

“Bam Earthquake” Versus “Hurricane Katrina”: How Scientific Communities have Responded to these Natural Disasters by Publishing Scholarly Articles

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Abstract

Objectives: On December 2003 in Iran, the “Bam earthquake” caused 43,000 people lost. On August 2005 in the United States, “Hurricane Katrina” caused 986 people lost. The aim of the current study was to determine how scientific communities have responded to these natural disasters by documenting the different aspects of them in the format of scientific articles. **Methods:** The well-known PubMed search engine (<http://www.ncbi.nlm.nih.gov>) was searched in June 2014 using “Bam earthquake” and “Hurricane Katrina” as the keywords. In the second round of the search, the Persian Scientific Information Database search engine (<http://www.sid.ir/fa/index.asp>) was also searched using two previous keywords that were translated into Persian. **Results:** The first search strategy retrieved 54 articles for “Bam earthquake” and 864 articles for “Hurricane Katrina.” The second search strategy retrieved 66 articles for “Bam earthquake” and 0 articles for “Hurricane Katrina.” Dividing the total retrieved articles by the number of deaths has revealed that for “Bam earthquake” nearly 0.0028 articles and for “Hurricane Katrina” nearly 0.88 articles per death have been indexed, respectively. **Conclusions:** The results of the current study have clearly demonstrated that overall there are shortages of scientific studies of “Bam earthquake” in comparison to “Hurricane Katrina.”

Key words: Bam earthquake, Hurricane Katrina, scientific publishing

INTRODUCTION

On December 2003, a 6.5 Richter scale earthquake totally destroyed Bam, a city which is located in the southeast of Iran. It has been estimated that more than 43,000 and 30,000 people were killed and injured, respectively. Soon after the earthquake there had been substantial amounts of national and international responses.^[1] The magnitude of “Bam earthquake” was so huge that it has been considered as one of the most catastrophic disasters to have hit Iran.^[2]

On August 2005, the deadliest hurricane since 1928 that is, Hurricane Katrina struck the US Gulf Coast. The hurricane caused substantial damage to Louisiana and Mississippi residents. In total, 986 Katrina-related deaths were recorded.^[3] Further investigation has revealed that “poverty,” “high-density housing,” “immigrant status,” “poor English language proficiency,” and “ethnic minorities” all have increased the vulnerability of the populations that were hit by disaster.^[4]

It is obvious that the types and damages of these two natural disasters are substantially different from each other and moreover, they have occurred in diverse time and space zones. The chief aim of the present study, however, is to determine how scientific communities have responded to these two natural disasters by documenting the different aspects of them in the format of scientific articles.

METHODS

The well-known PubMed search engine (<http://www.ncbi.nlm.nih.gov>) was searched in June 2014 using “Bam earthquake” and “Hurricane Katrina” as two keywords. Since no Persian language journal is covered by PubMed and in order to see

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how Persian language journals have published articles related to "Bam Earthquake" it was necessary to select and search an Iranian national search engine as well.

Therefore, in the second round of the search, Scientific Information Database (SID) search engine (<http://www.sid.ir/fa/index.asp>) was searched. This well-known Persian search engine covers most Persian language scientific journals in the diverse fields of medicine, basic sciences, art, etc. In June 2014, it provides access to more than 210,000 Persian articles. The only important shortcoming of this search engine is that it allows you to search within title and keywords but not the full text.

As a result in the second round of the search two previous keywords that is, "Bam earthquake" and "Hurricane Katrina" were translated into Persian and then searched separately within title and keywords of the Persian papers that were indexed by SID search engine.

Furthermore, to investigate how scientists have responded to these two natural disasters in terms of their mortality burden, the number of total retrieved articles was divided by the number of deaths resulting by each disaster.

RESULTS

The first search strategy retrieved 54 articles for "Bam earthquake" and 864 articles for "Hurricane Katrina." The second search strategy retrieved 66 articles for "Bam earthquake" and 0 articles for "Hurricane Katrina."

Table 1 demonstrates the number of retrieved articles for "Bam earthquake" and "Hurricane Katrina" based on the years of publication and the applied search engines. As this table highlight for "Bam earthquake," there was an increasing trend of the publication from 2003 to 2006 and afterward this trend constantly declined. The highest number of publications belong to the year 2006 (i.e., 19) and the lowest to the year

2014 (i.e., 0). For "Hurricane Katrina," there was also an increasing trend of the publication from 2005 to 2007 and afterward this trend constantly declined. The highest number of publications belong to the year 2007 (i.e., 154) and the lowest to the year 2014 (i.e., 16). Statistical analysis has revealed that this trend is significant ($P = 0.001$).

In addition, the number of total retrieved articles were divided by the number of deaths that is, 120/43,000 for "Bam earthquake" (nearly 0.0028 articles per death) and 864/986 for "Hurricane Katrina" (nearly 0.88 articles per death).

DISCUSSION

During recent years "Bam earthquake" and "Hurricane Katrina" are among those natural disasters that have received worldwide attention.^[5] Although these two natural disasters occurred in diverse time and space zones and have substantially different consequences the results of the current study have also clearly demonstrated that overall there are shortages of scientific studies of "Bam earthquake" in comparison to "Hurricane Katrina." This is an unfortunate fact that not only the developing countries are more prone to natural disasters and their devastating impacts^[6] but also the consequences of natural disasters are considerably less studied within developing countries.

Moreover, evidence suggests that even within both developed and developing countries natural disasters strike more poor people as they often live where the land is cheap and prone to natural disasters (e.g. "at the bottom of volcanoes," "on the coast," "in seismically dynamic areas").^[4,7] This clearly explains why in the 21st century underprivileged people especially in East Asia and Pacific, South Asia, and Sub-Saharan Africa have two times greater exposure to natural disasters than prosperous people.^[8] This fact should not act as an excuse to not scientifically investigate the impacts of natural disasters in poor people especially within developing countries.

However, the evidence further suggests that within developing countries very low budget is allocated for studying health-related phenomena^[9,10] including the consequences of the natural disasters. Even more prosperous developing countries including such as some middle-eastern oil reach countries spend far less on scientific investigations than that of the developed countries.^[11]

It is also worth mentioning that within developing countries the quality of existing health-related databases plus health monitoring and surveillance systems are usually weak.^[12,13] If a disaster either natural^[14] and/or man-made^[15,16] occurs, there would be also huge disruptions in gathering such low quality data. Furthermore, due to censorship policies even such low quality data might not be readily available for scientific investigations.^[17] All these might partially explain why usually there are lower scientific contributions from developing countries in comparison with developed countries.^[18]

Table 1: The Number of the Retrieved Articles Based on the Year of Publication and the Applied Search Engines

Year	"Bam earthquake" (PubMed) + (SID)=total	"Hurricane Katrina" (PubMed) + (SID)=total
2014	(0)+(0)=0	(16)+(0)=16
2013	(4)+(0)=4	(47)+(0)=47
2012	(4)+(2)=6	(57)+(0)=57
2011	(7)+(0)=7	(61)+(0)=61
2010	(5)+(6)=11	(101)+(0)=101
2009	(5)+(7)=12	(102)+(0)=102
2008	(8)+(5)=13	(128)+(0)=128
2007	(6)+(9)=15	(154)+(0)=154
2006	(7)+(12)=19	(129)+(0)=129
2005	(6)+(10)=16	(69)+(0)=69
2004	(2)+(9)=11	-
2003	(0)+(6)=6	-
Total	(54)+(66)=120	(864)+(0)=864

$P=0.001$. SID: Scientific Information Databases

The other important findings of the present study is that for both "Bam earthquake" and "Hurricane Katrina" it was a very short-term (i.e., 3–4 years) of increasing trend of publications which was followed by a constantly declining trend. Although this trend looks to be expected for studying any natural disasters more emphasis should be in place to study longer term impacts of the catastrophic disasters.

Let us take mental health status after natural disasters as an example. Evidence suggests that due to: "Personal intimidations to life," "loss of loved ones," "possessions loss," "massive demolition," "collapse of social security systems," "breakdown of social structure," etc., natural disasters have a great impact on the mental health status of the affected people.^[14] Evidence further suggests that the impacts of catastrophic disasters on mental health status are greater than milder ones^[19-22] and such impacts might be evident years after a natural disaster has occurred.^[23] Therefore, this is very unfortunate that 11 years after "Bam earthquake" no English or Persian studies have been indexed.

It is also worth mentioning that although no Persian studies were retrieved regarding "Hurricane Katrina" and this seems to be usual, surely there are good lessons that Iranian emergency care and disaster response might learn from this tragic disaster. Evidence suggests that there are always good lessons that one country might learn by investigating the other country's response to a natural disaster. For example, US emergency care and disaster response have learned good lessons from the 2011 Great East Japan Earthquake.^[24]

Therefore, it can be concluded that developing world countries need to establish a comprehensive surveillance system that enables them to congregate necessary information as soon as a disaster happens. In addition, this system should continue to collect the vital information for a long period to permit the scientists to study the longer impacts of a disaster as well.^[18,25]

In addition, more scientific work and documentation should be encouraged in response to catastrophic disasters in developing worlds and surely this needs scientists' and governments' commitment alike. Allocating sufficient budgets and designing well-established methodological studies are vital and international joint collaborations and cooperation should be seriously persuaded.^[26,27]

LIMITATION OF THE STUDY

To sum up it is worth mentioning that within the current study a well-known International search engine (PubMed) and a well-known Iranian search engine (SID) have been investigated. Therefore, it would be possible that by altering the search strategy e.g., by selecting new international search engines such as Scopus (<http://www.scopus.com/>), etc., and Iranian search engines such as Magiran (<http://www.magiran.com/>), etc., more articles be retrieved. However, it is rather impossible that retrieving more articles would change the current unbalanced situation.

CONCLUSIONS

The results of the current study have clearly demonstrated that overall there are shortages of scientific studies of "Bam earthquake" in comparison to "Hurricane Katrina."

Public health implication of the study

More efforts should be in place to investigate both short and long term consequences of natural disasters especially within developing countries where more natural disasters occur.

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Conflicts of interest

There are no conflicts of interest.

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