile phones; friends, family and neighbors; and government and local authorities.

Mobile phones or SMS were considered effective for DRR by 42% of the respondents. The information provided by SMS/mobile phones was valued highly by most of the respondents. In Pakistan, SMS is considered an emerging mode of non-media. It is increasing its popularity among youth as it is inexpensive and allows people to contact each other anytime and anywhere. According to Ali (2012), 88.7% of Pakistani female university students have their own mobile phones and a considerable percentage of these send more than 80 texts per day. This demonstrates that there is a tremendous opportunity to use mobile phones for DRR, especially among youth (De et al., 2020; Marlowe et al., 2018; Newnham et al., 2019).

Family, friends, neighbors, or coworkers were thought to be effective DRR information sources by 32% of the sample group. This shows that people tend to discuss disasters, which may or may not occur in the future. While DRR prepares the public for challenges, which may arise before, during, and after a disaster, the public tends to discuss catastrophes with family, friends, neighbors or coworkers. Women use mobile phones to inform unaffected family members about the crippling effects of a specific disaster on their daily lives.

Even though the government is the primary stakeholder tasked with caring for the general public, it was not considered as valuable (national government 15% and local government authorities 11%) by the respondents when compared with other communication modes. This is because the government is not proactive in disseminating information regarding DRR. As noted by Ainuddin et al. (2013) in their study of Baluchistan, there is a need for local involvement focusing on decentralization of disaster management institutions in Pakistan. Currently, few government projects are designed to disseminate DRR information before a disaster occurs or to provide information and help post-disaster. It could be said that the government systems especially lack capacity formation at the district, sub-district, and local levels. Majority of the local institutions are not well-prepared for DRR in terms of awareness and training, human resources, financial resources, infrastructure and equipment, and coordination (Anantasari et al., 2017; Shah et al., 2019). One of the participants from Baluchistan said:

"No one from the government come to us to tell us what we should do before disasters strike our houses. They do not even bother to come to listen to our problems even when disasters ruin our houses, crops and animals."

Social networking sites or social media are already effective tools of information sharing publicly. It could also be useful tools for government to understand the damage situation and the immediate needs for relief assistance. It is extremely important for government to access such information as early as possible to provide emergency assistance (Izumi et al., 2019). However, a study conducted by Anson et al. (2017) identified a limited use of social media for disaster preparedness due to the barriers such as language, culture, value, financial, human resources, technology, and data.

A focus group participant from Sindh said that even when government or local authorities came to see them, it did not make much difference. She noted:

"The tehsildar (local representative of the government) came to us when we had lost our valuables and had to migrate due to flash floods. He promised to help us, but his promise never materialized. We are still living in our dilapidated house and waiting for his return or at least some show of support or help."

The above quotes indicate that government representatives are perceived to be ineffective not only before and after a disaster but also during it. According to Shah et al. (2019), the majority of the local institutions were underprepared in terms of awareness and training, human resources, financial resources, infrastructure and equipment, and coordination for dealing DRR in Khyber Pakhtunkhwa, Pakistan.

The present study has also evaluated the role of media during the biggest disasters of Pakistani history. The 2005 earthquake is remembered as one of the worst seismic disasters not only in Pakistan but also in South Asia. There were some other natural disasters during 2005 to 2010, however, across the country the scope and scale of the crisis caused by 2010 flash floods was exceptional, which affecting the lives of over 18 million people (United Nations, 2010). Pakistani media played a decisive role during these disasters.

Role of Media in Disasters from 2005-2010: A Comparison

According to the global climate risk index 2012 issued by German Watch, Pakistan ranks highest among the most effected countries in 2010. Pakistan was among the top ten most affected countries as well for the period 1991-2010 (Harmeling, 2012). Major disasters hit the country in less than a five-year period, from 2005 to 2010: the 2005 earthquake was the first; the glacier melt in 2010 that created a lake in a residential area was the second; and the Cyclone "Phet" in 2010 was the third. However, the recent floods in 2010 and 2011 created such huge havoc in Pakistan that The United Nation Secretary General Ban Ki-Moon on his visit to flood-hit areas said that he would never forget the destruction and suffering he had witnessed. He said that in the past he had witnessed many disasters around the world but nothing like the destruction in the wake of the flood (Dawn 15, 2010). During disasters, the media keeps the people informed and motivates them to help the affectees (Naveed, 2019). To evaluate the role of the media during actual disasters, the respondents were asked about the role of the media in the 2010 floods, the 2010 glacier melt, which created Attabad Lake, the 2010 Phet Cyclone, and the 2005 earthquake. The comparison of the role of media in disasters from 2005-2010 is presented in [Table 2](#).

Providing Updated Information

[Table 2](#) shows a common pattern across all four disasters: the media's role in providing updated information is ranked first and giving voice to women is ranked last. The majority of the respondents believed that the most important function any source of information can play is providing updated information, which the media, including television, newspapers and social media, did consistently. It is through these updates that the general population becomes aware of the damage that has occurred during a natural hazard. However, there is a difference of percentages representing the respondents' agreement on the role of media in each of the disasters. In relation to providing updated information, 59% said that this was the most important role of media in the 2010 floods, 57% said it of the 2010 glacier melt, 53% of the 2010 Phet Cyclone

Table 2. Comparison of role of media in disasters from 2005-2010

Specific role of media	Respondents (%)			
	2010 floods	2010 Phet	2010 glacier melt	2005 earthquake
Providing updated information	59.2	52.9	57.1	73.6
Organizing relief activities	50.3	28	29.1	53.7
Reporting about government performance	48.2	24.6	30.4	46.1
Giving voice to women	8.9	6	5.8	9.2

and a substantially higher 74% said it of the 2005 earthquake. This reveals that the media was perceived to play a more effective role during the 2005 earthquake as compared to the 2010 disasters.

From **Table 2**, it can be seen that the respondents considered the media to have played the biggest role during the earthquake and the flood. **Table 2** demonstrate the specific role of media during the disasters. The main reason for this could be that these were bigger disasters that impacted a far greater number of people than the Phet Cyclone or the glacier melt, and therefore more people were accessing media to ascertain the situation. There being more viewers automatically increase the perception of information promulgation. Pakistan was hit hard by 2010 floods, which were biggest in history as affecting over 20 million people and causing loss of over US\$ 10.85 billion (Khayyam, 2020).

Organizing Disaster Relief

An important aspect of media's role during the disasters was found to be that of organizing disaster relief, especially during the flood and earthquake. The respondents perceived that the media played a role in organizing relief activities, for example by requesting donations and volunteers. Likewise, media was seen to have been more active in organizing the relief activities during the 2005 earthquake, certainly in comparison to the glacier melt and the Cyclone, as the data shows that people's perception of the media's role in organizing the relief activities was 50% in the 2010 floods, 29% in the 2010 glacier melt, 28% in the 2010 Phet Cyclone and 54% in the 2005 earthquake. Consequently, the media is recognized as playing a special part in obtaining help for internally displaced people. One of the focus group participants from Sindh said:

"Pakistani media has in fact been vital in not only relaying information about the catastrophes that brought widespread destruction to millions of people and their crops in the affected areas, but it also has played a crucial role in conveying this situation to the international community. Consequently, many people, including expats, were motivated to contribute hefty amounts of money as palliative measures to help relocate and rehabilitate the victims of these national disasters."

A similar view about how the media has helped garner support for the affectees was shared by one of the participants from Punjab:

"My uncle was watching the news coverage of the flood on television. The plight of helpless hungry children weeping and asking for food was intolerable for him. So he gathered his friends and together they took a truck loaded with food for the affectees. My uncle is not the only example of somebody who was motivated by the media coverage."

One of the focus group participants from Peshawar (NWFP) said:

"During the catastrophic event of glacier melting, people wanted to know what they could do to help with money, food, clothing, and medical supplies. Media coverage could have advised them on what was most needed and how it could be conveyed to the affected place."

During disasters, many philanthropists, local community members, and NGOs come forward to help the affected people. Once again, the scale of relief needed in the 2005 earthquake and the 2010 floods were greater than in the others: not only did these two calamities have impact on more people but they also geographically took place across a larger area. The areas affected by both the earthquake and the flood (three provinces were simultaneously affected by the flood) were massive, whereas the glacier melt was limited to only a small portion of the NWFP province and by the time the Phet Cyclone had reached Pakistan its intensity

had lessened. Another major reason for the perceived focus on the organization of relief efforts could be the interest of the people. The earthquake took place in Islamabad, which is not only the capital of Pakistan but a very important bureaucratic city housing many foreign nationals. A number of international organizations are located in Islamabad and Pakistani policy makers also live in Islamabad. Therefore, the prime location of the city coupled with its political importance ensured greater relief efforts and consequently greater major coverage of those relief efforts.

Reporting About Government Performance

As **Table 2** shows, the media had played a role by reporting about government performance. Media's reporting on government performance was 48.2% in the 2010 floods, 46.1% in the 2005 earthquake, 30.4% in the 2010 glacier melt and 24.6% in the 2010 Phet Cyclone. The general population is interested to know how the government is addressing the catastrophic situation, but the government is also aware that its relief activities are carefully followed by the media. This is an important aspect as citizens of any country need to be reassured that their government will provide support for them when needed. The government officials also prefer to use the media to communicate with the public. There are many reports of the government engaging experts to provide information about the disaster situation to the population through the media. For example, during the Cyclone the chief government meteorologist talked to the media and explained that only the coastal areas would be affected. Through the media as well as messages delivered by military helicopter, the fisherman of Sindh and Baluchistan were warned not to venture into open sea and thus their lives were saved. This shows that the media greatly enhances the government's ability to communicate and can thereby help in averting the severe effects of any disaster. The content analysis of four US newspapers in Hurricane Katrina showed the similar findings that more articles addressed response and recovery than mitigation and preparation. Media framed stories by emphasizing the government response and less often addressing individual and community levels of preparedness or responsibilities (Barnes et al., 2008).

Even though few respondents perceived that the government played an active and helpful role during the floods, the government is in fact the only institution whose infrastructure is large and coordinated enough to undertake rescue missions and rehouse people according to a reasonable standard of living. Part of the media's role is to provide people with updated information about the activities of government officials in managing a disaster. A woman from Sindh in one of the focus groups said:

"These government officials only come to see the affected people if the media gives coverage to the problem. They come to us when the media approaches them and holds them responsible for not acting; otherwise they do not bother to come to see us in these katchiabadies (slum areas). They are only frightened of the media."

The simultaneously coordinated and contrasting agendas of the media and government can create an effective form of DRR: firstly, through the media providing updated information in a timely manner, and additionally because media exposure can be critical of government policies and warning methods and thus pressure the government to act more efficiently. Nevertheless, media also has its own priorities when it comes to disseminating forewarnings, precautionary information, and post-disaster coverage of a natural hazard. The majority of the participants from all four provinces were of the view that the media gave priority only to important personalities. The media provided coverage when a public person of interest, such as a politician or celebrity, planned a visit to an affected area. The participants also perceived that these public figures only visited the affected areas for the sake of staged photo opportunities with the victims, and thus they were using the media to build their own positive image and publicity. The following quote from one of the focus group participants from Sindh demonstrates these reservations:

"Media people come here only if powerful officials such as the Prime Minister or Chief Ministers are visiting. They do not come to us to know our problems. They leave as soon as the government official leaves the site and come back only if there is another such official visit."

The government's perceived failure to help victims reinforced the long-held opinion that civilian authorities are unsuccessful, leaving the Pakistani military to manage the situation in troubled times. The media is important in this regard because it conveys information about the government leadership to the affected and

Table 3. Comparison of role of media in disasters from 2005-2010

Specific role of media	Respondents (%)			
	2010 floods	2010 Phet	2010 glacier melt	2005 earthquake
Educating people how to face disaster	29.3	24.1	22.8	33.2
Educating women about how to face disaster	11.5	6.3	5.8	10.5

unaffected public. This finding is in line with another study conducted by Zivari et al. (2019) that government's institutional capacity and unreal political commitment has caused inefficiency of public participation in earthquake preparedness in Iran. Another focus group participant from Sindh recounted:

"On the television, I heard news of the president leaving for a foreign trip and going to London. This shows a lack of concern for us on part of a Head of State. We are homeless and miserable people, needing their help."

In countries with weak or unstable political situations, it is important to equip the population with awareness and education about DRR. One of the focus group participants from Baluchistan said:

"Pakistani media, specifically electronic sources, has been essential in dealing with the disasters, which have been occurring across the country throughout the whole year. It cannot be denied and is worthy of sincere appreciation. However, one area in which the media has shown some deficiency is that about educating the masses about disasters and how the people can effectively cope with these disasters."

Media as an Education Tool

There is a notable difference between the respondents' perception that the media played a role in educating people and their perception that it had a part in educating women about disaster risk. This indicates that women are particularly ill-served by the media as an education tool. It should be kept in mind that if men are the breadwinners of the family, then the women are the caretakers of the family. However, the media does not place much focus on women. Even lower than educating women, the statistics indicate that the media is not giving a voice to women with reference to floods. Only a small percentage of the respondents thought that the media was representing women's opinions in floods and about disaster management.

The most important finding revealed in **Table 3** is that the respondents thought the media played only a small role in educating women and giving them a voice. The two disasters in which the respondents gave some recognition to the gendered aspects of media coverage were the flood and the earthquake, whereas for the glacier melt and the Phet Cyclone the number of respondents who highly rated this role of the media was much less.

This highlights two facts: firstly, that women's opinions are not a media priority, and secondly that the degree of priority given to women's education and opinions is regionally dependent. The flood and earthquake took place predominantly in Punjab and Islamabad. The women of both of these areas are relatively vocal and educated as compared to the province of Sindh and Baluchistan (where the Phet Cyclone and glacier melt took place, respectively). This means that the stronger, better educated and more vocal the social group is, the greater degree of media representation they will receive.

The data suggests that respondents consider the media's role to have been more significant during the 2005 earthquake. The respondents agreed that the media played some role in educating people in all four disasters, but the percentage was very low across the board. The earthquake of 2005 created a focus on educating people about earthquakes. People started to become more conscious about building earthquake-proof homes and preparing to face such situations. This awareness was supported and to a large extent driven by various programs on TV and articles in newspapers. Despite the fact that the media is performing this role, the low percentage of respondents who perceived the media to be involved in DRR education indicates that people are not very satisfied with it. In some ways, the media's potential is as yet untapped as the data shows that education about DRR is not given much coverage in the media. This potential of the media to educate the population in general and women in particular about disasters, and environmental issues need to be properly utilized for maximum DRR effects.

CONCLUSION

Pakistani women perceive that the media, in addition to other information sources, plays an important role in DRR. According to the quantitative data, the respondents agreed that newspapers, radio, television and the Internet (in that order) all play a role in providing information about DRR. The most informative medium, according to the literate respondents, was the Internet. Nevertheless, TV news was considered to be the most effective source of information when it came to DRR. This points to a discrepancy between the Internet being considered to be the source, which provided the most information but TV news being considered the most effective. The perceived effectivity of television may be due to the fact that TV news and Breaking News are viewed by the majority of the population.

This study has demonstrated that Pakistani women are in a unique position to create positive environmental change if given the opportunity. It is important that female-safe DRR infrastructures must be developed, monitored for corruption, and held accountable to feedback, so that the most vulnerable can receive the assistance they require. These infrastructures must also be culturally/religiously sensitive and take the differing circumstances of rural and urban Pakistani women into account.

In many recent DRR programs, the media has been shown to be an effective actor in creating awareness about disasters along with churches, local authority figures, community leaders, meteorologists, development planners, and emergency managers (Perez-Lugo, 2004). In DRR, aside from the government, the people themselves are one of the most important stakeholders. The omnipresence of media has to be utilized not only during disasters but also before and afterwards, not only in order to convey the issue at hand but also to help prevent future widespread negative impacts from such disasters. People can be educated through the well-organized use of media about mitigation and adaptation to reduce the risks of natural hazards.

On a simple level, media can broadcast programs, for example, that teach first aid and cardiopulmonary resuscitation to audiences for everyday life and for disaster response purposes. Many national and international NGOs use media to disseminate effective DRR strategies among different communities. People can be engaged in DRR initiatives. Therefore, DRR is not only the responsibility of the media or any one sector; rather it should be a concerted effort between various institutions, authorities and community leaders. These links can be strengthened through media. Media can help to provide a communicative bridge between authorities, institutions and the public. For these reasons, it is pertinent that all stakeholders join a common forum to develop a better understanding of the complex dynamics amongst media discourse, DRR policies, climate change policies, environmental strategies and people's practices. Such an understanding would, however, be even more effective if it took the gender-specific vulnerabilities of women into consideration.

Funding: The author received no financial support for the research and/or authorship of this article.

Ethics declaration: Author declared that the research was conducted in accordance with the ethical guidelines of University of Auckland, New Zealand. Informed consent was obtained from all participants through paper-based documents. All personal data was collected and handled in confidentiality. All personal data were stored anomalously which only authorized researcher had access to. Data was destroyed soon after the study was completed to protect participant's anonymity and confidentiality.

Declaration of interest: The author declares no competing interest.

Data availability: Data generated or analyzed during this study are available from the author on request.

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