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Global research trends in Coronavirus disease 2019 (COVID-19) and hepatitis: A bibliometric analysis

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The pandemic of Coronavirus Disease 2019 (COVID-19) had a major impact on other diseases like cancer, diabetes, hepatitis and various diseases related to cardiovascular system [1,2]. Globally, the prevalence of chronic liver diseases (CLD) is high and imposed serious challenges for health care services [2,3]. Every year, an approximately 2 million deaths have been reported due to liver diseases [3]. The prevalence of CLD in patients with COVID-19 is not well documented. However, some studies have been conducted at regional level [4,5,6]. A study from China reported the prevalence of CLD in COVID-19 patients found to be 2% to 11.% [5]. Another study from United States recorded, in total recruited COVID-19 patients 9% had preexisting liver disease [6].

So far, many bibliometric studies have been published about COVID-19 and other diseases, [7,8,9] but there is no bibliometric study about COVID-19 in patients living with hepatitis or chronic liver diseases. Thus, the current study was conducted to provide a historical overview of COVID-19 and hepatitis related studies, evaluate the main bibliometric characteristics and plot the global research output.

The data for this study was retrieved from the Web of Science Core Collection database.The Boolean search method was applied. The searching key terms used were "Novel coronavirus 2019" OR "nCoV-2019" OR "Novel 2019-coronavirus" OR "Coronavirus disease" OR "COVID" OR "COVID 19" OR "COVID-19" OR "SARS-2" OR "SARS-CoV-2" OR "Coronavirus" (Title) AND "Hepatitis" OR "Liver infection" OR "Liver cirrhosis" OR "Liver disease" OR "Liver injury" (Title).

The scientific literature published between December 2019 to December 2021 were included in the final analysis. The obtained data were assessed for a number of bibliometric attributes such as the leading authors and journals, frequently used keywords, most studied research areas, top funding agencies, and active institutes and countries in COVID-19 and hepatitis research. VOSviewer software version 1.16.7 was used to plot the data for co-authorship countries, and co-occurrence all keywords network visualization mapping [10].

The initial search yielded a total of 758 publications, of which 651 publications were assessed for the final analysis. In total, 406 (62.37%) publications were published in 2021, and 245 (37.63%) publications in 2020. These publications were cited 6019 times, and 4371 times without self-citations. The average number of citations per publication was 9.25 citations. The extensively studied research areas were gastroenterology with sub-specialty of hepatology (n=425, 65.28%), internal medicine (n=81, 12.44%), and infectious diseases (n=31, 4.76%). The most frequently used keywords in COVID-19 and hepatitis publications were COVID-19 (n=219 occurrences), followed by SARS-CoV-2 (n=125 occurrences), and liver injury (n=72 occurrences) as shown in Figure-IA.

Maximum number of publications were funded by the United States Department of Health Human Services (n=39, 5.99%), followed by National institutes of Health, United States of America (USA) (n=38, 5.84%), and National Natural Science Foundation of China (n=29, 4.46%). In total, maximum number of publications were published as research articles (n=215, 33.03%), while only (n=100, 15.36%) were published as review articles.

The leading authors in COVID-19 and hepatitis research were Zheng MH (n=13, 2%) from the First Affiliated Hospital of Wenzhou Medical University, China, and Bernstein D (n=11, 1.69%) from Northwell Health and Zucker School of Medicine

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at Hofstra/ Northwell, USA. The leading journals were "Hepatology" (n=89, 13.67%), followed by "Journal of Hepatology" (n=52, 7.99%), and "American Journal of Gastroenterology" (n=44, 6.78%).

The maximum number of publications had produced by Huazhong University of Science Technology, China (n=25, 3.84), Harvard University, USA (n=24, 3.69%), Icahn School of Medicine at Mount Sinai, USA (n=17, 2.61%), and Wuhan University, China (n=17, 2.61%).

The USA had contributed most number of publications (n=208, 31.95%), followed by China (n=128, 19.66%), and Italy (n=67, 10.29%). The network visualization mapping of co-authorship countries is presented in Figure-IB. Based on the total link strength (TLS), the USA was the most influential and contributing country with TLS 149, while China was the most cited country with 3147 citations.

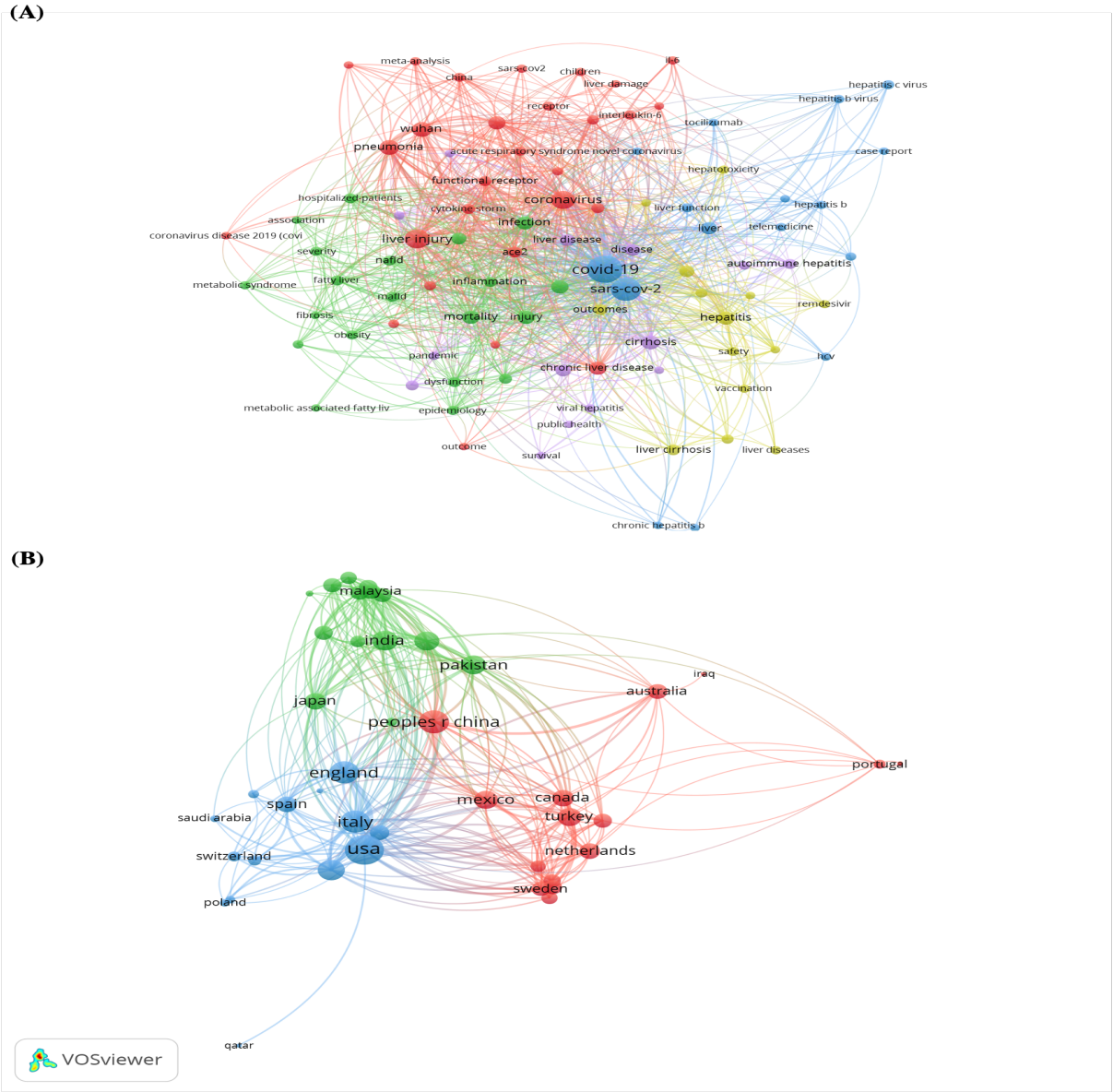

Figure-I: (A) Network visualization mapping of all keywords in COVID-19 and hepatitis publications based on number of occurrence. The minimum number of occurrence of a keyword was 5, while the minimum cluster size was 10. Of the total (n=934) used keywords, only 92 were plotted. A total of 5 clusters were formed, and each color designates different cluster. The largest cluster 1 (red) consists of 28 keywords, followed by cluster 2 (green, n=20 keywords), cluster 3 (blue, n=16 keywords), cluster 4 (yellow, n=14 keywords), and cluster 5 (purple, n=14 keywords). (B) Network visualization mapping of co-authorship countries in COVID-19 and hepatitis publications based on TLS. The minimum number of publications per country was selected at 3, while the minimum cluster size was 10. Of the total involved countries (n=87), only 44 countries were plotted. A total of 3 clusters were formed, and each color represents different cluster. Cluster 1 (red color) consist of 16 countries, cluster 2 (green color) 14 countries, and cluster 3 (blue color) 14 countries.

This is the first bibliometric study highlights an insight into the progress and development of COVID-19 and hepatitis research during the current pandemic. These findings can be useful for researchers and future studies. Most importantly, the long-term adverse effects of the COVID-19 pandemic on hepatology practice will need to be evaluated at national and global level.

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