©Sierra Leone Journal of Biomedical Research
Vol. 3(2) pp. 89-96, August, 2011

ISSN 2076-6270 (Print)
ISSN 2219-3170 (Online)

Original Article

Assessment of Scholarly Publications of Nigerian Health Sciences Researchers in MEDLINE/PubMed (1996-2007)

Ajuwon Grace A[1*], Auston Ione[2], Raghavan Ramkripa[3], Kotzin Sheldon[4] and Hofman Karen J[5]

[1]Reference and Information Services Librarian, E. Latunde Odeku Medical Library, College of Medicine, University of Ibadan, Nigeria, [2]National Information Center on Health Services Research and Health Care Technology (NICHSR), National Library of Medicine 8600 Rockville Pike, Bethesda, MD 20894, [3]Division of International Science Policy, Planning and Evaluation, The John E. Fogarty International Center, U.S National Institutes of Health Building 16, Bethesda, MD 20892-6705, [4]Division of Library Operations, National Library of Medicine, U.S. National Institutes of Health, 38 Center Drive, MSC 3814, Bethesda, MD 29894-3814, [5]Division of International Science Policy, Planning and Evaluation, The John E. Fogarty International Center, U.S National Institutes of Health, 16 Drive, MSC 6705, Bethesda, MD 20892-6705

ABSTRACT

Scholarly publications are outcome of research and are important channels for dissemination of research findings by researchers. The main objective of this study was to assess the scholarly publications of Nigerian health sciences' researchers and the journals in which they publish. Health science researchers are health care providers, faculty, medical scientists and other allied health professionals who conduct research in health related fields. Research articles written by Nigerian health sciences' researchers published during 1996-2007 were accessed through the MEDLINE/PubMed database. Both the author affiliation in Address field and Publication date field were used to obtain data on the number and characteristics of publications by the researchers. A total of 7030 articles were published during the period. The number of publications increased from 338 in 1996 to 952 in 2007. Of the 7,030 citations, 2,124 (31%) were published in nine Nigerian journals with the *African Journal of Medicine and Medical Sciences* having the highest (660). However, 17 articles were published in four international multidisciplinary journals namely: *British Medical Journal (BMJ), Journal of the American Medical Association (JAMA), Lancet and New England Journal of Medicine (NEJM).* Approximately 80% of the publications were Original Research Articles. Nigerian health sciences' researchers are productive in terms of scholarly publications. However, their publications are concentrated more in national journals, some of which are not indexed in any bibliographic database; others are print only, not widely circulated thereby limiting the impact of their research. Development of a national bibliographc database to index articles published in Nigerian journals and publication of more journal in electronic format is recommended.

Keywords: Biomedical journals, Nigerian health science researchers, Publication output, Scientific publications

Received 24 April 2011/ Accepted 12 August 2011

INTRODUCTION

Scholarly or scientific publications are the life blood of science (Hofman *et al.*, 2009). Tijssen (2007) asserted that peer-reviewed scholarly and professional journals are one of the very few internationally comparative sources of information on scientific outputs. Uthman and Uthman, (2007) stated that scholarly publications play an important role in scientific process by providing a key linkage between knowledge production and use. They are vital for knowledge sharing, dissemination of research findings and career advancement of academics. Thus, publishing in scientific journals is the most common and powerful means to disseminate new research findings (Sigoneau, 2000).

*Corresponding author: Tel: +234 8032904466; E-mail: gajuwon@comui.edu.ng

Owolabi *et al*. (2007) opined that scientific productivity is measured by its contribution to the body of knowledge. Although, the big and populous African countries namely South Africa, Egypt and Nigeria are the top producers of scientific publications in Africa, Rahman and Fukui (2003) noted that the decline in publications in biomedicine since the 1990s is an Africa-wide experience. Africa lags behind other regions of the world in scientific research and needs large investment to catch up with other developing countries such as India and Brazil. However, South Africa has consistently produced more biomedical research output than other African countries (Uthman and Uthman, 2007; Tijssen, 2007; Hofman *et al*., 2009).

An examination of scientific publications can aid in determining research priorities within a country and results of such studies may be useful to policy makers in research administration, planning and collection development in libraries (Jacobs, 2001). Access to the contents of African journals is provided in part by the international bibliographic databases: African Index Medicus (AIM), EMBASE, MEDLINE/Pubmed, Scopus, and Web of Science (Gaillard, 1992)

A number of bibliometric studies have examined scientific publications in sub-Saharan Africa as a whole (Arvantis *et al*., 2000; Hassan, 2001; Uthman *et al*., 2007; Tijssen, 2007; Hofman *et al*., 2009) and specific African countries including Malawi (Gondwe *et al*., 2008), Libya (Bakoush *et al*., 2007) and Egypt (Afifi, 2007). The results of these studies showed that scientific research in Africa is going through a crisis and that national scientific communities in these countries are struggling to sustain their activities. The challenges include poor infrastructure, poverty and political instability (Ondari-Okemwa, 2007).

In Nigeria, health researches have focused mainly on communicable and tropical diseases such as malaria, HIV/ AIDS, Tuberculosis, Onchocerciasis, Trachoma, Meningitis, Hepatitis B and C, Respiratory infections, Nutritional conditions, Maternal and prenatal conditions (Lopez *et al*., 2006). Nigerian researchers have also paid attention to non-communicable diseases especially cancer (Ntekim *et al*., 2009), hypertension (Okehialam, 2011; Adebiyi *et al*., 2011), stroke (Ekenze *et al*., 2010; Desalu *et al*., 2011a) diabetes (Desalu *et al*., 2011b; Kuti *et al*., 2011). These researches take place within an environment of economic constrains as in many other sub-Saharan African countries. Government provides funds for research through universities or research agencies but the funds are insufficient for large scale studies. Consequently, Nigerian researchers rely more on external funding by competing with their colleagues across the globe through grant application while others fund their research out of pocket.

Due to insufficient funds from government, fewer Clinical Trials are taking place in the country when compare with other African countries such as South Africa, Egypt, Uganda and Kenya (Clinical Trials, 2011). Other factors adversely affecting research include, poor laboratory infrastructure and energy problems, limited technical support, lack of mentors, inadequate career structure, low pay and lack of training (Uthman and Uthman, 2007; Tijssen, 2007; Ondari-Okemwa, 2007; Uthman, 2008). Thus, it is important to carry out an assessment of Nigerian scholarly publications in order to determine research priorities in biomedical/health sciences in the country. Also, the result of this study will be useful to policy makers in research administration and to librarians for collection development in libraries.

Although, a number of bibliometric studies (Nwagwu, 2005; Nwagwu, 2006; Nwagwu, 2007) are available that investigated the publication output of Nigerian biomedical researchers. These studies essentially covered publication output and authorship patterns in Nigerian biomedical literature. To the best of our knowledge, there is no single, comprehensive bibliographic database that indexes the scientific articles produced in Nigeria. There is a dearth of information on scholarly publication output of Nigerian health sciences researchers, the specific national and regional journals in where the articles were published and the publication types. Although, some scholars have documented data on biomedical research output of Nigerian authors from earlier years, this communication sought to fill the knowledge gap between 1996 to 2007 by assessing the scholarly publications of Nigerian health sciences' researchers in scientific journals accessible through MEDLINE/PubMed and the journals where they publish.

METHODOLOGY

Setting of the study

Nigeria has a population of 140 million (NPCN, 2011), making it the most populous country in Africa.

The country is endowed with rich natural resources, of which oil and gas have been the mainstay of the economy in the last few decades, providing 20% of GDP, 95% of foreign exchange earnings, and about 65% of budgetary revenues (WaterAid International, 2011). Despite the natural and human resources Nigeria is endowed with, the country has a huge disease burden including communicable and non-communicable diseases (Lopez et al.,, 2006).

Data Collection

For the publication output of Nigerian health sciences researchers, we obtained data by searching MEDLINE/PubMed, the premier bibliographic database of the National Library of Medicine, Bethesda, Maryland, USA. MEDLINE indexes over 5,000 medical journals worldwide and is freely accessible to all around the globe. Data collection (searches) for this study was done during the months of May and June 2008.

Search Strategy

To determine the growth trend in publication output for each year of the 12-year period: search strategies were developed using the author affiliation in the Address field combined with the Publication Date field in MEDLINE/PubMed. Example 1: Nigeria [ad] AND 1996 [pdat], and this was repeated for each year, Example 2: Nigeria [ad] AND 2007 [pdat]. To elicit information about the publication types of the scholarly articles, data were first collected by searching the author affiliation in the Address field combined with the Publication Date in MEDLINE/PubMed. PubMed's date range searching feature was used as an alternative for searching individual publication years, as it provides a more efficient mechanism for searching the inclusive (combined) years 1996-2007. Using the PubMed limit feature, the retrieved citations were categorized into nine Publication Types: Case Reports; Clinical Trial; Editorial; Historical Article; Letter; Meta-Analysis; Randomized Control Trial; Review. As PubMed does not include a Publication Type for 'Original Research Article', all citations not identified as one of the above comprise a 10th category labeled 'Original Research Article'.

Search strategies used to elicit information on the publication types of the scholarly rsearch output of Nigerian health sciences researches include:

1. Nigeria [ad] AND 1996:2007 [pdat] AND Case Reports [pt]
2. Nigeria [ad] AND 1996:2007 [pdat] AND Clinical Trial [pt]
3. Nigeria [ad] AND 1996:2007 [pdat] AND Editorial [pt]
4. Nigeria [ad] AND 1996:2007 [pdat] AND Letter [pt]
5. Nigeria [ad] AND 1996:2007 [pdat] AND Review [pt]
6. Nigeria [ad] AND 1996:2007 [pdat] AND Meta-Analysis [pt]

This was repeated for the remaining three publication types: Meta analysis, Randomized Controlled Trial, and Histories. In addition to collecting data for scholarly publications of Nigerian health sciences researchers in African journals, data were elicited from four major international journals, namely Journal of American Medical Association (JAMA), New England Journal of Medicine (NEJM), British Medical Journal (BMJ) and Lancet. These four journals were selected because they are multidisciplinary in nature, widely distributed and have high impact factor (Journal Citation Reports, 2008).

Data Management and Analysis

The retrieved publications were changed to MEDLINE display format and imported into Endnote bibliographic management software. The data were sorted and duplicate citations were removed. The remaining citations were then exported into Microsoft Excel for analysis. The data were analyzed using frequency counts, percentages, and presented in charts and on tables.

RESULTS

Number and types of publications

The number of scholarly publications in MEDLINE/PubMed authored by Nigerian health sciences' researchers during the period 1996-2007 was 7030 articles. The growth trend in the publications increased substantially from 338 citations in 1996 to 953 in 2006 and dropped to 952 in 2007 (Figure 1).

Publication output in Nigerian Journals

As at 2008 when the study was conducted, nine Nigerian medical/health journals were indexed in MEDLINE. The publication output of Nigerian health sciences' researchers in these journals is shown in Figure 2. Of the 2,124 articles published in the journals, 660 (31%) were in the *African Journal of Medicine and Medical Sciences* (*AJMMS)* and 477 (22%) in the *West African Journal of Medicine (WAJM)*.

Figure 1: Scholarly Publications of Nigerian Health Sciences Researches in Journals in MEDLINE (1996-2007)

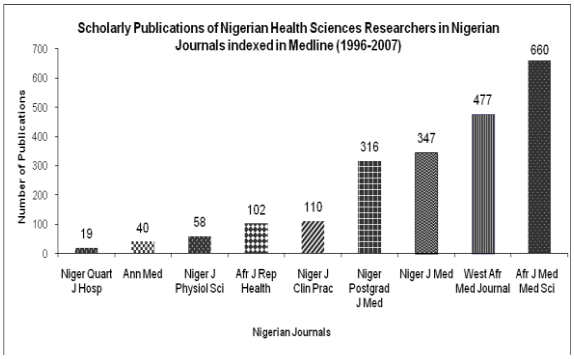

Figure 2: Scholarly Publications of Nigerian Health Researchers in Nigerian Journals Indexed in Medline (1996-2007)

Figure 3 shows the output of Nigerian health researchers in African journals indexed in MEDLINE and published in other African countries. Although a total of 28 African journals (excluding the nine Nigerian journals) were indexed in MEDLINE; Nigerian health sciences researchers published in only 12 of the journals. Of the 474 articles published in these journals, *East African Medical Journal (EAMJ),* with 301 (63.5%) citations has the highest number of publications authored by Nigerians, followed by *Central African Journal of Medicine* 75 (16%) and *African Health Science* 25 (5.3%).

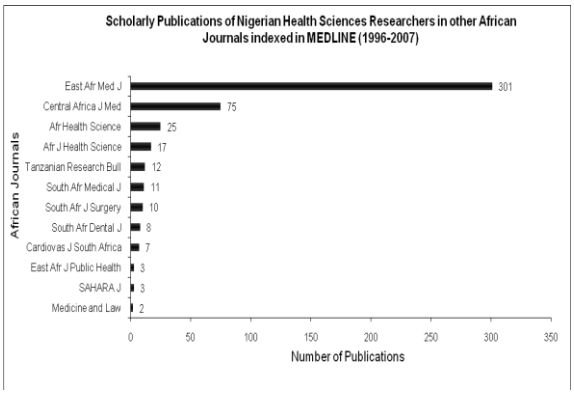

Figure 3: Scholarly Publications of Nigerian HealthResearchers in other African Journals Indexed in Medline (1996-2007)

Publication output in four multidisciplinary western journals

A total of 17 papers were published in BMJ, JAMA, NEJM and the *Lancet*. Most of the articles appeared in The Lancet (11) while two each were published in BMJ, JAMA and NEJM.

Table 1: Publication Types of the output of Nigerian Health Sciences Researchers

Year	Research Articles	Review	Case Reports	Clinical Trial	Randomize Control Trial (RCT)	Research Support, NIH Extramural	Historical Articles	Meta analysis	letters	Editorials
1996	286	18	22	19	8	0	3	0	0	**0**
1997	306	13	23	25	9	0	0	0	0	**0**
1998	245	11	34	15	12	0	0	0	0	**0**
1999	317	9	36	19	5	0	0	0	0	**0**
2000	376	13	22	24	13	0	0	0	0	**0**
2001	411	23	43	28	15	0	0	0	0	**0**
2002	496	22	60	25	10	0	1	2	0	**0**
2003	463	32	46	30	14	0	0	1	0	**1**
2004	533	23	54	37	12	1	3	1	0	**0**
2005	646	38	97	32	20	**7**	3	1	1	**0**
2006	731	53	101	37	19	**7**	3	1	1	**0**
2007	764	43	68	47	19	**7**	2	2	0	**0**
Total	**5,574**	**298**	**606**	**337**	**156**	**22**	**15**	**8**	**2**	**1**

Publication types

The types of scientific publications by Nigerian researchers are shown in Table 1. Original Research Articles, Case Reports, Clinical Trials, Reviews, and Randomized Control Trials rose significantly during the period 1996-2007. For example, Original Research Articles rose from 286 in 1996 to 764 in 2007, while Reviews rose from 18 in 1996 to 53 in 2006.

DISCUSSION

The output of Nigerian health researchers increased substantially during the 12 year period covered by this study. A similar trend was observed in two previous studies among African biomedical researchers (Uthman and Uthman, 2007; Hofman *et al*., 2009). With the exception of South Africa, the output of Nigerian researchers is higher compared to those of biomedical researchers from other sub-Saharan Africa countries (Hofman *et al*., 2009). Among countries in sub-Saharan Africa, Nigeria ranked second (16%) with respect to number of scholarly publications while South Africa was at the top of the list with 40% of the output (Uthman, and Uthman, 2007). The possible explanation for the consistent increase observed in publication output of Nigerian researchers may be due to the efforts being put into scholarly publication for visibility among peers and career advancement (Ajao and Lawoyin, 2005). Also, the number of private and state owned universities in the country has increased substantially within the last decade (NUC, 2011). This may explain the increase in the number of those holding academic positions who require publications in scholarly journals for career advancement.

A substantial number (31%) of articles published by Nigerian researchers appeared in *African Journal of Medicine and Medical Sciences (AJMMS)*. This may be a reflection of the fact that the subject of their investigation is more appropriate to the local environment and as such, the manuscripts are more relevant to the Nigerian audience. In addition, being a multidisciplinary journal, provides a platform for both behavioural and health science researchers to disseminate their research findings. The fact that this journal is owned by a premier university in Nigeria with a sizable number of researchers may also be a contributing factor to its success in attracting authors. However, most of Nigerian health sciences journals are in print with only abstracts appearing in bibliographic databases. Excluding Nigerian journals, EAMJ tops the list of African journals in which Nigerian researchers published their research findings. One of the reasons for EAMJ featured popularity is that it has remained continuously in publication for over 70 years. In addition, it is published monthly making it one of the most reliable journals on the continent.

Despite its relatively young age some Nigerian authors have published in *African Health Sciences (AHS),* a Ugandan medical journal. The full-text of articles published in *AHS*, is accessible electronically through PubMed Central (PMC), a digital archive / repository of free full-text articles created by the National Center for Biotechnology Information (NCBI) at the National Library of Medicine (NLM) in Bethesda, Maryland, USA. PubMed Central also archives all publications by authors whose studies were funded by the National Institutes of health (NIH), United States (NIH public access policy, 2011). This has encouraged more Nigerians to publish in *AHS* despite the fact that it is a relatively young and upcoming journal. Publication in this journal creates high visibility for authors whose work is accessible to scholars around the world. This is one of the advantages of Public or Free Access journals, a category the *AHS* has now joined through African Journal Partnership Project, an initiative funded by the National Library of Medicine (Goehl and Flanagin, 2008).

The number of publications by Nigerian health sciences researchers in the "big four" multidisciplinary international journals is low (17 citations) compared to those of their counterparts in developing countries such as Colombia (Nelson and De la Hiz-Restrepo, 2003). While Nigerian health researchers published more than one-third (31%) of their papers in national journals, their Colombian counterparts have most publications in international journals, that are indexed in the major bibliographic databases (Nelson and De la Hiz-Restrepo, (2003). Like their counterparts in other sub-Saharan African countries, Nigerian researchers operate in a difficult environment where the basic infrastructures for research including laboratories are limited and power (electricity) cut is frequent. Unfortunately, these studies have had limited impact on public health because their conclusions and recommendations are rarely used for policy development.

Good quality research that brings about scientific breakthroughs requires huge financial investments which is lacking in Nigeria. Many Nigerian researchers fund their studies out of pocket, thus limiting the scope and rigour of their investigation.

Only a few Nigerian health sciences researchers published Clinical Trials and Review articles. This is similar to findings of a previous study by Ben Abdellaziz *et al*. (2000) on Tunisian Biomedical Journals in which Review articles and Clinical Trials constitute 3.4% and 6.9% of the citations respectively. The possible explanation is that clinical trial research involves huge capital and in most cases requires external funding through a competitive grant application. Although some research projects involving Nigerian researchers and their collaborators from the Western world are clinical trials, the principal investigators are usually their Western collaborators who appear as the first author when the results are published. However, these studies may not be easily identifiable as involving Nigerian researchers because affiliation is often retrievable only for first authors in MEDLINE databases.

Although, we have been able to provide useful information on the publication output of Nigerian health sciences researchers and the national and regional journals where they published, the study has some limitations. Only publications by Nigerian authors in journals indexed in MEDLINE/PubMed were investigated. MEDLINE is a major bibliographic database; does not index all journals and is not the only one available. In addition, the MEDLINE database has the limitation of including only the affiliation of the first author of an article. Furthermore, the coverage of Nigerian literature is limited in MEDLINE/PubMed because only nine Nigerian journals are indexed. More importantly, the use of bibliographic databases is not the only means of determining researchers' output in scientific journals and search strategy used in this study did not cover author institutional affiliation and city names as practices vary among journals in the form of address published.

CONCLUSION

Despite numerous constrains, Nigerian researchers are productive with regards to scholarly publications. The number of their publications increased substantially over the past decade. Some of the publications of the researchers were in Nigerian journals most of which are in print format with limited circulation and impact. We recommend the development of national bibliographic database to index articles published in Nigeria journals and also publication of electronic equivalent of the journals.

ACKNOWLEDGEMENTS

We wish to acknowledge with thanks the valuable comments of Drs. Adebowale Adeyemo, Ademola Ajuwon and Melissa Resnick for review of the earlier versions of this manuscript. We thank Lou Knecht for helping with strengthening out the search strategies and Jason Broadway for providing administrative assistance.

REFERENCES

Adebiyi AA, Akinosum MO, Nwafor CE and Falase AO (2011). Plasma Catecholamines in Nigerians with Primary Hypertension. *Ethn Dis*. **21**:158-162

Afifi M (2007). Egyptian Biomedical Publications in PubMed: 1996-2005. *J Egypt Publ. Health Assoc*. **82**:91-104

Ajao OG and Lawoyin TO (2005). Guidelines for Assessment of Publications for Contribution to Scholarship: A View Point. *West Afr J Med*. **24**: 338-41

Arvanitis R, Waast R and Gaillard J (2000). Science in Africa: A Bibliometric Paranoma using PASCAL Database. *Scientometr*. **47**:457-472

Bakoush O, Al-Tubuly AA, Ashammakhi N and Elkhammas EA (2007). PubMed Medical Publications from Libya. *Libyan J Med*. **2**:18-24

Ben Abdellaziz A, Abdelali M and Khamakhem A (2000). Bibliometric Profile of Tunisians Medical Publications Indexed MEDLINE from 2000 to 2003. Part 3: International Radiance. *Tunis Med*.**85**:96-101

ClinicalTrials.gov.*http://clinicaltrials.gov/ct2/search/browse?brwse=locn_cat_AF* [Accessed 16 July, 2011]

Desalu OO, Salawu FK, adekoya AO, Busari OA and Olokoba AB (2011b). Diabetic foot care: self reported knowledge and practice among patients attending three tertiary hospitals in Nigeria. *Ghana Med J*. **45**:60-65

Desalu OO, Wahab KW, Fawale B, Olarenwaju TO, Busari OA, Adekoya AO and Afolayan JO (2011a). A Review of Stroke Admissions at a Tertiary Hospital in Rural Southwestern Nigeria. *Ann Afr Med*. **10**:80-85

Ekenze OS, Onwueke IO and Ezeala Adikaibe BA (2010). Profile of Neurological Admissions at the University of Nigeria Teaching Hospital, Enugu. *Nig J Med*. **19**:419-422

Gaillard J (1992). Use of Publication Lists of LDC Scientists to Study Scientific Production and Strategies in Peripheral Scientific Communities. *Scientometr*. **23**: 57-73

Goehl TJ and Flanagin A (2008). Enhancing the Quality and Visibility of African Medical and Health Journals. *Environ Health Perspect*. **116**:A514-5

Gondwe M and Kavinya T (2008). An Analysis of Malawi's Publication Productivity. *Malawi Med J*. **20**:90-92

Hassan M (2001). Can Science Save Africa? *Sci*. **292**:609

Hofman KJ, Kanyengo CW, Rapp B and Kotzin S (2009). Mapping the Health Research Landscape in Sub-Saharan Africa: A Pilot Study of Trends in Biomedical Publications. *J Med Libr Assoc*. **97**:41-44.

Jacobs D (2001). A Bibliometric Study of Publication Patterns of Scientists in South Africa 1992-1996, with Particular Reference to Status and Funding. Inf Res. **6**: *http://InformationR.net/6-2/paper104.html* [Retrieved 18 December, 2009]

Journal Impact Factor. Thomson Reuters Journal Citation Reports. *http://wokinfo.com/products_tools/analytical/jcr/* [Accessed 19 July, 2008]

Lopez AD, Mathews CD, Ezzati M, Jamison DT and Myrrat CJL (2006). Global Burden of Disease and Risk Factors. Edited by New-York, Oxford University Press and The World Bank. Pp: 21-41

May R (1998). The Scientific Investment of Nations. *Sci*. **281**:49-51

Nelson AG and De la Hiz-Restrepo F (2006). Scientific Production in Health Sciences in Colombia, 1993-2003. *Rev Salud Publica (Bogota)*. **8**:25-37

Nigeria Background Information, Background Note (2008). *<http://www.state.gov/r/pa/ei/bgn/2836.htm>*
http://www.wateraid.org/international/what_we_do/where_we_work/nigeria/2604.asp [Retrieved July 28, 2008]

Nigeria: Background Information. WaterAid International [Accessed 6 September, 2011] *http://www.wateraid.org/international/what_we_do/where_we_work/nigeria/2604.asp*

Nigerian Population Statistics. National Population Commission, Nigeria. *http://www.population.gov.ng* [Accessed 16 July, 2011]

National Institutes of Health (NIH) (2011). Public Access Policy. *http://publicaccess.nih.gov/* [Retrieved 22 April, 2011]

National Universities Commission (NUC), Nigeria (2011). *http://www.nuc.edu.ng*

Nwagwu WE (2005). Mapping the Landscape of Biomedical Research in Nigeria since 1967. *Learned Publ*. **18**: 200-211

Nwagwu WE (2006). Bibliometric Analysis of Quantity and Quality of Nigeria's Biomedical Literature. *LIBRES16*:**1**-23

Nwagwu WE (2007). Patterns of Authorship in the Biomedical Literature of Nigeria. *LIBRES 17*:**1**-28

Ntekim A, Nufu FT and Campbell OB (2009). Breast Cancer in young Women in Ibadan, Nigeria. *Afr Health Sci*. **9**:342-346

Okehialam BN (2011). Issues in Blood Pressure Control among Hypertensives Attending a Specialist Hypertension Service in Nigeria. *West Afr J Med.* **30**:69-70

Ondari-Okemwa E (2007). Scholarly Publishing in Sub-Saharan Africa in the Twenty-first Century: Challenges and Opportunities: *http://firstmonday.org/htbin/cgiwrapbin/ojs/index.php/fm/rt/printerFriendly/1966/1842* [Retrieved 10 October, 2010]

Owolabi MO, Bower JH and Ogunniyi A (2007). Mapping Africa's way into Prominence in the Field of Neurology. *Arch Neurol*. **64**: 1696-1700

Rahman M and Fukui T (2003). Biomedical Publication- Global Profile and Trend. *Public Health*. **117**:274-280

Shetty P (2008). How to Keep Science Local; Developing Nations are Boosting their Scientific Output, but are Being Impeded by a Lock of Local Journals in which to showcase their Work. *New Sci*. **199**:20

Sigogneau A (2000). An Analysis of Document types Published in Journals related to Physics: Proceeding Papers Recorded in Science Citation Index Database. *Scientometr*. **17**:589-604

Tijssen RJW (2007). Africa's Contribution to the Worldwide Research Literature: New Analytical Perspectives, Trends and Performance Indicators. *Scientometr*. **71**:303-327

Uthman AO (2008). HIV/AIDS in Nigeria: A Bibliometric Analysis. *BMC Infect Dis*. **8**:19.

Uthman AO and Uthman MB (2007). Geography of African Biomedical Publications: An Analysis of 1996-2005 PubMed Papers. *Intl J Health. Geogr*. **6**:46