

Basic Literature of Diabetes: A Bibliometrics Analysis of Three Countries in Different World Regions

Yahya Ibrahim Harande¹

Ibrahim Usman Alhaji²

Abstract

Among the non-communicable diseases in the world, Diabetes is considered deadly and terrible disease. It attacks both adults and infants. Governments of different countries and the non-governmental organizations (NGOs) are showing some concern on how the disease can be reduced from their societies. Multi-disciplinary attack is now launched on the disease include research and publication. This paper, examines the growth of published literature on the disease in three countries; Nigeria, Argentina and Thailand. The finding clearly shows that the literature of diabetes grow and spread very widely. In the year 1986 and beyond, the countries in the selected regions witnessed exponential growth of the literature. Bradford-zipf distribution method was applied to the three countries and the result indicates that, the literature of diabetes disease in these countries positively agreed with the Bradford-zipf laws of distribution and scattering of journal article. Total number of (19) core journals were found. Nigeria has (9), Argentina (6) and Thailand (4) respectively. These core journals produced (585) papers article on literature of diabetes. Out of this number, Argentina has 297Thailand has 104 and Nigeria with 184 papers. Another striking finding of the study is that among the nineteen (19) core journals identified from the three countries, one of the journals Diabetes research and clinical practice appeared in the core collection of each of these countries under review. Therefore it is more universal than the rest of the core journals.

Keywords: Bibliometrics, diabetes, disease, Nigeria, Argentina, Thailand

1. Introduction

Storage of excessive sugar in the body is the major cause of Diabetes disease. In a document, Diabetes success (2009), the term Diabetes has been defined as, “ A disease in which the body has a shortage of insulin or decreased ability to use insulin, a hormone that allows glucose (sugar) to enter cells and be converted to energy. When diabetes is not controlled glucose and fats remain in the blood and over time, damage vital organs.” Diabetes disease is therefore considered one of the world diseases that are traumatized the entire humanity silently. Indeed it is posing threat to the growth, survival and healthy living to so many communities across the globe. In the developing countries, the spread of the disease seems to be significantly felt.

Due to the prevalence of various forms of diseases, in the developing countries, most of their governments do not make it a policy to fight the spread of diabetes disease alone, but fight against the dispersion and spread of the non-communicable diseases which includes the diabetes.

¹ Department of Library and Information Sciences, Faculty of Education, P.M.B. 3011, Kano, Nigeria

² National Library of Nigeria, Abuja, Nigeria

Vaughan, Gilson and Mills (1989), are of the opinion that, "The prevention of diabetes in developing countries, does not appear to be a viable policy option. The priority lies with a broad approach to the prevention of a range of non-communicable diseases, including diabetes and to improve case diagnosis and management." The platform on which the developing countries combat the non-communicable diseases in their nations is not very strong, solid and effective. This resulted in the high growth and increase of these form of diseases in their countries.

Reddy and Yusuf (1998) opined that, "In 1990 the developing countries contributed 68% of the total global deaths due to non-communicable disease." To further buttress the point above, it has been reported on a document (2010), that, "Indeed Africa is experiencing one of the most rapid demographic and epidemiological transition of the world history. It is characterized by a tremendous rise in the burden of non-communicable diseases, underlined by the increasing life expectancy and life style changes resulting from the reduction of infectious diseases and fertility, and westernization." In a related statement it has been projected that, diabetes diseases in the near future would be spreading at an alarming rate in the developing countries of the world. "By the year 2025 over 75% of people with diabetes will reside in developing countries. These estimates and projections should however be modulated by taking in to consideration the on-going HIV infection pandemics."

2. Purpose of the Research

The purpose of the research constitutes the following:-

- 1- To trace the growth of the literature of diabetes from three countries; Nigeria in West Africa, Argentina in South America(Latin America) and Thailand in Asia.
- 2- To determine the core productive journals in the literature, using Bradford's law of scattering.

3. Literature Review

Bibliometrics as a tool in research assesment and evaluation uses mathematics and statistical techniques to measure output of scientific authors and their subjects. Generally it is a method that measure documents and other forms of media of communication using quantitative techniques. According to Haiqi (1994),"Bibliometrics is concerned with Mathematics and statistical methods to media of communication and become a well established part of information research to the quantitative description of documents." In a similar statement, Wormell (2002), says that, "Bibliometrics methods (quantitative studies of information flows) in combination with statistics, advanced information retrieval, data and text mining techniques can be applied , e.g. to the analyses of subject domains and research fronts , evaluation of portals and electronic libraries , and for gathering useful information for business intelligence and policy making." In another dimension, (Borgman, 1990; White and McCain, 1998), opined that, Bibliometrics methods, have been successfully applied to examine the intellectual structure of many disciplines. Schneider and Borlund (2002), in their research on thesaurus construction found that," By the use of bibliometrics analyses such as bibliographic coupling and cluster analysis, several clusters in the three overlapping document sets are created." Also Darko-Ampem (1993), says that," Bibliometrics has been used to study various characteristics of subject literatures, both literature used and literature produced."

In addition to this Kademani, et al (2005), opined that, "Over the years, scientometrics and bibliometrics techniques have become tools to evaluate the productivity of research institutes and individual researcher, as well as to map the growth of the research area."

One could say that, bibliometrics as a research field has given rise to a community of specialized experts (Bibliometricians). In addition bibliometrics as a method of research is quite applicable in many other fields of science, for the purpose of studying the publication pattern of a given discipline or other aspects of bibliometrics.

Also, Estabrook, Wenther and Katz (2002), hold the view that, “The purpose of bibliometrics is to map the literary production in a given field and to determine the structure of a field of study. This, in turn, allows identification of patterns in the literature-for example the most prolific authors or countries in the field, the rates of literary production over time, or the patterns of communication and collaboration of authors in the field. In doing so, it is possible to determine where the field of study is located, and where it is going in terms of its literary output.”

Many similar bibliometrics studies were conducted by a number of scholars and researchers. For example, Afolabi (1992), conducted study on Acquired immune deficiency syndrome AIDS. Onyecha and Ocholla (2007), also studied collaborations in HIV/AIDS research in Kenya and South Africa. Haiqi (1995), studied the literature of Acupuncture.

Michalopoulos and Falagas (2005), researched on global respiratory medicine. Haiqi (1994) also studied medicine Chinese traditional (MCT) using the Medline database. In addition to this, Xu, Chen, and Shen (2003), hold the view that, “Science scientific literature is a good indicator of scientific activity it is possible to derive several indexes that assess trends and to get a global picture of scientific activity through bibliometrics analyses over time.” Chiu, Huang and Ho (2004), utilized Science Citation Index (SCI) data base as their source of information in their research on, “Severe acute respiratory syndrome (SARS).”

4. Methodology

The data utilized for this study were contained in National Library of Medicine data base. The data was accessed through PubMed which is considered globally as one of the best ways to have contact to the database that index papers in the health sciences. The range of the data gathered for the study falls within the years 1967 through 2009. The names of the participating countries were considered as the MeSH Terms for checking on the data base. Then also the subject of the study Diabetes was also considered in the MeSH Term for checking the data base. For example, “Nigeria” AND “Diabetes,” “Argentina” AND “Diabetes,” “Thailand” AND “Diabetes”. The data collected are utilized and presented in tabular form as in Table 1.

The Table provides information on the nature of growth of the literature in the three participating countries. In order to determine the core productive periodicals in the literature, The graphical formulation of the Bradford’s law of scattering was applied to the data. According to the law , Bradford (1948), if the journals containing articles on a given subject are arranged in decreasing order of productivity of articles they carried on the subject, then successive zones of periodicals containing the same number of articles on the subject form the simple geometric series $1 : n : n^2 : n^3$. The first zone that contained the most productive journals is considered as the core or nucleus zone of the subject. The journals that constitute the second and the third zones decrease in their productivity of articles to the subject under study. Figure1 depicts the extent to which the literature of diabetes found in these three countries from different geographical regions conform to the law of scattering as explained by Bradford.

5. Findings and Discussion

A- Growth of the Literature of Diabetes in the three Countries

Table 1 show that, the growth of the literature on these three countries at four year interval is significantly showing some slight differences. The growth of the literature is more pronounced in Nigeria, then followed by Argentina, then followed by Thailand. Interestingly the three countries started experiencing high growth of the literature from the year 1986; even though Nigeria started having high increase in the growth of the literature earlier than this period.

The growth of the literature recorded by Nigeria in the year 1974-1977 was a little higher than the scores recorded by Thailand in the year 1986-1989. Despite this revelation, the three countries started experiencing exponential growth of the literature from the 1986 onwards. The reason could be that the spread and growth of the literature goes in relation to each of the countries level of commitment to education and literacy. Variations in their effort to develop education and literacy in their respective countries could be the influencing factors that affect the pattern in which researches and studies are conducted and published. Another reason could be that the extent of awareness on the availability of the disease in their country could serve as a reason for their scholars to dwell in to research in the area, hence the growth of the literature. Increase in the population of these countries could be another important reason that brings about the spread of both the disease and the literature. Population can make people to develop interest in knowing the causes of the disease and this curiosity could have some significant influence in the way and manner in which researches are conducted in the area. Another reason that could be put forward is that, the lack of satisfaction exhibited by the victims of the disease on the governments' effort in combating the disease from their countries. This could necessitate the scholars and researchers to conduct researches on the disease so that both the people and the government could benefit from the findings of the research. However a similar research was conducted by Lewin (2008), and concluded that, "The data showed that the publications on the topic were experiencing growth similar to the population of diagnosed cases, without expected lag time.

This similarity in the growth pattern of the literature and the affected population suggested that the research might be a factor in both identifying those with the disorder and maintaining their lives for longer periods of time." Also in another findings Ortiz, et al (2009), mentioned that, "Our findings suggest a growing interest in cancer research in Puerto Rico, as shown by the increased number of cancer related articles."

B- Bradford's zipf Distribution of Literature of Diabetes among the three Countries

The findings of the study have clearly shown that the literature of diabetes disease in the three countries studied surprisingly maintained scattering trend during the period of the study. The rate of the scatter could be viewed as alarming and exponential. Despite the fact that these countries are geographically located in different continents, yet they tend to have similarities in the spread and scattering of the literature of diabetes. Information from the graphical data reveals that, the core journals that emanates from Nigeria are (9), Argentina has (6) while Thailand has (4). The total number of the core journals of these countries is (19). These nineteen core journals, put together they produced five hundred and eighty five (585) papers in the literature of diabetes from their respective countries. Out of the total number, Argentina has 297 papers; Thailand has 104 papers, and Nigeria who recorded 184 papers. Table, 2 has the nine journals listed above.

Another striking finding is that, among the core journals in the literature of diabetes in these countries, only one journal seems to be universal. This journal appeared in the core journals of the three countries. The journal is *Diabetes Research and Clinical Practice* it appeared to be more universal than the rest of the journals listed in the core journals of these countries.

However, the Bradford-zipf distribution of the literature of Diabetes among the three countries can be seen conspicuously in Figure, 2. The ranked journals are plotted along the horizontal axis logarithmically while the cumulative sums of journal articles in Diabetes disease are plotted along the vertical line of the figure or illustration.

A lengthy straight-line can be seen on each of the three illustrations that represents the three countries; Nigeria, Argentina and Thailand. The existence of this line in the illustration clearly indicates that, Bradford-zipf law does apply to the literature of Diabetes disease in these three countries.

It also shows that the literature is scattering very widely and growing with significant speed in the three countries coming from different geographical regions and continents.

6. Conclusion

Diabetes disease is one of the non-communicable diseases that grow with speed in many countries of the world. The three countries studied have clearly shown some evidences of growth of the literature of the disease which further gives indication that people show concern on it and are engaging themselves in to various forms of researches and studies.

The study concludes that, the literature of the disease is growing significantly in these three regions of the world. The extent of the growth is quite significant and in harmony with Bradford-zipf distribution phenomenon of a given literature. The line depicted by the three countries in Figure, 2 has further confirmed the harmonious relationship earlier mentioned between the Bradford-zipf distribution law and the literature of diabetes disease. Furthermore, there has been a growing interest by the researchers and scholars in these three countries on the disease. This interest aid the growth of the literature in these countries. This could be seen from the year 1986 when these countries started experiencing exponential growth and scattering of the literature of diabetes in their environments.

7. References

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Table: 1: Cumulative Number of Submissions According to Country

Year	Nigeria	Argentina	Thailand
1966-1969	7	3	0
1970-1973	18	8	1
1974-1977	30	11	2
1978-1981	46	13	5
1982-1985	51	15	9
1986-1989	86	49	28
1990-1993	147	95	65
1994-1997	178	168	103
1998-2001	222	257	186
2002-2005	340	415	331
2006-2009	512	597	585

Table: 2 Core Journals Emanating From the Three Countries

Country	Submission	Journal Title
Nigeria	27	Ann Epidemiology
	53	Diabetes
	75	International journal of obesity
	97	Ethn. Disorder.
	117	Atherosclerosis
	136	Molecular vision
	154	Invest ophthalmology
	170	American journal of kidney disease
	184	Diabetes research and clinical practice
Argentina	54	Medicine (Burnes Aires)
	73	Prostaglandins LEF Acids
	82	Rev. Facien Medicine University Nac. Cord
	90	Diabetes research and clinical practice
	97	Horn. Metabolism research
	104	Advanced exp. Med. Biology
Thailand	240	Journal of medical association of Thailand
	264	South east Asia journal of Tropical medicine and public health
	288	Diabetes research and clinical practice
	279	Clinical Hermorheol medicine

Figure 1: Growth of the Literature in the Three Countries

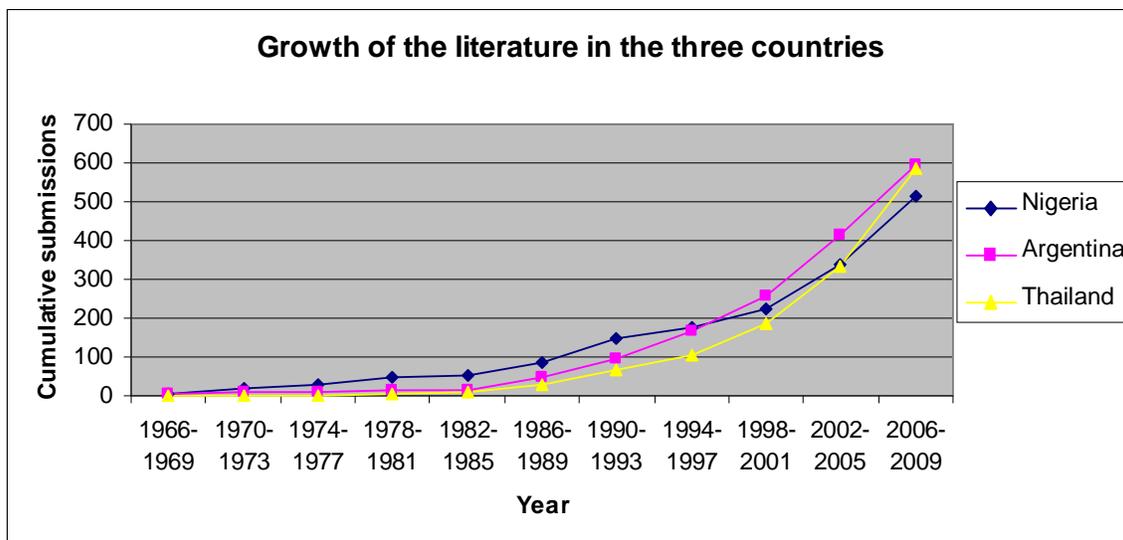


Figure 2; Bradford-Zipf Distribution among the Three Nations

