The Impact of Unemployment on the Health of Individuals:
A Bibliometric Survey

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Abstract

Unemployment pays a tremendous tribute to human health, both physical and mental. Academics have put their potential emphasis on this particular gradient through their research publications. This literature review aims to explore the performance evolution, trends, and most productive countries in relation to unemployment's effect on health. To achieve these objectives, a total of 3,977 social science and economics journal articles were obtained from the Scopus database through a keyword search. The authors simultaneously reviewed abstracts to identify fifty articles for a content analysis. The findings demonstrated a gradual growth in scientific publication throughout the study period, especially from 1970-2023, while in the last decade, the growth was significant. The results unveiled four distinct themes associated with unemployment/health research constituent: unemployment and health outcomes (both physical and mental health), unemployment and human psychology, unemployment and gender differences, and unemployment effects based on socioeconomic and economic settings. Another significant finding is that the USA holds the dominant position in the scientific production of this particular research domain. The findings can be a source for future studies as well as beneficial to policymakers to gauge some remarkable variables and findings to aid during policy-level decisions. The paper concludes with suggestions for future research.

Keywords

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Introduction

The economic and global crisis following COVID-19 are causing persistent global unemployment (Hollederer, 2015; Kianfar et al., 2022). Thereby, unemployment's effect on individual health conditions has been a crucial subject in both economic and social science research (Hollederer, 2015; Junna et al., 2022; Raftopoulou & Giannakopoulos, 2022; Ronchetti & Terriau, 2019; Thill et al., 2019). Idiosyncratically, the risk exposure of being unemployed is not correspondingly distributed among social groups and regions (Hollederer, 2015). In prior studies, unemployment is depicted as a significant cause of both physical and mental health (Daly & Delaney, 2013; Drydakis, 2015; Strandh et al., 2013; Wang & Fattore, 2020).

Individuals' income is a dominant determinant of health (Deaton, 2015) that derives from their employment or other sources. The richest people tend to have more disabilities and sicknesses than the poorest (Wilkinson, 1997). This trend renders 10-20 years fewer years of disability-free living and 5-10 years of shorter life expectancies at birth (Mackenbach, 2012). A higher income leads to a healthier life and greater longevity (Thompson et al., 2019). The inverse also appears when individuals experience a loss of financial stability relative to their past position (Bezruchka, 2009). By means of unemployment, individuals typically suffer the financial strain due to the reduction of income. As a result, unemployment unveils several risky behaviors among individuals, including poor health conditions (Linn et al., 1985). Mass employment is not only a social determinant of health, but also a challenge for public health (Hollederer, 2015). Nonetheless, the effect of unemployment on health may be associated partly with a reduction in income, whereby unemployment benefits offer protection against loss (Ronchetti & Terriau, 2019). Many economies do not provide such benefits to unemployed individuals. As a result, these economies are pertinently exposed to several social issues, including physical and mental health.

Prior studies have focused on the effect of unemployment on health and have informed academics as well as policymakers. It is important to continue to explore the overall trends in unemployment/health studies as well as the performance of publications and trending themes. Several similar studies were reviewed prior to this study. For example, Amenyah et al. (2022) employed a systematic literature review of 83 articles to identify common strategies applied by health-related interventions to lessen obesity and unemployment. Meanwhile, Habte et al. (2022) included 42 articles in their systemic and meta-analysis study to explore maternal employment status and the effect of post-natal care counseling in Ethiopia. Saul et al. (2022) explored the topics of alcohol-attributable mortality risk and employment status using a systematic literature review on only ten articles. Backhaus et al. (2022) employed a systematic literature review on 21 articles to explore the consequence of great recession on population health in another study.

Previous review studies have revealed several gaps, such as a limited or smaller number of articles, varieties of the topic, database selection, and method of reviews. Since the number of studies linked to the unemployment/health gradient increased significantly (Farré et al., 2018; Junna et al., 2022; Pohlan, 2019; Ronchetti & Terriau, 2019; Stauder, 2018), it is thus obvious to apply a broad technique to review the literature. Further, past review studies have failed to demonstrate a clear understanding of the effect of unemployment on health outcomes in different geographical locations. The bibliometric method could be appropriate to explore the research performance, trends, and focused locations in a particular domain due to its vast features and capability. As per authors' concern, a limited or no study has employed the bibliometric method in this particular unemployment/health research constituent.

The bibliometric method is an approach that is popular for its vastness of features inclusively for the search, exploration, and prophecy of the journal article (Martínez et al., 2015). It is a method rooted in a quantitative approach with the blend and node of many other disciplines, including philology, information science, mathematics, and statistics (He et al., 2017). Idiosyncratically, this method aids in exploring the research trends, performance, themes, and suggestions for future studies by exploring a large number of articles. As a result, this study aims to figure out the performance, themes, and focused geographical locations on the research gradient of unemployment and health.
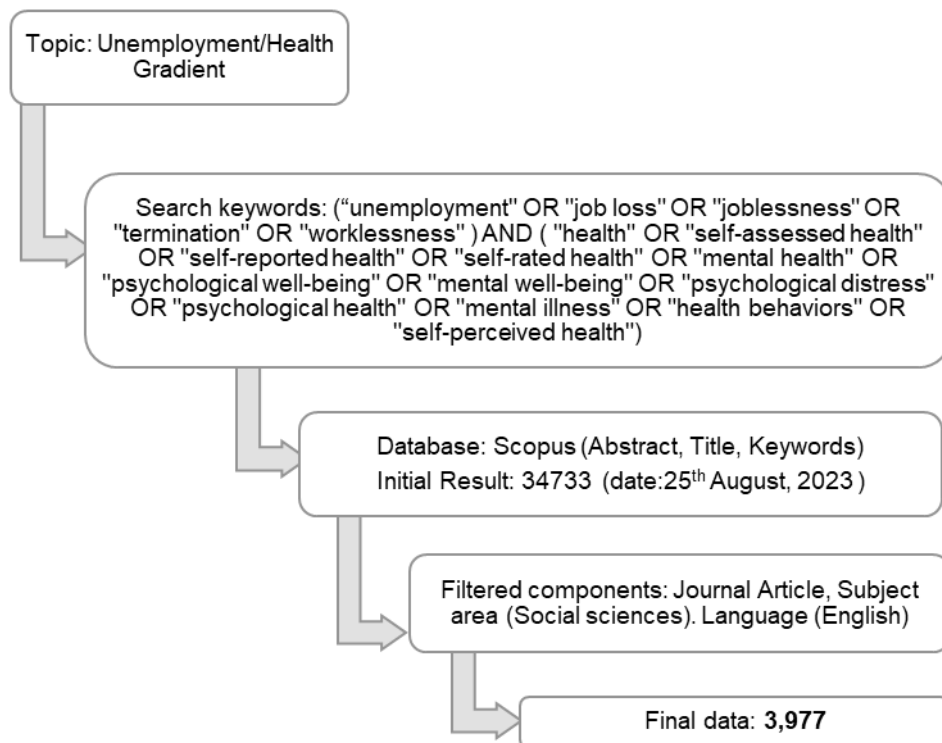
Methods

Data

The main purpose of this study was to map the effect of unemployment as well as other socioeconomic factors deteriorating individuals' health. This study complements the bibliometric approach with a text-mining analysis of the relevant journal articles available.

The data extraction process in this study included five phases, namely; design of the study, preliminary and final data collection, bibliometric application, network, and content analysis (Alam et al., 2021; Islam et al., 2022; Musilová et al., 2022). In the first phase, in order to receive an overall overview, all the articles on the impact of unemployment concurrently was tracked in high-quality journals entailed in the Scopus. Scopus includes more than 5.5 million academic papers, 370 book series, and around 36,000 peer-reviewed books from close to 11,000 publishers in the social, health, physical, and life sciences (Capobianco-Uriarte et al., 2019; Rusly et al., 2019). In addition, a greater number of scientific papers on the desired topic can be found in the Scopus database than in the Web of Science (Hernández-González et al., 2016). Therefore, this study used Scopus to scrutinize the scholarly articles relevant to unemployment and health studies. A crucial prerequisite for locating a relevant database of research articles is the assortment of

keywords (Musilová et al., 2022). According to the main purpose of this study, the similar keywords used by various scholars to demonstrate the unemployment as well as health were identified for Boolean search (Bartelink et al., 2020; Dooley et al., 1996; Heponiemi et al., 2007; Hollederer, 2015; Junna et al., 2022; Raftopoulou & Giannakopoulos, 2022; Thill et al., 2019) namely, "unemployment*", "job loss", "joblessness", "termination", "worklessness", and "health", "self-assessed health", "self-reported health", "self-rated health", "mental health", "psychological well-being", "mental well-being", "psychological distress", "psychological health", "mental illness", "health behaviors", and "self-perceived health."

Figure 1 Data extraction process

In the second phase, this study restricted the selection to social sciences and economics articles and reviews written in English. As most of the rapports applied as keywords may have a general meaning, the early set delimited a remarkably high illustration of articles entirely outside of the focus of the objective. Thus, the selection process was tightened by requiring the simultaneous presence of two of the above collocations linked to unemployment and health at the same time.

Finally, a total of 3,977 journal articles were obtained from the database. Figure 1 presents the data extraction process. The dataset formed in the third phase transformed into

the foundation for the descriptive analysis steered in the fourth phase. In this phase, a quantitative analysis was carried out on the bibliographic material (Broadus, 1987). Bibliometric analysis is predominantly used to deal with numerous highly organized materials (Aria & Cuccurullo, 2017). Table 1 displays the descriptive statistics of the understudy dataset. The table displays the results up to the year 2022 as well as to the present date of data extraction (until 23rd August 2023). The data shows a total of 3,724 journal articles were published from 1965 to 2022 whereas 1,175 sources were used to publish these articles. An annual growth of 10% on publications is unveiled in nearly 59 years of publications. The publications received a total of 91,146 citations by the date of data extraction whereby an article received an average of 23.67 citations. Henceforth, a total 943 articles were written by sole author while 10,289 articles were written by multiple authors. According to the analysis results, more than three authors collaborated to publish an article while more than 18% collaboration was incurred by cross-border authorships.

Table 1 Descriptive statistics of the dataset

Items	Description	Results (up to 2022)	Results (up to 2023*)
Period	Publication history	58	59*
Sources	Journals	1175	1234
Documents	Number of journal articles	3724	3977
Annual growth rate	Publication growth rate per annum	10.72%	10.01%
Total citations	Citations received by published articles	93934	94146
Citations/article	Average citations per article	25.22	23.67
Authors	Number of authors	10370	11232
Single authored articles	Articles written by single author	905	943
Multi-authored articles	Articles written collaboratively	9465	10289
Co-authors/article	Co-authors per article	3.13	3.18
International co-authorships	Collaboration of international authors	18.13%	18.38%

Note: * refers to incomplete year or period

In phase four, practical bibliometric and network analysis was carried out using 'biblioshiny' (Aria & Cuccurullo, 2017), a web-based interface of R-package (bibliometrix), and a visualization tool 'VOSViewer' (van Eck & Waltman, 2010) was used on the 3,977

journal articles. In the final phase, the dataset was filtered manually by reading abstracts as well as considering the total number of local citations for content analysis. A total of 50 journal articles were selected for content analysis to enlighten the findings from the bibliometric analysis. These 50 journal articles were selected based on their merit and potential influence on future studies. They were all recent publications that have received numerous citations.

Bibliometric Techniques

The bibliometric method manifests implicitly two types of analysis, namely, performance and science mapping (Alam et al., 2021; Donthu et al., 2021; Ramli et al., 2022). Performance analysis denotes the scientific production of a specific research domain, including key characteristics, articles, average citations, sources, and publication growth (Islam et al., 2022). This analysis enumerates the productivity of a scholarly area for a certain period (Lundberg, 2006). Further, it calculates the number of citations, average citations per year, and documents the impact and influence of a particular research area (Durieux & Gevenois, 2010). Meanwhile, science mapping presents a scientific field with two or three extents which is known as 'landscape of science' within scholarly publications. In this landscape, the constituents (co-occurrence mapping, collaboration mapping, co-citation mapping) appear on the map concerning the themes same as cities on a geographical map (Noyons, 2001). These constituents (themes) are positioned relative to each other in such a way that are instinctively connected to each other's area, and those not or hardly connected are disconnected from each other (Noyons, 2001). Thus, science mapping reconnoiters the connection between themes (Baker et al., 2021) and links the intellectual connections and structural networks within the research domain (Donthu et al., 2021). Citation analysis, co-occurrence, and clustering are predominantly utilized in science mapping (Alam et al., 2021).
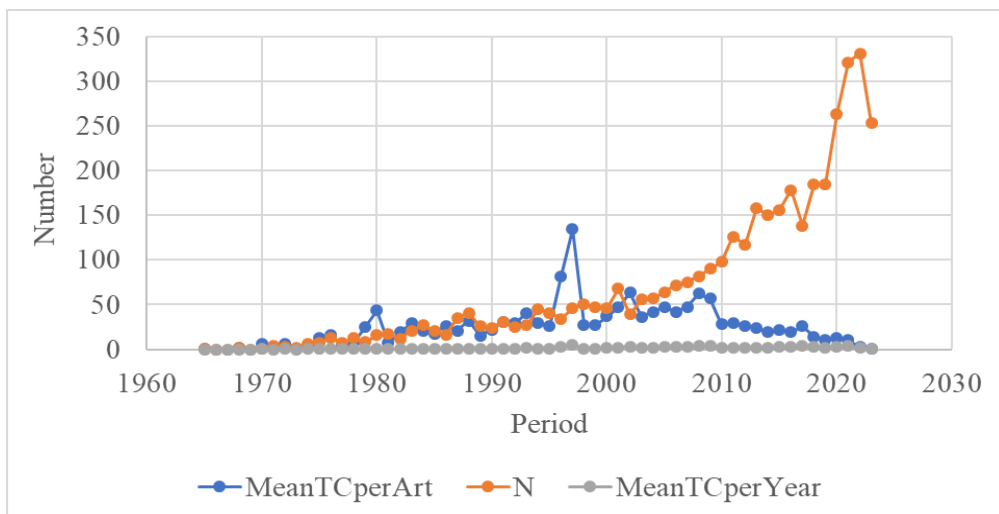
Clustering is a group of more than two substances alienated from a statistical background - unveils the linkages/connections between concepts and also visualizes foremost clusters (Musilová et al., 2022). This study aims to identify the scholarly performance (publication trend & citation), key themes, and the most focused geographical locations (focused) related to unemployment/health gradient. Therefore, this study adopts citation, co-occurrence, and clustering mapping to achieve its objectives.

Findings

Performance Analysis

Figure 2 presents the annual scientific performance of journal articles on unemployment and health published between 1965-2023. Gradual growth in publications indicates the interest of academics which demonstrates the essence of the subsequent topic

(Musilová et al., 2022). In the graph, steady growth is observed in the late 1970s. Hence, significant growth emerged from 2010 to 2022. However, the first publication was observed in 1965, which mainly discussed the impact of educational activities and public health funded by the government in mining areas (Young, 1965). According to the publication trends, it is evident that academic interest has increased. Meanwhile, along with publication growth, the impact measured through citation analysis mainly calculated the average citations per article demonstrating crucial growth between 1996 to 1997 and dropping afterward. Recently, citations performance has a low phase which might be due to the growing number of publications. On the other hand, average citations per year showed a straight-line growth which was below five citations. As a result, it could be elucidated that the trend in unemployment and health publications is showing considerable interest with current scholars with a moderate pace of citations.

Figure 2 Scientific performance of journal articles on unemployment and health

Citation Analysis

Citation analysis is one of the crucial techniques in science mapping, which demonstrates the intellectual contributions and impacts of the research scenarios by calculating the number of citations they have received from the date of publication (Appio et al., 2014; Musilová et al., 2022). This analysis demonstrates the influential scholarly documents that aid in improving and continuing further studies relevant to unemployment and health studies inclusively how it expanded its research areas and emerging themes (Ahmad Jaber & Mohammed Shah, 2023; Ramli et al., 2022). Tables 2 & 3 present the top global and local cited articles based on the number of citations received from their publication date. 'Global citation' refers to the total number of citations of an article in the database (e.g.,

Scopus), while 'local citation' presents the count of citations of an article within the dataset (Aria & Cuccurullo, 2017). Based on the global citation analysis, an article written by Prochaska and Velicer (1997) received the topmost citations and ranked the top influential article. This article explained that health behavior shifts comprise progress by six stages of transformation including precontemplation, action, preparation, maintenance, contemplation, and termination. The next most cited article was Ferrera (1996) who mainly discussed common traits of the welfare states of Spain, Italy, Portugal, and Greece. Furthermore, he identified some crucial traits, such as the income maintenance system of a highly fragmented and corporatist, presenting a marked internal polarization, the departure from corporatist traditions in the health care field and the establishment of national health services based on universalistic principles, a low degree of state penetration of the welfare sphere and a highly collusive mix between public and non-public actors and institutions, and the persistence of clientelism and the formation of fairly elaborated 'patronage machines' for the selective distribution of cash subsidies. In addition, he also demonstrated several problems those are linked with market globalization, mass employment, and rapid aging (Ferrera, 1996). Meanwhile, the second top article emphasized the factors associated with subjective well-being by reviewing the economic literature. The article unveiled that poor health, unemployment, separation, and lack of social contact are negatively linked to subjective well-being (Dolan et al., 2008).

Table 2 Top global cited articles

Title	Author (s)	Source	PY	TC	TC/Y
The Transtheoretical Model of Health Behavior Change	Prochaska & Velicer.	American Journal of Health Promotion	1997	4861	180.04
The 'Southern Model' of Welfare in Social Europe	Ferrera	Journal of European Social Policy	1996	1869	66.75
Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being	Dolan et al.	Journal of Economic Psychology	2008	1616	101.00
Unemployment impairs mental health: Meta-analyses	Paul & Moser	Journal of Vocational Behavior	2009	1444	96.27

Table 3 Top global cited articles (continued)

Title	Author (s)	Source	PY	TC	TC/Y
Vital Signs: Changes in Opioid Prescribing in the United States, 2006-2015	Guy Jr et al.	Morbidity and Mortality Weekly Report	2017	755	107.86
Self-Interest vs. Symbolic Politics in Policy Attitudes and Presidential Voting	Sears et al.	American Political Science Review	1980	557	12.66
The Test of Time: Predictors and Effects of Duration in Youth Mentoring Relationships	Grossman, Jean B. Rhodes, Jean E.	American Journal of Community Psychology	2002	430	19.55
Losing life and livelihood: A systematic review and meta-analysis of unemployment and all-cause mortality	Roelfs et al.	Social Science and Medicine	2011	365	28.08
Depression, self-esteem, and anger in emerging adulthood: Seven-year trajectories.	Galambos et al.	Developmental Psychology	2006	383	21.28
Adverse childhood experiences and life opportunities: Shifting the narrative	Metzler et al.	Children and Youth Services Review	2017	317	45.29

Note: PY=publication year, TC=Total citation, TC/Y=total citations per year

The topmost locally cited article, which also ranked third-most globally cited, was authored by Paul and Moser (2009) and emphasized the effect of unemployment on mental health. Their meta-analyses found that unemployment is both the cause and the reason for mental distress. The second-topmost locally cited article examined the effect of unemployment on the mortality rate in Germany. However, they stated that lower mortality rate is associated with higher employment rates hence not in all cases from Germany's context (Neumayer, 2004). Similarly, the third-topmost locally cited article authored by Gerdtham and Ruhm (2006) investigated the effect of macroeconomic situations and death in OECD countries. Their findings found similar evidence that total deaths and mortality rates are increased by lower unemployment.

Table 4 Top 10 local cited articles

Title	Author (s)	Source	PY	LC	GC	LC/GC
Unemployment impairs mental health: Meta-analyses	Paul & Moser	Journal of Vocational Behavior	2009	126	1444	8.73
Recessions lower (some) mortality rates: Evidence from Germany	Neumayer	Social Science and Medicine	2004	49	299	16.39
Deaths rise in good economic times: Evidence from the OECD	Gerdtham & Ruhm	Economics and Human Biology	2006	44	356	12.36
Why are the unemployed in worse health? The causal effect of unemployment on health	Schmitz	Labour Economics	2011	27	166	16.27
Unemployment and mental health: A critical review	Ezzy	Social Science and Medicine	1993	26	175	14.86
Booms, Busts, and Babies' Health	Dehejia & Lleras-Muney	The Quarterly Journal of Economics	2004	24	264	9.09
Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being	Dolan et al.	Journal of Economic Psychology	2008	24	1616	1.49
Losing life and livelihood: A systematic review and meta-analysis of unemployment and all-cause mortality	Roelfs et al.	Social Science and Medicine	2011	22	365	6.03

Table 5 Top 10 local cited articles (continued)

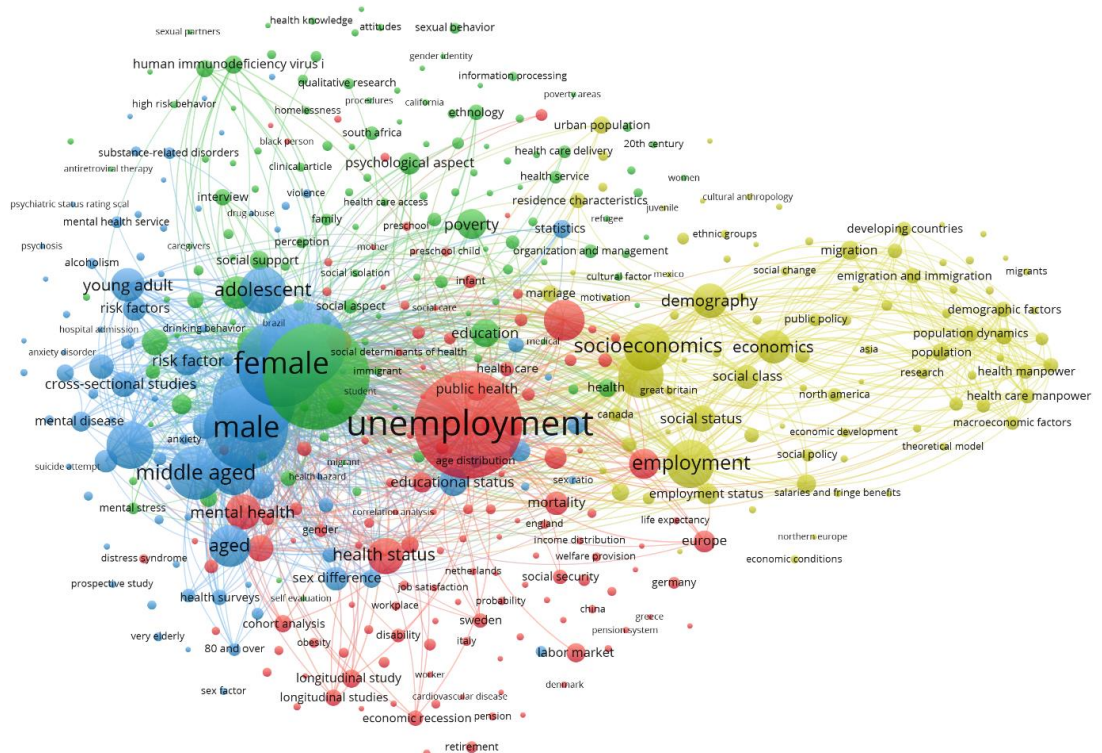| Title	Author (s)	Source	PY	LC	GC	LC/GC
Towards a Sociological Understanding of Mental Well-Being among the Unemployed: The Role of Economic and Psychosocial Factors	Nordenmark & Strandh	Sociology	1999	21	108	19.44
Business cycles and mortality: Results from Swedish microdata	Gerdtham & Johannesson	Social Science and Medicine	2005	21	109	19.27

Note: GC=Global citation, LC=Local citation, LC/GC=ratio of local citation and global citation

Co-occurrence Analysis

Co-occurrence mapping is related to content analysis. It involves the process of plotting the strength between keywords in word-based data (Callon et al., 1983). This mapping process helps to discover the content of the article and displays the themes with relevant keywords (Cobo & Herrera, 2011). Further, it shows the most relevant words used in the study as well as the thematic clusters formulated based on the keywords used in the article simultaneously. In order to unveil the various themes used in the unemployment and health gradient, this study employed co-occurrence analysis which is the most appropriate to detect trending themes. Figure 3 presents the co-occurrence analysis and Figure 4 shows a word cloud of the keywords. Based on the analyses, a total of four clusters were formed in the analysis with variables associated with each other. As a concern, 'unemployment' comes first with the highest number (1500 times) of appearances in the dataset linked with another concern, 'health' which appeared in different terms such as mental health, health status, and health survey in the first cluster (a total of 134 keywords). This cluster presented the main focused theme of this study with related variables such as mortality, labor market, and economic recession. More specifically, health outcome was investigated using mortality rates, labor market situations, and the effect of economic recession in this cluster (Reeves, Karanikolos, et al., 2014; Reeves, McKee, et al., 2014). Hence, this cluster mainly emphasized the United States and European countries.

In the second cluster, 127 keywords appeared concurrently in the articles. 'Human' mostly occurred (1400 times) with psychology, poverty, education, social support, HIV infections, and the human immunodeficiency virus. In this thematic cohort, social support, viruses such as coronavirus, and education are utilized in the context of poverty, job loss, and subjective well-being (Fan & Qian, 2023). These variables are associated with each

other and appeared concurrently in the priority journal articles that predominantly used survey and interview methods.
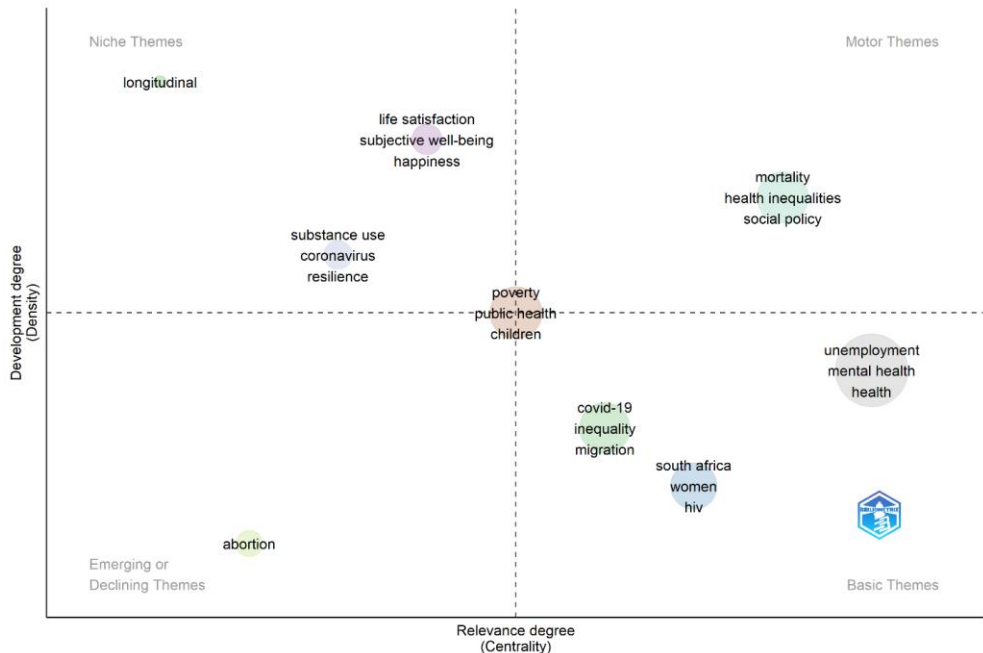

Figure 3 Co-occurrence of keywords,
Source: VOSViewer.

Note: Each variable appeared at least 20 times in the dataset

In the third cluster, 92 keywords were included, whereby females and males repeatedly and mostly concurrently appeared in the studies. This cluster seemingly considered the gender and age differences in order to evaluate the risk factors associated with health status. Idiosyncratically, prior studies have emphasized and examined how inequality and gender differences effect unemployment and the consequences (Lahelma et al., 1999; Strandh et al., 2013). In the final cluster, 91 variables appeared, and 'employment' appeared the most. This cluster mainly stressed employment, the relation and impact of socioeconomic and economic factors, demography, social status, population, and health manpower. In other words, how socioeconomic and economic factors, demography, social status, and health conditions affect employment has been investigated (Reeves, Karanikolos, et al., 2014; Reeves, McKee, et al., 2014). Based on the word cloud and co-occurrence analyses, the main four themes are segmented that explain the trending themes in unemployment and health gradients.
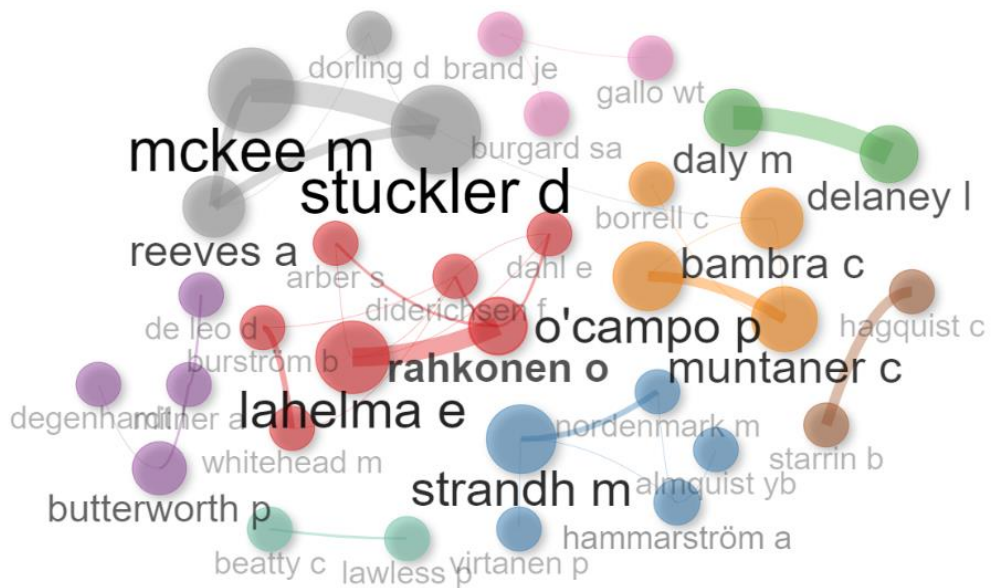
Figure 4 Word Cloud of most frequent keywords according to authors' keywords and keywords plus

Thematic Map

Thematic mapping presents the configuration of themes and how they appear and are demonstrated in the concurrent studies. Moreover, this analysis method shows the emergence of new themes, continuous themes, common theme that appear in most aspects, and niche themes that have started to gain attention among scholars. Figure 5 presents the thematic map of the study period. Based on the thematic mapping, unemployment, health, COVID-19, inequality, and migration have been used as basic concepts whereas abortion is displayed as an emerging theme. Abortion has been taken as an important factor in public health, especially in the workplace which causes health deterioration as well as job loss or self-unemployment. As continuous themes, social policy, health inequalities, and mortality are considered prospective and continuous themes in health and unemployment studies. However, life satisfaction, subjective well-being, happiness, coronavirus, and resilience are given less attention relevant to unemployment and health studies. Therefore, it can be concluded that poverty, public health, and children have been vital and central themes in the research on unemployment and health.

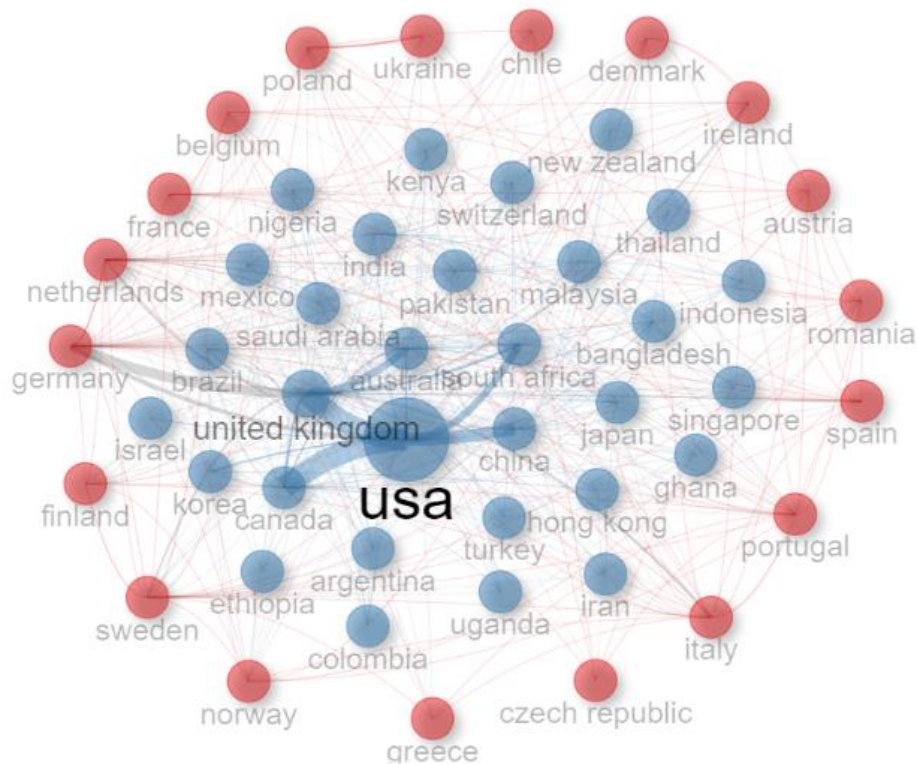**Figure 5** Thematic Map

Collaboration Network

Collaboration network is considered as a crucial technique under bibliometric analysis because it shows the cooperation between authors, institutions, and affiliated countries. In other words, it underpins the robust intellectual cooperation and knowledge structures in the domain. The results of this analysis help to picture the collaboration among scholars as well as their trending themes (Islam et al., 2022; Ramli et al., 2022). For instance, cooperation among authors for scientific publication benefits to identify the themes that emerged within a group of scholars and their influence in the domain. This study only presents authors' cooperation mapping and affiliated countries' network mapping. Figure 6 presents the authors' cooperation network in producing scholarly articles related to unemployment and health. Scholars such as Mckee, Stuckler, and Reeves built a network by collaborating on scholarly publications related to unemployment and health studies. This network measured the possibility of job loss during recessions among healthy and unhealthy employees. It found that government protection did not lessen the job loss risk (Reeves, Karanikolos, et al., 2014). Simultaneously, government health expenditure reductions did not significantly lessen the degree of economic recessions (Reeves, McKee, et al., 2014). So, this network pertinently examined the association of health policies relevant to government interventions and employment including economic growth in their research. Another network explores the inequalities among employees in the workplace while it is affected by

employment status, social class, and sociodemographic differences (Lahelma et al., 1999, 2000, 2002). In a similar context, Strandh et al. (2013b) analyzed the role of gender and its association with mental well-being and unemployment. They found that unemployment equally affected the mental health of men and women in Sweden while it negatively affected men compared to women in Ireland. Based on these networks, it is clear that different networks have explored and examined the effect of unemployment and health from different perspectives.

Figure 6 Co-authorship Networks

Figure 6 presents the collaboration network of the authors' affiliated countries. This network presents the depth of scholarly productions and the collaboration of authors in particular countries in relation to scientific investigation and exploration in unemployment and health studies. According to the analysis, the USA dominated scientific production as well as cooperation with Canada, the UK, China, and South Africa. This network also connected with some emerging and developing countries such as Malaysia, Thailand, Bangladesh, India, Indonesia, Kenya, Nigeria, Brazil, and Turkey. The other network shows that European countries collaborated within their continent while Chile as non-European country has been included in this cluster. According to these networks, it is clear that Middle Eastern countries, many African countries, and South American countries have not yet focused on unemployment and health research.

Figure 7 Collaboration network of authors' affiliated countries

Content Analysis

Content analysis enables researchers to analyze and quantify the existence, meanings, and relations of certain words, concepts, or themes (Columbia University, 2019). Content analysis was used in this study to determine the presence of certain words and identify themes. Table 4 displays the articles used in the content analysis. The articles were chosen based on their publication date and number of citations. The presence and relationships of the discovered themes and variables are justified by reviewing relevant and influential journal articles. The methodological, focused countries, and theoretical background are presented in Table 6. Extensive study exertions relevant to the consequences of unemployment/health gradient are pigeonholed by a significant number of review papers from the last century up to the current one (Dolan et al., 2008; Ezzy, 1993; Ferrera, 1996; Paul & Moser, 2009; Roelfs et al., 2011; Warr et al., 1988). All of these reviews are mostly descriptive in their approach. They have explained unemployment as a stressful and critical event that may favor various hostile responses, such as poor physical or mental health.

Table 4 Reviewed articles for content analysis

Study	Country	Method/Theory	Type
Warr and Jackson (1987)	Sweden, Ireland	Multiple regression	Longitudinal Survey
Kessler et al. (1988)	USA	Regression	Empirical
Warr et al. (1988)	Spain		Review
Graetz (1993)	Australia	Multiple classification analysis	Longitudinal survey
Ferrera (1996)	Spain, Italy, Portugal, and Greece	Discussion	Review
Nordenmark and Strandh (1999)	German	Systematic and meta-analysis	Review
Korpi (2001)	Sweden	OLS/Cox model	Longitudinal
Neumayer (2004)	Sweden	Regression	Empirical
Gerdtham and Johannesson (2005)		OLS/Functionalist approach	Empirical
Gerdtham and Ruhm (2006)	Sweden	Regression	Empirical
Dolan et al. (2008)	Germany	Discussion	Review
Paul and Moser (2009)	OECD	Meta-analysis	Review
Roelfs et al. (2011)	UK	Systematic and meta-analysis	Review
Schmitz (2011)	UK	Fixed effects	Empirical
Jefferis et al. (2011)	six European countries and Chile	Regression	Empirical
Garcy and Vågerö (2012)	Sweden	Proportional hazard regression/Cox model	Empirical
Strandh et al. (2013)	Australia	OLS/Employment model	Cross-border, Longitudinal
Daly and Delaney (2013)	UK	Hierarchical multiple linear regression	Longitudinal
Hollederer (2015)		Meta-analysis	Review
Drydakis (2015)	Greece	Fixed effects	Longitudinal

Table 4 Reviewed articles for content analysis (continued)

Study	Country	Method/Theory	Type
Urbanos-Garrido and Lopez-Valcarcel (2015)	Germany	Regression	Empirical
Milner et al. (2016)	Australia	Fixed effects	Longitudinal
Buffel et al. (2017)	Europe	Multiple regression/Social norm theory	Empirical
Bubonya et al. (2017)	Australia	Fixed effects	Empirical
Stauder (2018)	Germany	Fixed effects/Causation hypothesis	Empirical
Farré et al. (2018)	Spain	Fixed effects	Empirical
Voßemer et al. (2018)	European countries	Linear regression/basic micro-macro model	Empirical
Thompson et al. (2019)		Systematic literature	Review
Ronchetti and Terriau (2019)	France	DID	Longitudinal
Mousteri et al. (2020)	UK	Regression	Longitudinal
Wang and Fattore (2020)	Italy	Linear and dynamic regression	Empirical
Bartelink et al. (2020)		Systematic literature	Review
Amenyah et al. (2022)		Systematic literature	Review
Backhaus et al. (2022)		Systematic literature	Review
Andersen et al. (2022)	Denmark	Regression	Empirical
Jacques Wels et al. (2022)	UK	Poisson regression	Longitudinal
Raftopoulou and Giannakopoulos (2022)	Greece	Fixed effect	Longitudinal
Junna et al. (2022)	Finland	Fixed effects	Longitudinal

The causality hypothesis have demonstrated robust evidence from a number of longitudinal studies that investigated the fluctuations from employed to unemployed or vice versa (Daly & Delaney, 2013; Drydakis, 2015; Graetz, 1993; Korpi, 2001; Milner et al., 2016; Raftopoulou & Giannakopoulos, 2022; Strandh et al., 2013; Warr & Jackson, 1987). Both historically and recently, empirical shreds of evidence have unveiled that unemployment causes both poor physical and mental health (Buffel et al., 2017; Farré et al., 2018; Garcy & Vågerö, 2012; Gerdtham & Johannesson, 2005; Jefferis et al., 2011; Kessler et al., 1988;

Neumayer, 2004; Nordenmark & Strandh, 1999; Paul & Moser, 2009; Pohlan, 2019; Raftopoulou & Giannakopoulos, 2022; Ronchetti & Terriau, 2019; Stauder, 2018; Urbanos-Garrido & Lopez-Valcarcel, 2015; Voßemer et al., 2018; Wang & Fattore, 2020). Unemployment has been shown to cause negative health outcomes in developed countries (Farré et al., 2018; Raftopoulou & Giannakopoulos, 2022; Thern et al., 2017; Virtanen et al., 2016). However, scarce evidence or studies were found related to unemployment and health conditions in developing countries.

Unemployment prejudices human health, and several moderating factors have appeared in the literature. Differential unemployment studies have considered inequality in the distribution of health and psychosocial risks along with other risks among the unemployed (Hollederer, 2015). More recent studies have articulated several interacting factors to measure the unemployment effect on health outcomes. For instance, socioeconomic factors like age, income, family size, education, gender, marital status, migratory status, community, and partner status were found to be significant moderating factors in the unemployment/health studies (such as Daly & Delaney, 2013; Graetz, 1993; Jefferis et al., 2011; Korpi, 2001). However, these factors did not report a significant interaction between unemployment and mental health in the study conducted by Paul and Moser (2009). Nevertheless, the proportion of males, labor market policies, psychosocial needs, social participation, social status, self-efficacy (Pohlan, 2019; Voßemer et al., 2018; Wang & Fattore, 2020), and availability of social support (Voßemer et al., 2018; Warr & Jackson, 1987) were found to be the significant moderating factors in unemployment/health gradient studies. However, an earlier study demonstrated the lesser effect of unemployment on mental health for proactive people (Fryer & Payne, 1984).

Recent studies have mostly emphasized the effect of recessions, including the recent one caused by COVID-19, on negative health outcomes due to financial strain related to job loss or unemployment. Studies like Thompson et al. (2019) have stated that robust analyses is more likely to report a negative impact of the recession on health. Similar findings were demonstrated by a review study conducted by Backhaus et al. (2022) that recession (economic crisis) greatly leads to health risks. Henceforth, Andersen et al. (2022) showed a significant spillover effect on health due to cut-off spending due to less income during COVID-19. Similarly, Jacques Wels et al. (2022), and Rahman et al. (2022) depicted the negative effect of unemployment caused by COVID-19 on mental health outcomes.

Past studies have showed a variety of empirical and systematic review to explore the effect of unemployment on health outcomes (Anriddine, 2023; Chowdhury & Mohd Salleh, 2017; Fan & Qian, 2023; Strandh et al., 2013; Thern et al., 2017). Among several theories, the functionalist approach (Nordenmark & Strandh, 1999), the employment model (Strandh et al., 2013), the Cox model (Korpi, 2001), social norm theory (Buffel et al., 2017),

and social exclusion (Pohlan, 2019) have been applied in unemployment/health gradient studies. Meanwhile, regression analyses, including fixed effect, multiple linear regression, Cox proportional hazard regression, ordinal linear regression, and the IPW-DID approach, were employed in empirical studies, while systematic reviews and meta-analyses were adopted in qualitative studies.

Conclusion

The main objective of this review was to explore the research performance and trends in journal articles linked to unemployment/health constituent. A bibliometric analysis was utilized to achieve this objective with respect to evaluating the performance of published documents, research themes, countries with the most scientific production. The study also reviewed the most cited and recent journal articles. The findings unveil a substantial growth in scientific production between (1970-2022) while the first publication was indexed in 1916. The curve in scientific production continued to grow which demonstrates the robust interest of academics in this particular topic. The trends in the topic were accumulated into four distinct themes, namely, unemployment and health outcomes (both physical and mental health), unemployment and human psychology, unemployment and gender differences, and unemployment effects based on socioeconomic and economic settings. Publications from the USA were the most prominent, followed by the UK.

Limitations

This study unveiled several limitations; firstly, the keyword selection and subjective choice for the content analysis limited the credibility of the results due to their potential bias, although the study chose the keywords from previous studies and conducted content analysis independently. Secondly, the quantification of individual themes, topics, and frameworks was performed, however, a robust analysis of individual relationships can be performed in the future study. Thirdly, this study only selected a single database which limited the credibility of the findings. Future studies may consider the Web of Science as well as Pubmed to find a more robust literature on health and medicine. Further, this study only employed two bibliometric tools namely biblioshiny and VOSViewer. Future studies may consider other bibliometric tools.

Suggestions for future studies

Based on the findings from both the bibliometric analysis and literature reviews of influential articles, it can be agreed that the unemployment/health research constituent has achieved substantial findings by acknowledging an enormous focus on various perspectives, settings, and variables. However, past studies always underpin further studies. Similarly, a few suggestions are articulated based on the findings of this research. Firstly, vast research

has focused on developed countries, mainly in Europe and North America while less attention has been given to developing countries. Therefore, further studies can be taken into account by including developing countries, and especially those where social support stimuli are unavailable. Further, emerging countries that are yet to provide social support schemes for the unemployed can be included in future studies. Cross-sectional studies also can be included in further studies. Secondly, self-employed as well as contractual employees can be included in further studies. Thirdly, since past studies have mostly employed a quantitative approach, further studies can consider qualitative studies to gather insights from those who are unemployed. Finally, future researchers may consider the difference-in-difference approach on those unemployed from administrative and factory works and executive and non-executive levels.

References

Ahmad Jaber, T., & Mohammed Shah, S. (2023). Enterprise risk management literature: emerging themes and future directions. *Journal of Accounting & Organizational Change*. https://doi.org/10.1108/JAOC-07-2022-0106

Alam, S. M. S., Chowdhury, M. A. M., & Razak, D. B. A. (2021). Research evolution in banking performance: a bibliometric analysis. *Futur Bus J*, *7*(66), 1–19. https://doi.org/10.1186/s43093-021-00111-7

Amenyah, S. D., Waters, D., Tang, W., Fenge, L.-A., & Murphy, J. L. (2022). Systematic realist synthesis of health-related and lifestyle interventions designed to decrease overweight, obesity and unemployment in adults. *BMC Public Health*, *22*(1), 2100. https://doi.org/10.1186/s12889-022-14518-6

Andersen, A. L., Hansen, E. T., Johannesen, N., & Sheridan, A. (2022). Consumer responses to the COVID-19 crisis: evidence from bank account transaction data*. *The Scandinavian Journal of Economics*, *124*(4), 905–929. https://doi.org/10.1111/sjoe.12512

Anriddine, Y. (2023). Employment Crisis in Comoros and Importance of Training: Analysis and Prospects. *American Journal of Arts and Human Science*, *2*(2), 24–32. https://doi.org/10.54536/ajahs.v2i2.1401

Appio, F. P., Cesaroni, F., & Di Minin, A. (2014). Visualizing the structure and bridges of the intellectual property management and strategy literature: a document co-citation analysis. *Scientometrics*, *101*(1), 623–661. https://doi.org/10.1007/s11192-014-1329-0

Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, *11*(4), 959–975. https://doi.org/10.1016/j.joi.2017.08.007

Backhaus, I., Hoven, H., Di Tecco, C., Iavicoli, S., Conte, A., & Dragano, N. (2022). Economic change and population health: lessons learnt from an umbrella review on the

Great Recession. *BMJ Open*, *12*(4), e060710. https://doi.org/10.1136/bmjopen-2021-060710

Baker, H. K., Kumar, S., & Pandey, N. (2021). Forty years of the Journal of Futures Markets : A bibliometric overview. *Journal of Futures Markets*, *41*(7), 1027–1054. https://doi.org/10.1002/fut.22211

Bartelink, V. H. M., Zay Ya, K., Guldbrandsson, K., & Bremberg, S. (2020). Unemployment among young people and mental health: A systematic review. *Scandinavian Journal of Public Health*, *48*(5), 544–558. https://doi.org/10.1177/1403494819852847

Bezruchka, S. (2009). The effect of economic recession on population health. *Canadian Medical Association Journal*, *181*(5), 281–285. https://doi.org/10.1503/cmaj.090553

Broadus, R. N. (1987). Toward a definition of "bibliometrics." *Scientometrics*, *12*(5–6), 373–379. https://doi.org/10.1007/BF02016680

Bubonya, M., Cobb-Clark, D. A., & Wooden, M. (2017). Job loss and the mental health of spouses and adolescent children. *IZA Journal of Labor Economics*, *6*(1), 1–27. https://doi.org/10.1186/s40172-017-0056-1

Buffel, V., Missinne, S., & Bracke, P. (2017). The social norm of unemployment in relation to mental health and medical care use: the role of regional unemployment levels and of displaced workers. *Work, Employment and Society*, *31*(3), 501–521. https://doi.org/10.1177/0950017016631442

Callon, M., Courtial, J.-P., Turner, W. A., & Bauin, S. (1983). From translations to problematic networks: An introduction to co-word analysis. *Social Science Information*, *22*(2), 191–235. https://doi.org/10.1177/053901883022002003

Capobianco-Uriarte, M. de las M., Casado-Belmonte, M. del P., Marín-Carrillo, G. M., & Terán-Yépez, E. (2019). A bibliometric analysis of international competitiveness (1983-2017). *Sustainability (Switzerland)*, *11*(7). https://doi.org/10.3390/su11071877

Chowdhury, M. A. M., & Mohd Salleh, M. C. (2017). The Impact of Micro Credit on Financial Condition and Socio-Economic of Women Entrepreneurs in Bangladesh. *International Journal of Accounting, Finance and Business*, *2*(6), 38–49.

Cobo, M. J., & Herrera, F. (2011). An approach for detecting , quantifying , and visualizing the evolution of a research field : A practical application to the Fuzzy Sets Theory field. *Journal of Informetrics*, *5*(1), 146–166. https://doi.org/10.1016/j.joi.2010.10.002

Columbia University. (2019). *Content Analysis*. Mailman School of Public Health. https://www.publichealth.columbia.edu/research/population-health-methods/content-analysis

Daly, M., & Delaney, L. (2013). The scarring effect of unemployment throughout adulthood on psychological distress at age 50: Estimates controlling for early adulthood distress and childhood psychological factors. *Social Science and Medicine*, *80*, 19–23.

https://doi.org/10.1016/j.socscimed.2012.12.008

Deaton, A. (2015). *The Great Escape: Health, Wealth, and the Origins of Inequality*. Princeton University Press.

Dolan, P., Peasgood, T., & White, M. (2008). Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology*, *29*(1), 94–122. https://doi.org/10.1016/j.joep.2007.09.001

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, *133*(May), 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070

Dooley, D., Fielding, J., & Levi, L. (1996). Health and Unemployment. *Annual Review of Public Health*, *17*(1), 449–465. https://doi.org/10.1146/annurev.pu.17.050196.002313

Drydakis, N. (2015). The effect of unemployment on self-reported health and mental health in Greece from 2008 to 2013: A longitudinal study before and during the financial crisis. *Social Science and Medicine, 128*, 43–51. https://doi.org/10.1016/j.socscimed.2014.12.025

Durieux, V., & Gevenois, P. A. (2010). Bibliometric idicators: Quality masurements of sientific publication. *Radiology*, *255*(2), 342–351. https://doi.org/10.1148/radiol.09090626

Ezzy, D. (1993). Unemployment and mental health: A critical review. *Social Science and Medicine*, *37*(1), 41–52. https://doi.org/10.1016/0277-9536(93)90316-V

Fan, W., & Qian, Y. (2023). State Contexts, Job Insecurity, and Subjective Well-being in the Time of COVID-19. *Journal of Happiness Studies*, *24*(6), 2039–2059. https://doi.org/10.1007/s10902-023-00669-9

Farré, L., Fasani, F., & Mueller, H. (2018). Feeling useless: the effect of unemployment on mental health in the Great Recession. *IZA Journal of Labor Economics*, *7*(1). https://doi.org/10.1186/s40172-018-0068-5

Ferrera, M. (1996). The "Southern Model" of Welfare in Social Europe. *Journal of European Social Policy*, *6*(1), 17–37. https://doi.org/10.1177/095892879600600102

Fryer, D., & Payne, R. (1984). Proactive behaviour in unemployment: findings and implications. *Leisure Studies*, *3*(3), 273–295. https://doi.org/10.1080/02614368400390231

Garcy, A. M., & Vågerö, D. (2012). The length of unemployment predicts mortality, differently in men and women, and by cause of death: A six year mortality follow-up of the Swedish 1992-1996 recession. *Social Science and Medicine*, *74*(12), 1911–1920. https://doi.org/10.1016/j.socscimed.2012.01.034

Gerdtham, U. G., & Johannesson, M. (2005). Business cycles and mortality: Results from Swedish microdata. *Social Science and Medicine*, *60*(1), 205–218. https://doi.org/10.1016/j.socscimed.2004.05.004

Gerdtham, U. G., & Ruhm, C. J. (2006). Deaths rise in good economic times: Evidence from the OECD. *Economics and Human Biology*, *4*(3), 298–316. https://doi.org/10.1016/j.ehb.2006.04.001

Graetz, B. (1993). Health consequences of employment and unemployment: Longitudinal evidence for young men and women. *Social Science and Medicine*, *36*(6), 715–724. https://doi.org/10.1016/0277-9536(93)90032-Y

Habte, M. H., Seid, S. J., Alemu, A., Hailemariam, H. A., Wudneh, B. A., Kasa, R. N., & Bitew, Z. W. (2022). The effect of unemployment and post-natal care on the exclusive breast-feeding practice of women in Ethiopia: a systematic review and meta-analysis. *Reproductive Health*, *19*(1), 94. https://doi.org/10.1186/s12978-022-01404-y

He, X., Wu, Y., Yu, D., & Merigó, J. M. (2017). Exploring the Ordered Weighted Averaging Operator Knowledge Domain: A Bibliometric Analysis. *International Journal of Intelligent Systems*, *32*(11), 1151–1166. https://doi.org/10.1002/int.21894

Heponiemi, T., Elovainio, M., Manderbacka, K., Aalto, A. M., Kivimäki, M., & Keskimäki, I. (2007). Relationship between unemployment and health among health care professionals: Health selection or health effect? *Journal of Psychosomatic Research*, *63*(4), 425–431. https://doi.org/10.1016/j.jpsychores.2007.04.005

Hernández-González, V., Sans-Rosell, N., Jové-Deltell, M., & Reverter-Masia, J. (2016). Comparison between Web of Science and Scopus, Bibliometric Study of the Journals of Anatomy and Morphology. *International Journal of Morphology*, *34*(4), 1369–1377.

Hollederer, A. (2015). Unemployment, health and moderating factors: the need for targeted health promotion. *Journal of Public Health*, *23*(6), 319–325. https://doi.org/10.1007/s10389-015-0685-4

Islam, M. M., Chowdhury, M. A. M., Begum, R. A., & Amir, A. A. (2022). A bibliometric analysis on the research trends of climate change effects on economic vulnerability. *Environmental Science and Pollution Research*, *29*(39), 59300–59315. https://doi.org/10.1007/s11356-022-20028-0

Jacques Wels, Booth, C., Wielgoszewska, B., Green, M. J., Di Gessa, G., Huggins, C. F., Griffith, G. J., Kwong, A. S. F., Bowyer, R. C. E., Maddock, J., Patalay, P., Silverwood, R. J., Fitzsimons, E., Shaw, R., Thompson, E. J., Steptoe, A., Hughes, A., Chaturvedi, N., Steves, C. J., … Ploubidis, G. B. (2022). Mental and social wellbeing and the UK coronavirus job retention scheme: Evidence from nine longitudinal studies. *Social Science & Medicine*, *308*, 115226. https://doi.org/10.1016/j.socscimed.2022.115226

Jefferis, B. J., Nazareth, I., Marston, L., Moreno-Kustner, B., Bellón, J. ángel, Svab, I., Rotar, D., Geerlings, M. I., Xavier, M., Goncalves-Pereira, M., Vicente, B., Saldivia, S., Aluoja, A., Kalda, R., & King, M. (2011). Associations between unemployment and major depressive disorder: Evidence from an international, prospective study (the predict

cohort). *Social Science and Medicine*, *73*(11), 1627–1634. https://doi.org/10.1016/j.socscimed.2011.09.029

Junna, L., Moustgaard, H., & Martikainen, P. (2022). Current Unemployment, Unemployment History, and Mental Health: A Fixed-Effects Model Approach. *American Journal of Epidemiology*, *191*(8), 1459–1469. https://doi.org/10.1093/aje/kwac077

Kessler, R. C., Turner, J. B., & House, J. S. (1988). Effects of Unemployment on Health in a Community Survey: Main, Modifying, and Mediating Effects. *Journal of Social Issues*, *44*(4), 69–85. https://doi.org/10.1111/j.1540-4560.1988.tb02092.x

Kianfar, N., Mesgari, M. S., Mollalo, A., & Kaveh, M. (2022). Spatio-temporal modeling of COVID-19 prevalence and mortality using artificial neural network algorithms. *Spatial and Spatio-Temporal Epidemiology*, *40*, 100471. https://doi.org/10.1016/j.sste.2021.100471

Korpi, T. (2001). Accumulating disadvantage: Longitudinal analyses of unemployment and physical health in representative samples of the Swedish population. *European Sociological Review*, *17*(3), 255–273. https://doi.org/10.1093/esr/17.3.255

Lahelma, E., Arber, S., Rahkonen, O., & Silventoinen, K. (2000). Widening or narrowing inequalities in health? Comparing Britain and Finland from the 1980s to the 1990s. *Sociology of Health & Illness*, *22*(1), 110–136. https://doi.org/10.1111/1467-9566.00194

Lahelma, E., Kivelä, K., Roos, E., Tuominen, T., Dahl, E., Diderichsen, F., Elstad, J. I., Lissau, I., Lundberg, O., Rahkonen, O., Rasmussen, N. K., & Yngwe, M. Å. (2002). Analysing changes of health inequalities in the Nordic welfare states. *Social Science & Medicine*, *55*(4), 609–625. https://doi.org/10.1016/S0277-9536(01)00191-5

Lahelma, E., Martikainen, P., Rahkonen, O., & Silventoinen, K. (1999). Gender differences in illhealth in Finland: patterns, magnitude and change. *Social Science & Medicine*, *48*(1), 7–19. https://doi.org/10.1016/S0277-9536(98)00285-8

Linn, M. W., Sandifer, R., & Stein, S. (1985). Effects of unemployment on mental and physical health. *American Journal of Public Health*, *75*(5), 502–506. https://doi.org/10.2105/AJPH.75.5.502

Lundberg, J. (2006). *Bibliometrics as a research as- sessment tool: impact beyond the impact factor*. Karolinska Institutet, Stockholm, Sweden.

Mackenbach, J. P. (2012). The persistence of health inequalities in modern welfare states: The explanation of a paradox. *Social Science & Medicine*, *75*(4), 761–769. https://doi.org/10.1016/j.socscimed.2012.02.031

Martínez, M. A., Cobo, M. J., Herrera, M., & Herrera-Viedma, E. (2015). Analyzing the Scientific Evolution of Social Work Using Science Mapping. *Research on Social Work Practice*, *25*(2), 257–277. https://doi.org/10.1177/1049731514522101

Milner, A., Krnjacki, L., Butterworth, P., & LaMontagne, A. D. (2016). The role of social

support in protecting mental health when employed and unemployed: A longitudinal fixed-effects analysis using 12 annual waves of the HILDA cohort. *Social Science and Medicine*, *153*, 20–26. https://doi.org/10.1016/j.socscimed.2016.01.050

Mousteri, V., Daly, M., & Delaney, L. (2020). Underemployment and psychological distress: Propensity score and fixed effects estimates from two large UK samples. *Social Science and Medicine*, *244*(April 2019), 112641. https://doi.org/10.1016/j.socscimed.2019.112641

Musilová, I., Dvořák, J., Jánský, J., & Bolek, V. (2022). Trends in Performance Research in Relation to Business Strategy, Bibliometric Analysis and Text Mining. *Central European Business Review*, *12*(3), 1–31. https://doi.org/10.18267/j.cebr.323

Neumayer, E. (2004). Recessions lower (some) mortality rates: Evidence from Germany. *Social Science and Medicine*, *58*(6), 1037–1047. https://doi.org/10.1016/S0277-9536(03)00276-4

Nordenmark, M., & Strandh, M. (1999). Towards a Sociological Understanding of Mental Well-Being among the Unemployed: The Role of Economic and Psychosocial Factors. *Sociology*, *33*(3), 577–597. https://doi.org/10.1177/S003803859900036X

Noyons, E. (2001). Bibliometric mapping of science in a policy context. *Scientometrics*, *50*(1), 83–98.

Paul, K. I., & Moser, K. (2009). Unemployment impairs mental health: Meta-analyses. *Journal of Vocational Behavior*, *74*(3), 264–282. https://doi.org/10.1016/j.jvb.2009.01.001

Pohlan, L. (2019). Unemployment and social exclusion. *Journal of Economic Behavior and Organization*, *164*, 273–299. https://doi.org/10.1016/j.jebo.2019.06.006

Prochaska, J. O., & Velicer, W. F. (1997). The Transtheoretical Model of Health Behavior Change. *American Journal of Health Promotion*, *12*(1), 38–48. https://doi.org/10.4278/0890-1171-12.1.38

Raftopoulou, A., & Giannakopoulos, N. (2022). Unemployment and health: a panel event study. *Applied Economics Letters*, 1–4. https://doi.org/10.1080/13504851.2022.2044993

Rahman, Z. S. A., Kabir, S. M. H., & Rahamad, M. S. Bin. (2022). Socio-economic Impact of Covid-19 on Marginalized Youth in Malaysia. *American Journal of Economics and Business Innovation*, *1*(1), 39–45. https://doi.org/10.54536/ajebi.v1i1.165

Ramli, E., Zainudin, D., & Islam, R. (2022). Explore the Research Trends of Green Supply Chain in the Manufacturing Industry: A Bibliometric Analysis. *Operations and Supply Chain Management: An International Journal*, *15*(3), 345–358. https://doi.org/10.31387/oscm0500351

Reeves, A., Karanikolos, M., Mackenbach, J., McKee, M., & Stuckler, D. (2014). Do employment protection policies reduce the relative disadvantage in the labour market experienced by unhealthy people? A natural experiment created by the Great Recession in Europe. *Social Science & Medicine*, *121*, 98–108. https://doi.org/10.1016/

j.socscimed.2014.09.034

Reeves, A., McKee, M., Basu, S., & Stuckler, D. (2014). The political economy of austerity and healthcare: Cross-national analysis of expenditure changes in 27 European nations 1995–2011. *Health Policy*, *115*(1), 1–8. https://doi.org/10.1016/j.healthpol. 2013.11.008

Roelfs, D. J., Shor, E., Davidson, K. W., & Schwartz, J. E. (2011). Losing life and livelihood: A systematic review and meta-analysis of unemployment and all-cause mortality. *Social Science and Medicine*, *72*(6), 840–854. https://doi.org/10.1016/j.socscimed. 2011.01.005

Ronchetti, J., & Terriau, A. (2019). Impact of unemployment on self-perceived health. *The European Journal of Health Economics*, *20*(6), 879–889. https://doi.org/10.1007/s 10198-019-01050-5

Rusly, F. H., Ahmi, A., Talib, Y. Y. A., & Rosli, K. (2019). Global perspective on payroll system patent and research: A bibliometric performance. *International Journal of Recent Technology and Engineering*, *8*(2 Special Issue 2), 148–157. https://doi.org/10.35940/ijrte.B1028.0782S219

Saul, C., Lange, S., & Probst, C. (2022). Employment Status and Alcohol-Attributable Mortality Risk—A Systematic Review and Meta-Analysis. *International Journal of Environmental Research and Public Health*, *19*(12), 7354. https://doi.org/10.3390/ ijerph19127354

Schmitz, H. (2011). Why are the unemployed in worse health? The causal effect of unemployment on health. *Labour Economics*, *18*(1), 71–78. https://doi.org/10.1016/ j.labeco.2010.08.005

Stauder, J. (2018). Unemployment, unemployment duration, and health: selection or causation? *The European Journal of Health Economics*, *0*(0), 0. https://doi.org/10. 1007/s10198-018-0982-2

Strandh, M., Hammarström, A., Nilsson, K., Nordenmark, M., & Russel, H. (2013). Unemployment, gender and mental health: the role of the gender regime. *Sociology of Health & Illness*, *35*(5), 649–665. https://doi.org/10.1111/j.1467-9566.2012.01517.x

Thern, E., de Munter, J., Hemmingsson, T., & Rasmussen, F. (2017). Long-term effects of youth unemployment on mental health: does an economic crisis make a difference? *Journal of Epidemiology and Community Health*, *71*(4), 344–349. https://doi.org/10.1136/jech-2016-208012

Thill, S., Houssemand, C., & Pignault, A. (2019). Unemployment Normalization: Its Effect on Mental Health During Various Stages of Unemployment. *Psychological Reports*, *122*(5), 1600–1617. https://doi.org/10.1177/0033294118794410

Thompson, K., Ophem, J. van, & Wagemakers, A. (2019). Studying the impact of the

Eurozone's Great Recession on health: Methodological choices and challenges. *Economics & Human Biology*, *35*, 162–184. https://doi.org/10.1016/j.ehb.2019.06.004

Urbanos-Garrido, R. M., & Lopez-Valcarcel, B. G. (2015). The influence of the economic crisis on the association between unemployment and health: an empirical analysis for Spain. *European Journal of Health Economics*, *16*(2), 175–184. https://doi.org/10.1007/s10198-014-0563-y

van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, *84*(2), 523–538. https://doi.org/10.1007/s11192-009-0146-3

Virtanen, P., Hammarström, A., & Janlert, U. (2016). Children of boom and recession and the scars to the mental health – a comparative study on the long term effects of youth unemployment. *International Journal for Equity in Health*, *15*(1), 14. https://doi.org/10.1186/s12939-016-0305-0

Voßemer, J., Gebel, M., Täht, K., Unt, M., Högberg, B., & Strandh, M. (2018). The Effects of Unemployment and Insecure Jobs on Well-Being and Health: The Moderating Role of Labor Market Policies. *Social Indicators Research*, *138*(3), 1229–1257. https://doi.org/10.1007/s11205-017-1697-y

Wang, Y., & Fattore, G. (2020). The impact of the great economic crisis on mental health care in Italy. *European Journal of Health Economics*, *21*(8), 1259–1272. https://doi.org/10.1007/s10198-020-01204-w

Warr, P., & Jackson, P. (1987). Adapting to the unemployed role: A longitudinal investigation. *Social Science and Medicine*, *25*(11), 1219–1224. https://doi.org/10.1016/0277-9536(87)90369-8

Warr, P., Jackson, P., & Banks, M. (1988). Unemployment and Mental Health: Some British Studies. *Journal of Social Issues*, *44*(4), 47–68. https://doi.org/10.1111/j.1540-4560.1988.tb02091.x

Wilkinson, R. G. (1997). Socioeconomic determinants of health: Health inequalities: relative or absolute material standards? *Br. Med. J.*, *314*(7080), 591–595. https://doi.org/https://doi.org/10.1136/bmj.314.7080.591

Young, B. S. (1965). Jamaica's Bauxite and Alumina Industries. *Annals of the Association of American Geographers*, *55*(3), 449–464. https://doi.org/10.1111/j.1467-8306.1965.tb00528.x