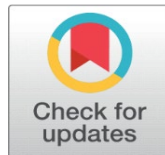
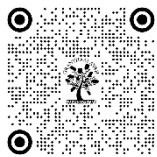


GLOBAL RESEARCH LANDSCAPE ON FAST FOOD CONSUMPTION AND ITS HEALTH IMPACTS: A BIBLIOMETRIC ANALYSIS AND VISUALISATION OF RESEARCH TRENDS AND THEMES

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ABSTRACT

Fast food consumption, characterized by the intake of calorie-dense and nutrient-poor meals, poses significant health risks, including obesity, chronic diseases, and mental health issues. This bibliometric analysis examines the research landscape on fast food consumption and its health impacts using data retrieved from the Scopus database, analyzing 545 publications spanning 1989 to 2023. Tools such as Biblioshiny and VOSviewer were employed to explore annual scientific production, identify prolific authors and key sources, and map the relationships between authors, sources, and countries using a three-field plot. The findings indicate a steady increase in research output, with the highest growth observed in the last decade, reflecting rising global concern. Trend analysis reveals a shift from foundational topics like obesity and BMI to emerging themes such as COVID-19, mental health, and food environments. The thematic map categorizes research into foundational, motor, niche, and emerging themes, highlighting key areas driving innovation and identifying underexplored topics. Bibliographic coupling analysis underscores the influence of foundational works while revealing integration opportunities for emerging studies. The co-occurrence network of keywords highlights the interdisciplinary nature of this research, spanning public health, behavioral science, and nutrition. Global collaboration patterns, led by the United States, reveal strong international partnerships but emphasize the need for enhanced regional efforts. This study provides insights into the evolving research priorities and underscores the necessity of interdisciplinary approaches to mitigate the health risks associated with fast food consumption.

Keywords: Fast Food Consumption, Health, Bibliometric Analysis, Biblioshiny, VOSviewer

1. INTRODUCTION

Fast food has become a defining feature of modern life, offering convenience and affordability to millions of people worldwide (Chowdhury et al., 2018; Sarhan & Alhazmi, 2024). The global fast-food industry has grown exponentially over the past few decades, driven by urbanization, hectic lifestyles, and changing dietary habits (Beal et al., 2019). Fast food establishments provide quick and easy access to meals, making them an integral part of daily life for individuals in both developed and developing countries (Lee & Lien, 2015). However, this growing reliance on fast food raises concerns about its long-term effects on health and well-being (Bell et al., 2024).

One of the major health concerns associated with fast food consumption is its contribution to obesity. Fast foods are often high in calories, unhealthy fats, sugars, and sodium, making them a significant contributor to excessive calorie intake (Lee & Lien, 2015; Mumena et al., 2022). The convenience of these meals often leads to overconsumption, as they

are frequently consumed in larger portions than home-cooked meals (Namdar et al., 2021). Obesity, in turn, is a risk factor for numerous chronic diseases such as diabetes, cardiovascular diseases, and certain types of cancer, emphasizing the need to address the health implications of a fast-food-driven diet (Mumena et al., 2022; Tambalis et al., 2018).

In addition to obesity, regular consumption of fast food is linked to a variety of other health issues, including digestive problems, poor mental health, and weakened immune systems (Lim et al., 2018; Shahzad et al., 2022). The lack of essential nutrients in fast-food meals can lead to deficiencies that affect overall physical and mental health (Janssen et al., 2018a; Shahadati & Modarresi, 2019). Furthermore, the high levels of sodium and trans fats in fast food are associated with increased risks of hypertension and high cholesterol (Janssen et al., 2018a). These issues highlight the broader impact of fast food on public health, particularly in societies where it has become a dietary staple.

Despite the health risks, fast food remains popular due to its affordability and accessibility, especially for low-income populations (Gordon-Larsen et al., 2011). Addressing the challenges posed by fast food consumption requires a multi-faceted approach, including public education on nutrition, governmental regulations to limit unhealthy ingredients, and promoting healthier alternatives within the fast-food industry (Wu et al., 2021). By fostering awareness and encouraging responsible consumption, individuals and policymakers can work together to mitigate the health impacts of fast food while retaining its convenience and affordability (Jaworowska et al., 2013).

Fast food consumption and its health impacts have garnered significant attention in academic research due to the growing prevalence of chronic health conditions linked to dietary habits (Janssen et al., 2018b; Moore et al., 2009; Song, 2016). As urbanization and lifestyle changes fuel the global rise in fast food consumption, the body of literature examining its effects on obesity, diabetes, cardiovascular diseases, and mental health has expanded considerably (Richardson et al., 2011; Rosenheck, 2008). Bibliometric analysis offers a systematic way to explore this research landscape, highlighting trends, influential studies, and collaboration networks within the field (Cobo et al., 2015; Gupta et al., 2022; Kawuki et al., 2020). Tools such as Biblioshiny and VOSviewer provide powerful visual and analytical capabilities for understanding the scope and impact of this scholarship (Husain & Mustafa, 2023; Kumar et al., 2023).

Biblioshiny, an extension of the R-based bibliometric package, facilitates in-depth exploration of research metrics such as publication growth, authorship patterns, and citation impact (Guleria & Kaur, 2021; Komperda, 2017; Racine, 2012; Souza de Cursi, 2023). It enables users to map thematic trends and identify prolific authors, institutions, and journals contributing to the study of fast food and health (Fahamsyah et al., 2023; Huang et al., 2021). VOSviewer complements this analysis by offering robust tools for visualizing bibliographic networks, such as co-authorship and co-citation networks, as well as keyword co-occurrence maps (Abbas et al., 2021; Kuzior & Sira, 2022; Van Eck & Waltman, 2010; Yu et al., 2020). These visualizations reveal the interconnectedness of studies, helping to identify research clusters and emerging themes in the field (Maryanti et al., 2023; Nandiyanto & Al Husaeni, 2022).

Using Biblioshiny and VOSviewer to conduct a bibliometric analysis on fast food consumption and its health impacts not only uncovers research trends but also sheds light on potential gaps and future directions. This approach can help policymakers, researchers, and public health advocates understand the breadth of evidence on fast food-related health issues and identify opportunities for collaboration and innovation. By analyzing the existing literature through a bibliometric lens, this study aims to contribute to a deeper understanding of the academic discourse surrounding fast food and its implications for global health.

2. MATERIALS AND METHODS

We collected scientific publications related to the investigation from the Scopus database (Archambault et al., 2009; Harzing & Alakangas, 2016; Kawuki et al., 2020). We retrieve bibliographic data using a search query such as (TITLE-ABS-KEY ("Fast Food Consumption") AND TITLE-ABS-KEY (health)). The search was not restricted to any particular language, and the data included articles from peer-reviewed journals, book chapters, and conference papers. We collected 545 articles from 308 different sources, spanning 1989 to 2023. To ensure accuracy, we screened the Scopus records to remove any duplicates. The results were saved as a "CSV" file, and we performed bibliometric analysis on the data using VOSviewer and Bibloshiny software.

3. RESULTS AND FINDINGS

3.1. MAIN INFORMATION OF THE INVESTIGATION

Table 1 provides an extensive overview of the bibliometric analysis of fast food consumption and its health impacts spans 34 years (1989–2023), encompassing 545 documents from 308 sources, with an annual growth rate of 11.2%, reflecting the growing scholarly interest in this field. The average document age is 7.43 years, and each document is cited an average of 31.85 times, indicating significant academic impact. With 2193 authors contributing and an average of 4.7 co-authors per document, the research demonstrates strong collaboration, including 22.57% international co-authorships, highlighting its global relevance. The study's content is diverse, with 2200 Keywords Plus and 1185 author keywords, underscoring its interdisciplinary scope. Most documents are journal articles (513), with a smaller contribution from book chapters (24) and conference papers (8). The extensive reference count (19,889) and relatively few single-authored works (21) further emphasize the collaborative and interconnected nature of this growing field.

Table 1. Main information of the investigation

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	1989:2023
Sources (Journals, Books, etc)	308
Documents	545
Annual Growth Rate %	11.2
Document Average Age	7.43
Average citations per doc	31.85
References	19889
DOCUMENT CONTENTS	
Keywords Plus (ID)	2200
Author's Keywords (DE)	1185
AUTHORS	
Authors	2193
Authors of single-authored docs	21
AUTHORS COLLABORATION	
Single-authored docs	21
Co-Authors per Doc	4.7
International co-authorships %	22.57
DOCUMENT TYPES	
article	513
book chapter	24
conference paper	8

3.2. ANNUAL SCIENTIFIC PRODUCTIONS

Figure 1 highlights a significant growth trend in research articles on the topic of fast food consumption and its health impacts, which has shown a significant upward trend over time, indicating growing research interest in this topic. The first publication appeared in 1989, followed by a period of inactivity until 2002, when research began to emerge sporadically. A noticeable increase occurred after 2006, with production steadily rising year after year. From 2008 onward, the number of articles published annually began to grow consistently, reflecting the increasing relevance of the subject in the academic and public health domains. The most significant growth occurred in the past decade, with a sharp rise starting around 2011. Notably, the highest production was observed in 2020, with 63 articles, possibly driven by heightened awareness of health issues during the COVID-19 pandemic, which may have influenced dietary habits and research priorities. Though the number of articles slightly declined in subsequent years (52 in 2021, 47 in 2022, and 37 in 2023), the overall trend remains robust compared to earlier years. This pattern highlights the sustained interest and

ongoing research efforts to address the implications of fast food consumption on health. The continuous growth in production also suggests a dynamic field with expanding themes and interdisciplinary contributions.

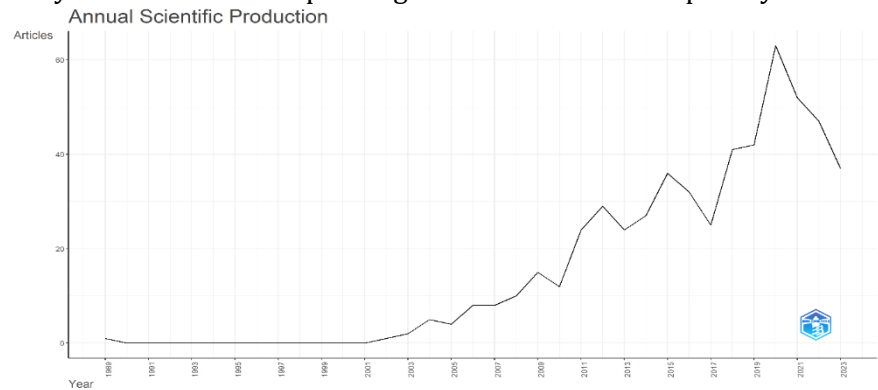


Figure 1. Annual scientific production

3.3. MOST RELEVANT AUTHORS

Figure 2 showcases the most prolific authors contributing to research on fast food consumption and its health impacts. Karl Peltzer leads as the most relevant author with 32 articles, followed closely by Supa Pengpid with 31 articles, indicating their significant contributions and potential leadership in the field. These two authors stand out with a considerably higher number of publications compared to others, suggesting their work may form the foundation of key research themes in this domain. Other notable contributors include Dianne Neumark-Sztainer (14 articles), Barry M. Popkin (9 articles), and Penny Gordon-Larsen and Nicole Larson (8 articles each), highlighting their impactful roles in expanding the research base. Authors like Ai Koyanagi, Demosthenes B. Panagiotakos, Lisa M. Powell, and Lee Smith each have six or seven publications, showing consistent contributions but on a smaller scale. The distribution of articles among these authors indicates a mix of both concentrated and diverse authorship. Peltzer and Pengpid, with the highest number of articles, might be central figures whose work connects various research threads in the field. This highlights their potential role in shaping the discourse on fast food consumption and health impacts through extensive, focused research. Additionally, the presence of multiple authors with significant contributions underscores the collaborative and interdisciplinary nature of this research area.

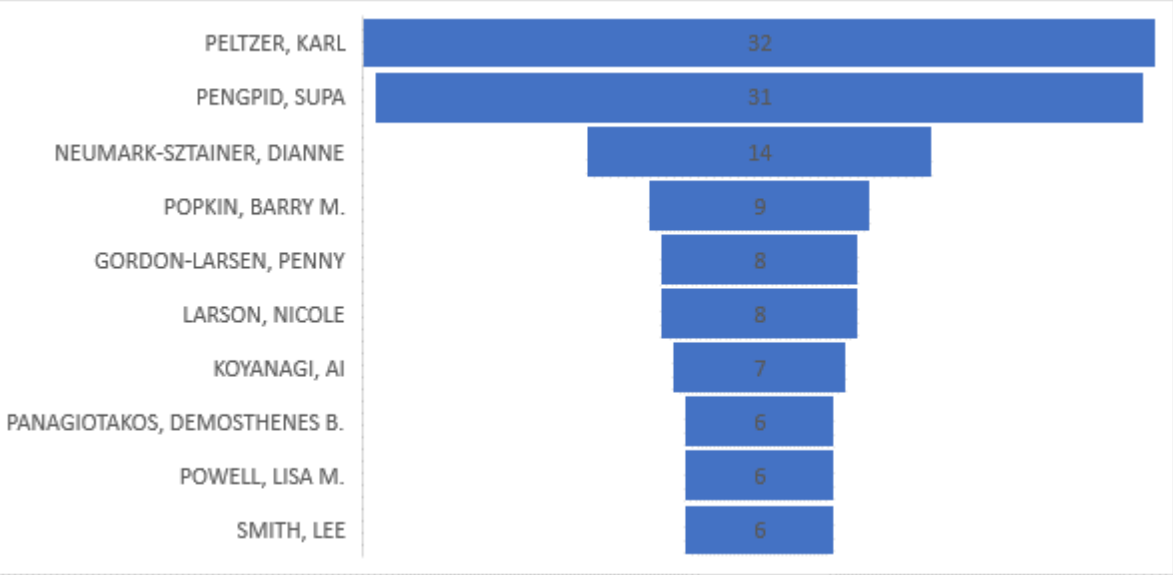


Figure 2. Most relevant authors

3.4. MOST RELEVANT SOURCES

The table identifies the key academic journals contributing to research on fast food consumption and its associated health impacts. Both Appetite and the International Journal of Environmental Research and Public Health lead with 15 articles each, highlighting their pivotal role in publishing studies that explore behavioral, environmental, and public health dimensions of fast food consumption. These journals likely focus on how dietary behaviors and environmental

factors influence public health outcomes, including non-communicable diseases. Public Health Nutrition, with 14 articles, reflects its emphasis on nutritional studies and public health policies aimed at understanding the impact of fast food on population health. Adolescence: Behavioural Risk Factors of Non-Communicable Diseases, contributing 13 articles, underscores a strong focus on adolescent dietary behaviors, which are critical in the context of fast food consumption and long-term health risks. BMC Public Health and Social Science and Medicine, each contributing 10 articles, emphasize the broader social determinants and public health implications of fast food consumption, exploring intersections between societal trends and health outcomes. Journals like Nutrients and Preventive Medicine, with 8 articles each, focus on nutritional science and preventive strategies to mitigate the health risks associated with fast food. Finally, Journal of Nutrition Education and Behavior and PLOS ONE, each contributing 7 articles, emphasize research on education, behavior modification, and broader multidisciplinary approaches to addressing fast food-related health issues. Overall, the distribution of articles across these journals underscores a robust interdisciplinary interest, with research spanning nutrition, public health, behavioral sciences, and preventive strategies, reflecting the complexity of addressing fast food consumption and its health impacts.

Table 2. Most relevant sources

Sources	Articles
APPETITE	15
INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH	15
PUBLIC HEALTH NUTRITION	14
ADOLESCENCE: BEHAVIOURAL RISK FACTORS OF NON-COMMUNICABLE DISEASES	13
BMC PUBLIC HEALTH	10
SOCIAL SCIENCE AND MEDICINE	10
NUTRIENTS	8
PREVENTIVE MEDICINE	8
JOURNAL OF NUTRITION EDUCATION AND BEHAVIOR	7
PLOS ONE	7

3.5. THREE-FIELD PLOT

Figure 3 highlights the three-field plot, highlighting the relationships between authors, publication sources, and countries in research on fast food consumption and its health impacts. Prominent journals such as Health and Place, Obesity, Journal of Nutrition Education and Behavior, and Public Health Nutrition serve as major platforms for disseminating research, strongly linked to influential authors like Karl Peltzer, Supa Pengpid, and Dianne Neumark-Sztainer. The United States dominates as the leading contributor, reflecting its central role in this field, while other countries like South Africa, Thailand, Australia, and the United Kingdom also play significant roles, showcasing the global interest in this area. Authors from diverse regions frequently publish in high-impact journals, bridging international collaboration and interdisciplinary research. The plot underscores the interconnected nature of the field, with key journals acting as hubs for knowledge exchange and fostering global discourse on the health impacts of fast food consumption.

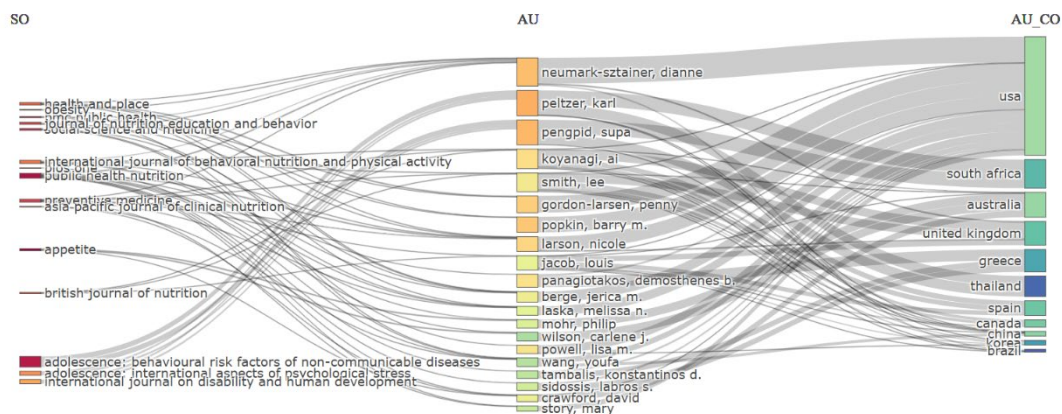


Figure 3. Three-Field Plot, highlighting the relationships between authors, publication sources, and countries.

3.6. TREND TOPICS

Figure 4, the trend topics visualization, reveals the evolving focus of research on fast food consumption and its health impacts, with the prominence of terms changing over time. Early studies primarily centered on quantifiable aspects such as energy intake, exercise, and dietary intake, reflecting an initial focus on physical health and lifestyle behaviors. Over the years, the research broadened to include topics like adolescents, nutrition, children, and obesity, highlighting the critical public health concerns related to fast food consumption's impact on younger populations and rising obesity rates. Key terms like BMI, overweight, and childhood obesity indicate a sustained emphasis on the health outcomes associated with fast food consumption, particularly among vulnerable groups. In recent years, new areas of interest have emerged, including COVID-19, psychological distress, mental health, and college students, reflecting the broader societal and psychological implications of fast food consumption. These trends suggest a growing recognition of the interplay between dietary behaviors and mental health, especially during global events like the pandemic. Furthermore, terms such as parents, food environment, and sugar-sweetened beverages highlight the increasing focus on environmental and behavioral factors influencing fast food consumption patterns. The transition from early research on physical health metrics to current studies exploring psychosocial and environmental dimensions demonstrates the dynamic and interdisciplinary nature of this field, with implications for both public health policies and individual behavior change strategies.

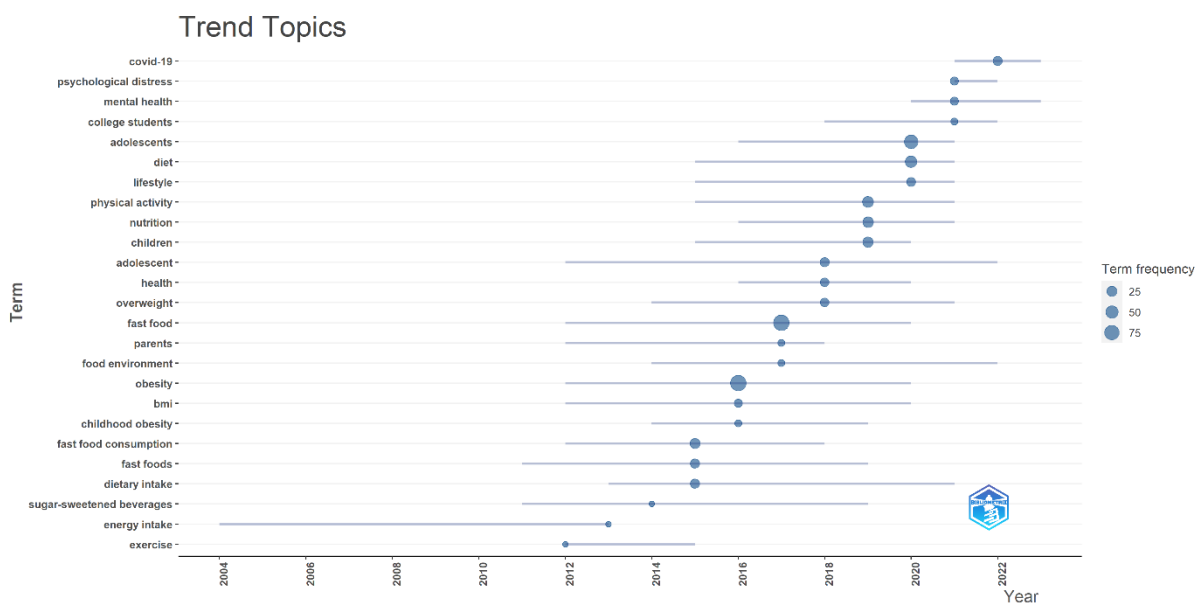


Figure 4. Trending topics in the realm of research

3.7. THEMATIC MAP

Figure 5 illustrates a thematic map that provides an overview of research topics on fast food consumption and its health impacts, categorizing them based on their centrality (relevance) and density (development). Basic themes, such as adolescents, children, fast foods, obesity, and body mass index (BMI), are located in the lower right quadrant, indicating that they are foundational and widely relevant to the field but less specialized or advanced in their development. These topics form the core of research in this domain, addressing critical health concerns such as obesity and its link to fast food consumption, particularly in younger populations. Their centrality reflects their importance in public health discourse, as these themes are often the starting point for understanding the broader implications of fast food consumption.

In the upper right quadrant, motor themes like diet, physical activity, and COVID-19 stand out as both highly relevant and well-developed. These topics are driving the field forward, representing areas of active and impactful research. The inclusion of COVID-19 underscores the pandemic's influence on dietary behaviors, including shifts in fast food consumption patterns. Similarly, diet and physical activity are critical components in addressing health outcomes related

to fast food, as they often interact with broader lifestyle factors. These motor themes not only shape current research directions but also highlight interdisciplinary opportunities to connect fast food studies with other health-related fields. The upper left quadrant contains niche themes such as childhood obesity, eating behavior, and eating habits. These topics are deeply developed but have lower centrality, indicating that they are specialized and may cater to specific subpopulations or focused behavioral studies. Meanwhile, emerging or declining themes, located in the lower left quadrant, include students, risk factors, and behavior. These topics show limited development and relevance, suggesting that they may represent either underexplored areas or ones that have lost prominence over time. Overall, the thematic map illustrates a dynamic research landscape, where foundational themes provide stability, motor themes drive innovation, and niche and emerging themes represent opportunities for future exploration.

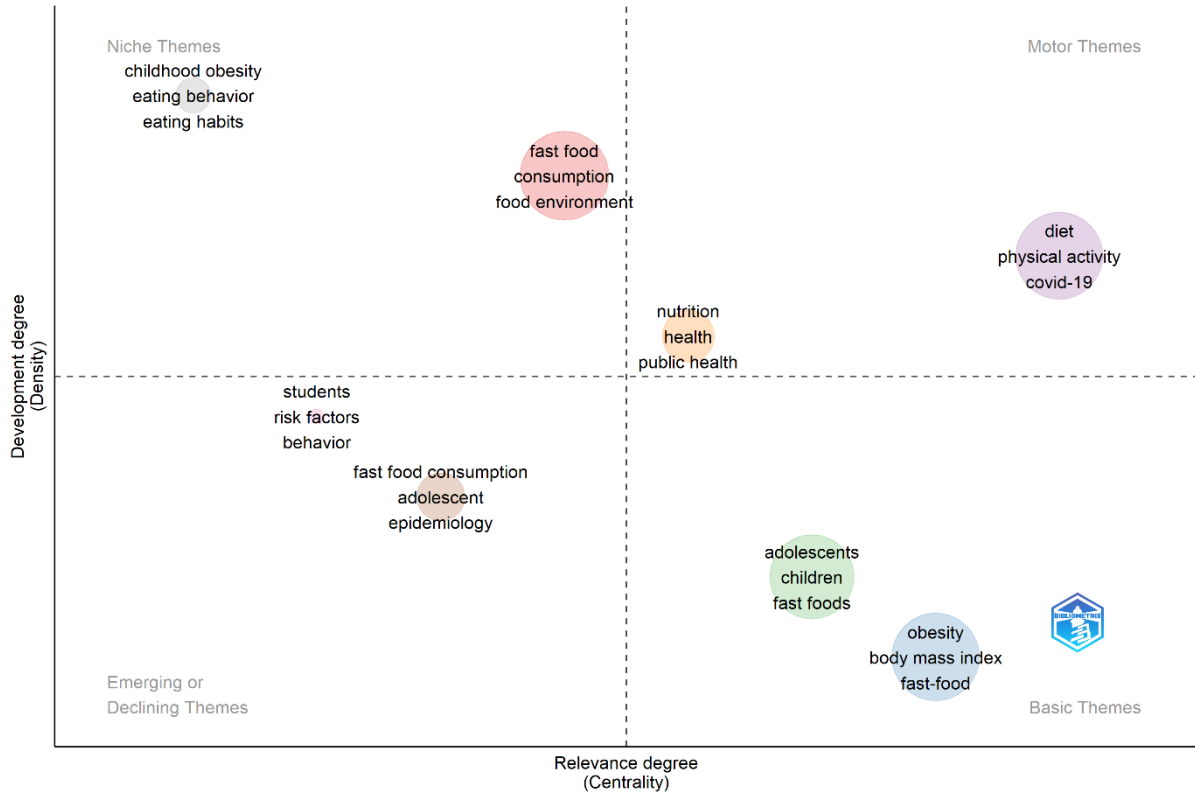


Figure 5. Thematic visualisation of author keywords

3.8. BIBLIOGRAPHIC COUPLING OF DOCUMENTS

Figure 6 displays a bibliographic coupling visualization that highlights the interconnectedness of research on fast food consumption and its health effects. A total of 294 documents met the minimum citation threshold of 10, resulting in a network of 271 items categorized into 13 clusters. Central works like Bowman (2004a, 2004b), Bes-Rastrollo (2006), and Boone-Heinonen (2011) dominate the network, reflecting their foundational role in shaping the field. These highly cited documents serve as pivotal references for subsequent studies, emphasizing their significance in understanding the health implications of fast food consumption. The clustering of documents reveals thematic groupings, such as studies on childhood obesity, dietary behaviors, and public health interventions, which highlight the diverse research areas contributing to this domain.

Emerging works, such as Husain (2020), Munasinghe (2020), and Wolfson (2022), suggest a growing integration of newer research with established studies, reflecting the dynamic evolution of the field. Peripheral nodes, like Zota (2016), indicate niche studies or areas that are less interconnected with the main body of research, presenting opportunities for future exploration to bridge these gaps. The visualization not only underscores the influence of foundational studies but also highlights the expanding and diversifying scope of research on fast food consumption and its health impacts, offering pathways for continued academic inquiry and interdisciplinary collaboration.

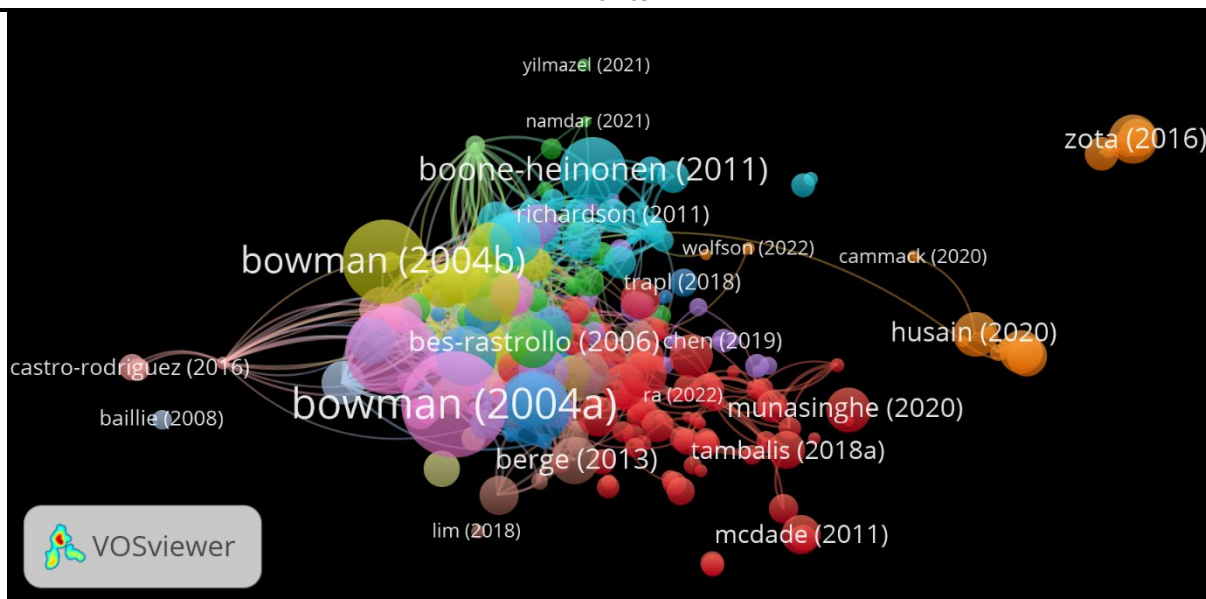


Figure 6. Bibliographic coupling of documents

3.9. CO-OCCURRENCE OF AUTHOR KEYWORDS

Figure 7 illustrates the co-occurrence network of author keywords, highlighting the interconnected themes in research on fast food consumption and its health impacts. These themes are categorized into 7 clusters based on their relevance and occurrence. Cluster 1 (red) focuses on core topics like fast food, obesity, dietary intake, and BMI, reflecting the foundational research linking fast food consumption with dietary patterns and health outcomes. This cluster also includes terms like energy intake and cooking, emphasizing the role of caloric consumption and dietary habits in fast food studies. Similarly, Cluster 4 (purple) and Cluster 5 (orange) concentrate on childhood and adolescent health, with keywords such as childhood obesity, eating behavior, and youth, highlighting age-specific vulnerabilities and eating habits that influence long-term health outcomes.

Cluster 2 (green) explores lifestyle and psychosocial themes, including mental health, lifestyle, and COVID-19, reflecting the evolving focus on how fast food consumption interacts with mental health and lifestyle changes, especially during the pandemic. Cluster 3 (blue) emphasizes fast food consumption, risk factors, and epidemiology, showcasing a public health perspective on identifying and mitigating the risks associated with fast food. Smaller clusters, such as Cluster 6 (yellow), focus on food environment and consumption, addressing contextual and environmental influences on dietary patterns. Together, these clusters reveal the diverse and interdisciplinary nature of research in this field, emphasizing the integration of dietary, behavioral, and environmental factors in understanding the broader implications of fast food consumption on health.

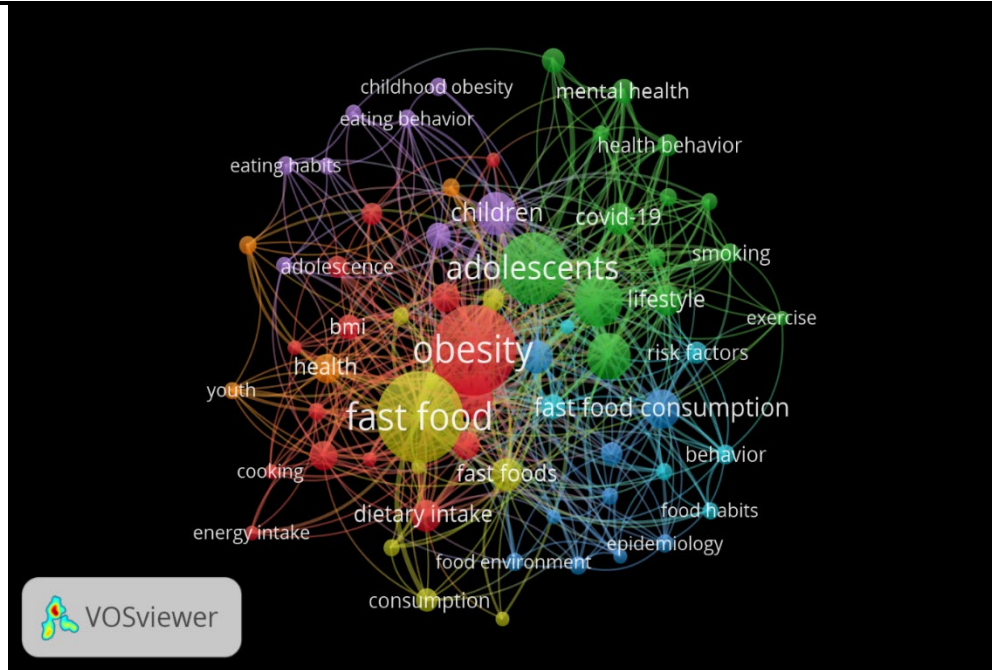


Figure 7. Co-occurrence of author keywords

3.10. COUNTRIES COLLABORATIONS

Figure 8 depicts a network visualization of the co-authorship network that highlights the global collaboration in research on fast food consumption and its health impacts, with the United States standing out as the dominant contributor and central hub for international partnerships. It is well-connected to countries across all clusters, including Australia, South Korea, and India, which are significant contributors in their regions. Regional clusters, such as the yellow cluster comprising India, Bangladesh, Taiwan, and Australia, and the red cluster with Saudi Arabia, Pakistan, and Poland, reflect geographically focused collaborations addressing regional health concerns. European countries like Spain, Germany, and France, along with South Korea, form another cluster centered on epidemiological and public health studies. Emerging contributors like South Africa and Vietnam show growing connections to leading nations, highlighting an expanding global interest in understanding and mitigating the health impacts of fast food consumption.

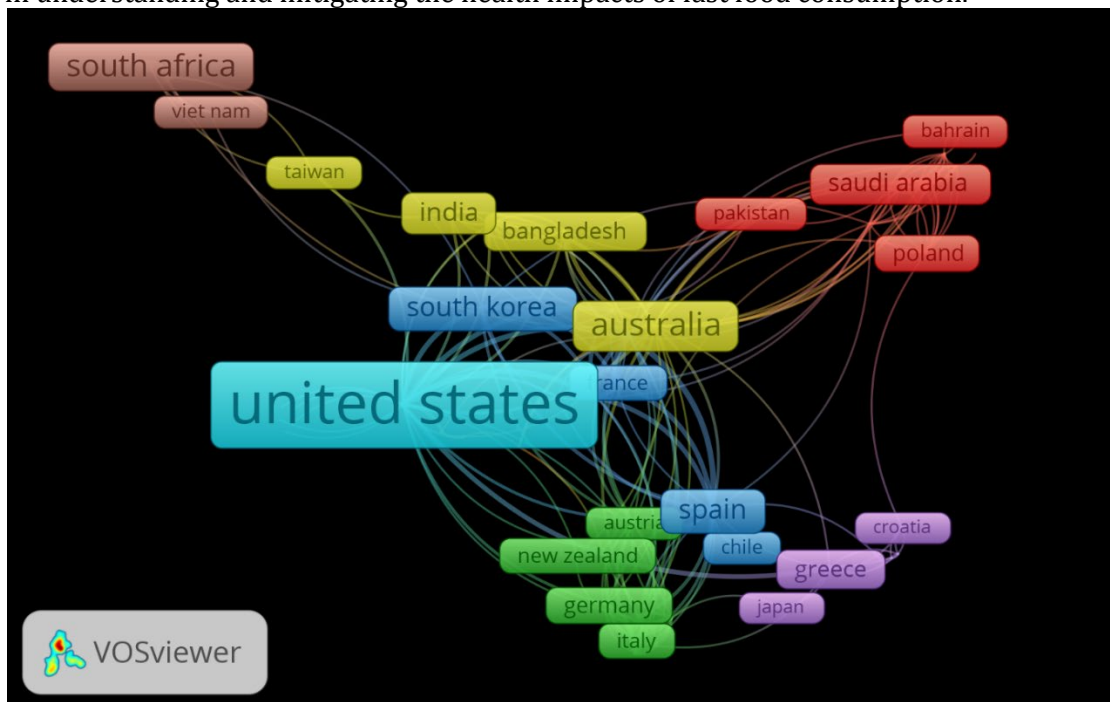


Figure 8. Countries collaborations

4. DISCUSSIONS

The bibliometric analysis of fast food consumption and its health impacts reveals several important findings that highlight the growth, trends, and thematic focus of research in this field. Over the past three decades, research output has grown significantly, with an annual growth rate of 11.2%, reflecting increasing academic and public health interest. Thematic trends and bibliographic coupling analysis show that foundational themes, such as obesity, BMI, and fast food consumption, dominate the research landscape, highlighting their relevance in addressing global health concerns. Emerging themes like COVID-19, mental health, and lifestyle reveal a dynamic shift toward exploring the psychosocial and environmental impacts of fast food consumption, especially during the pandemic. However, the high density but low centrality of niche themes, such as eating behavior and childhood obesity, indicates a need to integrate these specialized studies into broader research frameworks.

The analysis of author and keyword co-occurrence networks underscores the interdisciplinary nature of this research. Influential authors like Karl Peltzer and Supa Pengpid have significantly contributed to the field, while highly relevant keywords like adolescents, nutrition, and public health demonstrate the multi-dimensional focus of studies. Motor themes like diet and physical activity drive innovation in addressing fast food's health impacts, while foundational topics serve as the basis for understanding critical health outcomes. The co-authorship network highlights strong international collaborations, with the United States acting as a central hub and emerging contributors like India and South Africa expanding global research participation. However, regional collaborations need to be strengthened to address location-specific dietary habits and public health challenges effectively.

Despite the strengths of this research landscape, several gaps remain. Limited integration of niche themes into broader frameworks points to underexplored areas like the role of food environments and family dynamics in shaping dietary behaviors. Additionally, the declining prominence of certain emerging themes, such as students and risk factors, suggests a need for renewed attention to age-specific and demographic variables. Practical implications of these findings include the need for targeted public health policies, such as promoting healthier fast food options and incorporating behavioral interventions to address obesity and mental health challenges. Integrating interdisciplinary approaches and fostering regional collaborations could enhance the scope and applicability of future research.

This analysis highlights a robust and evolving field with strong foundational research and emerging areas of focus. While significant progress has been made in understanding the health impacts of fast food consumption, future studies should bridge thematic gaps and address underexplored variables, such as environmental and cultural influences. The insights gained from this analysis offer practical guidance for policymakers, researchers, and public health professionals in mitigating the health risks associated with fast food consumption and advancing global health equity.

5. CONCLUSION

The bibliometric analysis of fast food consumption and its health impacts highlights the growing scholarly attention to this critical public health issue, with significant contributions addressing obesity, chronic diseases, and emerging psychosocial factors like mental health. While foundational themes such as obesity and BMI remain central, the rise of topics like COVID-19 and food environments reflects an evolving research focus on broader societal and environmental influences. However, gaps in integrating niche themes like childhood obesity and eating behaviors into broader frameworks point to opportunities for future exploration. To advance the field, researchers should prioritize interdisciplinary collaborations that incorporate behavioral, environmental, and cultural dimensions of fast food consumption. Policymakers should focus on implementing targeted public health campaigns promoting healthier food choices, especially in vulnerable populations such as children and adolescents. Additionally, regional collaborations must be strengthened to address location-specific dietary patterns and health challenges effectively. Finally, further research should emphasize longitudinal studies to better understand the long-term impacts of fast food consumption and inform sustainable public health interventions.

CONFLICT OF INTERESTS

None.

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None.

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