

Bibliometric Analysis of Journal of Clinical and Diagnostic Research (Dentistry Section; 2007-2014)

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ABSTRACT

Background: The role of scientific journals in diffusion of data concerning researches in the field of Public Health Dentistry is of premier importance. Bibliometric analysis involves analysis of publications reflecting the type of research work.

Aim: The present study was conducted with an aim to determine the number and trends of published articles in Journal of Clinical and Diagnostic Research (JCDR) from Feb. 2007 to Oct.2014.

Settings and Design: A retrospective observational study was conducted for JCDR.

Materials and Methods: All issues of JCDR were electronically searched for the parameters : study design, area of interest of research, state /college where research was conducted, authorship pattern, source of articles published each year, changing study trends, disease under study and publication bias.

Statistical Analysis used: The data was organized and analyzed using software SPSS - version 21.0; descriptive statistics was used.

Results: Bibliometric analysis was done for 601 articles of JCDR published from Feb. 2007 to Oct. 2014. The total number of articles published under Dentistry section have tremendously increased from mere 2 articles in 2007 to 328 articles in 2014. Majority of the study designs published in both the journal were case reports (42.6%) followed by cross sectional studies (24.8%). 96.3% of the articles were from India. Majority of the articles published were of multi authors (65.2%) and from Educational institutes (98.4%). The trends of the articles published indicated that the case reports/series formed the major bulk (others=59.1%) followed by research studies (21.3%).

Conclusion: It was concluded that most articles published were case reports followed by researches indicating an inclination towards better quality methodology. The SJR and the citation count of the articles published also indicated the quality of the scientific articles published.

Keywords: Authorship pattern, Bibliometry, Study designs, Trends

INTRODUCTION

The field of medicine and biologic sciences is an ever changing domain with new developments occurring every day. This holds true even for the Dental field such that there has been a shift towards evidence based dentistry. According to a report by Inter Academy Council (2004), enhancing the scientific and technological capacity of the developing world is once again on the global agenda. In this, the role of scientific journals in the dissemination of information concerning the researches in the field is of prime importance [1]. The conveyance of information between authors of the articles published is thereby responsible for the growth and expansion of the concerned subject areas. This further provides new insights and inspiration for new researchers to work on the same or related fields [2]. Schaffner (1994) has identified five distinct roles of journals which they play in scholarly communities. This includes Building a collective knowledge base, communicating information, validating the quality of research, distributing rewards and building scientific communities [3].

According to Cronin 1982, scientists do not work in isolation. Rather all scientists are members of a worldwide community of researchers working together to decipher the secret of human body. The subject of science is comprehensive where exists Pan- National collaboration among scientists which provides a substantial platform for the development of scientific knowledge [2].

For this, the quality maintenance of journal is mandatory, especially for the developing countries which provide a common source of young researchers with an access to challenging situations. According to a report published in WHO bulletin (2004), access to the international scientific and technical literature has several facets. Researchers in developing countries require access not only as readers but also as

authors so that they contribute actively in the field of research. The low participation of developing country researchers in the output of the international literature is widely recognized problem [1].

The decision making among health care professionals regarding treatment and diagnosis depends on professional experience, clinical expertise, peer consultation and existent knowledge about the concerned subject. However, the upsurge of Evidence based medicine and dentistry has resulted in inclination towards scientific reading in Medical literature. Therefore, quality assessment of the published articles is necessary [4]. Indexation of a journal also reflects its quality. Index Medicus has been considered the most comprehensive index of medical scientific journal articles. The other popular indexation services that exist are MedLine, PubMed, EMBASE, SCOPUS, EBSCO Publishing's Electronic Databases, SCIRUS among others [5].

Thus, "Bibliometrics" is an important scientific tool to evaluate the standard of a journal. The subject of bibliometrics was first defined by Pritchard (1996) as "the application of mathematical and statistical methods to books and other media". It involves the assessment specific variables such as the author, the place of publication and study design [6]. Historically bibliometric methods have been used to trace relationships amongst academic journal citations and it is a set of methods used to study or measure texts and information. Many research fields use bibliometric methods to explore the impact of their field, the impact of a set of researchers or the impact of a particular paper [7]. There have been very few literature regarding the bibliometric analysis of scientific journals [2,4,8-12].

Journal of Clinical and Diagnostic Research is a free access, Peer Reviewed; International Biomedical journal which covers all medical and dental specialties. It has a monthly publication and is a

Multidisciplinary - wide scope journal. The journal has been certified by the Health on Net (HON) Geneva University Hospital, Switzerland. The journal aims to publish the findings of doctors working at the ground level and that of young researchers. Thus, encouraging the research work in our country. The journal has been indexed in many important data bases like PubMed Central® (PMC), EBSCOhost, Hinari Access, Index Copernicus and many more [13].

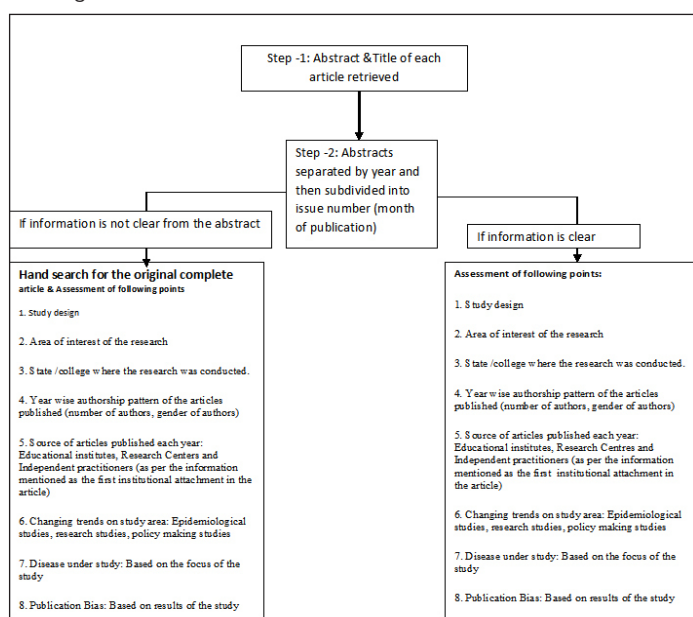
The dentistry section of the journal provides a wide data base for the dentists in our country and worldwide. It's been over five years since the inception of this journal, but no bibliometric analysis has been carried out of its Dentistry section to assess the various parameters of the articles published in the journal so as to give an insight into the trends in the focus of studies which would help us appreciate the landmarks achieved by the Journal in Dentistry section. Hence, the present study was conducted with an objective to determine the number and trends of published articles under the Dentistry section of the journal of Clinical and Diagnostic Research from the year Feb. 2007 to Oct. 2014.

MATERIALS AND METHODS

A retrospective observational study was conducted for JCDR from the year 2007 to 2014.

Data extraction strategy

All issues of the JCDR were electronically searched for articles published from 2007 to 2014 and were assessed by chief investigator.



[Table/Fig-1]: Selection of articles and data extraction [14]

Data collection

A standardized extraction method or checklist for retrieving the data from the articles was prepared. The variables which were collected from the articles are Study designs, (the study type was classified according to the study by Poletto VC [4]. The core area of articles was classified into three domains epidemiological studies, clinical studies and policy related articles [Table/Fig-1]. Similar analysis was done on two journals of community dentistry by Jain et al., [14].

Author mapping: For JCDR; the Indian state where the study was conducted was identified according to the institutional attachment of the author(s). Thus, the total number of publications in each state, as well as the scientific production of each state, will be determined.

STATISTICAL ANALYSIS

The data for all the parameters retrieved for JCDR was entered in the word Excel spreadsheet (2007). These data were organized and analysed using the software SPSS - version 21.0 and descriptive statistical analysis was used for the analysis of the data.

RESULTS

Bibliometric analysis was done for 601 articles of JCDR published from Feb. 2007 to Oct. 2014. The descriptive statistics of JCDR revealed an increase in the number of issues from 2007 to 2013 as the journal became a monthly publication from 2013. [Table/Fig-2] shows the total number of articles published under Dentistry section have tremendously increased from mere 2 articles in 2007 to 328 articles in 2014 (till the month of October 2014).

Year	Number of articles per year
2007	2
2008	7
2009	6
2010	35
2011	42
2012	32
2013	149
(Oct) 2014	328

[Table/Fig-2]: Number of articles published per year

Majority of the study designs [Table/Fig-3] published in both the journal were case reports (42.6%) followed by cross-sectional studies (24.8%).

Out of total 601 articles published; 96.3% of the articles were from India [Table/Fig-4]. Although, the international collaboration have increased since 2013 [Table/Fig-5]. (The Indian articles were mostly from Private colleges (93.5%), [Table/Fig-4]).

Authorship pattern of the articles [Table/Fig-6a&b] revealed that majority of the articles published under dentistry section were of multi authors (65.2%) and most of the authors were males (68.1%) and from Educational institutes (98.4%). Private practitioners contributed to about 1.5% of the total articles.

The trends of the articles published [Table/Fig-7] indicated that the case reports/series formed the major bulk (others=59.1%). This was followed by research studies (21.3%) and epidemiological studies (17.8%). However, policy making studies constituted 1.8% of the studies published.

Focus of the studies published [Table/Fig-8] revealed that majority the articles published were either concerning dental materials or treatment procedure (32.6%) and case reports (32.6%) followed by articles on prosthetic status/needs (11.8%) and on periodontal diseases (9.3%).

[Table/Fig-9] shows the SCImago Journal ranking trends of the journal (both medical and dental section) of the journal which has improved to 0.14 in the year 2013. The average citations of the article has also improved to 0.3.

DISCUSSION

The health sciences are ever changing and advancing specially in the field of diagnosis and treatment modalities. Hence, it is essential that health care professionals have access to reliable scientific information. The scientific journals play the pivotal role in dissemination of knowledge. This information provides a basis for evidence based practice guiding the decision making of doctors [4]. Thus, bibliometric analysis is of paramount importance in quality assessment of a scientific journal highlighting the loopholes and showing the path for improvement.

Number of publications (issues) reflects basic research capacity by showing the volume of papers being produced [15]. Data from the present bibliometric study of JCDR indicated that the number of issues suddenly rose to 6 issues per year in 2007 year to 12 in 2013 with increasing number of articles from 2 in the year 2007 to 328 articles till Oct 2014 [Table/Fig-2]. This reflects an increasing inclination of the dentists towards research in our country [16].

Year	Review N (%)	R.C.T N (%)	Case control Studies N (%)	Cohort N(%)	Case reports N (%)	Cross sectional studies N (%)	Longitudinal studies N (%)	Expert opinion N (%)	Lab research/ in vitro study N (%)
2007	0	0	0	0	2	0	0	0	0
2008	3	1	0	0	1	2	0	0	0
2009	1	0	0	0	2	3	0	0	0
2010	6	0	1	0	22	4	0	0	2
2011	10	0	1	0	24	7	0	0	0
2012	6	0	0	0	22	3	0	0	1
2013	22	6	1	0	70	37	1	0	12
2014	48	10	1	0	113	93	3	2	58
Total 601 (100%)	96 (16%)	17 (2.8%)	4 (0.7%)	0 (0%)	256 (42.6%)	149 (24.8%)	4 (0.7%)	2 (0.3%)	73 (12.1%)

[Table/Fig-3]: Number of articles with a particular study design per year

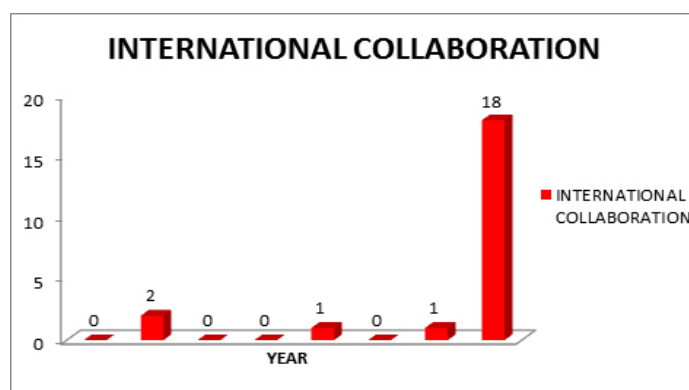
The assessment of the study design [Table/Fig-3] published in the journal showed a predominance of case reports followed by cross sectional studies. The case reports are an important source of information for the clinicians keeping them abreast with the rare diseases and their management. The cross-sectional studies help us to identify the magnitude and distribution of a particular health situation in a population and to analyse the probable etiologic agents [17]. However, systematic reviews and experimental studies formed only a small part of the studies published. Similar findings have been reported by Poorni S et al., and Dhillon JK et al., where the bulk of the studies in the field of Endodontics and conservative dentistry and Pedodontics comprised of experimental studies and case reports [18,19]. However, contrary findings have been reported in the bibliometric analysis of two journals of Community dentistry where it was found that bulk of the studies were of cross sectional designs while experimental studies were quite limited [14]. Randomized controlled trials are the gold standard by which all clinical research is judged. This is the strongest type of experimental design to support cause and effect relationship [20]. This highlights the fact that study designs vary according to the respective field of interest. Also, it indicates lack of resource or inclination towards experimental research in our country. Hence, a need to diversify the resources and manpower with appropriate knowledge is required to provide the epitome of evidence based dentistry.

The majority of articles (96.3%) published were from India based studies [Table/Fig-4], however, in recent times the international collaboration/representation has improved tremendously [Table/Fig-5] which is quite encouraging. This also highlights the commendable efforts of the journal team which has made it possible for the journal to carve a niche for itself in the world scientific domain.

The authorship pattern was analysed to determine the percentage of single and multiple authorship [Table/Fig-6a,b]. Majority of the articles were of multiple authors which might be due to the combined

Year	India	Out of India
2007	2	0
2008	5	2
2009	6	0
2010	35	0
2011	41	1
2012	32	0
2013	148	1
2014	310	18
Total 601 (100%)	579 (96.3%)	22 (3.7%)

[Table/Fig-4]: Source of articles



[Table/Fig-5]: International Collaboration (Based on author mapping)

efforts of more than three researchers required for the study as well as its reporting. Similar results were reported by the previous bibliometric studies done by Thanuskodi S [21] and Thanuskodi S

Year	One author	Two authors	Three authors	>Three authors	Male authors	Female authors
2007	0	2	0	0	4	0
2008	1	3	1	2	16	3
2009	0	1	5	0	15	2
2010	6	13	8	8	61	23
2011	7	8	12	15	80	43
2012	0	8	7	17	74	39
2013	3	15	25	106	414	207
(Oct) 2014	5	34	45	244	970	447
Total 601(100%) (%)	22 (3.7%)	84 (14%)	103 (17.1%)	392 (65.2%)	1634 (68.1%)	764 (31.9%)

[Table/Fig-6a): Authorship pattern of the articles per year

Year	Educational institutes	Research Institutes	Private practitioners
2007	0	0	4
2008	16	0	3
2009	17	0	0
2010	84	0	0
2011	117	0	6
2012	108	0	5
2013	614	1	6
2014	1404	1	12

[Table/Fig-6b): Authorship pattern of the articles per issue

[22]. However, this was contradictory to the findings of Warraich NF [23], where mostly the articles were of single authors. Also, the institutional attachment of the authors for both the journals was mainly from educational institutes. This emphasizes that educational institutes encourage more of research work mainly as a part of Post graduate curriculum. Similar results were shown by Hussain A [24]. Most of the authors were males indicating a more active participation from males as compared to women in the field of research. Similar results were shown by Zainab AN et al., [8].

Trends of the studies published [Table/Fig-7] again indicated the wider influence of the study. Mostly the studies were case reports providing a database for future studies. Research contributed a major bulk of the studies published proving the epitome of evidence based research.

Year	Epidemiological studies	Research studies	Policy making studies	others
2007	0	0	0	2
2008	0	2	0	5
2009	0	2	0	4
2010	5	2	0	28
2011	6	3	0	33
2012	2	2	1	27
2013	34	22	0	93
2014	60	95	10	163
Total	107 (17.8%)	128 (21.3%)	11 (1.8%)	355 (59.1%)

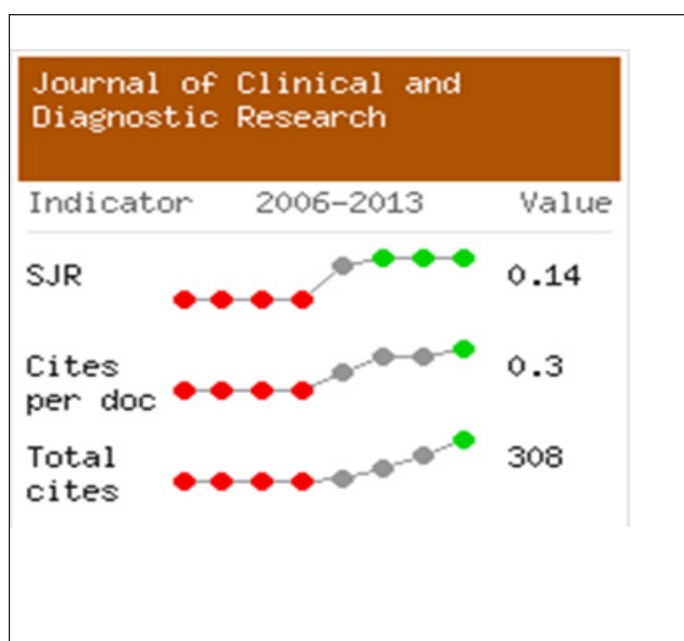
[Table/Fig-7]: Trends of articles published

Year	Dental Caries	Periodontal Diseases	Malocclusion	Carcinoma	Oral Health status	Prosthetic status/needs	Dental Materials/treatment method	others
2007	0	0	0	0	0	1	0	1
2008	0	2	0	0	0	0	0	5
2009	0	1	0	0	0	3	0	2
2010	0	2	4	1	0	9	10	9
2011	1	8	3	1	0	9	14	6
2012	0	5	0	2	0	2	12	11
2013	2	15	7	11	2	15	43	54
2014	4	23	15	28	1	32	117	108
Total	7 (1.2%)	56 (9.3%)	29 (4.8%)	43 (7.2%)	3 (0.5%)	71 (11.8%)	196 (32.6%)	196 (32.6%)

[Table/Fig-8]: Focus of study (based on disease or topic of the study)

The focus of the study [Table/Fig-8] was analysed and categorized into 8 categories as per the information retrieved from the articles into dental caries, periodontal diseases, Malocclusion, oral health status, prosthetic status/needs, dental materials/treatment methods and others (questionnaire based studies assessing knowledge, attitude and practices of study participants). There was an inclination towards case reports and dental materials/treatment methods amongst the various oral health problems for this journal. This indicates that the main concern for the Dentists in India and Worldwide is regarding reporting of rare cases and concerning researches regarding newly introduced dental materials/methodology to provide the database for the clinicians.

The SCImago journal ranking [Table/Fig-9] is an indicator of the journal's representation and citation in the scientific world. The improved SJR and average citations of the journal again highlights the quality of the journal along with the published articles. However, this ranking is based on the overall Journal's citations from all the



[Table/Fig-9]: SCImago Journal ranking trends [14]

sections. Hence, the citation count only for the dental section could be evaluated. Also, the Scimago Journal Ranking of the journal [Table/Fig-9] is low (0.14) as it measures the scientific influence of the average article in a journal. As more number of articles are published in this journal focusing to promote research work, its impact factor is low [25].

CONCLUSION

The bibliometric analysis of the Journal of Clinical and Diagnostic Research (Dentistry section) showed interesting publication trend of the Journal of Clinical and Diagnostic Research. It was concluded that most articles published were case reports followed by researches indicating an inclination towards better quality methodology in terms of research and systematic reviews. It further identified areas of interest like systematic reviews, policy making studies and studies focusing on oral health status; where little research has been done, indicating a need for more research on these topics. The SJR and the citation count of the articles published also indicated the proficient quality of the scientific articles published.

As no bibliometric analysis has been conducted before for the Journal of Clinical and Diagnostic Research, there was not much literature available for comparison of the study results which proved a major limitation for the study. Further bibliometric analysis for the various journals available for the concerned specialty are

required to evaluate the quality of the journals and to assess the areas of improvement which will help raise the standard of scientific publication.

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