Original Research

Recent Research on Effect of COVID-19 on Diabetic Patients

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ABSTRACT

Introduction: The current outbreak of the novel coronavirus disease 2019 (COVID-19) has left the whole world traumatized. It is prefixed with the word "novel" because it comes under the new strain of the virus that has not been reported before. This virus outbreak has disrupted human life in the most petrifying way worldwide. Numerous researchers have contributed since the beginning of this pandemic.

Objective: The present study aims to analyze the work done in this field through a bibliometric review to investigate the association between COVID-19 and diabetes.

Methods: We explored the Scopus database for publications and the time frame selected for review is the beginning of this pandemic to April 25, 2021. The inclusion criteria were met only by 60 papers and they came from 15 different countries.

Results: The United States gave the highest number of publications with a count of 16 (26%) and followed by India with 8 publications (13%). This paper gives some major insights regarding the flow of current research using Biblioshiny.

Conclusion: This study aims to explore the recent trends in fast-growing publications to present a bibliometric analysis of publications on diabetic people having coronavirus since its outbreak in December 2019.

Key Words: Bibliometric, COVID-19, Diabetes, Pandemic, Risk Factor

INTRODUCTION

Coronaviruses are positive-sense single-stranded RNA viruses broadly spread worldwide. The groups of pneumonia cases of undetermined aetiology emerged in the Hubei Province of Wuhan in China in December 2019.[1] An extensive sequencing examination of lower respiratory tract specimens revealed the coronavirus as a causative agent, which was called Severe Acute Respiratory Syndrome-Coronavirus-2 (SARS-CoV-2) that gave rise to a disease called COVID-19.[2, 3]

COVID-19 is the most recently discovered disease that has affected more than one crore person worldwide. It has emerged as a quickly growing communicable disease which has been announced as a pandemic disease by the World Health Organization (WHO).

On 30 January 2020, WHO declared the outbreak of COVID-19 as a Public Health Emergency of International Concern, and this epidemic was promoted to pandemic on 11 March 2020. As of today (25.04.2021) in more than 200 countries, 146,054,107 confirmed cases are recorded with 3,092,410 deaths as shown in **Fig. 1**.[4]
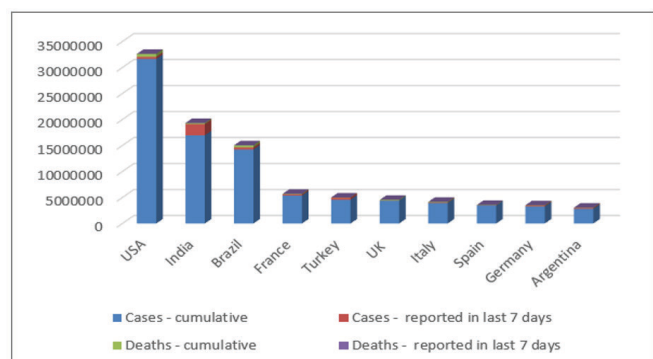

Figure 1: Country-wise data of Covid'19 victims.

Due to COVID-19, several nations have applied a lockdown system for the betterment of their people. Thus, this practice

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adversely affects human life socially, economically and emotionally.[5,6,7]

Diabetes is one of the main sources of mortality and morbidity on the planet and is mainly connected with significant cardiovascular and renal complications. The strength of the connection between the two pandemics, namely, COVID-19 and diabetes has been investigated in observational cohorts around the world. Diabetic patients have a high chance of risk of serious complications such as Adult Respiratory Distress Syndrome or failure of multi-organs. So, a bibliometric review is conducted to provide a summary of COVID-19 and diabetes. We believe that this analysis can contribute to future research by providing meaningful information and helps for better management of diabetic patients in COVID-19.

The evidence of epidemiologic recommends that an increased risk of communicable diseases is linked with diabetes. Also, diabetic patients are at high risk of pneumococcal bacteremia diseases and nosocomial bacteremia with a death rate as high as 50%.[8] This ailment is correlated with several microvascular and macrovascular complications that affect the survival of patients.[9] The pervasiveness of diabetes in humans affected by the virus is equal or slightly lower as compared to the general population as per various studies.[10,11] A research in Wuhan exposed that out of the 41 COVID-19 cases, 32% had underlying disorders, and amongst them, 20% had diabetes.[12] Therefore, diabetic patients are at high risk of hospitalization and mortality for the COVID-19 virus. So, patients having diabetes need to pay more attention if there is an occurrence of fast deterioration. Patients with diabetes should deal effectively with the difficulty of its treatment and management. This bibliometric analysis represents the most prominent references linked with diabetes and COVID-19 and helps in enhancing the understanding of research in the context of diabetic COVID-19 patients.

MATERIALS AND METHODS

All publications were extracted from the Scopus database which had been studied for this paper because Scopus is considered as the most extensive peer-reviewed journal database among others present in the world that fits best for scientific academic data.[13] The search keywords were applied as follows: TITLE-ABS-KEY ("COVID-19") AND TITLE-ABS-KEY ("Diabetes"). The literature search was filtered to incorporate papers published till 10 June 2020. The following keywords ''pandemic", ''COVID-19", ''risk factor" and ''diabetes" were used with interposition of ''AND" Boolean operator. The following information was used: document title, year, author, source, keywords,

citations, document and source type and affiliations. The software R-Studio is used to carry out statistical analysis. In this study, we applied computable methods for statistical analysis, including the Biblioshiny R package.[14] We also used the scientific literature available on the US Centers for Disease Control and Prevention and WHO websites.

RESULTS

In total, 60 documents met the selection criteria. Publications came from many countries worldwide. In terms of document count, the United States (26%) is top in this list followed by India (13%), China (10%), Italy (10%), Brazil (8%) and others as shown in **Fig. 2**.
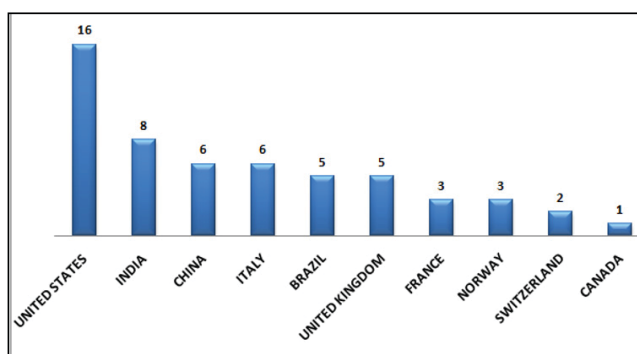

Figure 2: Top Ten Countries.

The seven most frequently used author keywords as shown in **Fig. 3** are COVID-19 with 33 occurrences, diabetes with 30, telemedicine with 9, sars-cov-2 with 7, coronavirus with 7, pandemic with 5 and risk with 4 occurrences.
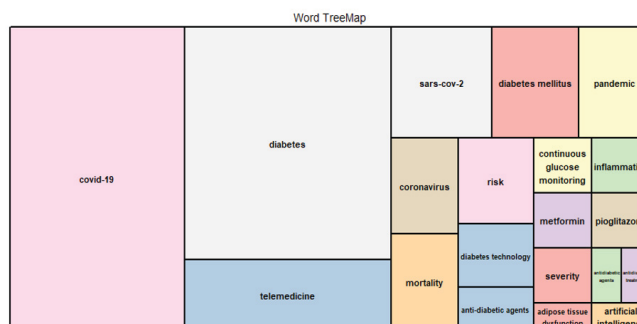

Figure 3: Top Twenty Keywords.

According to 60 documents, the top 10 cited sources are shown in **Fig. 4**. LANCET is at the top of this list followed by Diabetes Care and NEJM.
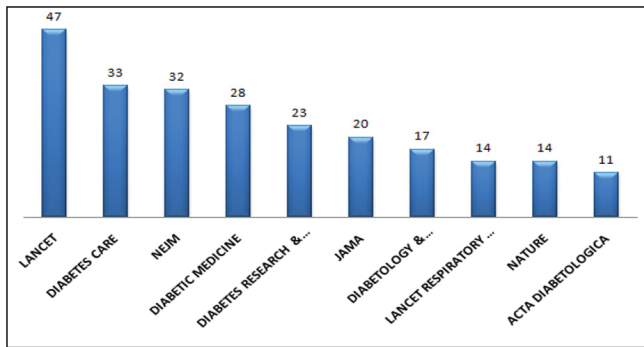
Figure 4: Top Ten Cited Sources.

The documents that met our selection criteria were distinguished across nine document types. These 9 types of documents were article (35%), note (30%), letter (18%), review (8.3%), editorial (6.7%) and conference paper (1.7%) as shown in **Fig. 5**.
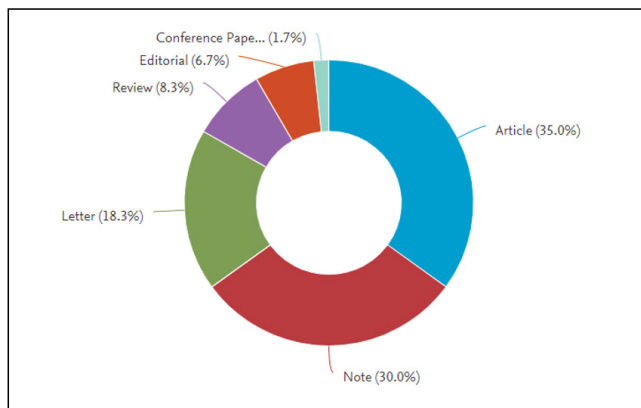

Figure 5: Document Type Distribution.

Fig. 6 summarizes the results matching the most relevant countries, their authors and affiliations. Y. Zhang has published maximum of papers from *Shanghai Jiao Tong University School of Medicine of* China *followed by A.K. Singh, A. Hussain and R. Singh also* published a good amount of papers from GD Hospital & Diabetes Institute, India.
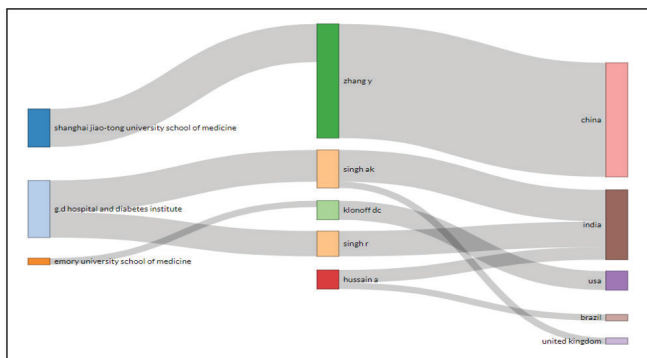

Figure 6: Summary plot of the most productive countries on the right, authors in the middle and the affiliations on the left.
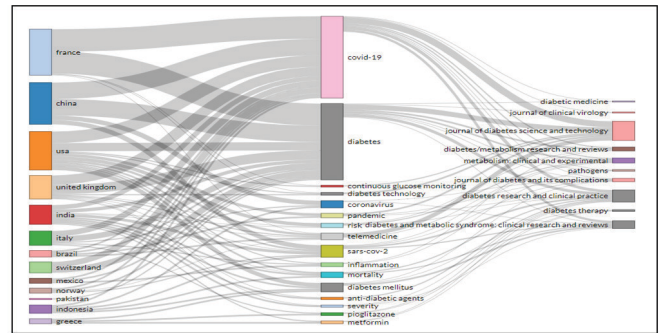

Figure 7: Summary of the most contributing countries on left, keywords in middle and sources on right.

The outcomes matching the most contributing countries, keywords and sources are summarized in **Fig. 7**. The most frequently used keyword is "COVID-19" by France and then followed by China, USA, UK, Switzerland, Italy and India and the Journal of Diabetes Science and Technology has maximum occurrences of this keyword followed by Diabetes and Metabolic Syndrome: Clinical Research and Reviews. The second most common keyword is "diabetes" used by China and then followed by France, the USA, the UK, India, Italy and Brazil and the Journal of Diabetes Science and Technology has the maximum occurrences of this keyword followed by *Diabetes Research and Clinical Practice.*

DISCUSSION

The progression of the immediate influence of the COVID-19 pandemic on diabetic patients is reviewed and interpreted by this bibliometric analysis. The included papers only cover the literature of COVID-19 & Diabetes and the focus of these research papers exhibited an outstanding rise in the number of papers. A huge inter-collaboration and intra-collaboration network between profoundly productive authors and organizations were found. This paper leads to intrinsic bias because we used only the Scopus database and results can vary according to other databases or on the inclusion of other search terms. Our bibliometric analysis gives a detailed quantitative review as well as confirms the feasibility of implementation and scale-up of networks.

CONCLUSION

The outbreak of COVID-19 has made a significant impact on human lives and increased the concern for public well-being. COVID -19 had been spreading rapidly and affecting a large number of people, so, it inspired researchers to research in this field. This paper aims to analyze 60 publications related to COVID -19 and diabetes using a bibliometric review. The subject areas with titles, keywords, and abstract criteria were utilized as a source for obtaining search results using Biblioshiny.

Among all countries, the United States contributed the most in terms of publications followed by India. COVID-19, diabetes and telemedicine became the most widely used keywords. LANCET is at the top of the list of cited sources followed by Diabetes Care and NEJM. 35% of the total documents are of article type and the authors from China and India published the maximum number of papers. Journal of Diabetes Science and Technology has maximum occurrences of the most widely used keywords. So, we can conclude that this analysis can be beneficial as it provides a global bibliometric evaluation of two pandemics, COVID-19 and Diabetes which may facilitate ongoing and future research.

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