



CITED PAPERS ON ALZHEIMER DISEASE: A SCIENTOMETRIC ANALYSIS USING SCOPUS DATABASE

N Kayalvizhi*

Research Scholar, SCSVMV University, Enathur, Kanchipuram, Tamil Nadu.
*Corresponding Author

Dr. S. S. Devika

Librarian In-charge, SCSVMV University, Enathur, Kanchipuram, Tamil Nadu.

Dr. P. Nageswara Rao

Senior Librarian, Dept. of Library and Information Science, Society for Electronic Transactions and Security (SETS), MGR Knowledge City, CIT Campus, Taramani, Chennai, India.

ABSTRACT

The impact of Alzheimer's disease on the population is significant. Alzheimer's disease rose from the 25th most burdensome disease in the world. In order to identify depth and importance of the disease a scientometric study has been carried out. The study was carried out with the objective to examine the cited publications in Alzheimer's disease research and to examine the chronological growth of cited publications. The literature on Alzheimer's disease research data has been downloaded from 'Scopus', multidisciplinary online database, which is an international indexing and abstracting database, using the search term 'Alzheimer's'. A total of 1,79,722 records have been identified during the period of 1970-2017 (48 years). The study was carried out with the objective to examine the cited publications in Alzheimer's disease research and to examine the chronological growth of cited publications. Further study identifies the authorship pattern of cited publications. The data were analysed based on trend of Cited publications; Citation and type of access; Yearwise growth; Block yearwise; Authorship pattern and Document type of cited publications. Nearly 85.3% of publications were cited and only 14.7% of publications were uncited. The study reveals that the citation of articles gets study increase every year during the study period and seems to be in linear trend. Nine papers out of 10 papers get cited irrespective of document type except short survey.

KEYWORDS : Alzheimer disease, Citation analysis, Bibliographic analysis, uncited publications.

INTRODUCTION

The impact of Alzheimer's disease on the population is significant. In 2006, the prevalence of AD was 26 million in the world, and by 2050, it is estimated that this disease will affect 1 in every 85 people, overall. Official records indicate a 71% increase in deaths due to Alzheimer's disease from 2000 to 2013⁽¹⁾. This is compared with a 14% decrease in heart disease in the same time span. Alzheimer's disease rose from the 25th most burdensome disease in the United States to the 12th in a 10-yr time span and an increase from the 32nd to the 9th worst in regards to years of life lost. This was the largest increase for any disease over that interval of time.

Alzheimer Disease

Alzheimer's disease is named after Dr. Alois Alzheimer. In 1906, Dr. Alzheimer noticed changes in the brain tissue of a woman who had died of an unusual mental illness. Her symptoms included memory loss, language problems, and unpredictable behavior.

Alzheimer's disease is a progressive disorder that causes brain cells to waste away (degenerate) and die. Alzheimer's disease is the most common cause of dementia — a continuous decline in thinking, behavioral and social skills that disrupts a person's ability to function independently.

People with Alzheimer's may:

- Eventually forget the names of family members and everyday objects
- Forget conversations, appointments or events, and not remember them later
- Get lost in familiar places
- Have trouble finding the right words to identify objects, express thoughts or take part in conversations
- Repeat statements and questions over and over
- Routinely misplace possessions, often putting them in illogical locations

REVIEW OF RELATED STUDIES

The first recorded history of AD is the eighth edition of Emil

Kraepelin's Psychiatry book (Handbook of Psychiatry)⁽²⁾ published in 1910, where he stated Dr. Alzheimer's findings on the brain disease, and termed it 'Alzheimer's disease,' after his colleague, Dr. Alzheimer.^(3,4) Around the same time, Oskar Fischer (psychiatrist and neuropathologist) also studied 12 cases of senile dementia and collected more clinical symptoms of neuropathological findings of the disease. In 1910, for the first time Fischer published a description of neuritic plaque.⁽⁴⁾

A number of studies indicate that in addition to age, gender also plays an important role as a risk factor of developing AD and suggest that the prevalence of AD is more common among women than men.^(5,6,7,8) However, inconsistencies have been observed in studies related to the incidence of AD between male and female.

OBJECTIVES

The objectives of the study are

- To examine the cited publications in Alzheimer's disease research.
- To examine the chronological growth of cited Alzheimer's disease research.
- To identify the authorship pattern of cited publications in Alzheimer's disease research.
- To compare and measure the growth rate cited literature published.

Hypotheses

The following hypotheses will be formulated for this study based on objectives.

- There exist substantial cited publications in Alzheimer's disease research.
- Growth of publications in Alzheimer's disease research is comparatively higher in developed countries.
- There exists more collaborative research papers were get cited in Alzheimer's disease research.

Data Capture

For this study, the literature on Alzheimer's disease research

data has been downloaded from 'Scopus', multidisciplinary online database, which is an international indexing and abstracting database, using the search term "Alzheimer's". For this study, publications commencing from 1970-2017 (48 years) has been downloaded from the database. A total of 1,79,722 records have been identified. The type of access of these publications were shown in Table 1.

Table 1 Type Of Access

S.No.	Type of access	No. of publications	%
1	Open Access	36185	20.13
2	Other	143537	79.87
	Total	179722	100.0

Out of 1,79,722 publications, 20.13% (36185) of papers were published open access source where as 79.87% (1,43,537) of papers were from commercial publications.

Data Analysis

The data were analysed based on

- Trend of Cited publications
- Citation and type of access
- Yearwise growth of cited publication
- Block yearwise cited publications
- Authorship pattern of cited publications
- Document type and cited publications

Trend Of Cited Publications

The cited and uncited papers were analysed and the same has been shown in Table 2.

Table 2 Cited And Uncited

S.No.	Cited/Uncited	Frequency	Percent	Cumulative Percent
1	Cited	153319	85.3	85.3
2	Uncited	26403	14.7	100.0
	Total	179722	100.0	

Nearly 85.3% of publications were cited and only 14.7% of publications were uncited.

Citation And Type Of Access

The study has further analysed with access type and the same has been shown in Table 3.

Table 3 Access Type Vs Cited And Uncited

S. No.	Access type	Cited	Uncited	Total
1	Others	119863 83.5%	23674 16.5%	143537 79.87%
2	Open Access	33456 92.5%	2729 7.5%	36185 20.13%
	Total	153319 85.3%	26403 14.7%	179722 100.0%

Out of 36185 Open access journals, 33456 (92.5%) were cited and only 2729 (7.5%) were goes uncited. Similarly out of 179722 other articles, 83.5% were cited and only 16.5% of articles were uncited.

Yearwise Growth Of Cited Publication

The yearwise cited and uncited publications were analysed and the same has been shown in Table 4.

Table 4 Year Vs Cited And Uncited Publications

S. No.	Year	Cited	Uncited	Total
1	1970	15 .0%	5 .0%	20 .0%
2	1971	12 .0%	5 .0%	17 .0%
3	1972	15 .0%	5 .0%	20 .0%
4	1973	29 .0%	17 .0%	46 .0%
5	1974	51 .0%	28 .0%	79 .0%
6	1975	62 .0%	20 .0%	82 .0%
7	1976	53 .0%	19 .0%	72 .0%

8	1977	68	.0%	12	.0%	80	.0%
9	1978	66	.0%	18	.0%	84	.0%
10	1979	90	.1%	29	.0%	119	.1%
11	1980	121	.1%	24	.0%	145	.1%
12	1981	161	.1%	37	.0%	198	.1%
13	1982	260	.1%	42	.0%	302	.2%
14	1983	339	.2%	71	.0%	410	.2%
15	1984	416	.2%	75	.0%	491	.3%
16	1985	573	.3%	126	.1%	699	.4%
17	1986	865	.5%	164	.1%	1029	.6%
18	1987	820	.5%	174	.1%	994	.6%
19	1988	1010	.6%	205	.1%	1215	.7%
20	1989	1408	.8%	312	.2%	1720	1.0%
21	1990	1494	.8%	359	.2%	1853	1.0%
22	1991	1643	.9%	312	.2%	1955	1.1%
23	1992	1800	1.0%	322	.2%	2122	1.2%
24	1993	1927	1.1%	321	.2%	2248	1.3%
25	1994	2356	1.3%	369	.2%	2725	1.5%
26	1995	2491	1.4%	373	.2%	2864	1.6%
27	1996	2857	1.6%	408	.2%	3265	1.8%
28	1997	3077	1.7%	520	.3%	3597	2.0%
29	1998	3272	1.8%	567	.3%	3839	2.1%
30	1999	3309	1.8%	533	.3%	3842	2.1%
31	2000	3639	2.0%	613	.3%	4252	2.4%
32	2001	3818	2.1%	639	.4%	4457	2.5%
33	2002	4205	2.3%	736	.4%	4941	2.7%
34	2003	4310	2.4%	795	.4%	5105	2.8%
35	2004	4983	2.8%	916	.5%	5899	3.3%
36	2005	5349	3.0%	1062	.6%	6411	3.6%
37	2006	5731	3.2%	968	.5%	6699	3.7%
38	2007	5953	3.3%	1013	.6%	6966	3.9%
39	2008	6172	3.4%	898	.5%	7070	3.9%
40	2009	6897	3.8%	1057	.6%	7954	4.4%
41	2010	7597	4.2%	1137	.6%	8734	4.9%
42	2011	8031	4.5%	1292	.7%	9323	5.2%
43	2012	8939	5.0%	1285	.7%	10224	5.7%
44	2013	9351	5.2%	1278	.7%	10629	5.9%
45	2014	9390	5.2%	1315	.7%	10705	6.0%
46	2015	9481	5.3%	1514	.8%	10995	6.1%
47	2016	9389	5.2%	1805	1.0%	11194	6.2%
48	2017	9424	5.2%	2608	1.5%	12032	6.7%
	Total	153319	85.3%	26403	14.7%	179722	100.0%

The citation of articles gets study increase every year during the study period. It can further seen that 5% more number of articles get cited since 2012 onwards. Every year it can be seen that only 1/5 of the published articles were uncited. The ratio of uncited publications were less in the domain of Alzheimer's disease research.

Block Yearwise Cited Publications

The study has further been extend to block year. The study period has been divided to 6 block period of 8 years each. The cited and uncited publication impact on block year has also been shown in table 5.

Table 5 Block Year Vs Cited And Uncited Publications

S. No.	Block Year	Cited	Uncited	Total
1	1970-1977	305 .2%	111 .1%	416 .2%
2	1978-1985	2026 1.1%	422 .2%	2448 1.4%
3	1986-1993	10967 6.1%	2169 1.2%	13136 7.3%
4	1994-2001	24819 13.8%	4022 2.2%	28841 16.0%
5	2002-2009	43600 24.3%	7445 4.1%	51045 28.4%
6	2010-2017	71602 39.8%	12234 6.8%	83836 46.6%
	Total	153319 85.3%	26403 14.7%	179722 100.0%

The cited publications were more than 10% during the last three block years. i.e. during 1994-2001; 2002-2009 and 2010-2017; Further citation gets doubled every block year. There

exist same trend in the case of uncited publications. In all 1/5 of the publications alone gets unnoticed during six block years.

Authorship Pattern Of Cited Publications

The study has also been extended to identify the relation between number of authors and citation. The authorship pattern; cited and uncited publications were compared with total publications and the same has been shown in Table 6.

Table 6 Authorship Vs Cited And Uncited Publications

S. No.	Authorship	Cited		Uncited		Total	
1	Single author	19283	10.7%	12806	7.1%	32089	17.9%
2	Two authors	22499	12.5%	4581	2.5%	27080	15.1%
3	Three authors	20691	11.5%	2860	1.6%	23551	13.1%
4	Four authors	18698	10.4%	1933	1.1%	20631	11.5%
5	Five authors	16302	9.1%	1339	.7%	17641	9.8%
6	Six and above	55846	31.1%	2884	1.6%	58730	32.7%
Total		153319	85.3%	26403	14.7%	179722	100.0%

Out of 17.9% of Solo research publications, only 10.7% of publications gets cited and nearly 7.1% were uncited. Nearly 50% of the single author publications were unnoticed when comparing to total uncited publications. Five author publications were less among the uncited publications. Six and above authors publications were cited more than any other authorship pattern. It can be inferred that collaborated author publications were cited more than solo author publications. Similarly in the case of solo research publications were more uncited than cited publications.

Document Type And Cited Publications

The study has further been extended to document type and the same has been shown in Table 7.

Table 7 Document Type Vs Cited And Uncited

S. No.	Document Type	Cited		Uncited		Total	
1	Article	105748	58.8%	10434	5.8%	116182	64.6%
2	Article in Press	60	.0%	27	.0%	87	.0%
3	Book	231	.1%	115	.1%	346	.2%
4	Book Chapter	1665	.9%	2172	1.2%	3837	2.1%
5	Conference Paper	6464	3.6%	2508	1.4%	8972	5.0%
6	Conference Review	3	.0%	117	.1%	120	.1%
7	Editorial	2733	1.5%	2315	1.3%	5048	2.8%
8	Erratum	157	.1%	498	.3%	655	.4%
9	Letter	3106	1.7%	1354	.8%	4460	2.5%
10	Note	2388	1.3%	2651	1.5%	5039	2.8%
11	Retracted	8	.0%	1	.0%	9	.0%
12	Review	28622	15.9%	2908	1.6%	31530	17.5%
13	Short Survey	2134	1.2%	1303	.7%	3437	1.9%
Total		153319	85.3%	26403	14.7%	179722	100.0%

Out of 85.3% of cited publications, 58.8% of citations were from Journal articles. It is followed by reviews and conference papers. All the different document types of publications were get cited.

Similarly out of 14.7% of uncited publications, 5.8% of publications were from journal articles. It is followed by reviews 1.6%; notes 1.5%; conference papers 1.4%

Out of 64.6% of journal articles; 58.8% of journal articles were

get cited and only 5.8% of articles were get uncited. Similarly 17.5% of review publications; 15.9% of reviews were gets cited and only 1.6% of reviews were not get cited. In all it can be inferred that out of 10 papers nine papers get cited irrespective of document type except short survey.

Finding

The findings of the study were

- A total of 1,79,722 research publications on Alzheimer's disease research publications can be seen during the study period of 1970-2017 (48 years).
- Out of 1,79,722 publications, 20.13% (36185) of papers were published open access source where as 79.87% (1,43,537) of papers were from commercial publications.
- Nearly 85.3% of publications were cited and only 14.7% of publications were uncited.
- Out of 36185 Open access journals, 33456 (92.5%) were cited and only 2729 (7.5%) were goes uncited. Similarly out of 179722 other articles, 83.5% were cited and only 16.5% of articles were uncited.
- The citation of articles gets study increase every year during the study period and seems to be in linear trend.
- 5% more number of articles get cited since 2012 onwards. Every year it can be seen that only 1/5 of the published articles were uncited. The ratio of uncited publications were less in the domain of Alzheimer's disease research.
- The cited publications were more than 10% during the last three block years. i.e. during 1994-2001; 2002-2009 and 2010-2017.
- There exist similar trend in the case of uncited publications. In all 1/5 of the publications alone gets unnoticed during six block years.
- Nearly 50% of the single author publications were unnoticed when comparing to total uncited publications. Five author publications were less among the uncited publications. Six and above authors publications were cited more than any other authorship pattern.
- Collaborated author publications were cited more than solo author publications. Similarly in the case of solo research publications were more uncited than cited publications.
- Out of 85.3% of cited publications, 58.8% of citations were from Journal articles. It is followed by reviews and conference papers. All the different document types of publications were get cited.
- Similarly out of 14.7% of uncited publications, 5.8% of publications were from journal articles. It is followed by reviews 1.6%; notes 1.5%; conference papers 1.4%
- Out of 64.6% of journal articles; 58.8% of journal articles were get cited and only 5.8% of articles were get uncited. Similarly 17.5% of review publications; 15.9% of reviews were gets cited and only 1.6% of reviews were not get cited.
- Nine papers out of 10 papers get cited irrespective of document type except short survey.

CONCLUSION

The study was carried out with the objective to examine the cited publications in Alzheimer's disease research and to examine the chronological growth of cited publications. Further study identifies the authorship pattern of cited publications. The literature on Alzheimer's disease research data has been downloaded from 'Scopus', multidisciplinary online database, which is an international indexing and abstracting database, using the search term "Alzheimer's". For this study, publications commencing from 1970-2017 (48 years) has been downloaded from the database. A total of 1,79,722 research publications on Alzheimer's disease research publications can be seen during the study period of 1970-2017 (48 years). Out of 1,79,722 publications, 20.13% (36185) of papers were published open access source where as 79.87% (1,43,537) of papers were from commercial publications. The importance of research can be seen in terms

of citation. The citation of articles gets study increase every year during the study period and seems to be in linear trend. This also indicates the depth and importance of the Alzheimer's disease.

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