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Bibliometric Analysis of Studies on Catastrophic Health Expenditures

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ABSTRACT

According to the World Health Organization, after meeting basic household needs, spending on health that equals or exceeds 40 percent of household income is referred to as catastrophic health expenditures (CHE). Individuals' out-of-pocket expenses for advanced treatments and the risk of being exposed to such financial catastrophe have increased considerably. Consequently, CHE has become a prominent and current topic in scientific research. This study aims to perform a bibliometric analysis of studies related to CHE in order to identify research gaps in the field. A total of 705 studies on CHE, published between 2002 and 2021, were included in the analysis by applying specific search strategies in the Web of Science database. The data were analyzed by dividing them into two periods using the SciMat bibliometric analysis program. As a result of the examinations, it was determined that the themes of 'depression, costs of illness' and 'hemodialysis, aging, direct costs' in isolated themes are areas of study open to further development within the field of CHE. Based on these findings, future researchers may conduct studies to determine the level of CHE exposure, the incidence of CHE, and the determinants of CHE for individuals within specific disease and risk groups.

Keywords: Catastrophic Health Expenditures, Health Policy, Health Economics, Bibliometric Analysis, SciMat.

JEL Classification Codes: I10, I12, I14, I18, C80, D83

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INTRODUCTION

The development of neo-liberal management and policy approaches over the last three decades has also impacted health systems. In this context, it is evident that pro-market policies have been implemented in the health sector in most countries. Health reform programs founded on neo-liberal principles have undergone significant adjustments due to issues such as inefficient resource use, unequal access to healthcare, lack of financial protection, and sustainability challenges in health systems (Burçin et al., 2014). Market-based health policies, which aim to ensure the sustainability of health systems, have successfully reduced health costs, which constitute a sizeable portion of gross domestic product. However, these policies have also led to an increase in out-of-pocket payments for medical treatments. It is widely recognized that under recent health reforms, out-of-pocket expenses for medical treatments now represent a significant portion of the total costs of these services. This burden is particularly high in countries where health insurance coverage is limited, levels of development are

low, social assistance frameworks are underdeveloped, and health inequalities are prevalent (Çınaroğlu & Şahin, 2016).

The increase in out-of-pocket payments, which is seen as a means of ensuring household participation in financial risk-sharing for the health system, leads to individuals being unable to access basic health services, a decline in the welfare of disadvantaged and low-income groups, and impoverishment. These findings highlight the issue of catastrophic health expenditures (CHE). The financial difficulty households experience due to medical expenses is measured by CHE (Doshmagir et al., 2021). When individuals are exposed to CHE, they face risks such as losing financial protection, having to limit basic needs like food consumption, depleting deposit accounts, and resorting to borrowing. The World Health Organization (WHO) defines such risks as financial catastrophe caused by out-of-pocket health expenditures. In short, CHE is described as 'the ratio of household income or expenditure on health exceeding a certain percentage at a given time' (Wagstaff & Van

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Doorslaer, 2003). CHE serves as an indicator to assess fairness in healthcare financing and the extent of health insurance coverage for individuals. The 10 percent and 25 percent thresholds of household income or expenditure are commonly used to determine CHE levels (Zhao et al., 2022). nother WHO threshold suggests that healthcare costs exceeding 40% of a household's solvency—solvency being defined as household expenses excluding food—expose a household to CHE (Murray et al., 2003).

A review of the literature reveals numerous studies demonstrating how out-of-pocket medical expenses, when combined with neo-liberal health policies, can lead to catastrophic outcomes by surpassing predetermined thresholds. In addition, it is observed that the effects of health expenditures on the health economy and health systems have been examined using methods such as stochastic frontier analysis and data envelopment analysis (Evans et al., 2001; Özdemir & Bulğurcu, 2015). These studies reveal performance indicators that demonstrate the impact of catastrophic health expenditures on the health economy, as well as the factors that cause such catastrophes (Abou Jaoude et al., 2022). It is argued that the high cost of catastrophic health care, particularly in low- and middle-income nations, is primarily due to insufficient prepayment systems. Furthermore, research has shown that the incidence of CHE is correlated with factors such as household size, income, receipt of social support, having family members over the age of 65, and the working status of the head of the household (Zhao et al., 2022). Research from Mexico (Galárraga et al., 2010), Türkiye (Yardım et al., 2010; Koçkaya et al., 2021), Vietnam (Van Minh et al., 2013), and India (Mondal et al., 2014) have also demonstrated that a household's economic standing significantly affects the CHE level. The primary variables influencing the degree of CHE in terms of health and wellness include the frequency of inpatient, outpatient, and dental care utilization (Doshmangir et al., 2021).

In WHO's 2000 report, it is emphasized that determining CHE, identifying the groups exposed to catastrophe, and understanding the factors that cause such catastrophes are crucial for health policymakers to achieve the goal of ensuring equal access to healthcare for all and equitable participation in health financing. Particularly in recent years, there has been a notable increase in scientific studies on this subject (Yadav et al., 2021; Ravangard et al., 2021; Yang & Hu, 2022; Gummidi et al., 2022).

The aim of this study is to examine the development of scientific publications in the literature on CHE using bibliometric analysis methods. Based on the findings from these examinations, the study will identify the authors, countries, institutions, the most frequently publishing journals and scientific fields, as well as the themes that have developed, emerged, or disappeared over time. In this way, suggestions for potential new research areas for future studies will be provided.

MATERIAL AND METHODS

This descriptive study aims to examine the characteristics of studies on catastrophic health expenditures using bibliometric methods. Bibliometrics is a quantitative scientific analysis methodology that allows for the evaluation of the nature and development of scientific studies. Bibliometric analysis provides a macroscopic overview of the vast amount of academic literature. It sheds light on the research themes that have the most output in a field and identifies influential and leading academics, institutions/universities, publication sources, and countries by considering their outputs and citations (Cobo et al., 2011). By analyzing the entirety or a specific portion of the literature and drawing generalizations, bibliometric analysis offers specific information on the evolution of the relevant field over time and space. It enables the objectification of personal observations and reveals the origins of researchers' influence. Drawing conclusions about a discipline's potential future trajectory is useful for choosing research topics and career planning (Moral-Muñoz et al., 2020). Moreover, bibliometric analysis can uncover the latest developments, research directions, and leading topics in a particular research area (Donthu et al., 2021).

There are many software programs that enable scientific mapping, such as VOSViewer, CiteSpace, Biblioshiny, and Gephi. The reason SciMat software was chosen for this study is that, while it includes the advantages of many similar programs, it also allows for the identification of inter-period themes related to the research topic and the analysis of relationships between these themes. The relationships between the units of analysis—in this study, words—are processed by the program using specific algorithms. It determines the conceptual structures important to the field of interest for each period, visualizes the findings in a way that allows for the evaluation of relationships between periods, and provides quality assessment criteria for the significant structures that emerge. This enables the researcher to evaluate the findings comprehensively. In

this study, SciMat v.1.1.04 software was used (Cobo et al., 2012).

SciMat software is used to conduct conceptual science mapping based on a network of frequently used words. This analysis follows a four-stage approach: research themes are identified, themes (research lines) are visualized, their relationships are shown as a thematic network, new themes are discovered, and performance analysis is conducted. The identified study themes are organized in a strategic diagram. The research is represented as a two-dimensional map, where themes are depicted as globes, with the volume proportional to the total number of publications related to the theme. These themes are categorized into four sections based on their relative relevance: (i) Upper right quadrant: Q1 - Engine Themes, which focus on organizing and expanding the field of study. (ii) Upper left quadrant: Q2 - Advanced and isolated motifs, which are significant but not central to the core research field. (iii) Lower left quadrant: Q3 - Ascending or declining themes, which are weak and may require further investigation or might vanish over time. (iv) Lower right quadrant: Q4 - Basic and cross themes, which, although not highly developed, are fundamental for understanding the subject matter (López-Robles et al., 2019). SciMat, with its advanced algorithms in text mining and theme visualizations, has been used in bibliometric analysis studies on a wide range of topics, including big data (López-Robles et al., 2019), human resources management (Santana & Cobo, 2020), wearable health technologies (Burbano-Fernandez & Ramirez-Gonzalez, 2018), Covid-19 research areas (Herrera-Viedma et al., 2020), emergency health services (Tabur, 2020), sustainability in health services (Morell-Santandreu et al., 2020) . While bibliometric studies using SciMat in the field of health are available, no study has been found on catastrophic health expenditures. Therefore, this study focuses on CHE.

Today, the most preferred databases for science mapping or bibliometric research are WoS, Scopus, Google Scholar, PubMed, and MEDLINE (Chen, 2017). Comparisons between WoS and Scopus have shown that both databases produce similar results in terms of citation counts. However, when examining publication counts by subject categories, it was found that Scopus gives more weight to life and medical sciences, while WoS places greater emphasis on economics and social sciences (Jacso, 2005). Additionally, WoS includes a large number of high-quality journals in the social

sciences. This database also provides significant convenience for researchers in conducting analyses and was chosen for this study due to its reputation as one of the most prestigious databases in the world (Demir & Erigüç, 2018).

Web of Science (WoS) was used in this study. WoS is a world-leading scientific database that is frequently preferred in academic research. The data for this research were drawn from the 'Web of Science Core Collection' on January 15, 2022. This core collection includes more than 21,000 peer-reviewed, high-quality scientific journals published across more than 250 scientific disciplines worldwide. Additionally, conference papers and book data are available (Clarivate, 2021).

Since the study aims to identify research related to CHE, the following keywords were used in the search: 'catastrophic health expenditure,' 'catastrophical health expenditure,' 'disastrous health expenditure,' 'devastating health expenditure,' 'catastrophic health spending,' 'catastrophical health spending,' 'disastrous health spending,' 'devastating health spending,' 'catastrophic health spendings,' 'disastrous health spendings,' and 'devastating health spends.' A total of 906 articles were retrieved from the WoS search. Since the search was conducted in January 2022 and publications were still ongoing, 74 publications from 2022 were excluded from the analysis. Only research and review articles indexed in SSCI, SCI, SCI-expanded, and ESCI were included in the study. A total of 127 studies outside this scope were not included in the analysis, leaving 705 publications published between 2002 and 2021. All records and references from these publications were downloaded as plain text files and transferred to the SciMat program. The data were analyzed by dividing it into two periods: 2002-2017 and 2018-2022. The reason for this division was to ensure an equal distribution of articles across the periods. The second period starts in 2018 because there was a significant increase in publications compared to previous years, as seen in Figure 1. This division facilitates better analysis and interpretation of the changes in themes during each period. Additionally, the Excel program was used to gather descriptive information on the number of publications, citations, articles, journals, and authors. The development of themes across the periods and their relationships were analyzed using the SciMat software.

RESULTS

As shown in Figure 1, publications on catastrophic health expenditures began in 2002 and have increased significantly over time. In 2002, there was 1 publication with 123 citations, and in 2003, there were 4 publications with 1,144 citations. In subsequent years, the number of publications remained relatively low but with notable citation counts, such as 2 publications in 2004 with 246 citations, 4 publications in 2005 with 100 citations, 5 publications in 2006 with 601 citations, and 6 publications in 2007 with 620 citations. A substantial increase in publications occurred in 2012 with 21 publications (1,052 citations) and again in 2015 with 39 publications (1,003 citations). Although the number of studies remained low during some years, they garnered significant citation counts. However, in more recent years, interest in the field has surged, as reflected by 121 publications in 2021 (174 citations), 108 publications in 2020 (386 citations), 87 publications in 2019 (534 citations), 94 publications in 2018 (784 citations), and 58 publications in 2017 (690 citations). This demonstrates a growing trend in the number of publications over the years.

In Table 1, it can be observed that the most cited studies on catastrophic health expenditures are from the first period (2002-2017).

The article titled "Household catastrophic health expenditure: a multicountry analysis," published in *The Lancet* in 2003 by Xu, K., Evans, D.B., Kawabata, K., Zeramdini, R., Klavus, J., and Murray, C.J.L., ranks first with 1,120 citations. Additionally, the second most cited study, published in *Health Affairs* in 2002, has 461 citations. The third and fourth studies, published in the *WHO Bulletin* in 2006 and 2012, have high citation counts of 212 and 209, respectively.

Below is a brief summary of the findings from these highly cited studies on catastrophic health expenditures:

Ke et al. (2003) analyze how spending on health services affects households' financial situations and whether these expenditures reach catastrophic levels for households. The research findings indicate that the burden of health expenditures on households varies significantly across countries, with low-income households being particularly at greater risk. Additionally, the study emphasizes the effectiveness of health insurance systems and the role of government investments in health services in protecting households from financial hardship.

Xu et al. (2007) discuss how households can cope with financial difficulties arising from health expenditures. The study states that such expenditures can have devastating effects, especially on low-income households. The article suggests various strategies to prevent catastrophic health expenditures, including establishing effective health insurance systems, providing government-supported health services, and increasing access to healthcare. It also focuses on ways to reduce the impact of health expenditures on households and the role governments play in this process.

Li et al. (2012) aimed to assess the extent to which the Chinese population is affected by catastrophic household expenditures and impoverishment due to medical costs and to examine the health system and
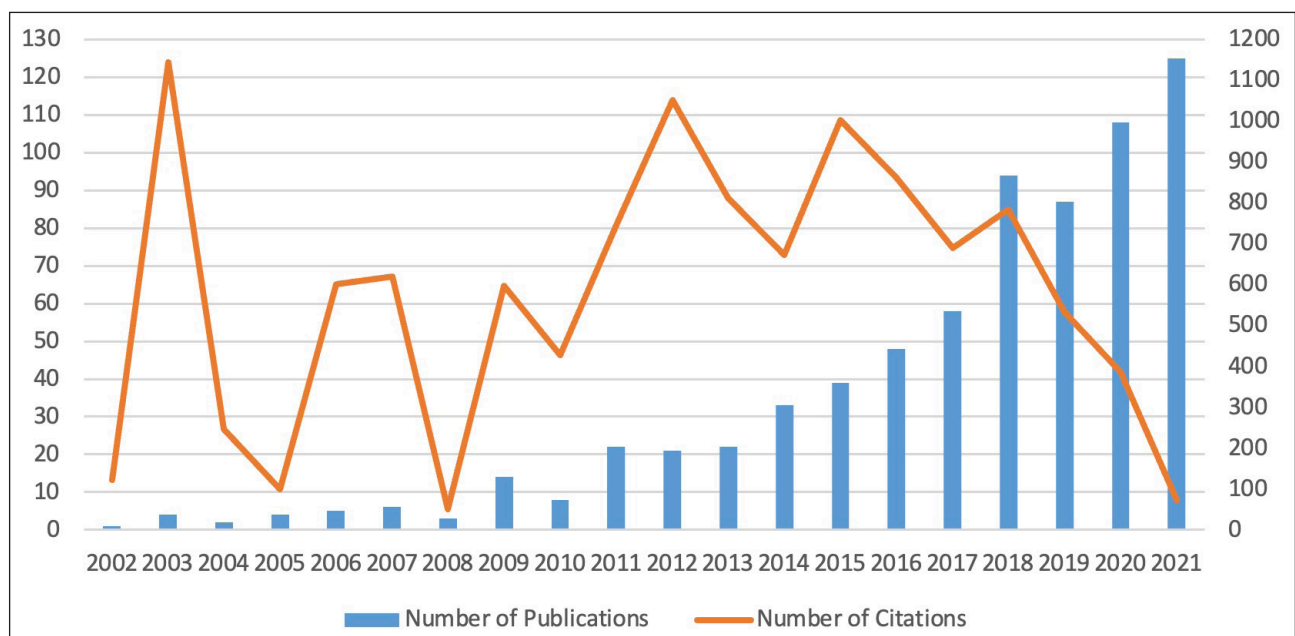

Figure 1: Distribution of Publications and Citations by Years

Table 1: Top 10 Most Cited Studies

No	Article	Author	Year	Citation	Journal
1	Household catastrophic health expenditure: a multicountry analysis (Ke et al., 2003)	Ke, X, Evans, DB, Kawabata, K, Zeramdini, R, Klavus, J, Murray, CJL	2003	1120	Lancet
2	Protecting households from catastrophic health spending, (Xu et al., 2007)	Xu, K, Evans, DB, Carrin, G, Aguilar-Rivera, AM, Musgrove, P, Evans, T	2007	461	Health Affairs
3	Catastrophic household expenditure for healthcare in a low-income society: a study from Nouna District, Burkina Faso (Su et al., 2006)	Su, TT, Kouyate, B, Flessa, S	2006	212	Bulletin Of The World Health Organization
4	Factor saffecting catastrophic health expenditure and impoverishment from medical expenses in China: policy implications of universal health insurance (Li et al., 2012)	Li, Y, Wu, QH, Xu, L, Legge, D, Hao, YH, Gao, LJ, Ning, N, Wan, G	2012	209	Bulletin Of The World Health Organization
5	Understanding the impact of eliminating user fees: Utilization and catastrophic health expenditures in Uganda (Xu et al., 2006)	Xu, K, Evans, DB, Kadama, P, Nabyonga, J, Ogwal, PO, Nabukhonzo, P, Aguilar, AM	2006	187	Social Science & Medicine
6	The financial burden from non-communicable diseases in low- and middle-income countries: a literature review (Kankeu et al., 2013)	Kankeu, HT, Xu, K, Evans, DB, Saksena, P	2013	181	Health Research Policies And Systems
7	Out-of-pocket health expenditure and debt in poor households: evidence from Cambodia (Van Damme et al., 2004)	Van Damme, W, Van Leemput, L, Por, I, Hardeman, W, Meessen, B	2004	167	Tropical Medicine & International Health
8	Catastrophic health expenditure and impoverishment in Türkiye (Yardim et al., 2010)	Yardim, MS, Cilingiroglu, N, Yardim, N	2010	148	Health Policy
9	The new cooperative medical scheme in China (You & Kobayashi, 2009)	You, XD, Kobayashi, Y	2009	137	Health Policy
10	Health system reform in Mexico 5: Assessing the impact of the 2001-06 Mexican health reform: an in term report card (Gakidou et al., 2006)	Gakidou, E, Lozano, R, Gonzalez-Pier, E, Abbott-Klafter, J, Barofsky, JT, Bryson-Cahn, C, Feehan, DM, Lee, DK, Hernandez-Llamas, H, Murray, CJL	2006	135	Lancet

structural factors influencing these expenditures. The survey data were obtained from the Fourth National Health Service Survey. The analysis of impoverishment due to catastrophic health and medical expenditures was conducted using a sample of 55,556 households with varying characteristics located in both rural and urban areas across different regions of the country. Logistic regression analysis was used to identify the determinants of catastrophic health expenditures. The rate of catastrophic health expenditures was 13.0%, while the rate of impoverishment was 7.5%. Households with hospitalized, elderly, or chronically ill members, as well as those in rural and poorer areas, had higher rates of catastrophic health expenditures.

Acombination of adverse factors increases the risk of these expenditures. Families enrolled in insurance plans and living in urban areas had lower rates of catastrophic health expenditures compared to those in rural areas. Finally, it was determined that the need for and use of

health services, demographic characteristics, type of insurance package, and payment method to the service provider are key determinants of catastrophic health expenditures.

The aim of the study conducted by Yardım et al. (2010) is to determine the level of CHE in Türkiye and to identify the factors influencing it. CHE was calculated using data from the Household Budget Survey and Consumption Expenditure data of TurkStat from 2006. According to the research findings, the rate of households experiencing CHE is 0.6%. The lowest average out-of-pocket health payment in the lowest quintile is US$7.36, which is approximately one-tenth of that in the highest quintile. The probability of households experiencing CHE increases with each unit increase in per capita expenditures. The health insurance status of the head of the household is closely related to the likelihood of experiencing catastrophic expenditures. Rural households are 2.5 times more likely to experience catastrophic events than urban households. Having a

Table 2: Top 10 Authors with the Most Publications in the Field

Author	Publication	Citation
Ulasi, Ifeoma	13	24
Louis, Siu-Fai	13	12
Garcia-Garcia, Guillermo	13	24
Tangcharoensathien, Viroj	12	289
Strani, Luisa	12	12
Verguet, Stephane	11	174
Prinja, Shankar	11	195
Jan, Stephen	11	238
Wu, Qunhong	10	274
Li, Ye	9	267

preschool child in the household is seen as a protective factor against catastrophic expenses, while having an elderly or disabled person increases the risk.

Table 2 provides information on the top 10 most productive authors in the field of catastrophic health expenditures. In this context, with 11 publications each, Ulasi, F. (Nigeria) and Lui, S.F. (USA) take the top spots. These authors are followed by Garcia-Garcia, Guillermo, Tangcharoensathien, Viroj (Thailand), and Strani, Luisa (Belgium), among others. Additionally, it is noted that Tangcharoensathien, Viroj, Wu, Qunhong (China), and Li, Ye (China) are prolific authors in the field and have high citation counts. The literature review also revealed that all authors listed in Table 2 continue to actively work on catastrophic health expenditures.

In Table 3, the *International Journal for Equity in Health*, with an impact factor of 3.8 in the SSCI index in the field

of catastrophic health expenditures, ranks first with 57 publications and 849 citations. It is followed by *PLOS One*, *BMC Health Services Research*, *Health Policy and Planning*, among others. Additionally, although *The Lancet* ranks last with 13 publications, it has 1,460 citations and an impact factor of 70.

In Table 4, it is observed that 85.40 percent of the scientific studies on catastrophic health expenditures are articles, 6.10 percent are compilations, 3.12 percent are meeting summaries, and only 0.42 percent are congress papers.

According to Table 5, 38.58 percent of the studies examined fall under environmental public and occupational health, 19.72 percent under healthcare services and sciences, and health policy, 10.07 percent under general internal medicine, and 6.95 percent under multidisciplinary sciences. Additionally, 6 percent of the studies are categorized under economics.

Table 6 shows the institutions associated with studies on catastrophic health expenditures. In this context, Harvard University, the University of London, and the World Health Organization are the three institutions with the highest number of publications. Johns Hopkins University, Tehran University of Medical Sciences, and Peking University are also on the list of organizations with significant publications in this field.

In Table 7, when examining the distribution of studies on catastrophic health expenditures by country, 24.68 percent are from the USA, 19.14 percent from China, 14.61 percent from England, and 8.22 percent from Iran.

Table 3: Information on Journals with the Most Publications in the Field

Journal	Publication	Citation	Quarter	Impact Factor	Index
International Journal For Equity In Health	57	849	Q2	3.8	SSCI
Plos One	46	952	Q2	3.78	SCI - Expanded
Bmc Health Services Research	44	660	Q3	3.29	SCI - Expanded
Health Policy and Planning	23	501	Q1	3.9	SSCI
Bmj Open	20	82	Q2	3.42	SCI - Expanded
Bmc Public Health	18	240	Q2	4	SCI - Expanded
Bulletin Of The World Health Organization	15	853	Q1	10	SCI - Expanded
Social Science & Medicine	15	397	Q2	5.2	SSCI
Tropical Medicine & International Health	15	492	Q2	3.08	SCI - Expanded
Lancet	13	1460	Q1	70	SCI - Expanded

Table 4: Information on Publication Types of Studies

Type	Number	Percent
Research Article	602	85.40%
Review	43	6.10%
Meeting summary	22	3.12%
Editorial Studies	18	2.55%
Congress Proceeding	3	0.42%
Others	17	2.41%

Table 5: Information on Science Categories Published by Studies

Category	Number	Percent
Public Environmental Occupational Health	272	38.58%
Health Care Sciences and Services	139	19.72%
Health Policy Services	139	19.72%
Medicine General Internal	71	10.07%
Multidisciplinary Sciences	49	6.95%
Economics	44	6.24%
Tropical Medicine	28	3.97%
Social Sciences Biomedical	19	2.69%
Surgery	18	2.55%
Medicine Research Experimental	17	2.41%

Table 6: Number of Publications From Institutions

Institution	Publication	Percent
Harvard University	57	8.08%
University of London	55	7.8%
World Health Organization	37	5.25%
London School Of Hygiene Tropical Medicine	33	4.68%
Harvard TH Chan School Of Public Health	32	4.54%
University Of California System	31	4.39%
University Of Nigeria	25	3.55%
Peking University	21	2.97%
Tehran University Of Medical Sciences	21	2.97%
Johns Hopkins University	19	2.69%

Table 7: Number of Publications From Countries

Country	Publication	Percent
USA	174	24.68%
China	135	19.14%
India	113	16.02%
England	103	14.61%
Iranian	58	8.22%

Table 8: Languages of Publications

English	687	97.45%
Spanish	13	1.85%
Other (French, Korean, Portuguese, Russian, Turkish)	1	0.5%

According to Table 8, 97.45 percent of the studies on catastrophic health expenditures were published in English, 1.85 percent in Spanish, and 0.5 percent in other languages, including French, Korean, Portuguese, Russian, and Turkish.
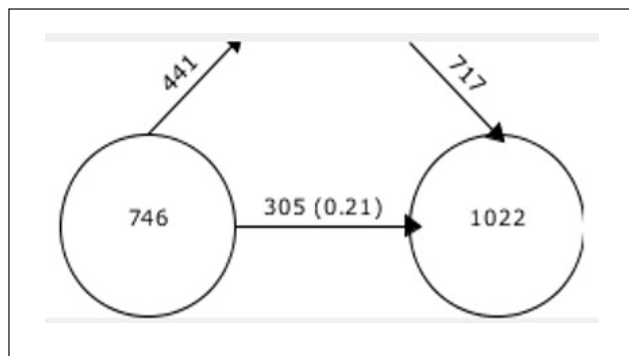

Figure 2: Graph of Development of Keywords

When Figure 2 is examined, the number of keywords and their changes during the 2002-2017 and 2018-2021 periods can be observed. This figure allows for the identification of increases and decreases in the number of keywords in a particular field, providing insights into the breadth and development of the field (Morell-Santandreu et al., 2020). In this context, 746 keywords were used in the first period, 441 of which disappeared without being used in the second period, 305 continued to be used, and 717 of the 1,022 keywords were newly introduced in the second period. Consequently, the recent increase in keywords used in CHE studies indicates that the field is current and continues to evolve.

When the theme map of the first period is examined in Figure 3, four motor themes are identified (Thailand, insurance, financial protection, households), along with seven main themes (HIV/AIDS, financial burden, Mexico, determinants, healthcare, poverty, access to healthcare). Additionally, there are three emerging or disappearing themes (coping strategies, services, health economics) and seven isolated themes (near-miss, lymphedema, being registered, results, economic evaluation, service use, cost-effectiveness analysis).

When Figure 4 is analyzed, it can be observed that there are more studies on catastrophic health expenditures in the 2018-2021 period compared to the first period. During this period, five engine themes were identified (catastrophic health expenditures, middle income, differences, status, equality), along with ten main themes (access to healthcare, health inequality, disease, population, inequality, services, health policy, Iran, expenditures, India). Additionally, there were five emerging or absent themes (depression, association, prevalence, disease cost, financial risk protection) and ten isolated themes (savings, random forest, health deprivation, financial value, direct costs, hemodialysis, household spending, aging, meta-analysis).

In Figure 5, it can be seen that the first period's themes of insurance, financial protection, households, and poverty—also present in the second period—strongly contributed to the development of catastrophic health expenditure studies. The second period theme of illness was further developed, being heavily influenced by the themes of consequences, coping strategies, and financial burdens. The services theme, in turn, significantly evolved with themes such as service proximity and economic evaluation analysis. The population theme has been associated with studies on determinants and service use. Meanwhile, the hemodialysis theme has a strong network relationship with the economic evaluation theme. Additionally, a close relationship exists between the themes of Thailand, healthcare, service use, and financial risk protection. Specifically, numerous themes from the previous period connect with the theme of inequality, considered one of the primary determinants of CHE. Themes such as determinants, household, financial protection, insurance, and financial burden are among these connections. It should also be noted that health policy studies are related to themes of health economics, financial protection, and insurance. However, themes like indirect costs, public health financing, financial value, health deprivation, meta-analyses, old age, health inequalities, prevalence, and disease costs do not interact with the themes from the previous period. This suggests that current studies can be developed around these themes.
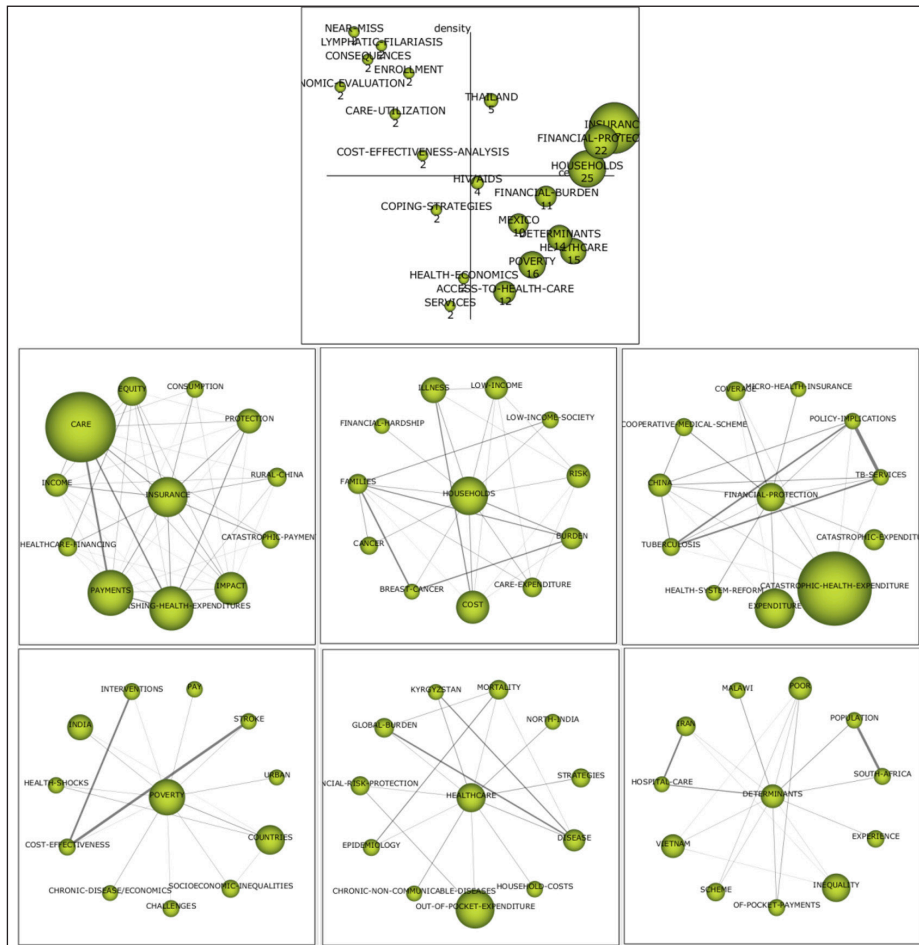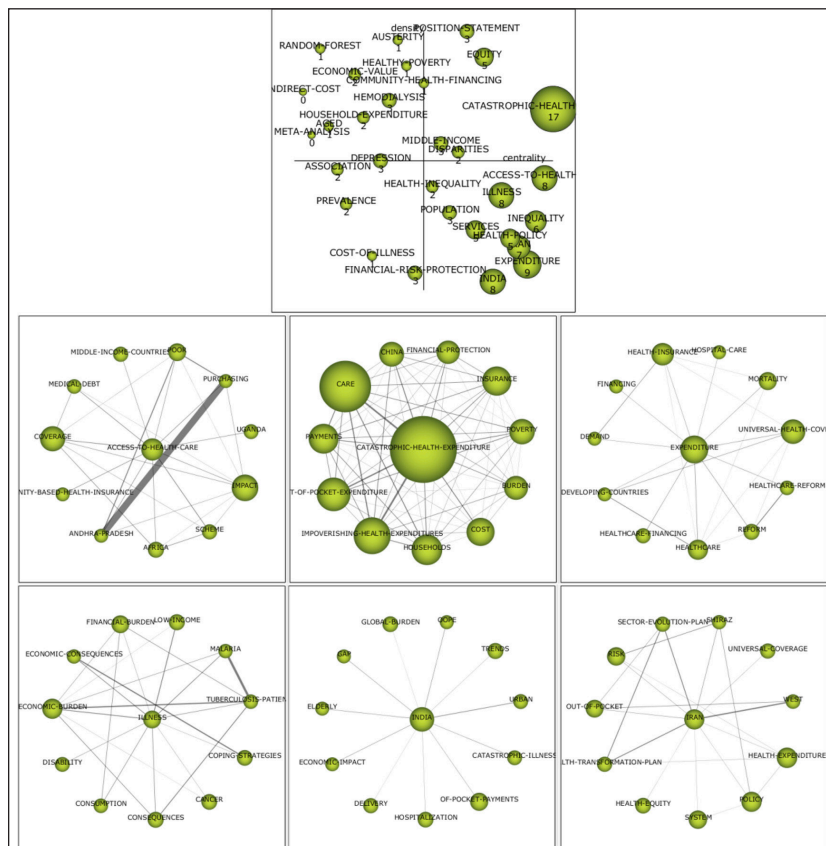
Figure 3: 2002-2017 Period Theme Map

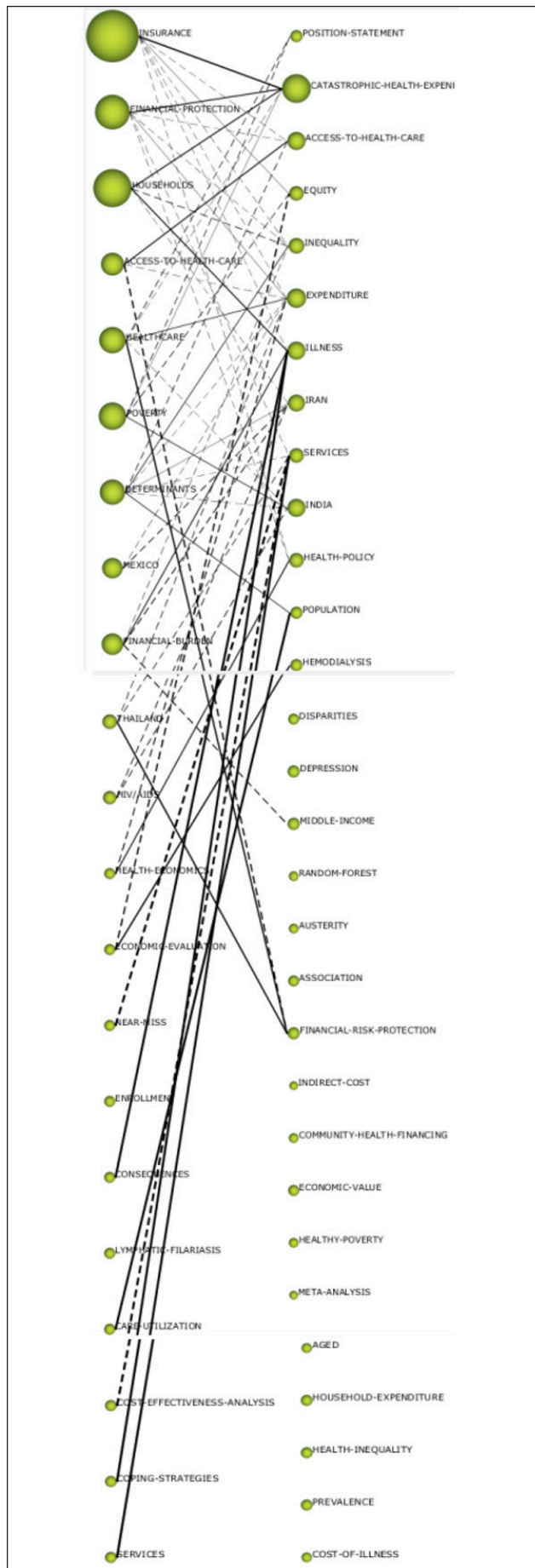**Figure 4:** 2018-2021 Period Theme Map

Figure 5: Longitudinal Structure Analysis for the Relationship Between Themes Across Periods

CONCLUSION

A bibliometric analysis was conducted on studies published in the SSCI, SCI, and ESCI indexes in the WoS database from 2002 to 2021 to provide an overview of academic publications on catastrophic health expenditures, a topic that has gained significant attention in health policies and financing. In this context, 705 publications were included in the study. The analysis revealed that the first study on CHE was published in 2002, and research in this field continues today. The most publications were made in 2021, while the most cited studies were published in 2003. Of the studies, 91 percent are research articles and reviews, and 98 percent are published in English or Spanish. In terms of WoS science categories, the studies have been published in fields such as public, environmental, and occupational health, health services, health policies, medicine, and economics, indicating that CHE is a multidisciplinary research area. Additionally, it was found that CHE studies are conducted intensively in countries such as the United States, China, India, and the United Kingdom. Institutions like Harvard University, the University of London, and the World Health Organization (WHO) have made significant contributions to the field in these countries.

Among the studies on CHE, the research article titled *Household CHE: A Multicountry Analysis* was the most prominent in the field, with 1,120 citations. Additionally, authors such as Ulasi, I., Lui, S.F., and Garcia, G. have been the most prolific in the field of CHE, each with 13 publications. Wu, Q., who is also among the prolific authors, has garnered the most attention, with 274 citations for their publications. When examining the journals that publish on CHE, the journal with the highest number of publications in the field is the SSCI-indexed *International Journal for Equity in Health*, which has an impact factor of 3.8.

Important results of the research are related to the strategic theme and thematic network maps obtained using the SciMat program. In this context, it was determined that themes such as depression, disease costs, hemodialysis, aging, and direct costs—categorized as isolated themes in the recent theme map—are areas open to further development in the field of CHE. Additionally, sub-themes like financial protection, financial burden, and impoverishment, which have a weaker relationship with CHE, are less developed. Based on these findings, future researchers may conduct studies to determine the level of CHE exposure, its incidence, and the determinants of CHE for individuals within specific disease and risk groups.

This study has some limitations. The study data were obtained solely from the WoS database, and studies from other academic databases, such as Google Scholar and Scopus, could not be examined. Additionally, SciMat was used as the bibliometric analysis program. Since SciMat does not provide visual mapping methods for author, journal, and institution information, the findings related to these aspects are presented in tables.

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