

Media and disasters: overview of international scientific production from 1996 to 2016

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Abstract

This article presents the trends and patterns in media and disasters research over the last 20 years. The analysis focused on identifying the main theoretical and methodological references; the fundamental themes addressed in the selected studies; and the role of the media in disaster risk management. The research demonstrated that there is a high interest of the international scientific community in this area, signaling a search for the deepening of knowledge and the conceptual basis on the subject. Thus, this paper provides clues about the opportunities and directions for the next decades of research in this field of study.

Keywords: Media. Disasters. Communication. Disaster risk management. Regional development.

Introduction

In the last decades, the study of environmental disasters has gained prominence in academic research, adopting different perspectives of investigation and giving rise to a series of methods for the evaluation of multiple aspects of the tragedy (HUANG; LIU; MA, 2011). In fact, environmental disasters such as tsunamis, hurricanes, tornadoes, storms, floods and earthquakes are critical episodes that, according to Reis, Zucco and Darolt (2013), directly affect the dialogue and interaction of public power with the population. In this sense, the main question revolves around the adequacy of the technical and political procedures for confronting the problem (MATTEDI, 2000).

According to Spence, Lachlan and Griffin (2007), communication in times of crisis seeks to prevent or diminish the negative results of a particular episode and, above all, fulfills two functions: one informative and the other persuasive. First, messages must create a rational understanding of risk and then encourage the public to take actions that avoid a possible threat or mitigate the consequences of such events. Crisis management requires planning, mobilization and integration of public power and private institutions, the corps of volunteer actors, afflicted communities and the media. Information or the lack of it can positively or negatively influence all phases of the disaster. In this sense, the media plays a critical role in communicating and understanding disasters and their implications (PANTTI; WAHL-JORGESSEN; COTTLE, 2012).

The media gain prominence in the tasks of involving the different actors, boosting the actions of relief and support to the victims and generating trust among those affected. This perspective is based on the perception of a series of previous works according to which, during a disaster, the media is the most important mitigation tool available to the authorities because its action creates the public perception about the risks of the event (MILES; MORSE, 2007; PÉREZ-LUGO, 2001).

In this context, the present work adds to the previous efforts of the Research Group Regional Media Studies - Research Line: Media and Regional Development, aimed at understanding the role of the media during disasters, such as Reis and Cardoso (2014), Reis, Zucco and Darolt (2013), Reis and Zucco (2012), among others. To address these concerns, the purpose of this paper is to explore the trends and patterns in media and disasters research over the last 20 years (1996-2016) through a bibliometric analysis in the EBSCO¹ database. This database is well respected, reliable and enables quick and easy access to scientific studies (OZDAL, 2017) regularly updated from a diverse set of disciplines.

The study aims to provide indicators of how this field of research has developed in recent decades, taking into account the following objectives: 1) identify the main theoretical and methodological references used in media and disasters research; 2) classify the main themes in media and disasters research; and 3) analyze the role of the media in prevention and reduction of disaster risks. From the results are drawn conclusions on current trends and patterns in research on the role of the media before, during and after disasters, which, in turn, provides clues about the opportunities and directions for the next decades of research in this field.

Media and disasters

During the process of calamity, effective communication management is a major challenge for public power. The shortage of essential data among key stakeholders is a problem associated with crisis management difficulties, contributing to the proliferation of myths from a wide range of genres, including those related to looting, social disorganization and other criminal behavior (TIERNEY; BEVC; KULIGOWSKI, 2006). In this sense, the quality of the information focuses on the early warning of the imminence of a disaster, the planning of relief work and support to the victims, the rehabilitation and reconstruction of the affected areas.

¹ The EBSCO is a data bank for scientific information of various fields. Its scientific information search system provides the text and/or abstracts of scientific journals, reference books and other publications of many disciplines. This application has an online interface through which is possible to access other public data, data banks and faculties, universities, libraries, schools, medical institutions, agencies and private corporations (Source: <https://www.ebsco.com>. Accessed on: Feb. 3, 2017).

Mattedi and Ludwig (2016) argue that the occurrence and intensity of disasters depend more on the degree of vulnerability of disaster scenarios and affected communities than on the magnitude of adverse events. For Moe and Pathranarakul (2006), the success of disaster management is directly associated with the characteristics of the system for issuing, distributing and receiving messages. The success of a communication management project in crisis situations truly depends on communication and cooperation between affected parties. Confidence resulting from dialogue between government and the community is a key element, as is the interaction between the members of the coordination team. In this sense, the situation demands a collaborative work, involving different actors and, therefore, requires the maximum planning.

Fundamentally, the perspective adopted here coincides with Baker's (2009) postulate that tragedies are socially constructed events and vulnerability to risk is a dynamic process that depends on a series of contextual factors. Thus, Barnes et al (2008) consider extremely important the knowledge about the criteria that the vehicles use for the publication of news about disasters, the framing of the themes, how the coverage impacts the public opinion in the different stages of a disaster and how the informative agenda contributes to the policy definition in the area.

Methodology

Realizing that disasters can be defined as events that impact society, that disaster management is also information management, and that media coverage can influence public perception and understanding of disaster risks, we sought an understanding of its approach in the scientific debate in the last decades. Thus, a bibliometric survey was carried out in the EBSCO database. According to Pritchard (1969), bibliometry is the application of mathematical and statistical methods to analyze written communication and scientific literature, identify the most productive authors and institutions, as well as the magazines at the core of each area of knowledge.

For the analysis of the data, the selection criteria were: complete texts in Portuguese language, published in academic journals, analyzed by experts and published between 1996 and 2016. The research was updated for the month of January, 2017, adopting the steps presented in Table 1. In order to refine the search, we chose to include "mídia" as thesaurus term, which limited the results to only six articles.

Table 1 – Bibliometric research on “mídia” and “desastre”

STAGE	FILTER	TOTAL ARTICLES
General Research	“Mídia” “Desastre” as keywords	502
Filter 1	Selection criteria	191
Filter 2	Media as thesaurus term	6
Refinement	Content analysis of articles	6

Source: Own elaboration.

A content analysis of the six articles was performed. The research was related to: *Media promotion of ecological awareness* (CORREA DE BARROS; RICHTER, 2013); *Media and scientific education* (MORAES; BONATO, 2012); *Media and social psychology* (HENNIGEN, 2010; ZAMBENEDETTI, 2012); *Media and religion* (TÚLIO; RODRIGUES, 2015); *Media and death* (SILVA, 2012). Considering that such studies were not significant for the analysis, the search was extended to the English language, following the steps shown in Table 2. The selection criteria followed the same orientation as in Portuguese and the term “media” was included as second filter. Taking into account the greater number of resulting publications, it was decided to add the term thesaurus “disaster” as a third filter, allowing to limit the results to 56 articles. The survey was updated for the month of January 2017.

Table 2 – Bibliometric research on “media” and “disaster”

STAGE	FILTER	TOTAL ARTICLES
General Research	“Media” “Disaster” as keywords	99.182
Filter 1	Selection criteria	78.112
Filter 2	Media as thesaurus term	316
Filter 3	Disaster as thesaurus term	56
Refinement	Content analysis of articles	25

Source: Own elaboration.

Of the 56 articles resulting from the survey, the EBSCO system provided 30, removing the studies repeated automatically. Of these, 3 publications were withdrawn in manual refinement because they appeared repeated, and 2 were deleted because the files were not available. Based on the data collected, a spreadsheet was prepared using Microsoft Excel software, structured with the following fields: author, title, year, scientific journal, keywords, objectives, references and main topics addressed. This worksheet served as the basis for the tabulation and analysis of the content of the 25 articles, resulting in the data

that will be presented in the following topic. Once the data were collected, each paper was analyzed to determine if the objectives or results were in fact focused on the media and disasters theme.

It was found that 7 of the documents were not related to the theme and thus were discarded. The other 18 publications were registered for the purposes of this study. The analysis focused on identifying: the main theoretical and methodological references (Objective 1); the fundamental themes addressed in the articles (Objective 2); and the role of the media in preventing and reducing disaster risk (Objective 3).

Theoretical and methodological approaches

The 18 articles selected used a total of 763 references. The authors with the highest number of citations were: Betty Pfefferbaum (1999, 2001, 2013); Brian Walker (2002, 2004, 2006, 2011); Lance H. Gundersen (2002, 2006, 2010, 2011); Anabela Carvalho (2000, 2007, 2008); Erez Cohen (2006, 2007); Enrico Quarantelli (1966, 1984, 1991, 1997, 2005) and Robert M. Entman (1990, 1993). The scientific production focused on the following publications: *Public Relations Review*; *Ecology and Society*; *Cultural Studies*; *Journal of Communication*; *Critical Studies in Mass Communications*; *Disasters*; *Journalism & Mass Communication Quarterly*; *Risk Analysis*.

The major academic journals in the field have a strong emphasis on theoretical, conceptual and methodological development on media and disasters. Each of the identified articles was evaluated by its theoretical or methodological approach. The largest proportion of articles published on media and disasters during the period of analysis were *case studies* (EWART; McLEAN, 2014; LAITURI; KODRICH, 2008; LEITCH; BOHENSKY, 2014; MACIAS; HILYARD; FREIMUTH, 2009; PFEFFERBAUM et al, 2003; PRINCIPE, 2015; RODRIGUEZ; TRIANOR; QUARANTELLI, 2006; ZAVESTOSKI et al, 2004), followed by *comparative case studies* (CUPPLES; GLYNN, 2014; HOUSTON; EFFERBAUM; ROSENHOLTZ, 2012; McLAUGHLIN, 2016; PARK; WANG; PINTO, 2016; SONNETT; JOHNSON; DOLAN, 2015); *literature review* (HOUSTON et al, 2015; McLEAN; POWER, 2013; PFEFFERBAUM et al, 2014; PFEFFERBAUM et al, 2015); and *construction of theoretical models* (SUSMAYADI et al, 2014).

Debates on the media and disasters, taking into account the type of disasters, focused on the categories of: *Environmental disasters* (CUPPLES; GLYNN, 2014; EWART; McLEAN, 2014; HOUSTON; PFEFFERBAUM; ROSENHOLTZ, 2012; LAITURI; KODRICH, 2008; LEITCH; BOHENSKY, 2014; MACIAS; HILYARD; FREIMUTH, 2009; McLAUGHLIN, 2016; PRINCIPE, 2015; RODRIGUEZ; TRIANOR; QUARANTELLI, 2006; SONNETT; JOHNSON; DOLAN, 2015), with Katrina Hurricane being the most investigated natural disaster; *Anthropogenic disasters* (PARK; WANG; PINTO, 2016; PFEFFERBAUM et al, 2003; ZAVESTOSKI et al, 2004), with special emphasis on the terrorist attack on the

Twin Towers in the United States in 2001 and the Fukushima nuclear accident in 2011; and lastly the category of *Disasters* (HOUSTON et al, 2015; McLEAN; POWER, 2013; PFEFFERBAUM et al, 2014; PFEFFERBAUM et al, 2015; SUSMAYADI et al, 2014) which concentrates researches of the two previous groups.

Selected papers in bibliometric research covered as main topics:

a) *Media coverage of disasters*. These researches have focused on how disasters are framed in media coverage (CUPPLES; GLYNN, 2014; EWART; McLEAN, 2014; HOUSTON; PFEFFERBAUM; ROSENHOLTZ, 2012; PARK; WANG; PINTO, 2016; SONNETT; JOHNSON; DOLAN, 2015). Overall, studies have shown that news coverage of a disaster has a temporal character, that the media generally rely on official sources during catastrophes, and usually focuses on the dramatic and descriptive qualities of events, that is the impact of disasters on human beings or on the built or natural environment, and not on their causal explanations (HOUSTON; PFEFFERBAUM; ROSENHOLTZ, 2012).

The bibliometric survey pointed to topics of interest related to the use of the Internet and the new media for journalistic coverage during disasters (LAITURI; KODRICH, 2008; MACIAS; HILYARD; FREIMUTH, 2009). Disasters, environmental or anthropogenic, have provided a unique scenario in consolidating technological advances and new social media that operate outside traditional information and aid intermediaries. For Cooper et al (2015), these social media represent a valuable opportunity to advance disaster risk management objectives related to mitigation, preparedness, response and recovery. Laituri e Kodrich (2008) indicate that online media has been particularly effective in facilitating the interactive communication of relevant information by connecting to a larger audience that can participate indirectly in the disaster.

Other studies (HOUSTON et al, 2015; LEITCH; BOHENSKY, 2014; McLAUGHLIN, 2016; PRINCIPE, 2015; SONNETT; JOHNSON; DOLAN, 2015) have given particular attention to narratives of media coverage of disasters. Issues such as religion, race and resilience are a point of interest in media reports. Sonnett, Johnson and Dolan (2015) point out that in the post Katrina Hurricane coverage many studies presented racially biased and stereotyped representations of the affected population. On the other hand, McLaughlin (2016) indicates that after the disasters (earthquake, tsunami and nuclear accident) of March 2011 in Japan, the media narrative concentrated on conveying a favorable image of the religious activists who provided aid in the regions affected by the disasters.

b) *Media exposure to disasters*. The analysis of these studies focused on the impact of media coverage and the relationship between media consumption and people's reactions in disaster situations (PFEFFERBAUM et al, 2003; PFEFFERBAUM et al, 2014; PFEFFERBAUM et al, 2015; RODRIGUEZ; TRIANOR; QUARANTELLI, 2006). In a study carried out by Pfefferbaum et al. (2014), they indicate that the psychological impact of media consumption on newspaper, radio and Internet coverage is not as significant as

the public's reactions to the news and reports broadcast on television. In another research, Pfefferbaum et al (2015) have revealed a possible relationship between visualization of disaster coverage and a variety of psychological outcomes that, in some cases, especially in children, may contribute to posttraumatic stress.

The results of these studies indicate that for those who are directly exposed to disaster or related to victims, media coverage is an additional source of contact in the search for reliable and secure information. However, these individuals may have stronger reactions to the media exposure and maintain a high state of arousal (PFEFFERBAUM et al, 2003).

c) *Institutional framework and media relationship.* In general, these surveys have been devoted to examining and assessing how in crisis and disaster situations the accuracy, scope, credibility, and timeliness of media information depend on the solid and reliable relationship between journalists and emergency managers (McLEAN; POWER; 2013; ZAVESTOSKI et al, 2004). When disaster strikes, people resort to various sources of information, and since traditional media (radio, television and newspapers, including their online components) remains a key source of public information in a disaster, crisis managers need the media to disseminate information.

McLean e Power (2013) argue that the relationship between emergency managers and the media is based on trust but also identifies threats in this relationship: the lack of knowledge of emergency managers about how the media operate in terms of routine news collection techniques; and how one's approaches to disaster need to be negotiated since the media provides as much information as entertainment. In this sense, it is imperative that the crisis manager and the media develop a better understanding of the perspectives and needs of others, so as to promote a relationship of trust, familiarity and respect before a crisis or disaster. Building trust involves the recognition of a common shared goal: serving the public (McLEAN; POWER, 2013). From a structure of social exchange, the relationships flourish when the parties realize mutual benefits.

The role of the media in preventing and reducing risks

According to Quarantelli (1991), most of what people know about disasters is what they learn through the media. In this sense, the role of the media in disasters can not be understood only as a tool to communicate and describe what happened and keep the public informed. Guion, Scammon and Borders (2007) argue that media as well as being one of the most important vehicles for the distribution of information on certain risks and dangers to people, is used extensively during the various stages of a tragedy. In this sense, Leitch and Bohensky (2014) indicate that the media should also contribute to individual and community preparedness, help identify potential threats, enable communities to tap into local potential and experiences to adapt to crises, disasters and other challenges, as well as provide a forum for community planning on post-disaster reconstruction.

Media coverage can promote a policy of disaster prevention and risk reduction in the public and political agenda (QUARANTELLI, 1991). The dynamics of the media leads to addressing the disaster by relating the news to the experiences and concerns of the audience. But behind the journalistic imperative to do media coverage, there should be interest in creating and setting an agenda that places disaster risk reduction in local attention, since the media serve to disseminate information, guide, educate, persuade and reduce people's concern (SUSMAYADI et al, 2014).

For Quarantelli (1991) it is necessary to include the media in the development of national / local plans of disaster prevention and risk reduction. While the authorities see the media as part of the response effort, they generally do not include it in the planning or in any practical prevention exercise. Part of the responsibility for this difficulty lies with local emergency management officials who, according to Quarantelli (1991), almost always have mixed feelings about including the mass media in the planning.

The results of this research indicate, in a general way, that disaster coverage has a great variety and magnitude of effects on various publics, agendas, policies and behaviors. The studies surveyed gave little attention to disasters before they occurred, concentrating most of their coverage on the disaster itself and ignoring long-term issues, while recognizing the importance of the role of the media in disaster prevention and reduction.

The research identified an open predominance of English language at the expense of Portuguese (99,182 articles in English vs. 502 articles in Portuguese). This domination is due to the tendency of the scientific community to publish in high-impact journals, which depends directly on the number of times articles published in it are cited in other works, expanding the publications in English and their possibilities of being used as reference. In a study carried out by Rosa and Alves (2011) on the journals classified in the CAPES Qualis system, it was concluded that among the most valued periodicals, 97% of them are edited in English and only 3% in other languages. In this sense, it is difficult for a research done in another language to circulate in the academic circuit.

It is necessary to record the significant percentage increase over the 2000s of the studies on media and disasters (80% of publications focus on the decade 2006-2016). Certainly, with the increase of natural and anthropogenic catastrophes and the development of social media in recent years, researchers in the area have been concerned with reflecting and deepening studies on the subject. The scientific community can play an even more relevant role in the future by helping to develop communication technologies in terms of disaster risk management and the creation of better resilience strategies.

It can be pointed out that research of the last 20 years focused mainly on natural disasters (80% of articles) and on analysis of case studies (70% of articles). The researchers noted the media's propensity to report the drama of the situation and expose the human

side of catastrophe beyond our control, attempting to alleviate chaos through images of relief teams and information on aid and assistance provided. In contrast, the coverage of anthropogenic disasters more often seeks to blame and judge the situation severely by the number of victims, property damage and geographic reach (BARNES et al, 2008).

The cases analyzed suggest that the performance of government officials and institutions in disaster situations as well as the solid and reliable relationship between journalists and emergency managers have to be analyzed differently. There are a number of policy and administrative decisions that must be taken before any catastrophe, so that they have a significant impact on the collective capacity to respond effectively to disasters. The great challenge is to have the media as allies, and that this relationship promotes the minimization of risks, ensuring the preparation and participation of society in a preventive way.

Media coverage of natural or anthropogenic disasters should not be instantaneous or episodic, nor should it focus on survival or on emergency services assessments. This weakens community resilience and the ability to reflect more seriously on the importance of collective disaster risk reduction education. Participatory approaches provide an opportunity to increase the number of innovative local, national and regional initiatives to build resilience. An important factor is the strengthening of the relationship between government structures, the media – as a communication agent – and those who are most vulnerable to danger. However, there is a need for public policies that foster the role of the media and active citizen participation in the investment of disaster risk management.

Based on the analysis procedures applied in this work, it can be stated that the variation identified in the literature on media and disasters is related to four main factors:

- Types of disasters: environmental disasters show great variation in predictability, which means that covering the impact of an earthquake is different from following the course of a flood.

- Types of media: the technical devices establish significant differences in the dynamics of the activities, which indicates that reporting the impact through a tweet is different from the production of a television report.

- Types of affected regions: an important factor that affects the relationship between media and disasters is the country impacted, because some regions arouse more interests than others in the media.

- Disaster Stage: Another key element in the relationship between media and disaster concerns the disaster phase, as the post-impact period draws more attention to the destruction.

The combined effect of these factors leads to a large thematic and methodological variation in media and disaster studies.

Final remarks

The central focus of this article was the evaluation of the evolution of media and disasters research in the last decades, aiming to identify the trends and patterns of the area, the current state of the research, as well as to outline future perspectives for this particular field of studies. Thus, a bibliometric analysis was carried out in the EBSCO database on media and disasters research of the last 20 years (1996 to 2016). In general terms, it can be concluded that there is a high interest in this area in the scientific community, signaling a search for the deepening of knowledge and the conceptual basis on the subject.

Should be distinguished as limitations of this research, given the need to limit the period of the study, the findings are restricted to the time considered and any changes or relevant subject may not have been analyzed. The second limitation has to do with the lack of research with the same objective. The exploratory nature of the study was limited in terms of comparison of results with other studies. The third limitation is related to the difficulty in obtaining a more significant sample for the analysis (only 18 articles were selected for registration). Some publications were not considered in the analysis by leaving the scope of this work.

From the results of this study, it is suggested that future researches examine issues related to the implications of disasters coverage in policy conversations addressing issues such as environmental protection, global climate change or human development costs in areas prone to natural disasters. It would also be interesting to expand the understanding of disaster risk, strengthening the preparation based on the effective collaboration among stakeholders (local, regional and global level), aiming to improve resilience.

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