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Dental appearance among Nigerian adolescents

Mandibular arch forms in Northern Nigeria

Bibliometric analysis of scientific articles

Management of anterior crossbite

Orthodontic management of anterior open bite

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"DENTISTRY'S FIRST SPECIALTY JOURNAL IN SUB SAHARAN AFRICA"

Bibliometric Analysis of Scientific Articles Published in the West African Journal of Orthodontics over a 10-year Period

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Abstract

Background: The West African Journal of Orthodontics (WAJO) is a relatively new journal with her maiden edition published in June 2012. This bibliometric review was carried out to assess the pattern of publications from 2012-2021 in order to ascertain the trend of publications and to provide an empirical tool in refocusing the journal in the nearest future.

Methods: All past publications of WAJO from 2012-2021 were accessed on the journal's website (wajo.oauife.edu.ng) and then analyzed for their article type, study design, gender of author, number of authors, author's specialty, article source, number of affiliations of authorship and country/region of origin of authors. Data analysis was carried out with SPSS version 21

Results: A total of 99 articles were analyzed. Original research papers accounted for 63.6% of the article type, 56.6% of these were cross-sectional in design, the average number of authors per article was 3.28±1.4 and author's specialty was mainly orthodontics (97%). The majority of articles emanated from hospital and university departments with 56.6% and 41.4% respectively, while the least was from private settings (2%) and there was slightly more preponderance for female authors (51.5%).

Conclusion: Most of the articles were original research papers with cross-sectional study design. The majority of papers were written by orthodontists in hospital departments. Finally, there is need to publish more randomized clinical trials RCTs and Systematic reviews in the journal.

Keywords: Bibliometry, WAJO, 10years

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ORIGINAL ARTICLE

Introduction

The West African Journal of Orthodontics (WAJO) was first published in June 2012. The establishment of the journal was to fill the knowledge gap and share scientific views in relation to the practice and training of orthodontics in Sub-Saharan Africa. WAJO is the first indigenous journal of orthodontics in the West African sub-region and indeed Sub-Saharan Africa. This international journal is published twice a year (biannually); June and December with an average of five articles per edition.

After a decade of publication, it is important to audit or review the activities of the journal as a formidable regional orthodontic journal. This review will provide a measurable information and policy thrust of published scientific articles in the next decade of activities.

Several bibliometric reviews of dental journals and more specifically orthodontic journals have been reported,[1-3] to help in mapping and obtaining different indicators for information management and knowledge. Bibliometrics deals with techniques to retrieve and statistically analyze measurable information in published scientific articles.[4]

Many bibliometric reviews have been carried out in medicine, dentistry and indeed orthodontics.[5-8] Various parameters have been analyzed in these bibliometric reviews. These include: publication title, article type, number of authors, publication year, authorship, core area of interest, affiliation of the first author, number of affiliations, knowledge domain,

study design and countries or states where the articles were published[2,3,7-9]. Analysis of these parameters have assisted in identifying changing trends, dominant topics of interest, centres of excellence and significant advancements made over time.[7]

In a bibliometric review of orthodontic journals titled past, present and future of orthodontic research, Buschang and Asiri[10] found that the level of orthodontic research has improved over time but that there is need for more randomized clinical trials, they also noted that the countries with the highest quality and most impactful research were United States, United Kingdom, Germany, Brazil and Italy. They opined that future studies in genetics, technology, artificial intelligence and craniofacial anomalies will help advance the field of orthodontics.

Mavropoulos and Kiliaridis[11] also observed that articles published in orthodontic journals which focused on treatment evaluation and diagnosis were growing while those focused on new treatment modalities were reducing. Similarly, Aura-Tormos et al[12] in a 2007-2017 review on current trends of eight orthodontic journals found an increase in the number of female authors within the decade, the majority of research originated from orthodontic departments of public institutions. Furthermore, the most productive nation was observed to be the United States of America. The study further revealed that the most recurrent topic was bone anchorage and the studies were mostly of observational cross-sectional design.

A bibliometric study[13] of American Journal of Orthodontics and Dentofacial Orthopedics {AJODO), Angle Orthodontist (AO) and European Journal of Orthodontics (EJO) between two time-intervals of 1993 to 1997 and 1998 to 2002 reported higher research works in EJO and higher case reports in both AJODO and AO. The study also showed an increase in number of authors and authorship affiliations between the two time- intervals for all the three journals. More European authors were reported to be published in EJO while American and Canadian authors also dominated AJODO and AO. There was also almost a 100% increase in East Asian contribution in the second interval.[13]

This paper therefore sought to evaluate the pattern of publication of WAJO since inception 10 years ago using the bibliometric parameters on type of article, gender of author, study design, number of authors, author's specialty, article source and country/ region of origin.

Material and Methods

An online search of all past publications of the West African Journal of Orthodontics was done on the journal's website (wajo.oauife.edu.ng). Each article was then analyzed for article type, study design, gender of first author, number of authors, author's specialty, article source, number of affiliations of authorship, country of origin of article and regional source of origin.

The article type was classified into original research, literature review, case report, expert opinion, and update. The study design into cross-sectional, case-control, cohort, Randomised Clinical Trials (RCTs) and systematic reviews/meta-analysis. The author's specialty was classified as either orthodontics (when articles originated from orthodontic departments) or non-orthodontic (articles that originated from departments outside orthodontic departments). The article source was classified as public hospital, public university or private settings. These were considered with regards to the first authors.

The number of authors was assessed by the total number of authors of each article. The number of institutional affiliations of authorship also assessed numerically the total number of affiliations of all authors per article, some individual authors have more than one affiliation. The origin of the article was based on the first author's address. Further analysis of the regional source of the articles published in Nigeria was also done.

Subsequently the findings were analyzed using SPSS version 21.

Results

Ninety- nine articles were published in the journal within the 10-year period of 2012- 2021, with the highest number of 11 articles published in 2015, 2016 and 2018 (Table 1). Table 2 reveals that literature reviews, original research articles and case studies constituted 14.1%, 63.6% and 20.2% respectively. Table 3 shows the distribution according to study design. Fifty six point six percent of the articles were cross-sectional studies, 5.1% were case-control studies, 1% cohort studies and 1% RCTs.

Table 4 reports the number of authors, author's specialty, number of affiliation and article source. The maximum number of authors per article was seven while the least number of authors per article was one. The average number of authors per article was however 3.28±1.4. About a third (32.3%) of the published articles had three authors per publication.

The author's specialty was mainly orthodontics (97%) while non-orthodontics constituted 3%. The number of affiliated institutions ranged from one to four. The modal and mean number of authorship affiliation were however two (46.5%) and 1.76±0.8 respectively. The article source recorded was predominantly hospital (56.6%), followed by university (41.4%) and private settings (2%).

Table 5 shows the country and local region of origin of the articles. Over three quarters (79%) of the articles originated from Nigeria, followed by Ghana (9%) and only 4% from Senegal. For articles which emanated from Nigeria; 64.6% originated from the South-West, 6.1% from the South-South, 4.0% from the North Central and 3.0% from the South-East.

The gender of authors and the gender distribution across the countries of origin was recorded in Table 6. It revealed that there were 51 female and 48 male authors with Nigeria leading the pack with 43 female and 36 male authors.

Table 1: Number of publications according to year

Year	Number of publications	Percentage
2012	9	9.1
2013	10	10.1
2014	9	9.1
2015	11	11.1
2016	11	11.1
2017	10	10.1
2018	11	11.1
2019	9	9.1
2020	9	9.1
2021	10	10.1
Total	**99**	**100.0**

Table 2: Publications based on article type

Article type	n	Percentage
Review	14	14.1
Original research	63	63.6
Expert opinion	1	1.0
Case report	20	20.2
Update	1	1.0
Total	**99**	**100.0**

Table 3: Study design of published articles

Study design	n	Percentage
Cross-sectional	56	56.6
Case-control	5	5.1
Cohort	1	1.0
RCT	1	1.0
Systematic reviews	0	0
Reviews/ Expert opinion/ Update/ Case report	36	36.4
Total	**99**	**100.0**

Table 4: Number of authors, main author affiliations, number of affiliations and article source

Number of authors	n	Percentage	Mean (SD)
1	10	10.1	
2	19	19.2	
3	32	32.3	
4	18	18.2	
5	13	13.1	
6	5	5.1	
7	2	2.0	3.28±1.4
Author's speciality			
Orthodontic	96	97.0	
Non-orthodontic	3	3.0	
Number of institutional affiliations			
1	40	40.4	
2	46	46.5	
3	10	10.1	
4	3	3.0	1.76±0.8
Article source			
Hospital	56	56.6	
University	41	41.4	
Private settings	2	2.0	

Table 5: Country and local region of origin

	Country	n	Percentage
	Nigeria	79	79.8
	Ghana	9	9.1
	Senegal	4	4.0
	Côte d'ivoire	2	2.0
	USA	1	1.0
	Canada	1	1.0
	Mali	1	1.0
	Burkina Faso	1	1.0
	India	1	1.0
	Total	99	100
	Local region		
	Non-Nigerian	20	20.2
	South-west	64	64.6
	South-east	3	3.0
	North-west	1	1.0
	North-east	1	1.0
	North-central	4	4.0
	South-south	6	6.1
	Total	99	100.0

Table 6: Gender distribution of authors across countries

		Country										
		Nigeria	Ghana	Senegal	Côte d'Ivoire	USA	Canada	Mali	Burkina Faso	India	Total	%
Gender	Male	36	4	3	1	0	1	1	1	1	48	48.5
	Female	43	5	1	1	1	0	0	0	0	51	51.5
		79	9	4	2	1	1	1	1	1	99	100

Discussion

Auditing of a journal is a process of objectively evaluating its operation and performance over a period of time. Such a process is so crucial for the growth and development of a regional journal like WAJO. This provides a clear view of the journal in the past ten years and will also assist in refocusing the journal in the coming years. Our study shows that almost a hundred articles were published in this journal from the year 2012 to the year 2021 with an average of ten articles published each year, and five articles per edition. This number is relatively low compared to established international journals such as AO, EJO and AJODO.[12] The reason for this might be due to the relatively young age of the journal which has attracted a modest visibility.

It was observed that there were more female first authors compared to their male counterparts. This may be due to more females joining the orthodontic specialty and indeed a higher number of female orthodontists in Nigeria from where majority of the articles in this present work emanated. This report is in contrast with findings by Aura -Tormos et al[12] in which they reviewed the trends of eight orthodontic journals published between 2007 and 2017. The authors observed that all the eight journals had higher number of male authors, though they reported an increased number of female authors within the period.

The article type in WAJO was mainly original research articles, followed by case reports and reviews. The number of original research articles in WAJO was higher than the report of a review of Journal of Indian Orthodontic Society (JIOS) carried out by Ramteke and Madhan.[14] The percentage of case reports in WAJO was however comparable to the 17.4% reported in JIOS. Ozturk et al[15] reported a rise in publication of case reports in their review of nine journals from 2016- 2020, but AJODO was reported to have the highest publication of case reports in the same period of time.

Cross-sectional studies were the predominant design among the research articles in this present study. This is consistent with the findings of the reviews by Aura-Tormos et al [12] and Primo et al[3], in which they found a high percentage of cross-sectional studies. This may be due to the ease of conducting cross-sectional studies compared to other study designs. A low percentage of randomized clinical trials (RCTs) and systematic reviews/meta-analysis which provide the highest level of evidence was observed in this study, thus more research effort needs to be focused in publishing RCTs in the near future. This observation further buttressed the findings of Buschang and Asiri[10] who emphasized the need for more quality RCTs in their study when comparing the quality and impact of AO, EJO and AJODO over a period of time.

The average and the highest number of authors per article were 3.28 $\pm$1.4 and 7 respectively. This is consistent with the increased number of authors reported by Baumgartner et al[16] in a study comparing three orthodontic journals over two time intervals. A rise in interdisciplinary collaborations across various fields of endeavor may be responsible for this trend, though the specialties of co-authors other than the first authors were not analyzed in this present study. This may also be responsible for the greater number of articles with more than one authorship affiliation.

The main specialty of authors was orthodontics and the source of article was mainly the teaching hospitals, closely followed by university departments. Most of research studies emanated from government institutions where emphasis is placed on research activities as outcomes of research grant deliverables, promotions and career advancements.

The very minimal non-orthodontic authorship in the journal is consistent with other orthodontic journals[12] as it is expected that orthodontic research should mainly be carried out by orthodontists[17], although it implies that an increasing level of collaboration with other dental, medical and possibly other science fields is needful.

The majority of articles in WAJO originated from Nigeria, especially the south-western part of the country. This is similar to observations made about AJODO and EJO which had more American and European authors respectively.[12] According to Primo,[3] Dental Press Journal which is a Brazilian journal had over 90% of their publications emanating from Brazil. A reason attributable to this is that these journals tend to publish more papers from countries where they are domiciled, possibly because more indigenous authors submit their manuscripts to them. The south-western part of Nigeria had more

published articles in the journal possibly because most of Nigerian orthodontists reside in the region.

Conclusion

Most of the published research articles were mainly of cross-sectional design. The vast majority of authors were Nigerians though authors from 8 other countries were listed. Whilst most articles originated from orthodontic departments, more females published in the journal than their male counterparts.

There is a need for more research works and publication in RCTs and systematic reviews as they produce higher levels of scientific evidence. Visibility of the journal can also be enhanced through a more diverse authorship.

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