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A Bibliometric Analysis on "*Trichomonas Tenax* in Oral Diseases" Published in Indexed Journals between 1970-2024

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A B S T R A C T

Introduction: The oral flagellate *Trichomonas tenax* has been identified as an important etiological agent of periodontal diseases.Method: In this study the publication data was determined by using the phrase "*Trichomonas tenax* in oral diseases" as the primary search keyword. Associated articles indexed in the Scopus Core Collection between January, 1970 and February, 2024 was retrieved. The evaluation was performed based on productivity, publication years, authors, research topic, institutions, countries, documents by source, type of article, subject area and funding sponsor.***Results:*** Out of 79 publications in the given period, maximum numbers of publications were done in 2023, Poland being the country with maximum number of publications where Anna J Kurnatowska has published most of the aricles in Annals of Parasitology. ***Conclusion***: *Trichomonas tenax* is one of the most commonly found parasites of the oral cavity. Further research with more specific tests and larger sample size shall be conducted.

Keywords: *Trichomonas tenax*, Oral diseases, Bibliometric analysis, Parasites.

INTRODUCTION

Periodontitis is an inflammatory disease triggered by the infection of the periodontal structures by various microbes [1]. Several microbiological patterns can be identified in periodontal disease in association with some specific pathophysiological traits including mainly bacteria, viruses and parasites. Two important parasites have been identified in relation to periodontal disease: *Trichomonas tenax* and *Entamoeba gingivalis*[2].

Trichomonas tenax, an anaerobic motile flagellated protozoan, plays a role in pathophysiology of periodontal diseases. It is either ellipsoidal or ovoid (pear-shaped) in shape and 5–16 × 2–15 μm in size. Each has five flagella—four free anterior flagella and one that extends posteriorly. An undulating membrane extends two-thirds of the body length and its accompanying costa typically lies next to the posterior flagellum [3]. The pathogenicity of *T. tenax* has been attributed to the protein secreted by the oral flagellate [4]. It has a fibronectin like protein on its cell surface which is

responsible for tissue adhesion [5]. Cysteine proteinases from *T. tenax* are responsible for the cleavage of collagen [6]. Nagao *et al*., (2000) [7] reported that the hemolytic activities were due to two types of hemolysins, one which is protein-like and the other lipid-like. It possesses the ability to adhere to a target cell with mediation of the range of iron-dependent surface adhesions, has a cytotoxic effect, causes apoptosis of epithelial cells through release of cysteine proteses, and induces a weakening of the junctional complex within the epithelial monolayer. The first article on the presence of *T. tenax* in oral diseases was published in 1970 by Wantland*et al*., [8]. Till date research has not been done on the bibliometric analysis for publications on role of *Trichomonas tenax* in oral diseases. Thus, this paper aims to present a bibliometric review on the published articles on "*Trichomonas tenax* in oral diseases" between January 1970 to February 2024.

MATERIALS AND METHOD:

BIBLIOMETRIC METHOD AND DATA STATISTICS

Bibliometric is an approach to examine, analyse and check structures of research areas. It explains the publication information and identifies the influence of journals, researchers and institution [9]. In this study the publication data was determined by using the phrase "*Trichomonas tenax* in oral diseases" as the primary search keyword. The retrieved articles were analyzed using both computer and manual methods. By utilizing "*Trichomonas tenax* in oral diseases" as a significant search phrase, associated articles indexed in the Scopus Core Collection between January, 1970 and February, 2024 was retrieved. The phrase produced a total of 79 documents from numerous researchers and the data was safeguarded for evaluation purpose. The evaluation was performed based on productivity, publication years, authors, research topic, institutions, countries, documents by source, type of article, subject area and funding sponsor.

Scopus

Scopus is an abstract and citation database launched by the academic publisher Elsevier in 2004 [10]. The database includes three types of sources—book series, journals, and trade journals—and covers 36,377 titles (22,794 active titles and 13,583 inactive titles) from 11,678 publishers, of which 34,346 are peer-reviewed journals in top-level subject fields: life sciences, social sciences, physical sciences and health sciences [11].

RESULTS

Publication Years

This graph describes the number of articles published over the years. Out of 79 publications in the given period, maximum numbers of publications (9 articles) were published during 2023. No articles were published from 1970-1975 and in the year 1995. A sudden fluctuation in the publication number was publication outputs which may be due to increase in number of periodontal/oral infections due to parasites (Figure 1).

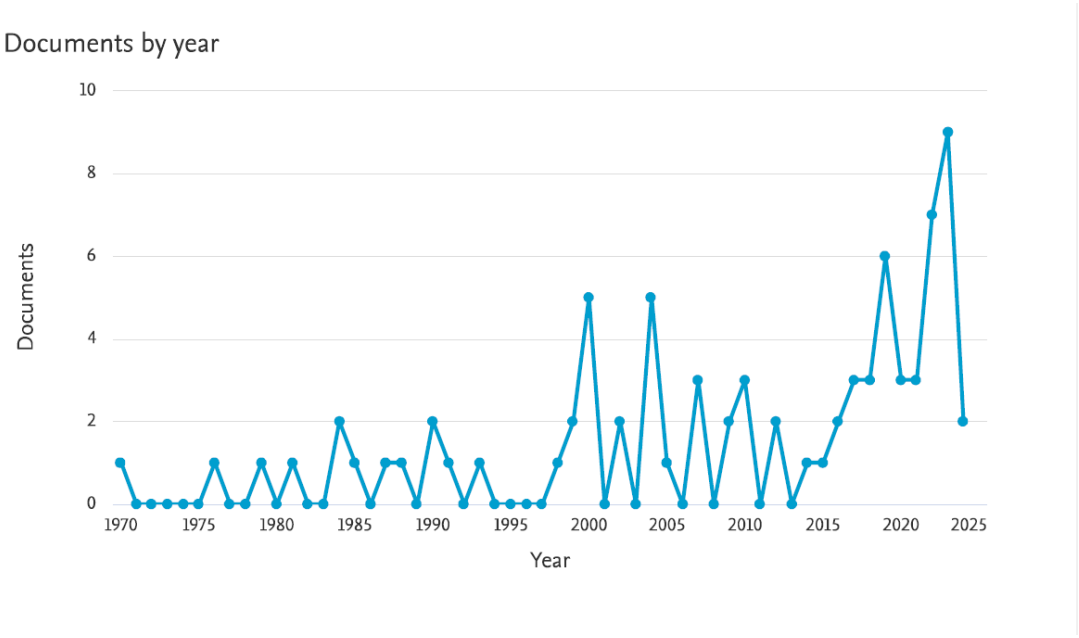

Figure 1:

Productivity

The productivity serves as a device used to gauge the number of different published articles amongst countries. Figure 2 shows that the top 3 most productive countries with highest publications in the period under review are Poland (17articles, 21.5%) followed by France (9 articles, 11.4%) & Iraq (8 articles, 10%) signifying the probability of prevalence of *Trichomonas tenax* is more in the European countries.

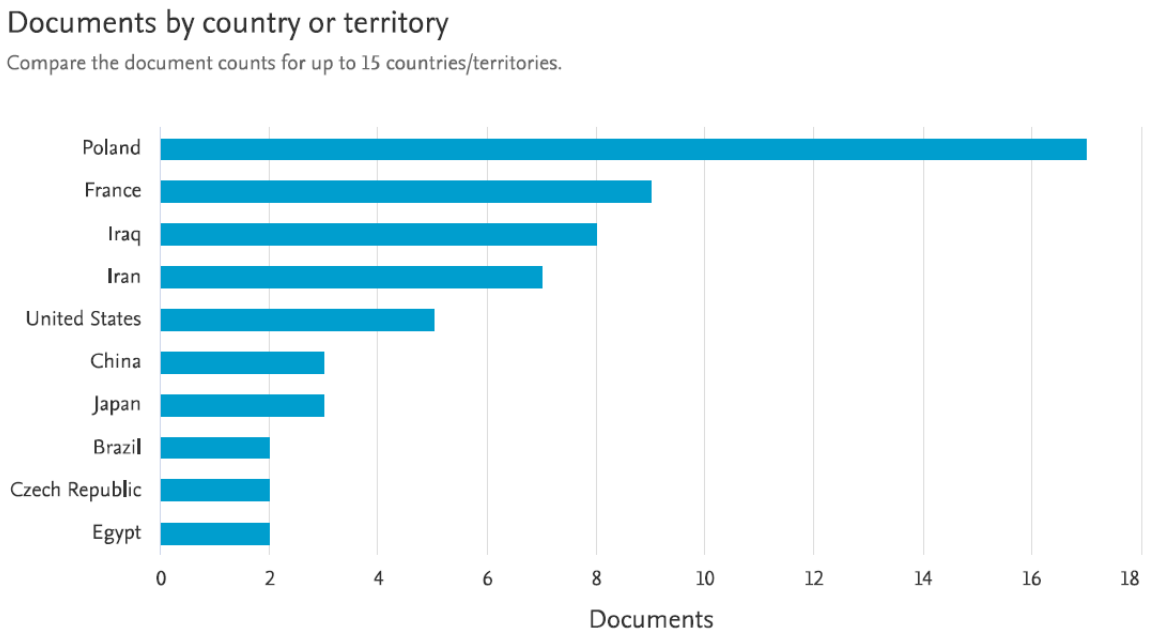

Figure 2:

Document by Subject Area

As shown in Figure 3, 57 publications are from Medicine, 30 from Immunology and Microbiology, 13 from Dentistry, 7 from Agricultural & Biological Sciences, 6 from Biochemistry, Genetics & Molecular Biology, 3 from Pharmacology, Toxicology &Pharmaceutics, 3 from Veterinary, 1 each from Engineering & Environmental Discussion. Most of the articles are published from the healthcare industry.

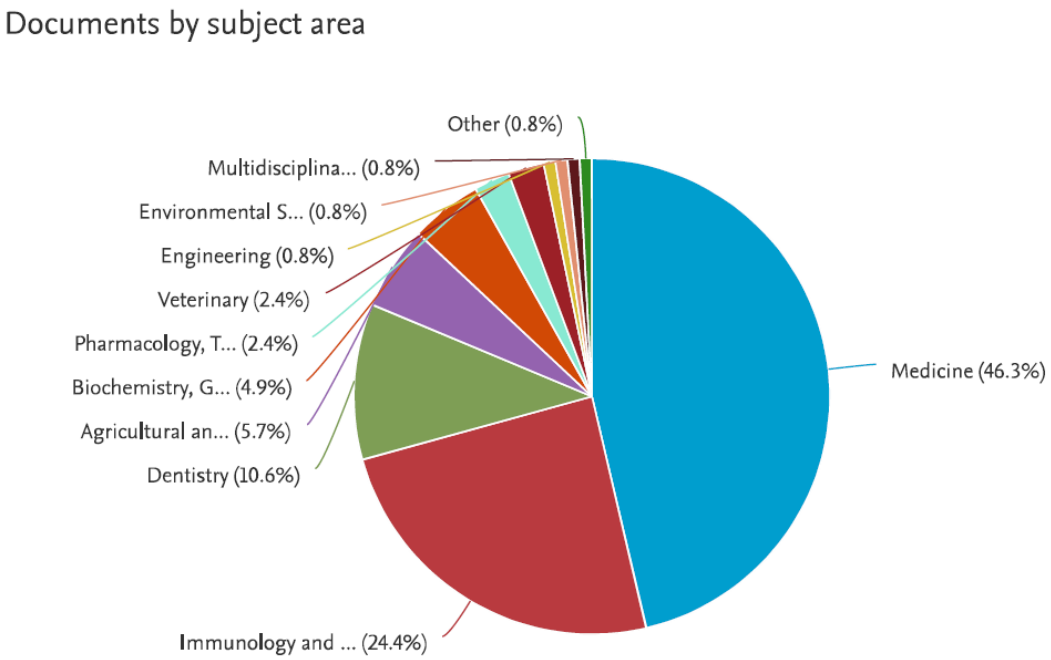

Figure 3:

Authors

This section discusses the number of articles published according to the authors, to determine the most active author. Figure 4 shows maximum numbers of publications have been done by Anna J Kurnatowska from Poland (Medical University of Lodz). He has published a total of 7 articles on the topic. Out of the 7 articles, 4 are research articles and 3 review articles.

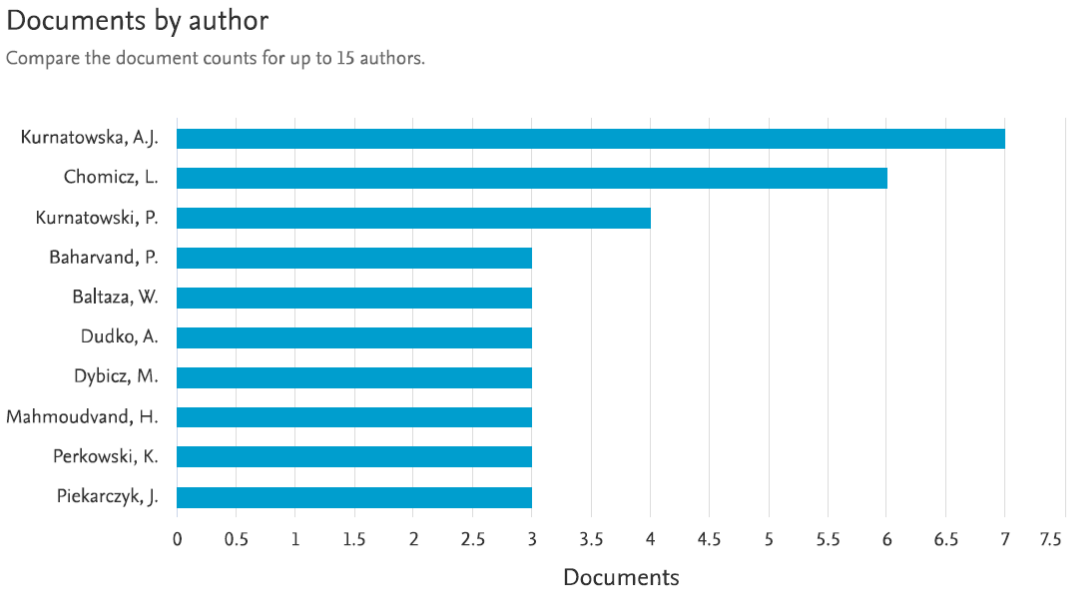

Figure 4:

Documents by affiliation

Comparing the document counts for up to 15 affiliations, 6 are affiliated with Medical University of Warsaw, 3 each with Science & Healthcare for Oral Welfare, Medical university of Lodz, and Lorestan University of Medical Science, and 2 each with Zaklad Stomatologii Zachowawczej Instytutu Stomatologiioraz, and Charles University (Figure 5).

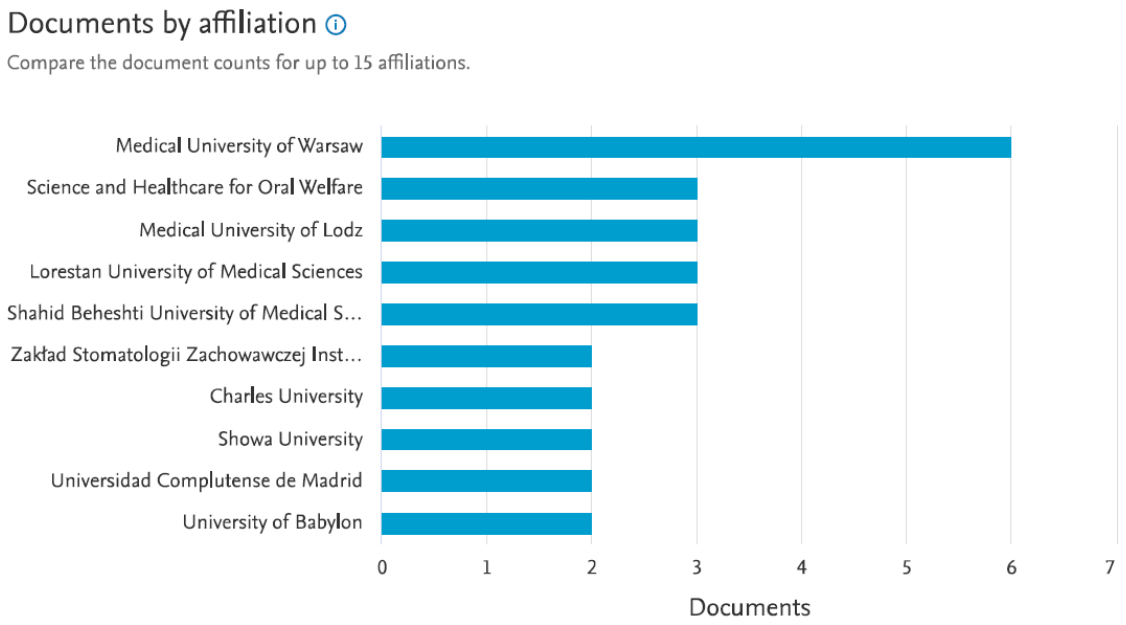

Figure 5:

Documents per year per source

It is the number of documents published each year and the corresponding citation count of the document. The measure of the visibility of a specific topic to academic researchers determines its number of citations.

The Annals of Parasitology (formerly known as Wiadomosci Parazytologiczne) is an official, peer reviewed quarterly of the Polish Parasitological Society in which maximum 6 articles have been published with a maximum of 53 citations (Figure 6).

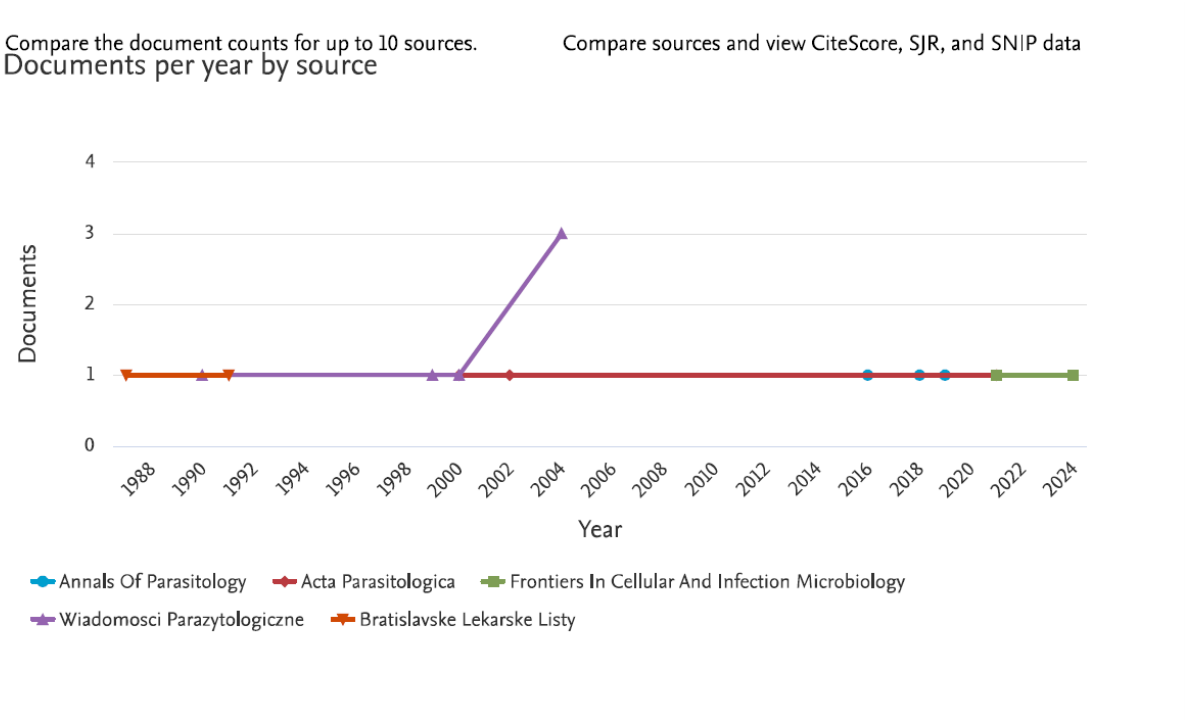

Figure 6:

When further analyzed, Frontiers in cellular and infection microbiology had the highest cite score of 6.4 in the year 2022 (Figure 7a), highest SNIP (Source normalized impact per paper by year) i.e. 1.198 in 2022 (figure 7b), highest source citation per year (35360 citations in 2023) (Figure 7c), highest documents by year (2079 in the year 2022 and 1609 in 2023) (Figure 7D) and highest percentage documents not cited by year (98.14 in 2024) (Figure 7E). But, SJR (SCImagoJurnal rank) per year was highest for Acta parasitological (0.478 in 2022) (Figure 7F) and Percentage review articles (25 in 2024) was maximum for Annals of Parasitology (Figure 7G).

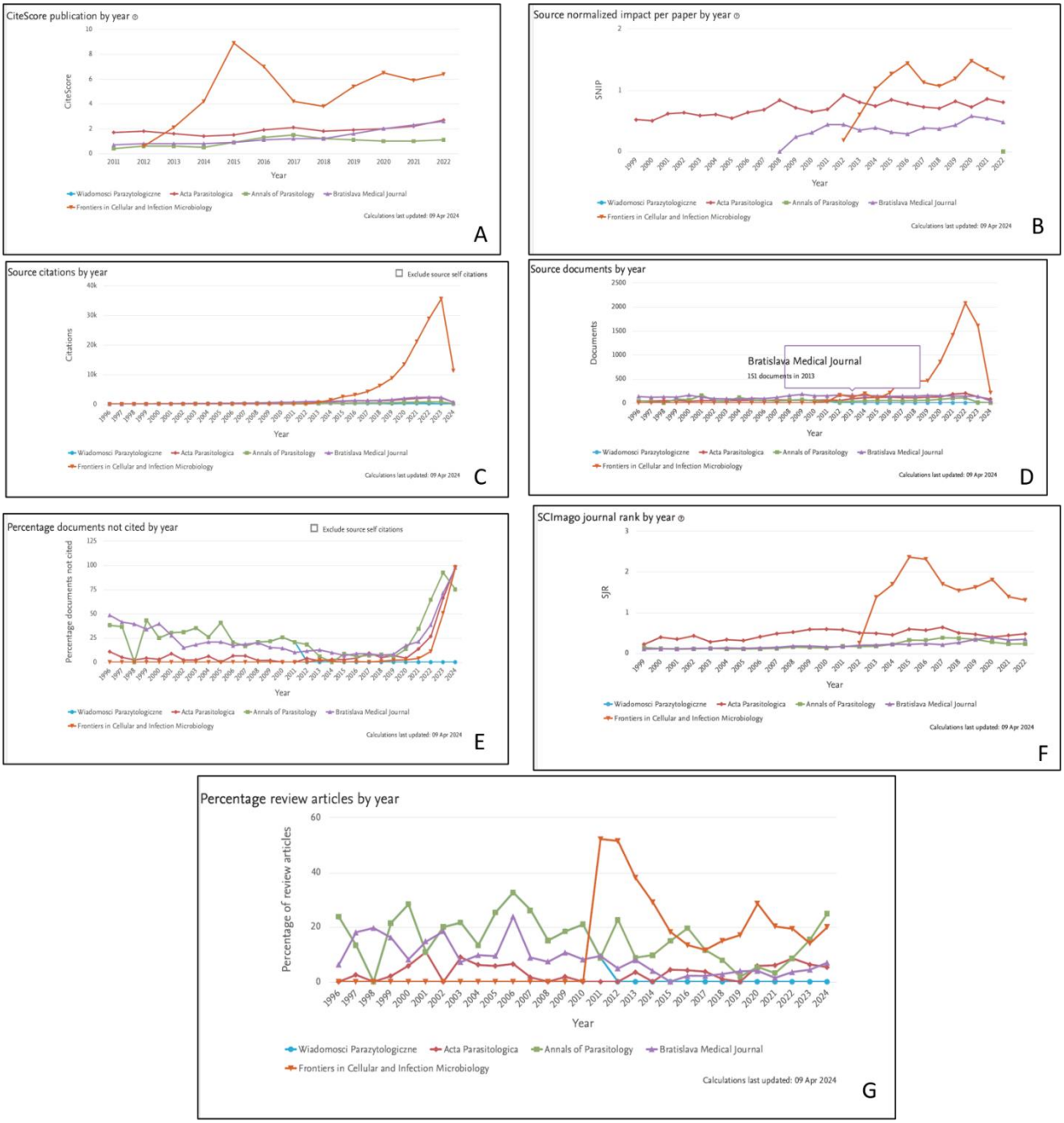

Figure 7:

Document by Type

Out of 79 publications, 65 (82.3%) are original/ research articles, 9 (11.4%) are reviews, 4 (5.1%) are book chapters and 1 (1.3%) are conference papers. Table 1 summarizes a report of review papers published on the topic "*Trichomonas tenax* in oral diseases (Figure 8).

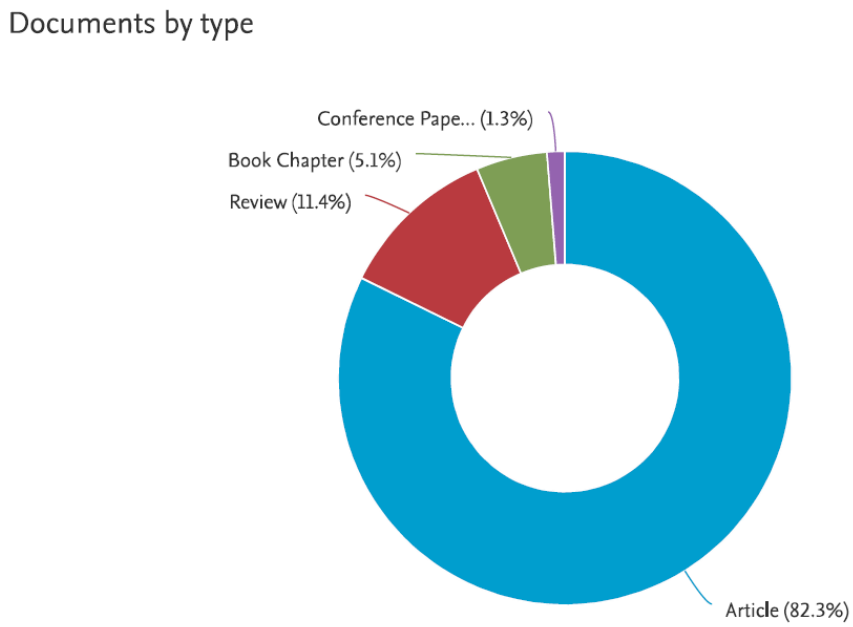

Figure 8:

Documents by funding sponsor

Out of 79 studies in the period of study, 10 were funded by sponsors (Figure 9).

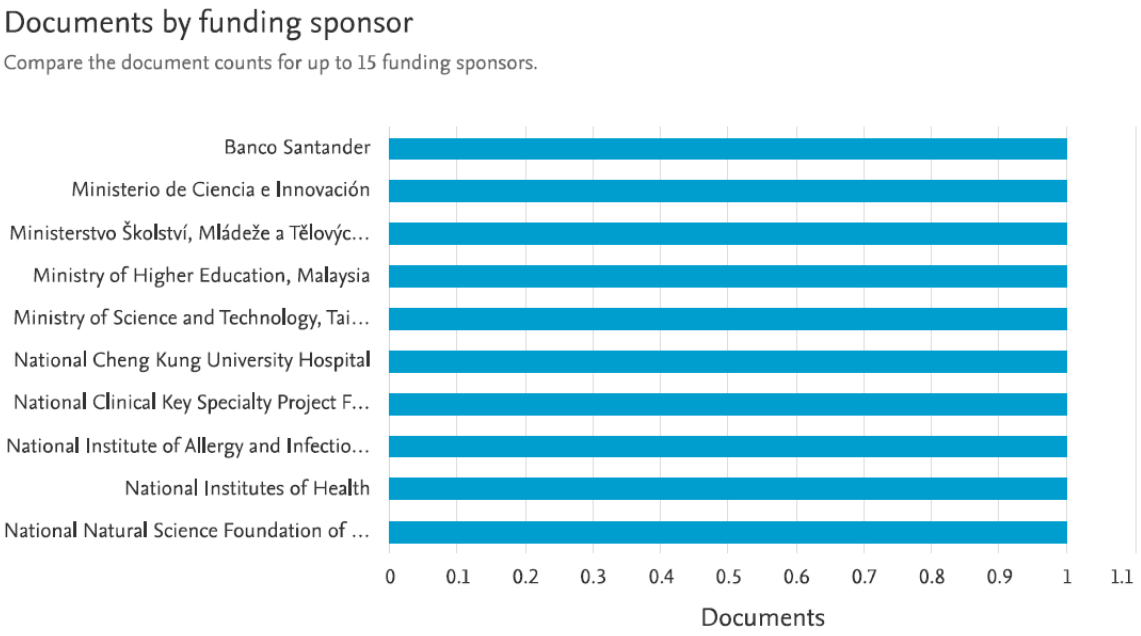

Figure 9:

DISCUSSION

This paper conducted a bibliometric analysis of the publications on the topic "*Trichomonas tenax* in oral diseases" between the years 1970 to 2024. Scopus database was searched and 79 documents retrieved were analyzed on the basis of Publication Years, Productivity, Document by Subject Area, Authors, Documents by affiliation, Documents per year per source, Document by Type and Documents by funding sponsor.

We found that a review article titled ‘Parasitic infections affecting the oral cavity’ was published in 2009 in the journal ‘Periodontology 2000’ with an impact factor of 18.6 which is highest amongst the journals.

Furthermore, most of the studies analyzing*Trichomonas tenax* microbiologically had taken plaque as sample. Future research can be done using gingival crevicular fluid (GCF) as sample for detection of this parasite.

CONCLUSION

Trichomonas tenax is one of the most commonly found parasites of the oral cavity. Further research with more specific tests and larger sample size shall be conducted.

REFERENCES

1. Bhuyan, R., Bhuyan, S. K., Mohanty, J. N., Das, S., Juliana, N., & Abu, I. F. (2022). Periodontitis and its inflammatory changes linked to various systemic diseases: a review of its underlying mechanisms. *Biomedicines*, *10*(10), 2659. doi:10.3390/biomedicines10102659
2. Radaic, A., &Kapila, Y. L. (2021). The oralome and its dysbiosis: New insights into oral microbiome-host interactions. *Computational and structural biotechnology journal*, *19*, 1335-1360.https://doi.org/10.1016/j.csbj.2021.02.010
3. Wenrich, D. H. (1944). Comparative morphology of the Trichomonad flagellates of man.*Am J Trop Med Hyg*, 24, 39-51.
4. Ribaux, C. L. (1979). Study of an oral protozoan Trichomonas tenax using scanning and transmission electron microscopy. *Journal de Biologie Buccale*, *7*(2), 157-168.
5. Ribaux, C. L., Magloire, H., Joffre, A., &Morrier, J. J. (1983). Immunohistochemical localization of fibronectin-like protein on the cell surface of the oral flagelatteTrichomonas tenax. *Journal de Biologie Buccale*, *11*(1), 41-51.
6. Bozner, P., & Demeš, P. (1991). Degradation of collagen types I, III, IV and V by extracellular proteinases of an oral flagellate Trichomonas tenax. *Archives of oral biology*, *36*(10), 765-770.
7. Nagao, E., Yamamoto, A., Igarashi, T., Goto, N., &Sasa, R. (2000). Two distinct hemolysins in Trichomonas tenax ATCC 30207. *Oral microbiology and immunology*, *15*(6), 355-359.
8. Wantland, W. W., & Lauer, D. (1970). Correlation of some oral hygiene variables with age, sex, and incidence of oral protozoa. *Journal of dental research*, *49*(2), 293-297.
9. Pritchard, A. (1969). Statistical bibliography or bibliometrics. *Journal of documentation*, *25*, 348-349.
10. Goodman, D., &Deis, L. (1 January 2005). Web of Science (2004 version) and Scopus. *The Charleston Advisor*, 6, 5-21.
11. https://csjmu.ac.in/centrallibrary/e-resources/ Retrieved on 28th May, 2024.