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Original Article

The scientometric characteristics of lichen planus in stomatology and dermatology journals: A comparative study

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Abstract *Background/purpose:* Lichen planus (LP) is a representative mucocutaneous disease involving oral mucosa and skin. The aim of this study was to compare the scientometric characteristics of LP publications in stomatology and dermatology journals.
Materials and methods: All the papers on LP were comprehensively searched and then ones published in stomatology and dermatology journals were retrieved.
Results: Among all the 5633 papers on LP, 1344 (23.9%) and 2528 (44.9%) were published in stomatology and dermatology journals, respectively. Among the most-cited top-100 papers, 58 and 30 were published in stomatology and dermatology journals, respectively. Moreover, citation count (11,908) and citation density (640.2) of the 58 stomatology publications were obviously higher than the 2 numbers (5096, 260.3) of the 30 dermatology publications. Based on the frequency of research keywords, the distinctive keywords such as malignant transformation, precancerous, genetics, genotype, gene expression, saliva, blood, cytokines, smoking, anxiety, and depression were identified in stomatology publications. On the other side, hyperkeratosis, hyperpigmentation, erythema, epiluminescence microscopy, and dermoscopy were identified in dermatology publications. Furthermore, drug research including drug withdrawal, drug safety, and drug dose reduction with a dozen of drugs are frequent keywords in dermatology but not in stomatology publications.

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Conclusion: The distinctive keywords of LP publications in stomatology and dermatology journals correspond to the research priority in stomatology and dermatology. We hope that the observations of this analysis will aid clinicians and investigators in promoting mutual understanding and more reciprocal cooperation regarding LP in stomatology and dermatology.

Introduction

Lichen planus (LP) is a relatively common chronic inflammatory mucocutaneous disease of probable immune-based etiology, involves the oral and genital mucosal sur-faces, skin, nails, and scalp.[1–3] Although oral and cutaneous LP share similar histologic features, they are distinguished by heterogeneity of the clinical behaviors.[4] Oral LP follows a chronic and recalcitrant course and may persist for very long periods, with alternating periods of exacerbation and quiescence, and those erosive, atrophic, or bullous areas are often painful and sensitive[5]; whereas cutaneous LP tends to be cured though management.[4] Generally, oral and cutaneous LP is mainly managed by oral medicine specialists and dermatologists, respectively. The publications on a disease, e.g. oral and cutaneous LP, in the speciality journals are the major source knowledge for clinicians and investigators. Arguably, publications in stomatology and dermatology journals preferentially represent the scientific output and research productivity of the corresponding specialists. These may lead to different research trends and study topics of a disease.

Scientometric analysis of a disease is often conducted to recognize research characteristics and trends.[6–8] Bibliometrics is a useful tool that utilizes citation data to evaluate the academic influence of the literature in a particular field.[9] Bibliometric analysis based on citation data is conducted within the designated area to guide research forward,[10,11] or in an individual journal such as Journal of Dental Research, Journal of Dental Sciences.[12–15] However, the analysis combined with a representative disease and speciality journals is few. Herein, we hypothesized that there would be some different study topics and trends of LP, as a representative mucocutaneous disease, in stomatology and dermatology journals. Therefore, the aim of this study was to compare the scientometric characteristics of LP publications in stomatology and dermatology journals, so as to promote mutual understanding and even reciprocal cooperation regarding this disease in stomatology and dermatology.

Materials and methods

As per the methodology described previously,[7,8] we searched the literature up to 28 February 2023 from the Scopus database according to the search strategy (Table 1). We used medical subject term "lichen planus" in the Title, and selected "Journal" in the filter of source type to retrieve all the English papers on LP published in the journals. According to the categories of Journal Citation Reports (see https://jcr.clarivate.com/jcr/browse-categories), there are Dentistry, Oral Surgery & Medicine category and Dermatology category. The word "Dent" or "Oral" and "Derm" and its synonyms in the journal title represents stomatology (mainly oral surgery & medicine) journals and dermatology journals, respectively. LP belongs to oral medicine disease in stomatology. Then (Dent* OR Oral) and (Derm* OR Skin OR Cutaneous OR Cutis) in the filter of journal title was performed to retrieve LP publications in stomatology and dermatology journals, respectively. In literature search, the asterisk indicates a wildcard used to search for all endings including fifth or more root words. There was no restriction in the search regarding type and design of the papers.

Titles and abstracts or full texts of the articles were screened and re-evaluated to confirm the eligible papers. The scientometric characteristics of all the eligible articles were reviewed and recorded the following information: title, keywords, citation count, citation density (citations per year), publication year, paper type, authorship, affiliation, and country/region of origin. Data search and extraction were performed independently by two investigators (Q.L. and W.L.), and discrepancy of results was resolved in a consensus symposium. A list of most-cited top-100 articles was created by sorting among all the retrieved articles according to the number of citations in descending order. Descriptive statistics and associations were calculated for scientometric characteristics. The Bibliometrix Biblioshiny R-package software (https://www.bibliometrix.org/home/; K-Synth Srl Inc., Naples, Italy) was used to analyze the relevant bibliometric data.

Table 1 The search strategy used in the Scopus database.

Literature on lichen planus (LP) retrieved	Search strategy
All the English papers on LP published in the journals	(TITLE (lichen planus) AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (LANGUAGE, "English")))
LP publications in stomatology journals	(TITLE (lichen planus) AND SRCTITLE (dent* OR Oral) AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (LANGUAGE, "English")))
LP publications in dermatology journals	(TITLE (lichen planus) AND SRCTITLE (Derm* OR skin OR cutaneous OR cutis) AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (LANGUAGE, "English")))

Results

Paper types and citation trends of LP

With the search strategy algorithm, 5633 papers on LP were published in the journals until the time of the search. A total of 1344 (23.9%) and 2528 (44.9%) papers are published in stomatology and dermatology journals, respectively. Fig. 1A illustrates the number and distribution of the paper types. To concretize the treads of scientific output in LP field, we assessed the annual number of the papers and accumulated citation count of the most-cited top-100 papers during 2007—2022. The annual number of all the papers stably raised from 115 to 347 during 2007—2022 (Fig. 1B), and the accumulated citations of the top-100 papers spirally increased from 463 to 1098 during this period (Fig. 1C). The annual numbers and accumulated citations of the top-100 papers published in stomatology and dermatology journals were also showed in Fig. 1B and C. Interestingly, the number of papers published in stomatology journals was modest growth from 24 to 104 during 2007—2022, which was almost all smaller than that in dermatology journals from 54 to 141. Unexpectedly, the accumulated citations of the top-100 stomatology publications stably increased from 411 to 1008; which was entirely higher than that in the dermatology journals from 314 to 507.

Citation characteristics of the most-cited top-100 papers on LP

To further compare the academic influence, the most-cited top-100 papers published in all the subjects were classified into three categories: stomatology (58 papers), dermatology (30 papers), and other subjects (12 papers). The top-100 papers were published in 16 stomatology journals, 11 dermatology journals, and 10 other subject ones. The numbers of citation count (11,908) and citation density (640.2) of stomatology publications were obviously higher than the 2 numbers (5096, 260.3) of dermatology publications and the 2 numbers (1771, 102.3) of other subject ones. The journal names and citation distribution of these publications are recognized in Fig. 2. The stomatology journals with largest citations and numbers were Journal of Oral Pathology and Medicine (3331 citations and 15 papers) and Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology (3011 citations

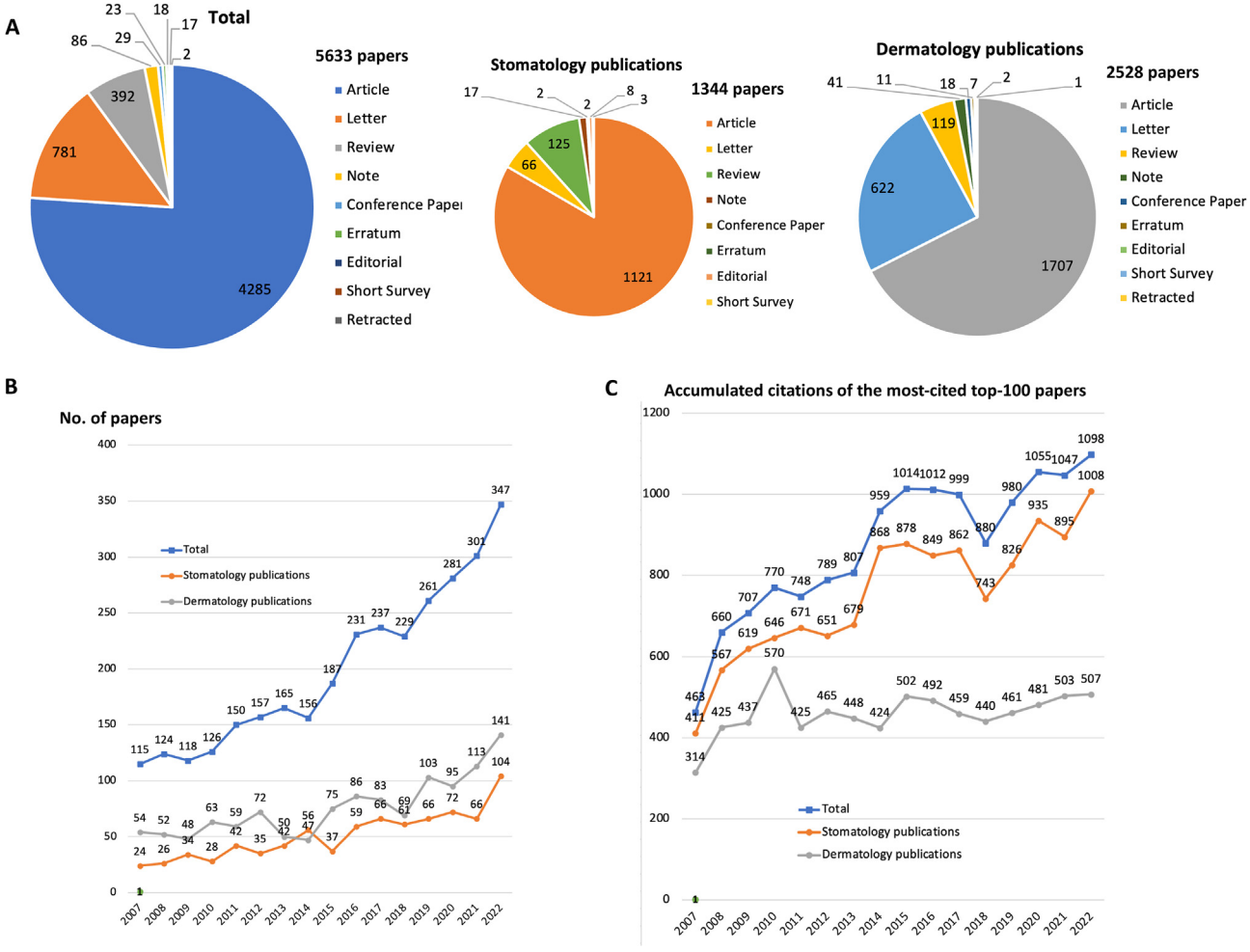

Figure 1 Paper types and citation trends of lichen planus. (A) Document types and distribution of all the papers and ones published in stomatology and dermatology journals. (B) The annual number of all the papers and ones published in stomatology and dermatology journals during 2007—2022. (C) The accumulated citations of the most-cited top-100 papers from all the subjects, the top-100 papers published in stomatology, and the top-100 papers published in dermatology journals during 2007—2022.

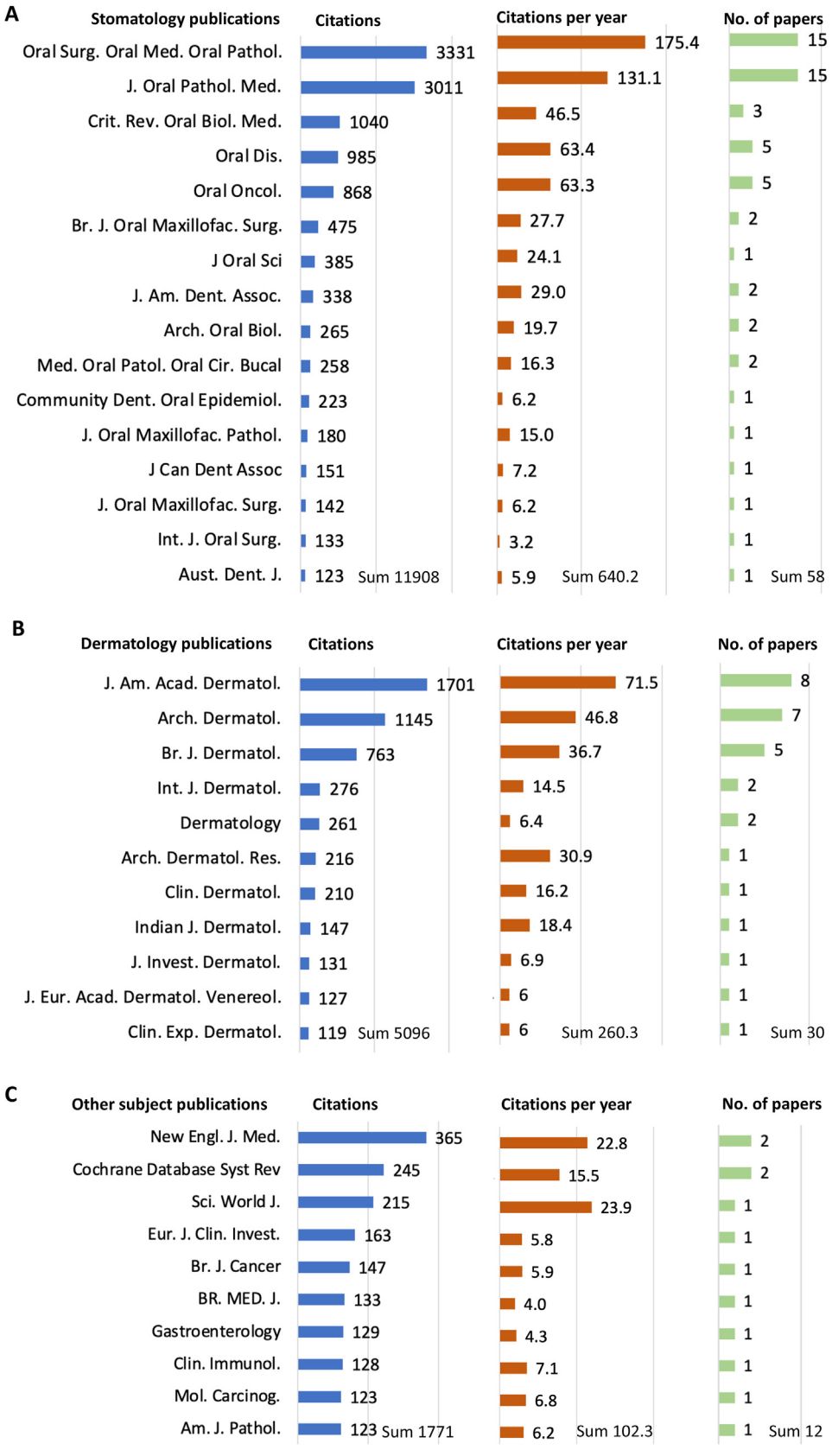

Figure 2 Citation characteristics of the most-cited top-100 papers on lichen planus. (A) Stomatology publications. (B) Dermatology publications. (C) Publications from other subjects.

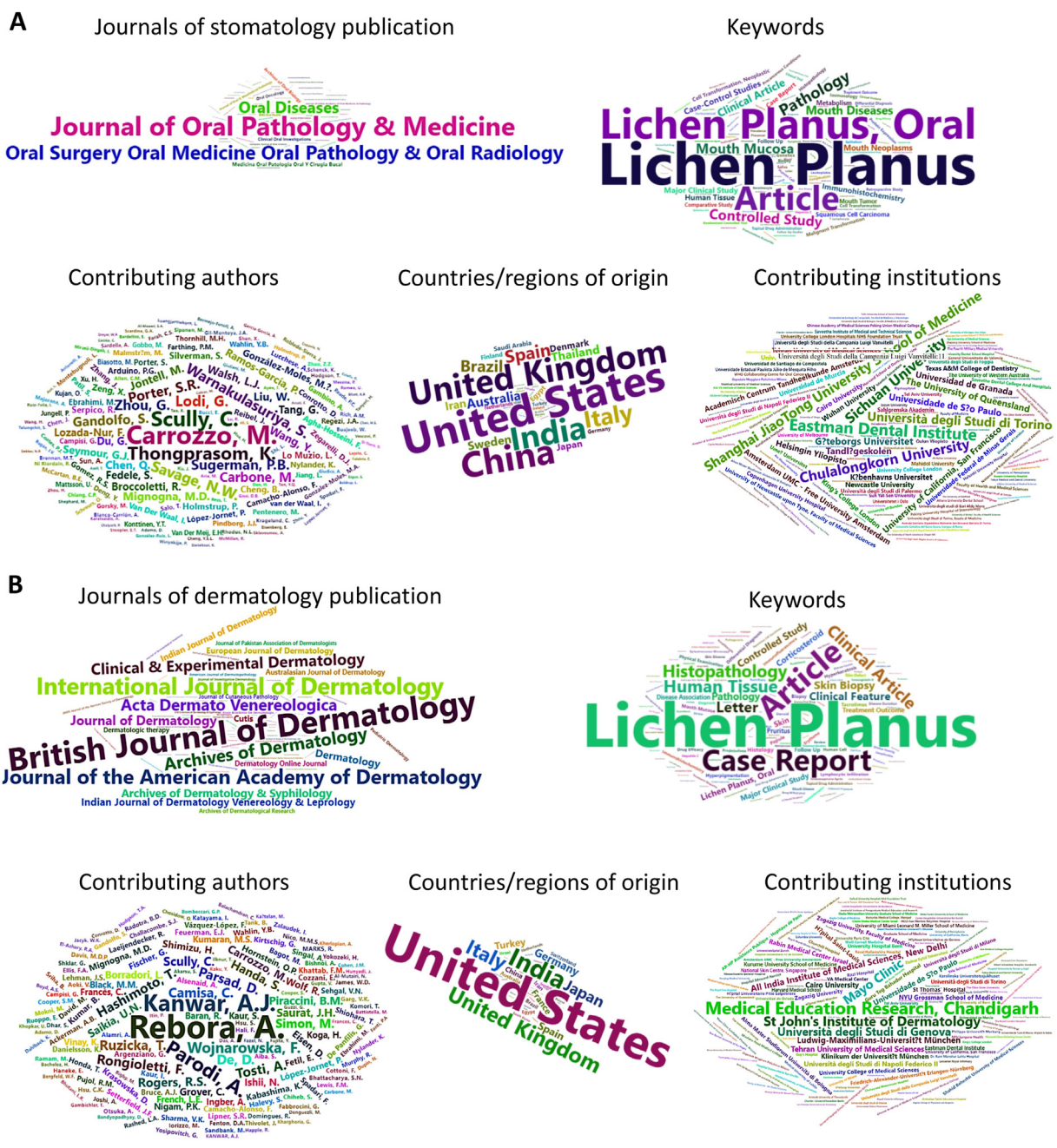

Figure 3 Cloud graphs of journal names, contributing authors, institutions, countries/regions, and keywords in (A) stomatology and (B) dermatology publications on lichen planus.

and 15 papers). The dermatology journals with most citations and numbers were Journal of the American Academy of Dermatology (1701 citations and 8 papers) and Archives of Dermatology (1145 citations and 7 papers). The detailed information on title, publication year, journal, citation count, authors, affiliation, keywords, and document types of the top-100 papers are presented in Supplementary Table S1.

Bibliometric characteristics of stomatology and dermatology publications on LP

The cloud graphs of journal names, contributing authors, institutions, countries/regions, and keywords in stomatology and dermatology publications on LP are showed in Fig. 3. For stomatology publications, the journal with largest number is Journal of Oral Pathology & Medicine (n = 247), followed by Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology (n = 185), Oral Diseases (n = 153). The contributing author with largest number of papers is Carrozzo, M. (n = 29), followed by Scully, C. (n = 24), and Thongprasom, K. (n = 21). The contributing institution and country of origin with the maximum number is Eastman Dental Institute (n = 37) and United States (n = 181), followed by Sichuan University (n = 33) and United Kingdom (n = 142), respectively. For dermatology publications, the journal with largest number is British

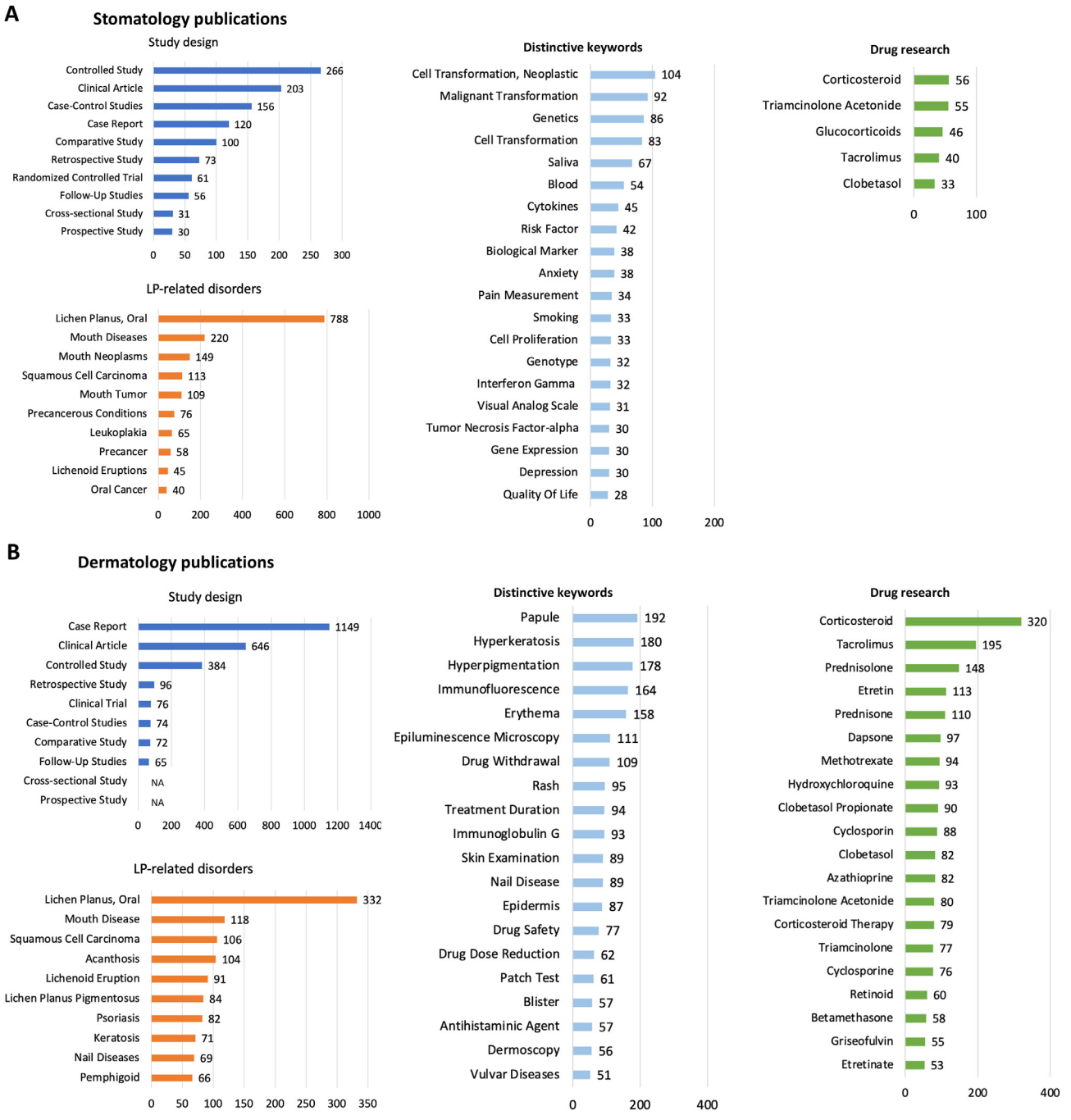

Figure 4 Research characteristics of lichen planus (LP). The ranks of study design, LP-related disorders, distinctive keywords, and drug research in (A) stomatology and (B) dermatology journals.

Journal of Dermatology (n = 244), followed by International Journal of Dermatology (n = 174), Journal of the American Academy of Dermatology (n = 153). The contributing author with largest number of papers is Rebora, A. (n = 26), followed by Kanwar, A.J. (n = 19), and Parodi, A. (n = 16). The contributing institution and country of origin with the maximum number is Medical Education Research, Chandigarh (n = 44) and United States (n = 485), followed by St John's Institute of Dermatology (n = 34) and India (n = 251), respectively. The general information on keywords of the stomatology and dermatology publications on LP are also showed in Fig. 3D.

Research characteristics of stomatology and dermatology publications on LP

Based on the frequency of keywords in all included articles, we highlight the analysis of research characteristics regarding stomatology and dermatology publications on LP (Fig. 4). All the keywords are automatically recognized in the order of highest to lowest frequency by the database. The top-10 study designs, LP-related disorders, and top-20 distinctive keywords are identified. For study design, the most common design is controlled study, followed by clinical

article, case—control study, and case report in stomatology publications; while the most common design is case report, followed by clinical article, and controlled study in dermatology publications. For LP-related disorders, the distinctive disorders are precancerous conditions, leukoplakia, and precancer in stomatology publications; whereas the distinctive disorders are acanthosis, lichen planus pigmentation, and psoriasis in dermatology publications.

For research keywords, we identified top-20 distinctive keywords among stomatology and dermatology publications on LP, respectively (Fig. 4). In stomatology publications, cell transformation, malignant transformation, genetics, saliva, blood, and cytokines are the distinctive keywords; papule, hyperkeratosis, hyperpigmentation, erythema, epiluminescence microscopy, and dermoscopy are the distinctive ones in dermatology publications. We further focus on the drug research keywords. Strikingly, the drugs such as corticosteroid, triamcinolone acetonide, glucocorticoids, and tacrolimus and their frequencies (56, 55, 46, and 40, respectively) in stomatology publications is dramatically lower than the drugs such as corticosteroid, tacrolimus, prednisolone, and etretin and their frequencies (320, 195, 148, and 113, respectively) in dermatology publications. Consistently, drug withdrawal, drug safety, and drug dose reduction are the distinctive keywords in dermatology publications.

Discussion

Currently, there are many challenges and controversies regarding LP, especially oral LP, such as etiopathogenesis, malignant potential, and management.[1—3] Given these challenges, the significance of LP research is highly regarded in the field, and increasingly number of papers on LP have been published in recent years. Consistently, the accumulated citations of the most-cited top-100 papers spirally increased during 2007—2022, mainly owing to the highly cited papers published in stomatology journals. As shown in Fig. 1C, the growth curve of the accumulated citations of the top-100 papers from all the subjects is essentially parallel to the that of the top-100 papers from stomatology journals. Nevertheless, the accumulated citations of the top-100 papers from dermatology journals does not increase during 2010—2022. Furthermore, based on the distribution of the top-100 papers from all the subjects, the numbers of papers, citations, and citation density of stomatology publications were obviously higher than these numbers of dermatology publications and other subject ones (Fig. 2). It is reasonable to assume that the stomatology publications surrounding the challenges and research of oral LP are more than dermatology publications.

In this study, we highlight the comparative analysis of study design and keywords of LP publications in stomatology and dermatology journals. For paper type and study design, original article is the main type of stomatology publications; while the letter and case report are the main types of dermatology publications. Original articles often obtain higher academic influence compared with the letter and case report. It is plausible to speculate that there are less papers in stomatology journals with higher citations and more papers in dermatology journals with lower citations. More importantly, the identification of distinctive keywords in stomatology and dermatology publications on LP may reflect the importance and concerned topics of research. After all, investigators and clinicians often follow the major speciality journals for obtaining knowledge and information on a disease.

In stomatology publications, the distinctive frequent keywords such as genetics, genotype, gene expression, saliva, blood, and cytokines suggest that the gene-related research in tissue, saliva, and peripheral blood mononuclear cell is a concerned topic in oral LP. Malignant transformation, cell transformation, risk factor, smoking, anxiety, depression, and quality of life imply that malignant potential nature and risk factors of oral LP influence the patients' quality of life and psychological health. On the other side, the distinctive frequent keywords such as hyperkeratosis, hyperpigmentation, and erythema in dermatology publications suggest that they are the common clinical manifestations of cutaneous LP. Epiluminescence microscopy and dermoscopy are the adjunctive tools for the diagnosis and management of cutaneous LP, implying whether the related application in oral LP management. Furthermore, drug research including drug withdrawal, drug safety, and drug dose reduction with a dozen of drugs are frequent keywords in dermatology journals but not in stomatology journals. These also imply whether there would be the more related drug investigations in oral LP.

In summary, the scientometric characteristics of LP publications in stomatology and dermatology journals are firstly comprehensively provided in this study. Even though there are certain limitations in a scientometric analysis mentioned previously, [4,5] we hope that the above observations and implications of this analysis will be able of benefit to clinicians and investigators in promoting mutual understanding and more reciprocal cooperation regarding this disease in stomatology and dermatology.

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jds.2023.03.018.

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