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Review article

Bibliometric analysis on global research trends on communicable diseases among prisoners from Scopus database

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ABSTRACT

Introduction: This bibliometric analysis aims to identify the major and essential research trends in the field of communicable diseases among prisoners, as well as new developments and possibilities for collaborative efforts to achieve a target. **Methods:** We searched for peer-reviewed literature published till 31 July 2023 in the Scopus database, with keywords such as "communicable diseases" and "prisoners" to perform the search. **Results:** A total of 308 articles were retrieved. After duplicate removal, total 266 articles were included. The trend in the topic reflects a dramatic rise in this domain since 2019. The international journal of prisoner's health produced most of the studies. The majority of studies were performed in industrialized nations, including the United States, the United Kingdom, and Australia. Furthermore, the United States is the greatest contributor to communicable disease research among prisoners in the form of both the funder as well as and the implementing organization. **Conclusion:** There is still a dearth of knowledge and financing concerning communicable diseases among inmates, particularly from low- and middle-income nations with a large burden of the prisoner population, which necessitates more focused and collaborative efforts.

Introduction

As of 2021, more than 10.77 million people are being held in penal institutions globally, which accounts for individuals "left behind" [1,2]. The country with the highest number of absolute individuals in prison is the United States of America (2 million prisoners), followed by China (1.69 million plus unknown numbers), 811,000 individuals in Brazil and 478,000 in India [1]. Prisoners generally come from marginalised groups and may have experienced unemployment, limited access to healthcare, and poverty before entering prison. This already vulnerable population is further exposed to overcrowding, injectable drug use, unsafe sexual behaviour and the changing prison

population while being incarcerated, which in turn, might predispose the inmates to the dangers of infectious diseases [3,4].

The unfavourable socio-political, economic, environmental, and lifestyle factors prior to imprisonment and the circumstances in the prison were attributed to the enormous health needs of the inmates [2]. Compared with the general population, people in prison are more likely to suffer from illnesses such as human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV), other sexually transmitted infections (STIs), and tuberculosis (TB) [5,6]. Estimates from the meta-analysis revealed the global prevalence of

HCV among prisoners to be 17.7% [7], tuberculosis to be 15.0% [8], and HIV 3.4% [9]. The living conditions such as proximity, and unhygienic conditions in prisons favour the transmission of infectious diseases independently of individual behaviour. Personal risk factors for infectious transmission of infection include high-risk sexual practices and intravenous substance abuse [10]. According to international standards, prisoners must receive the same level of medical care as the general public. However, in actuality, the nation's health programmes disregarded the jail population. Additionally, neither the international health programmes nor the Sustainable Development Goals (SDGs) take into account the potential contribution that jail health could make to the SDGs [2]. Therefore, health care for inmates continues to be a weak link in terms of social and racial justice, public health awareness, and civil rights [3].

Continuous study on communicable disease among inmates can be extremely helpful in tracking improvements in prisoners' health, making wise judgments, and coming up with developing innovative ways to fight the disease in the wake of the COVID-19 outbreak and other unanticipated pandemics. The use of bibliometric techniques would enable researchers to better understand the intricacies of a certain topic and gain knowledge about its frontiers [11]. Thus, it would be beneficial to identify the major and essential research trends in the field of communicable diseases among prisoners, as well as new developments and possibilities for collaborative efforts to achieve a target [12,13].

Methods

We searched for peer-reviewed literature published October 31st till July 2023 in the Scopus database, in order to determine trends and patterns in publications linked to communicable diseases among prisoners. Boolean operators (OR, AND) were used in conjunction with keywords such as "communicable diseases" and "prisoners" to perform the search. Scopus was selected since it has the largest abstract and reference database of all peer-reviewed works, including books, scholarly journals, and conference papers. Nearly 22,000 articles from more than 5000 publishers are included in Scopus, 20,000 of which are peer-reviewed journals in the social, technical, medical, and scientific disciplines. For use in the biomedical area, Scopus is more comprehensive and user-friendly

when compared to other bibliometric databases for literature reviews. It is also renowned for housing the largest database of abstract and citation data used in bibliometric studies [14]. A total of 304 studies in total were identified that had been published up until 31st July 2023 and then were considered for analysis. All original papers, reviews, summaries, letters to the editor, editorials, and more were covered in this study.

Statistical analysis

The retrieved records were cleaned and loaded into Microsoft Excel 2021. The dataset's main outputs included authors, document type, publication, institutions, nations, and citations. The co-authorship nation, co-occurrence author keywords, and co-citation cited sources were all visualised using the VOS viewer (Version: 1.6.18) tool, which is available at <http://www.vosviewer.com>.

Results

In the initial search on communicable diseases among prisoners, 304 articles spanning over 63 years (1959-2023) were found. N=38 articles from the 304 pieces of published literature that comprised up the overall study were disregarded after preliminary screening due to repetitions and incomplete access to full text. Thus, a total of 266 articles were included. Out of these, original publications constituted 64.25% (N= 169) of the literature, followed by review articles 19% (N= 50) (**Table 1**).

According to the publication's time trends, there has been a discernible rise in the number of publications produced in the field of research on communicable diseases among inmates, especially since 1983 and with a noticeable spike in 2019 (**Figure 1**).

The top 10 authors, according to the volume of documents and citations, are listed in **Table (2)** The minimum number of documents per author was set at two for analysis purposes. Out of all the authors examined, only 66 made contributions to at least two or more publications. The articles of Altice, F.L. author from the country U.S.A. received the highest number of citations (n=88).

Based on the number of documents and citations, the top 10 journals used for the dissemination of research publications are ranked in **Table (3)**. The international journal of prisoner's

health produced the majority of the studies (n=15) on communicable diseases among prisoners, followed by the American Journal of Public Health (n=10) and the Lancet (n=8). Out of ten, seven of these journals have impact factors above 3.

The organisations that produce the most papers for publication are listed in **Table (4)** The most active institute is public health England, followed by Yale University, UNSW Sydney, Centre for Disease Control and Prevention and Hospital Clinic Barcelona. Seventy percent of these institutes are public/government organizations, whereas the remaining 30% are either nongovernmental or private agencies.

The five most active funders were the National Institute on Drug Abuse, National Institute of Health, National Institute of Allergy and Infectious Diseases, National Institute of Mental Health and Gilead Sciences (**Table 5**). 80% Eighty percent of these funding agencies belong to United States, followed by the United Kingdom (10%) and Sweden (10%).

Article productivity by countries

Countries that were most productive in publishing documents on communicable diseases among prisoners are listed in **Table (6)**. The United States was the most productive (n = 85; PI=31.95), followed by the United Kingdom (n = 47; PI=17.67), Australia (n = 18; PI = 6.77), Canada

(n = 12; PI = 4.51) and Switzerland (n = 11; PI = 4.14) (**Figure 2**).

Co-occurrence author's key word

In a publication, keywords are crucial because they enable quick and easy access to the fundamental details about the concepts, objectives, and approaches used. The simultaneous appearance of two or more keywords in the same document is known as keyword co-occurrence [15]. Using keyword co-occurrence analysis, it is possible to monitor the research trending topics and paradigm shifts in a scientific domain of knowledge. The minimum number of Author's keywords was set at 5. Out of the total 342 Authors key words used authors, only 14 met the threshold. The five most often used author's key words were prisons (N=26, TLS= 31), prisoners (N= 22, TLS= 30), prison (N=19, TLS=22), tuberculosis (N= 15, TLS= 27), infectious diseases (N= 11, TLS= 21) (**Figure 3**).

Co-Citation Citation-cited sources

The minimum number of citations of a source was set at 20. Out of the 3614 sources, 31 met the inclusion criteria. The American Journal of Public Health was the leading source with the highest TLS of 2501 and 143 citations, respectively, and the Lancet was second in number with a TLS scorescores of 2172 and 144 Citations, respectively (**Figure 4**).

Table 1. Document types

Document type	Documents
Article	182
Review	53
Editorial	17
Letter	8
Note	8
Short Survey	6
Conference Paper	5
Book	3
Book Chapter	2

Table 2. Top 10 most Prolific authors on communicable diseases among prisoners

Author	Documents
Altice, F.L.	4
Kinner, S.A.	4
Sequera, V.G.	4
Awofeso, N.	3
Azbel, L.	3
Bautista-Arredondo, S.	3
Bayas, J.M.	3
Bertozzi, S.M.	3
Dolan, K.	3
Hammett, T.M.	3

Table 3. Top 10 leading journals published research work on communicable diseases among prisoners

Source	Documents	Impact factor
International Journal of Prisoner Health	16	1.16
American Journal of Public Health	10	9.30
Lancet	8	202.73
Plos One	7	3.24
International Journal of Tuberculosis and Lung Disease	6	3.40
Lancet Infectious Diseases	5	71.42
Disease A Month	4	4.47
Revista Espanola De Sanidad Penitenciaria	4	0.3
BMC Public Health	3	2.56
BMJ Open	3	3.007

Table 4. Top 10 most active institutions working on communicable diseases among prisoners

	Affiliation	Country	Documents
1	Public Health England	United Kingdom	9
2	Yale University	USA	8
3	UNSW Sydney	Australia	8
4	Centers for Disease Control and Prevention	USA	7
5	City University of New York	USA	5
6	Yale School of Medicine	USA	4
7	Hospital Clinic Barcelona	Spain	4
8	Hunter College	New York	4
9	UNSW Medicine	Australia	4
10	Karolinska Institute	Sweden	4

Table 5. top 10 funding sponsors for research on communicable diseases among prisoners

Funding sponsor	Country	Documents
National Institute on Drug Abuse	United states	12
National Institutes of Health	United states	7
National Institute of Allergy and Infectious Diseases	United states	6
National Institute of Mental Health	United states	4
Gilead Sciences	United states	3
National Institute for Health Research	United Kingdom	3
Centers for Disease Control and Prevention	United states	2
European Centre for Disease Prevention and Control	Sweden	2
CAPES Foundation	United states	2
Johns Hopkins University	United states	2

Table 6. Top 10 countries / territories that are engaged in research on communicable diseases among prisoners

Countries/territories	Documents	Percentage (%)	
United States	94	284	33.1
United Kingdom	48	284	16.9
Australia	18	284	6.3
Canada	13	284	4.6
Italy	11	284	3.8
Switzerland	11	284	3.8
Spain	10	284	3.5
Brazil	9	284	3.2
France	9	284	3.2
Germany	8	284	2.8

Figure 1. Time trend analysis of the published articles on communicable diseases among prisoners from 1959-2023 (Image Source: Scopus Database)

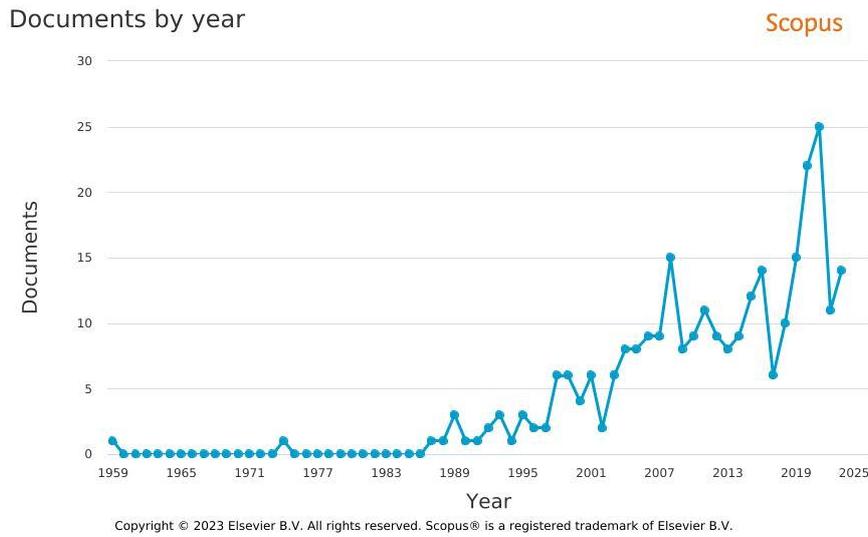


Figure 2. Country map on production and collaboration network in field of communicable disease among prisoners

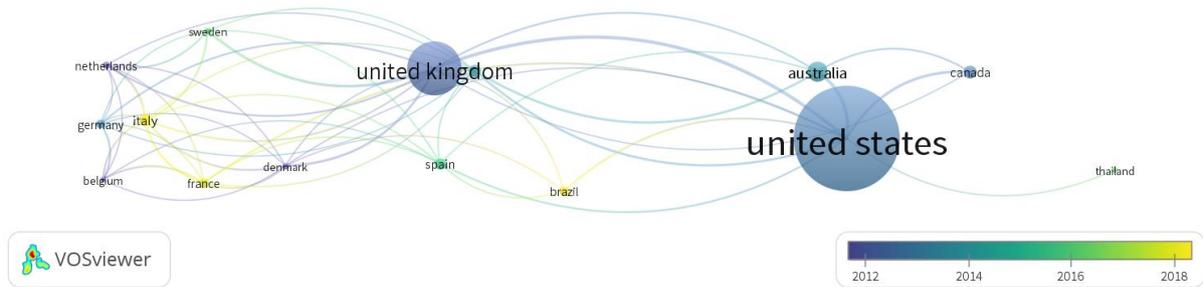


Figure 3. Keywords co-occurrence network used by authors in field of communicable diseases among prisoners

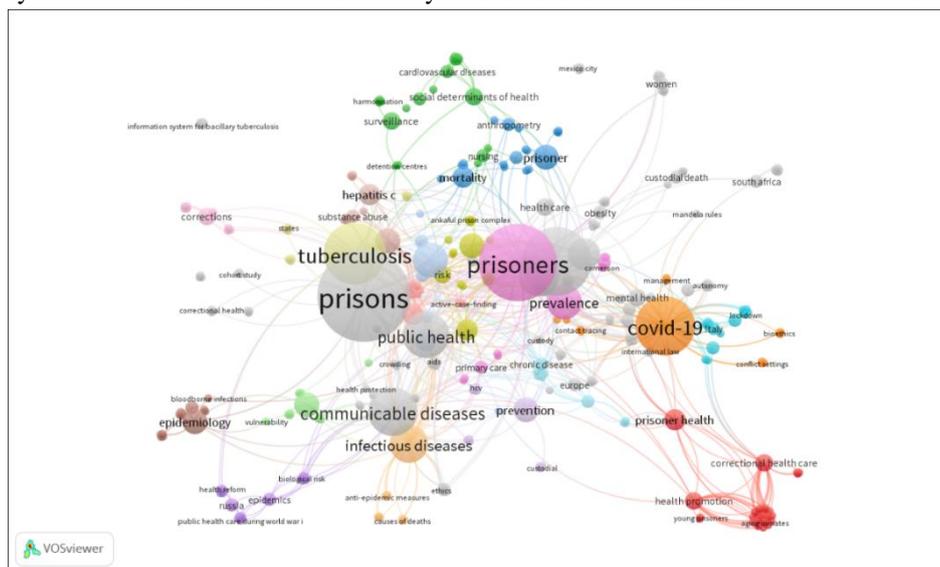
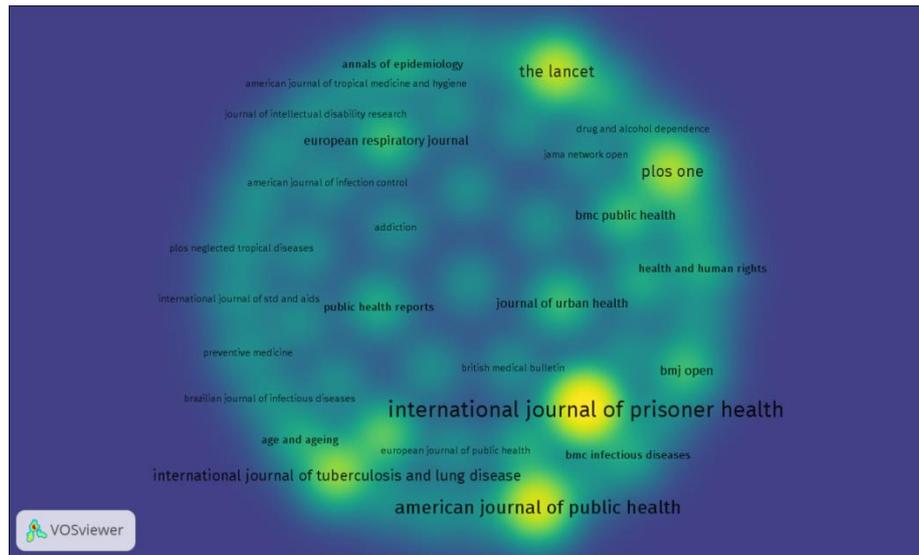


Figure 4. Network of co-citation sources in the field of communicable diseases among prisoners

Discussion

Bibliometric analysis is emerging as a highly effective technique for analysing and assessing trends in scientific research. This is the first of its kind of bibliometric analysis to assess the research on the communicable diseases among prisoners and thus, provide an outline for the future evidence-based research and policies for prisoners' health. The current analysis of data represents different dimensions of communicable disease research among prisoners, which includes the top countries, authors, organisations, funders, journals, co-citation sources, co-occurring keywords and years of publication [15].

In the last 20 years, the prison population has grown exponentially, as has the prevalence of communicable diseases among prisoners. The bibliometric analysis of trends in the topic reflects a steady climb in the research published in this area since 1988, but the dramatic rise in this domain since 2019 is ironic. This abrupt increase may be explained by the sudden onset of the COVID-19 pandemic which has piqued the interest of researchers all over the world and led to a heap multitude of publications about COVID-19. [16-18].

The vast majority of these works have been published in prestigious journals such as the American Journal of Public Health, Lancet, Plos One, and others. The findings revealed that the International Journal of Prisoners' Health has published the most papers on the topic, but papers published in the American Journal of Public Health and the Lancet were the most cited. This high citation could be because these journals have a high

impact factor, instead of because they are of high quality.

The majority (68.48%) of studies have, interestingly, been done in nations, including the United States, the United Kingdom, and Australia. While China, Brazil, India and Russia, have the world's second, third, fourth, and fifth-highest jail populations, respectively, however, very few research studies have been conducted in these countries [1]. These findings imply that countries with high prison populations need to ramp up or broaden their research on the wellbeing of prisoners.

The United States, which harbours more than 2 million prisoners have, has been found to be the greatest contributor to communicable disease research among prisoners in the form of both the funder as well as and the implementing organisation. This is not surprising, as the United States has the world's largest prison population and largest number of scientific research institutions. As per the data, an approximate \$55 billion is spent on US corrections in 2020. However, the major cost included in prison spending is salaries and benefits for correctional officers and operational cost for prisons [19,20]. Thus, leaving very little margin for the healthcare of the prisoners. This suggests the need to implement better health policies for the incarcerated population. Moreover, the lack of funding from other countries, particularly those with high prisoner populations, calls for increased funding to generate more data on prisoners' health.

Our study has certain inherent limitations because of how bibliometric analysis functions. Most crucially, because we only included the

Scopus database, we highlight the danger of missing multiple papers that would have been discovered than had we included additional databases. The parameters set by the databases themselves define how the studied items will develop moving forward. Additionally, we might have eliminated them if the authors hadn't used the characteristics of our study as key terms or in the titles of their papers. Additionally, during the chosen study period, local publications and articles that weren't indexed in Scopus might not be considered. Our results suggest that more worldwide and regional bibliometric studies on infectious diseases among inmates, and indepth analysis can be advantageous, especially from high-burden nations.

Conclusion

Using bibliometric techniques, the literature on communicable diseases among inmates was analysed from inception to 2023 based on the Scopus database. The number of publications reached one distinct peak in the last 63 years, in 2019, which may be related to the COVID-19 pandemic. The analysis findings indicate that the most active institutions for sponsoring and conducting scientific research on prisoners are those in the United States, and that papers from journals with high impact factors receive the most citations. However, there is still a dearth of knowledge and financing concerning communicable diseases among inmates, particularly from low- and middle-income nations with a large burden of the prisoner population, which necessitates more focused and collaborative efforts.

Conflicts of interest

The authors have no conflicts of interest to declare.

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