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# **A bibliometric analysis of Human Trafficking in the wake of Natural Disasters**

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## **Abstract**

*This study is based on the bibliometric analysis of research publications that focus on highlighting the interlinkages between natural disasters and human trafficking as its aftermath. The main objectives of the study are to determine the frequency of such publications and also to establish that the problem of trafficking as a result of natural disasters has not received enough attention from the researchers. The data was collected from the Scopus database using VOSviewer software. Literature written from 2000 to October 2020 were perused. The study consisted of a total of 66 documents which are classified into articles, letters, editorials conference papers, and reviews. Data collected is analyzed and presented using tables, charts, and graphs. The study revealed that the interlinkage between disaster and human trafficking continues to be an under-researched area and which has led to complete divorce between disaster management and anti-trafficking practices. It is also recommended that disaster-prone economies should fund and encourage such research.*

**Keywords** –Human trafficking, natural disaster, floods, natural calamities, bibliometric analysis

## **I. Introduction**

Allen Pitcard (1969) differentiated between statistical bibliography and bibliometric. The term Statistical bibliography was used first used by E. Wyndham Hulme In 1922. He used the term to mean the illumination of the process of science and technology through counting documents. According to Pitcard the term statistical bibliography is confusing and is not very clear and can be confused with statistics or bibliography of statistics. Pitcard points to the word bibliometric by which he meant the application of mathematics and statistical methods

to books and other means of communication. The bibliometric study provides analysis and evaluation of periodical literature by providing a complete picture of the core publications of any specific subjects (D and A, 2008). Lately, a bibliometric study is being widely used to analyze and evaluate the scientific contribution of the published literature on any specific subject for a definite period with the help of the application of bibliometric and citation indicators. The bibliometric analysis also helps academicians and researchers to identify the most popular and cited authors and discover quality publications and simultaneously highlight the research gaps creating scope for further research.

The present study attempts to examine the publication output on human trafficking and natural disasters from 2000 to 2020. Although human trafficking is regarded as a violation of human rights it has not received enough academic attention as an aftermath of a natural disaster. The present study analyses a total of 66 documents and with the help of graphical data representation and examines the document from different perspectives like keywords, research domain, subject area, countries of publication, authorship, and citation analysis.

## **II. Statement of Problem**

Human trafficking is a global problem. Human trafficking has become a concern globally in the past few decades. The issue of human trafficking is raised in many international conventions and conferences. Human trafficking is said to have three constituent elements: firstly, to Act i.e. to harbor, transport, recruit or transfer a person. Secondly, means i.e. by use of force, threat, abduct, fraud, abuse of vulnerability, use of undue influence, etc. Thirdly, Purpose i.e. why is it done, it is carried out for any purpose any such as slavery, organ removal, sexual exploitation, prostitution, and similar acts (UNTOC, 2000). Human trafficking is a concern for every country. Human trafficking is addressed in many conventions and conferences. The conventions such as the International Agreement for the suppression of White Slave 1904, International Agreement for Suppression of Traffic in Women and Children 1927 and entered into force in 2003, the Trafficking Protocol 2000 and Protocol against Smuggling of Migrants by Land, Sea and Air 2000 and entered into force in 2004 (UN, 2000). Many countries have developed their human trafficking laws by using Trafficking Protocol 2000 (Laczko, 2015). The European countries have adopted Brussels Declaration on combating and preventing trafficking among human beings within Europe (Laczko, 2015).

Human trafficking has become a transnational organized crime. In South Asia, approximately 150,000 people have been trafficked annually (UNFPA, 2006). India, Bangladesh, and Nepal are recognized as major contributing countries for women and children trafficking for sexual exploitation, forced domestic servitude, and forced labor. In the South Asian region, it is particularly observed that women and children are exploited underneath the name of deceitful marriages, fake employment guarantees culture and spiritual trust and deceit. According to the United Nations Office on Drugs and Crime (UNODC) report on human trafficking (2009), the most widespread form of human trafficking is sexual exploitation which constitutes 79%. In India, according to the latest National Crime Records Bureau (NCRB) report total No. of reported cases for trafficking in 2018 was 5902. Approximately worldwide nearly 20.9 million people are forced labor i.e. trapped in the job which they are not willing to do and neither can they leave. At any given time near around 3 people out of 1000 are suffering in forced labor out of which the private sector exploits 18.7 million i.e, 90 percent of forced labor victims are in agriculture, construction, domestic work, or manufacturing has 68 percent and forced sexual exploitation victims consists of 22 percent. Women and girls share is 11.4 million i.e. 55% compared to men and boys with the share of 9.5 million i.e. 45% (ILO, 2012).

There are several push factors for victims falling prey to human trafficking such as poverty, disasters, migration, child marriage, war, etc. It has been observed that natural disasters can also be a major push factor for victims falling prey to human traffickers. Natural disasters usually result in the migration of people in search of food and shelter. Victims of disaster-affected regions become more vulnerable due to loss of their livelihood as everything around is destroyed which forces people to migrate in search of livelihood. Victims migrate within the local area as well as cross borders in search of livelihood.

Natural disasters affect nearly 160 million people every year across the globe (Ritchie and Roser, 2014). There is adequate data to prove the disappearance of the women and children in the disaster-affected areas. Whenever disaster takes place many cases of disappearance are reported. Usually, these disappearance cases are of women and children. Many studies have shown that women and children are more vulnerable to the disastrous situation (Bhalla, 2016).

However, the nexus between trafficking and disaster remains an under-researched area. This paper is written to establish the gap in the literature relating to trafficking. We have

conducted a Bibliometrix analysis to know the research scope of human trafficking in the wake of natural disasters. The bibliometric analysis will be used to know the research activity. The bibliometric method will also be useful to analyze the already published literature and establish the further need of the research in this area.

### **III. Objectives of the study**

The key objectives of the study are as follows

- To study the pattern of articles distribution and citation by year
- To discover the affiliation of contributing authors by the country
- To map the most frequent keywords in documents relating to trafficking and disaster
- To determine the growth of publications and typology of documents
- To do the citation analysis of documents
- To analyze the research contribution by the countries based on their vulnerability to disasters.

### **IV. Literature Review**

**Waleed M. Sweileh (2018)** did a bibliometric analysis using the Scopus database of research trends on human trafficking. He concluded that there is an under-representation of health-related literature on human trafficking and the existing literature was dominated by sex trafficking. The research collaboration between research networks and source countries and destination is important.

**Gonzalez et al (2020)** highlighted the huge gap in scientific publication trafficking of human beings for organ removal and migration. They suggested that there is an urgent need for empirical studies for better policy implementation.

**Barnes et al (2019)** did a bibliometric analysis to identify the main research themes and research gaps in the area of “natural hazards”, “disaster management” and “stimulation techniques”. They highlighted that the research is reactive and proactive. Most of the research is done on past events and there is less coverage of case studies in Africa and Asia. They also showed that disaster management is a rapidly expanding area of research and current research initiatives need to be coupled with more research relating to vulnerability specific to developing countries.

**Rana (2020)** conducted a bibliometric analysis based on three categories that are “disaster resilience”, “climate resilience”, and “disaster and climate change resilience”. The study

revealed that disaster resilience was studied by more disciplines than climate change resilience however the no. of publication on climate change resilience were more than that on disaster resilience. It suggested that resilience should be used as a bridging concept between disaster resilience and climate change resilience.

**Zhang et al (2018)** did a bibliometric analysis of policy documents on disaster management in china. It discovered that “risk”, “disaster risk reduction” and “disaster risk governance” have failed to become important policy keywords that do not agree with the global agenda to move from response to risk reduction.

**Giupponi et al (2015)** did a bibliometric analysis of evolving concepts in vulnerabilities. They documented the rise and interpretation of vulnerability as one of the dimensions of risk. Thus it can be observed that bibliometric analysis of publications on human trafficking and natural disasters is still unexplored. It creates a huge research gap to be filled by further research.

## **IV. Research Methodology**

### **IV.1. Source of information**

The present study is conducted with the help of the Scopus database. The Scopus database is developed by Elsevier in the year 2004. Scopus is the peer-reviewed literature database such as scientific journals, conference proceedings, and books. It has comprehensive literature in the fields of medicine, social science, arts and humanities, and Science and technology. Scopus also has tools for analysis and visual representation of data. The Scopus database uses many metrics to analyze the data such as authors and their affiliation, document type, total no. of papers, total no. of citation, H-index.

### **IV.2. Study Design**

The bibliometric method is adopted for the study. The bibliometric analysis is done as The study is done from 2000 to 2020 i.e. 20 years. It is observed that since two decades the frequency of natural disasters has increased. Also, trafficking has increased. The disasters have affected people on an average of 99 million a year (Guardian, 2016). Therefore the study is conducted to ascertain whether human trafficking and natural disaster have attracted any attention of researchers in the past 20 years.

### **IV.3. Search Strategy**

The keywords play a major role in fetching the results through a database. Therefore, in the present study, we have used keywords and title words including few constraints to reduce false-positive results for conducting the study. The keywords and title words are presented in Table 1. The keywords were accessed from previously published literature on human trafficking and natural disasters. The limitations set during the study were about the source type and language. We have analyzed journals published in the English language only.

The search result showed a total of 66 publications by using the Scopus database. We selected all publications in the subject matter of human trafficking and natural disasters interlinkage. The VOSviewer analysis and Scopus analysis data were used for the visualization of maps.

## V. Presentation and Analysis of Data

**Table 1 Research strategies and keywords used to retrieve documents in the field of interlinkage of human trafficking and natural disaster**

Search method	Keywords	Constraints	Exclusion
Title words	Trafficking and Disaster	None	--
Limit	1. Source type = Journal 2. Time interval = 2000 – 2020	--	--

### V.1. Growth of publication and typology of documents

Out of total 66 documents there were five different types of document: Articles (72.7%), letters (1.5%), editorials (1.5%), conference papers (3.0%) and Reviews (21.2%). [Table 2]

The retrieved number of documents has been fluctuating during the study time (Figure 1). The publication was at a peak during 2017 but the gradual decline was observed after 2017.

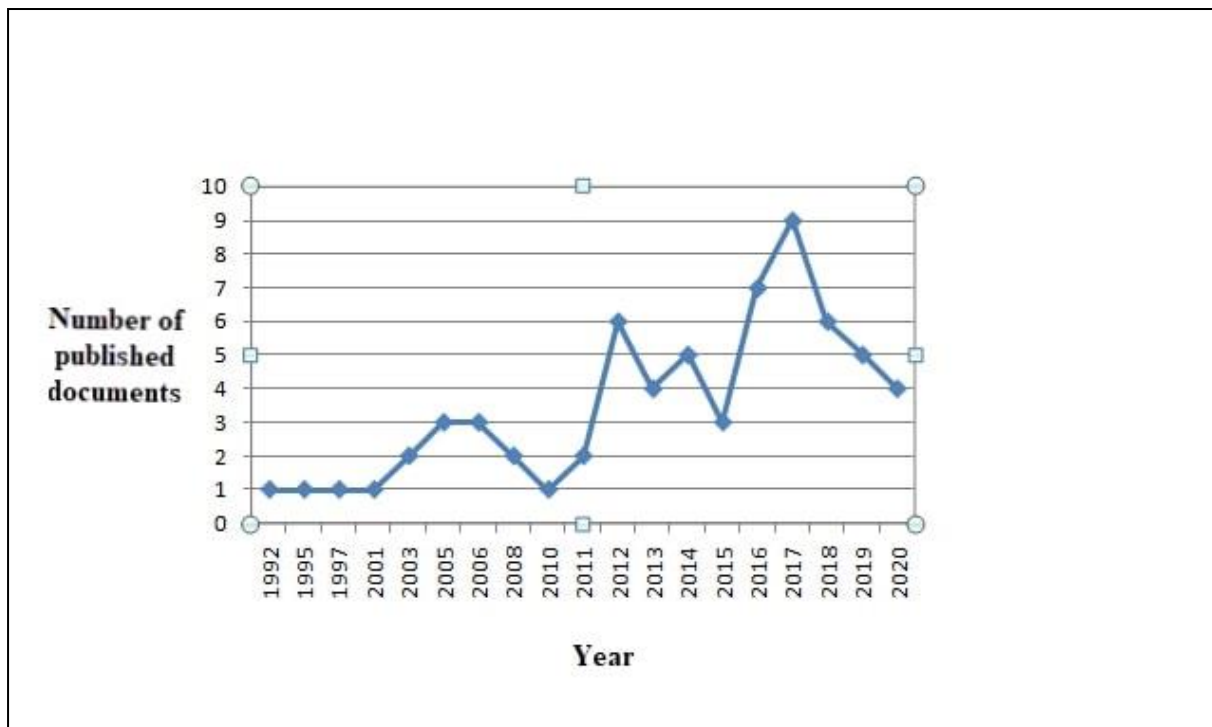


**Table 2 -Document type and No. of Documents**

Document Type	No. of Documents
Articles	48
letters	01
editorials	01
conference papers	02
Reviews	14
<b>Total</b>	<b>66</b>

**Figure1-Growth of publication and typology of documents**

Source: visited scopus.com/ on 1<sup>st</sup> October 2020



## V.2. Mapping the most frequent keywords and typology of trafficking and disasters

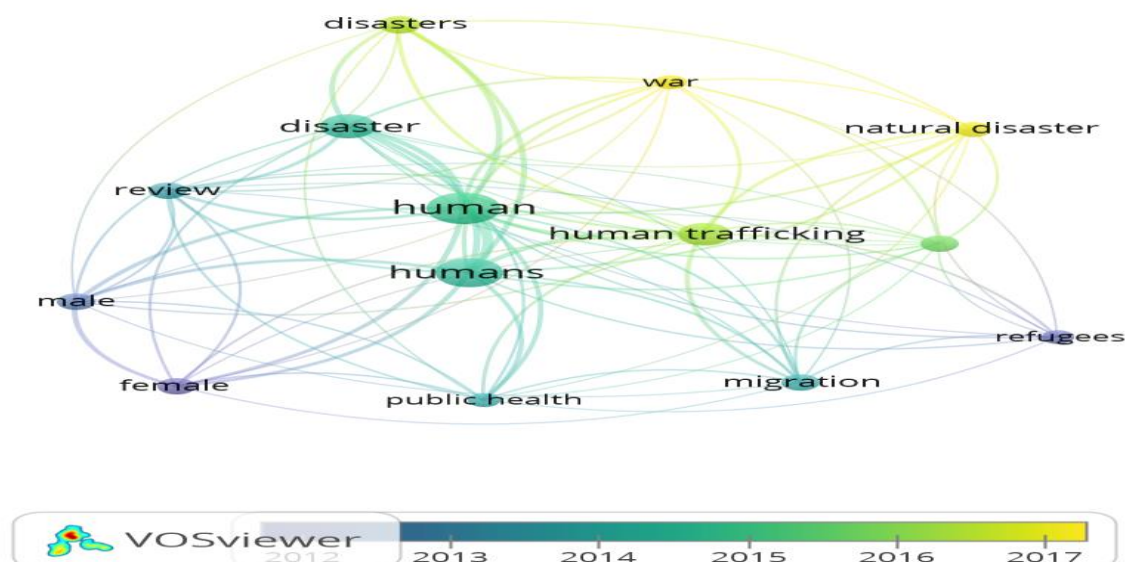
The keywords selection is very important as it is directly related to the results and findings. The most common keywords that were visualized are in figure 2. The map showed 3 clusters comprising of (1) Human trafficking, migration, natural disaster, refugees, trafficking, and war. Cluster (2) articles, disaster, disasters, and human. Cluster (3) female, human and public

health. The below is the table that shows the occurrence of keywords and figure 2 shows the most common keywords retrieved from the documents. The keywords “human trafficking” and “human” occur more than the “natural disaster”. Also, it was only in 2016 onwards that trafficking and natural disasters started to appear together.

**Table 3 Keywords and Occurrence**  
Source: VOSviewer

Keyword	Occurrences
human	27
humans	22
priority journal	15
human trafficking	14
article	17
disaster	16
disasters	9
male	8
female	8
review	7
war	5
natural disaster	6
migration	7
public health	5
trafficking	8
refugees	5

**Figure 2 Mapping the most frequent keywords and typology of trafficking and disasters**  
Source: visited scopus.com/ on 1<sup>st</sup> October 2020



### V.3. Research Domain

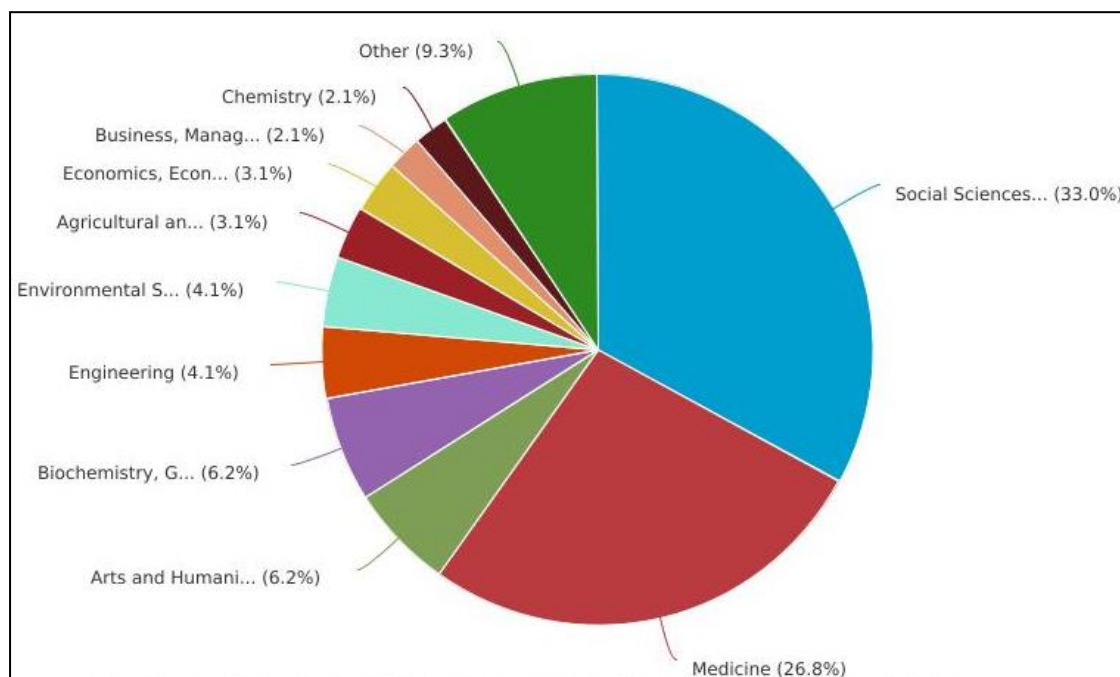
A total of 33% of the documents were retrieved from the field of social sciences. The medicine field contributed about 26.8% of documents. The documents retrieved from biochemistry and arts and humanities are about 6.2% each. Whereas the documents retrieved in the field of Environmental studies is of 4.1%. The Agricultural studies have contributed 3.1%. The 3.1 % of documents retrieved from the field of Economics. The 2.1% of documents were retrieved from the field of Business management. The 2.1% of documents retrieved from the field of Chemistry. The 9.3% of documents were retrieved from the other field (Figure 3). It can be concluded that there is no research conducted in the field of law and the upcoming research domain of vulnerabilities also remains largely unexplored.

**Table 4 Subject Area and Number of Documents**

<b>Subject Area</b>	<b>No. of Documents</b>
Social Science	22
Medicine	18
Arts and humanities	04
Biochemistry	04
Engineering	03
Environmental science	03
Agricultural Studies	02
Economics	02
Business Management	01
Chemistry	01
Others	06
<b>Total</b>	<b>66</b>

### Figure 3 Documents by subject's area

Sources: visited scopus.com/ on 1<sup>st</sup> October 2020

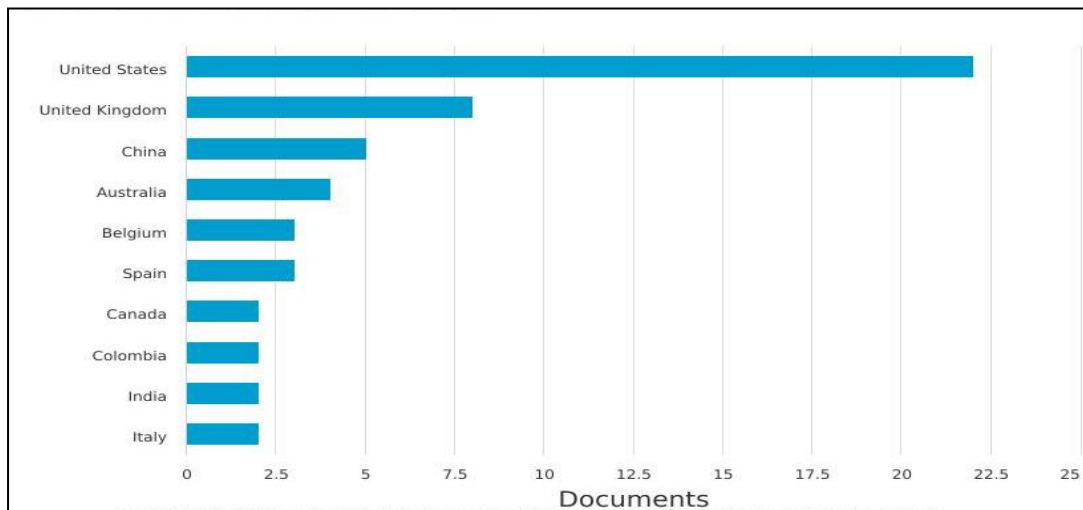


#### V.4. Top 10 active countries

Authors from countries have contributed to publishing the retrieved documents. The top 10 active countries contributed to publishing documents. The United States ranked first in several published documents. The other top ten countries that have published documents are United Kingdom, China, Australia, Belgium, Spain, Canada, Colombia, India, and Italy. The graphical representation of the same is in figure 4

**Figure 4 Top 10 active countries**

**Source: visited scopus.com/ on 1<sup>st</sup> October 2020**



### **V.5 Disaster risk analysis**

Table no. 2 shows the ranking of the top 10 countries which has the highest disaster risk worldwide. On the other hand ranking of countries like the United Kingdom ranks 140, China ranks 100, Australia ranks 124, Belgium ranks 161, Spain ranks 136, Canada ranks 156, Colombia ranks 88, India ranks 89 and Italy ranks 122. It is observed that the countries which have conducted studies to establish the link between human trafficking and Disaster are less vulnerable to this risk of disaster. Whereas, countries having the highest risk of a disaster have not conducted any study in this area.

Investing in disaster risk reduction for resilience is the basic aim of the Sendai framework to achieve sustainable development goals (UNISDR, 2017). This establishes that investment in research and development is one of the keys to disaster risk reduction and making communities less vulnerable to the risk of trafficking. Also, the countries which are highly vulnerable to disaster risk are contributing less towards the research and development and vice versa. Thus it is the need of the hour that research is promoted and funded by the states of the most vulnerable countries.

**Table 5– World risk report**

<b>Rank</b>	<b>Name of the Countries</b>	<b>Risk index</b>
1	Vanuatu	49.74
2	Tonga	29.72
3	Dominica	28.47
4	Antigua and Barbuda	27.44
5	Solomon Islands	24.25
6	Guyana	22.73
7	Brunei Darussalam	22.3
8	Papua New Guinea	21.12
9	Philippines	20.96
10	Guatemala	20.09

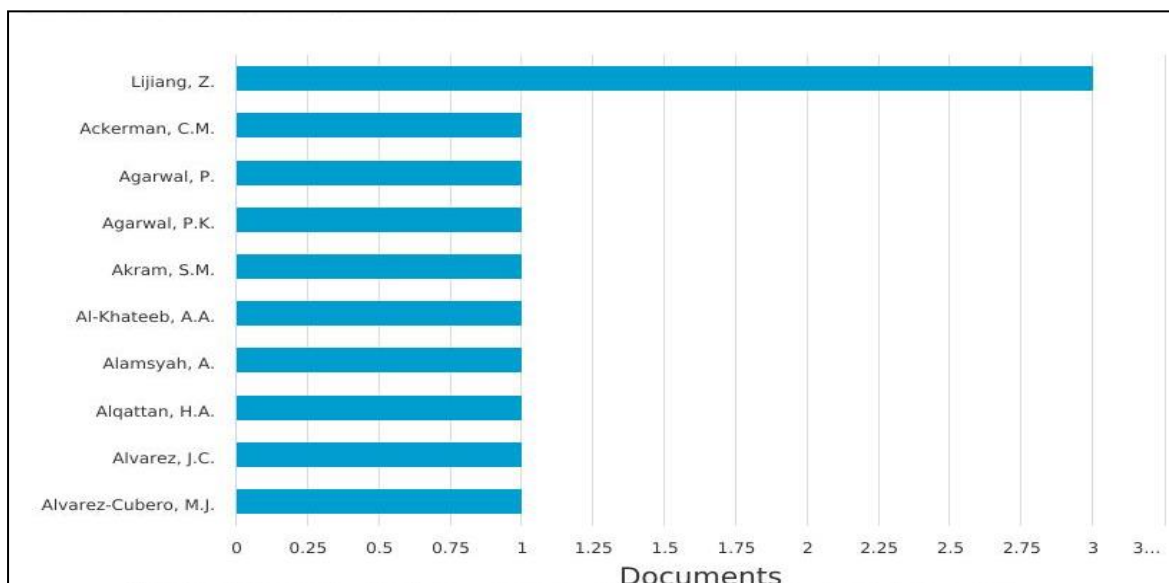
(Source – worldriskreport.org/#data on 1<sup>st</sup> October 2020)

### V.6 Authorship and Affiliation analysis

The total number of authors identified was 10 in the retrieved documents from Scopus. The average number of documents per author is 1.6 documents. The documents retrieved show that there is a maximum of 04 documents by one author seen (Figure 5).

**Figure 5 Top 10 Authorship analysis and their affiliation analysis in Scopus database**

**Source: visited scopus.com/on 1<sup>st</sup> October 2020**

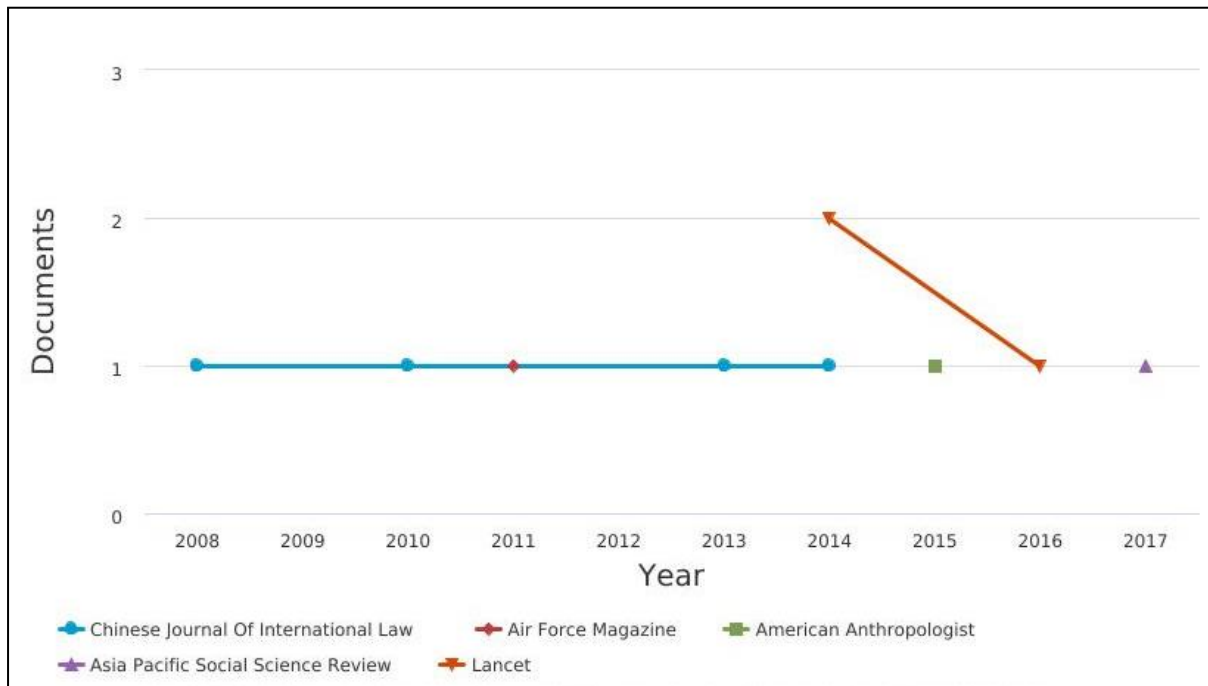


## V.7 Journal for publishing documents

The documents retrieved were published in 62 journals. The most active journal is the Chinese Journal of International Law. The top 05 journal sources were identified which is shown in figure no. 6.

**Figure 6 Number of documents published per years in Journals**

Source: visited scopus.com/ on 1<sup>st</sup> October 2020

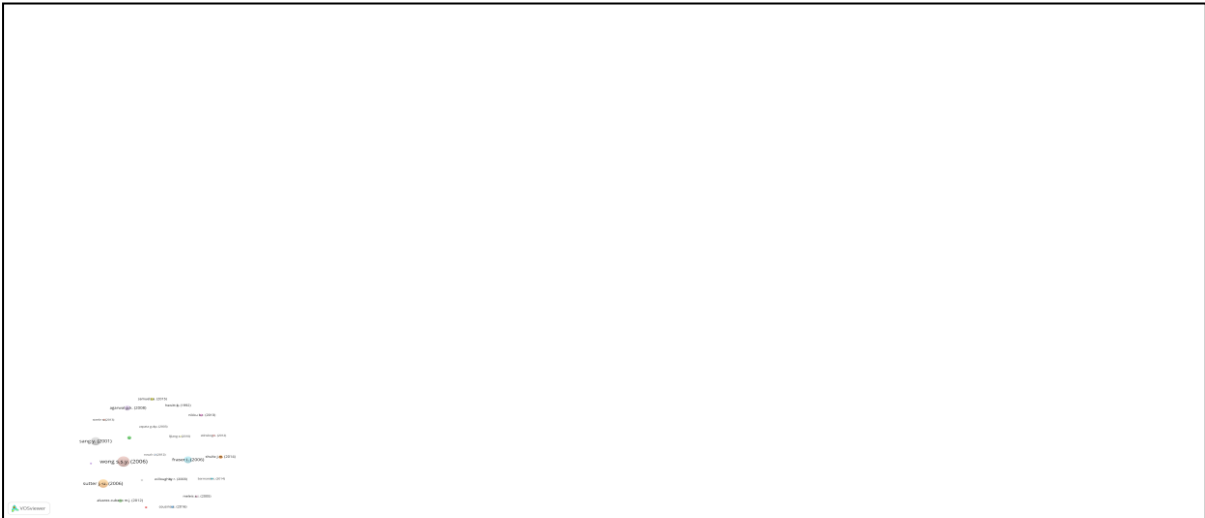


## V.8 Citation analysis

The retrieved document is 66. A minimum of 5 citations per document was selected and only 23 documents meet the threshold. 23 clusters are consisting of one author each (Figure 7).

## Figure 7 Citation analysis

Source: visited scopus.com/ on 1<sup>st</sup> October 2020



### Discussion

The present study was conducted for analysis of the research trends in the field of publication to trace the gap in human trafficking and natural disaster. We aim to identify the gaps in the existing literature which do not acknowledge the linkage between trafficking and disasters. Many articles and papers were published on human trafficking and natural disaster independently. It is also observed that there are articles and papers on subject matter that discuss different root causes for human trafficking. Many papers discuss the criminal activity carried after a natural disaster as well. Some papers talk about different types of the aftermath of a natural disaster.

It has also been observed that there are papers that establish a link between migration and human trafficking. There were only three documents that established a linkage between human trafficking and natural disaster. There one contribution on this topic by one Indian Author.

It is observed that there is considerable growth in the research area of human trafficking and natural disaster issues individually. These issues are attracting the interest of many researchers individually and have seen progress in the forms of several measures taken to combat them. On the other hand, it is observed that very little attention is given to establishing the link between human trafficking and natural disaster. Not much research is done to identify human trafficking as an aftermath of a natural disaster. It is well established



that natural disasters cause migration increases the population of vulnerable people especially women and they fall prey to human trafficking. It is also observed that there is no international collaboration or research done in this area.

There is no research collaboration or documents in identifying legal gaps in human trafficking and natural disaster. There is a lack of availability of literature at the international and national levels. Not many studies are published concerning under-representation of the data on human trafficking as an aftermath of a natural disaster.

## **Conclusion**

It is established with the help of bibliometric analysis that not enough research has been conducted to establish the interlinkage between human trafficking and natural disasters. The countries like Papua New Guinea, Guayana, Philippines have high disaster risk as well as they are prone to human trafficking also. It is the need of the hour that research networks and funding agencies in high-risk countries invest in empirical research studies to document and establish human trafficking as one of the aftermaths of natural disasters.

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