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Trends in Public Health Research: a Bibliometric Review 2018-2022

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ABSTRACT

As an evolving discipline, public health encompasses many aspects of health, including epidemiology, environmental health, global health, public health interventions, health policy, health promotion, and others. Globally, research in public health continues to increase in line with the increasing complexity of health challenges faced by people in different parts of the world. To understand these research trends, bibliometric studies can provide valuable insights. This study aims to analyze public health research trends from 2018 to 2022 based on indexed scientific publications. By involving the analysis of indexed scientific publications, this objective includes mapping the dominating research themes, identifying the most influential publications, as well as measuring researcher collaboration across institutions. The research method used a bibliometric study conducted using relevant databases to identify, collect, and analyze scientific publications related to public health within the specified time frame. The results of this study show an increase in the number of scientific publications in public health research during the period 2018-2022. Dominating themes include global health issues, public health interventions, epidemiology, and environmental health. In addition, collaboration between researchers was also noted to increase, indicating a synergized effort in addressing public health issues across disciplines and countries. The conclusions of this study provide an in-depth understanding of public health research trends over the period, highlighting key foci and developments in the discipline. These results can help guide future research directions in support of global public health efforts.

Keywords: *Public Health, Bibliometric, Review 2018-2022*

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INTRODUCTION

Public health is a field of study that highlights efforts to improve the health and well-being of entire populations (Ding et al., 2022). The primary focus of public health is to prevent disease, improve quality of life, and address factors that contribute to declining public health (Y. Gao et al., 2019). The field involves a wide range of disciplines, including epidemiology, biostatistics, health promotion, health policy, health management, and health environment (Chunara et al., 2021). Public health is a very important aspect of life, as it encompasses efforts to maintain the health of the community as a whole, rather than just focusing on individuals in isolation (Barbu, 2023). This approach considers external factors such as environmental, social and economic factors that can affect the overall health of a community.

Public health includes an understanding of the health of whole populations, not just individuals (M. Ahmad et al., 2016). This includes understanding the causes of specific diseases, the distribution of disease among the population, and ways to prevent disease and improve overall quality of life (Widiastuti et al., 2012). In this sense, public health is preventive, not just curative. In modern societies, the role of public health is increasingly important in maintaining the health of the population as a whole (Clarke et al., 2007). In an era of globalization and rapid urbanization, public health challenges are increasingly complex and require a broader approach (Liu et al., 2022). Public health has a major role in developing health policy (Han et al., 2020), designing intervention programs, as well as conducting research and development to better understand health issues.

Key challenges in public health include infectious diseases, chronic diseases, and determinants of health. Infectious diseases such as COVID-19, HIV/AIDS, and malaria still pose a serious threat to public health in many countries (Dewi et al., 2023). Chronic diseases such as diabetes, cancer, and heart disease are also a significant health burden at the global level. In addition, climate change, the refugee crisis, and pandemics such as COVID-19 have highlighted how vulnerable people are to the global health crisis (Rejeb et al., 2021). Addressing the pandemic, preparing for future threats, and building strong response capacity are priorities (Jin et al., 2022). In addition, determinants of health such as social inequality, poverty, access to health services, environmental sustainability, and unhealthy lifestyles also play a role in determining the overall health of the community. These challenges require a holistic approach to addressing public health issues. Mental health issues, including depression, anxiety and stress, are increasingly recognized as a significant public health challenge. Social stigma and limited access to mental health services are often a problem. There are significant disparities in health between social groups, such as

health disparities between high and low income groups, ethnic groups, and age groups. This can be due to limited access to health services, unhealthy environments, or differences in health behaviors.

To address these challenges, various parties, including the government, non-governmental organizations, academics, and the general public need to work together in an effort to improve public health. Adoption of healthy practices in daily life, health promotion, improved access to health services, and environmental protection are some examples of efforts that can be made to improve public health (Adunlin et al., 2015). Some of the ways that can be done to face this challenge include: first, education on the importance of healthy eating, exercise, hygiene, and disease prevention is key to improving public health. Secondly, improving the accessibility and availability of affordable health services for all levels of society. This could include establishing health facilities in remote areas, inclusive health insurance programs, or mobile health services to reach hard-to-reach communities. Third, support disease prevention programs through vaccination, early detection, and promotion of healthy lifestyles (Netea et al., 2020). A focus on prevention can reduce the burden of disease and improve overall public health. Fourth, collaboration between the health sector and other sectors such as education, environment, and social policy is essential. This could include health programs in schools, environmental policies that support clean air and water, and regulations related to workplace health. Fifth, investment in health research and the development of new innovations can bring more effective solutions in addressing health challenges. This includes the development of new medicines, health technologies, and interdisciplinary approaches to solving complex health problems.

In the field of health, the community has a crucial role in analyzing factors that affect population health, identifying ongoing health challenges, and formulating effective interventions to improve people's quality of life. In addition, the community plays a role in maintaining health by maintaining a healthy diet, exercising regularly, maintaining hygiene, and avoiding risky behaviors that can cause disease. Communities can also be agents of change by disseminating correct information about health. Through education and awareness campaigns, people can understand diseases, symptoms, and how to prevent and treat them. In essence, the role of the community in health is diverse and indispensable to create an environment that supports collective health and well-being. In this context, the 2018 to 2022 bibliometric review of public health research trends offers valuable insights into the direction of scientific development and research focus in this discipline.

The 2018-2022 bibliometric review will discuss trends in scientific writing during the period (Espina-Romero et al., 2023). Bibliometric study is a quantitative analytical approach to scientific literature, which aims to measure and analyze the style of writing, dissemination, and use of scientific sources in a field of study (Wedhatama et al., 2021). In the context of 20 18-2022, bibliometric studies will provide a comprehensive overview of the development and trends of investigations in various disciplines (Karim & Soebagyo, 2021). There are several key aspects to the

bibliometric study for the 2018-2022 period, including the number of scientific papers, the distribution of papers in international rankings, trends in papers by specific institutions and individuals, the use of references and citations, and the relationship between fields of study (Falagas et al., 2013). Bibliometric studies can also provide insight into the overall achievements of a discipline (F. Gao et al., 2021), and provides information to assist in the design and management of scholarly resources

Through bibliometric analysis, it is possible to ascertain recent developments in specific fields (Zhou et al., 2022), recognize the main contributors in a field, and understand the pattern of the spread of knowledge and its use on a global level (Xia et al., 2023). Instead, the bibliometric study for the period 2018-2022 will provide an in-depth look at the dynamics of research and scientific development for those years (Wang et al., 2019). It is important to note that bibliometric studies are an important approach in assessing the impact and achievements of research ("Educational Research and Evaluation" Yogyakarta State University et al., 2023), as well as providing a broad outlook for the determination of future research directions and strategies. With that, the bibliometric review for the period 2018-2022 will provide valuable information for researchers, university administrators, publishers, and various parties involved in the academic and research world

There are several objectives of public health research using the 2018-2022 bibliometric review, the first being that bibliometrics helps identify key trends in public health research over a period of time (M. Iqbal Firmansyah et al., 2021). This helps in understanding the changing focus of research over time, allowing researchers, policy makers, and health practitioners to adjust their priorities and strategies accordingly. Secondly, by analyzing the number of publications, citations, collaborations between researchers, institutions, or countries, this method helps measure research productivity in public health. This is important to evaluate the impact of the research conducted and identify areas where collaboration can be improved. Thirdly, bibliometrics helps in understanding the evolution of certain research topics, such as infectious disease epidemiology, mental health, healthcare access, or technological innovation in public health (Vaquero-Álvarez et al., 2020). This opens up insights into how these topics are evolving in terms of concepts, methodologies and practical implications. Fourthly, bibliometric analysis helps in identifying collaboration networks between researchers, institutions or countries in public health research. This allows researchers to expand collaboration, share resources, and improve research quality through interdisciplinary cooperation. Fifth, through a better understanding of research trends, bibliometric methods provide a foundation for policy makers to make better decisions regarding resource allocation, health policy development, and more strategic research directions. Finally, bibliometric analysis provides insight into future research directions (T. Ahmad et al., 2021). The information obtained helps in planning future studies by considering knowledge gaps, current trends, and areas that require more exploration

RESEARCH METHODOLOGY

This research method uses a bibliometric study conducted using relevant databases to identify, collect, and analyze scientific publications related to public health within a specified time frame (Tran et al., 2018). Bibliometric analysis is a research method that uses quantitative data to evaluate the distribution, growth, and citation patterns in scientific publications (Abdullah & Abd Aziz, 2021). In the context of public health, bibliometric analysis can provide insights into research trends, current topics, and the contributions of researchers on specific topics (Taj et al., 2019). This bibliometric analysis method can provide valuable insights into research developments and trends in public health (Subramanyam, 1983). Using this approach, it is possible to identify the contributions of researchers, understand the impact of publications, and evaluate future research directions in the discipline.

Here are the steps to conduct a bibliometric analysis in public health first identify the research objectives. Determine the purpose of the bibliometric analysis. Do you want to identify research trends in public health (Trenggono & Bachtiar, 2023), evaluate the impact of a particular scientific publication, or understand collaboration between researchers in the field (Xie et al., 2021). Second, data collection. Identify the data sources to be used. Usually, bibliometric data can be obtained from databases such as Scopus, Web of Science, PubMed, or Google Scholar (Maghribi, 2023). Select relevant keywords to search the data. Third, select publications. Determine the time span and inclusion-exclusion criteria for publications to include in your analysis. For example, you can limit your search to research articles, reviews or editorials within the public health field. Fourth, analyze the data. Identify the bibliometric parameters you want to evaluate, such as the number of publications per year, citation rank, identification of the most prolific authors, or analysis of co-citation between authors or research topics.

Then the fifth is data visualization. Use graphs and charts to visualize the findings. For example, use a line chart to show trends in publication growth in public health over time, or use a network graph to illustrate researcher collaboration. Sixth, interpret the findings. After analyzing the data, draw conclusions from the findings. Are there any prominent research trends in health society? Who are the most influential researchers in the field? How do citation patterns indicate the impact of publications? Seventh, validate the findings by comparing with other bibliometric studies in the field of public health. Submit the findings for discussion with peers or in a scientific forum for feedback. Finally, draw conclusions about your findings and consider the implications of the bibliometric analysis for public health. Do your findings provide guidance for future research directions in this area? Are there opportunities for further collaboration on specific topics? The bibliometric analysis shows that the number of scientific publications in the field of public health has increased over time. This reflects an increased interest and focus on global health issues. There is also an increase in cross-disciplinary collaboration in public health

research, with researchers from different disciplines working together to find the best solutions.

RESULT AND DISCUSSION

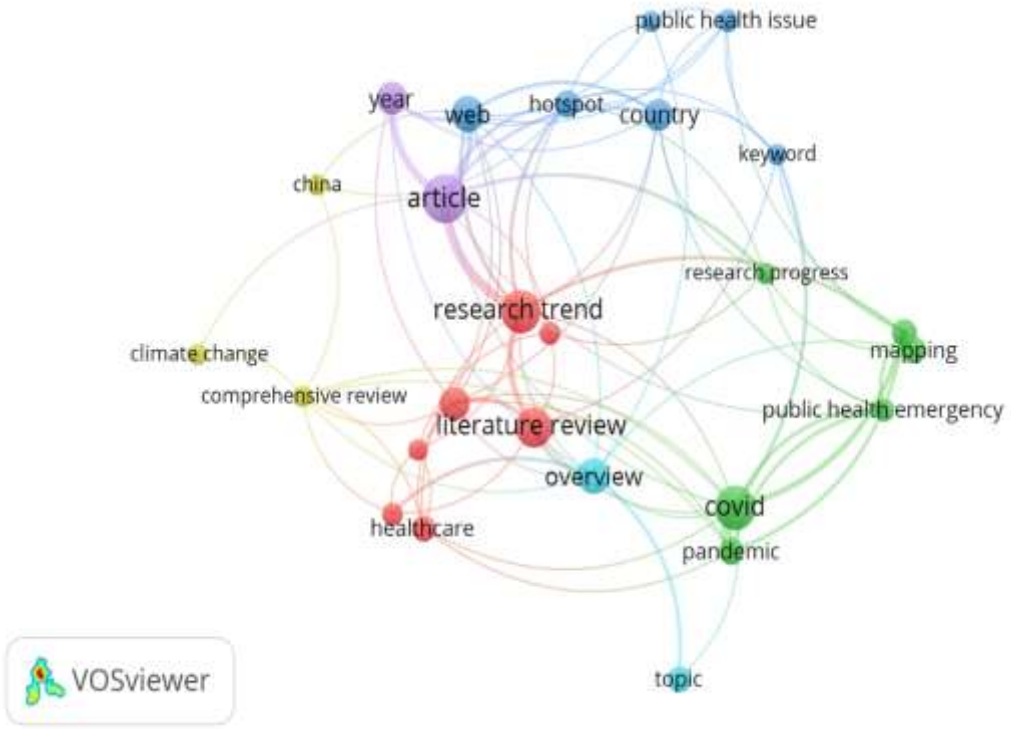
Public health is a field of study that focuses on disease prevention, health promotion, and improving the well-being and health of populations. The factors that influence health in society are vast. The first is disease prevention and preventive health. Public health emphasizes disease prevention and health promotion through evidence-based approaches, such as immunization, health education, and public health campaigns. Second is environmental health. Studying the impact of the environment on health and implementing policies and interventions to improve environmental quality and prevent diseases caused by environmental factors. Third, health equity and equal access. Striving for equal access to health services for all segments of society and addressing health disparities caused by social, economic or demographic factors. Fourth, global health. Confronting health issues that cross national borders, such as pandemics, climate change, and children's health in developing countries. Fifth, epidemiologic analysis and population health research. Analyzing disease patterns, risk factors and health trends in populations to plan appropriate interventions.

There are several approaches to public health. The first is the community-based approach. Involves the active participation of the community in the planning, implementation, and evaluation of health programs. Second, prevention is better than treatment. Emphasizes the importance of prevention through education, promotion of healthy lifestyles, and early detection of disease. Third, evidence-based research. Using scientific evidence to design policies and interventions that are effective and efficient in improving public health. Fourth, inter-sectoral cooperation. Involves collaboration across sectors (e.g., health, education, environment) to address factors that affect health. Fourth, population-based approaches. This approach is divided into two: focusing on the whole population, which means that it targets the population as a whole, not just individuals, with disease prevention and health promotion efforts, and population-level interventions. This involves interventions that can influence habits or the environment at large, such as public health campaigns, food regulations, or environmental policies. Fifth, the determinants of health-based approach. Identifying and address factors that directly or indirectly affect health, such as social, environmental, economic and behavioral. Sixth, the participatory approach. This approach gives communities the opportunity to participate in decision-making processes related to their own health. This approach in public health allows for more holistic, sustainable and evidence-based planning and implementation of interventions. The combination of these approaches can help achieve broader and more effective health goals for the population as a whole.

In this study, we used the VOS viewer application to analyze data for bibliometrics. VOSviewer is bibliometric data analysis software that allows network visualization of bibliographic data such as scientific publications or keywords. This tool is used to understand the structure and patterns of bibliometric datasets, often used in bibliometric studies or citation analysis. The use of VOSviewer in Bibliometric Studies is for the analysis

of publications Science. Mapping linkages between scientific articles, identifying topic clusters, and revealing research trends. Second, research scientific ideals. Analyzing citation networks between researchers or publications to evaluate influence and impact. Third, topic mapping and literature review. Understand the structure and development of a particular topic in the scientific literature. The main purpose of VOSviewer is to enable effective visual analysis of bibliometric data. It allows visualization of relationships between keywords, publications, or authors in the form of easy-to-understand networks or maps. Provides a visual overview of patterns and trends in bibliometric data, such as inter-topic relationships or changes over time. Enables identification of clusters or groups of keywords, authors, or publications that have thematic similarities or linkages.

Figure 1: Network Visualization Public Health, Bibliometric.



In Figure 1 above is a network visualization image obtained from conducting bibliometric analysis. The analysis is obtained from the analysis of journals in google scoolar the number of papers is 200. The publication is taken from publish or operate, then click the google scoolar section and the publication is taken from 2018-2022. Here the researchers took the keywords namely Public Health, Bibliometric Review 2018-2022. This bibliometric analysis was obtained with the help of VOS viewer. Network Visualization in the context of public health and bibliometrics refers to the use of network or graph visualization techniques to analyze and understand relationships, interrelationships, or patterns in bibliometric data related to public health.

Figure 2: Overlay Visualization Public Health, Bibliometric.

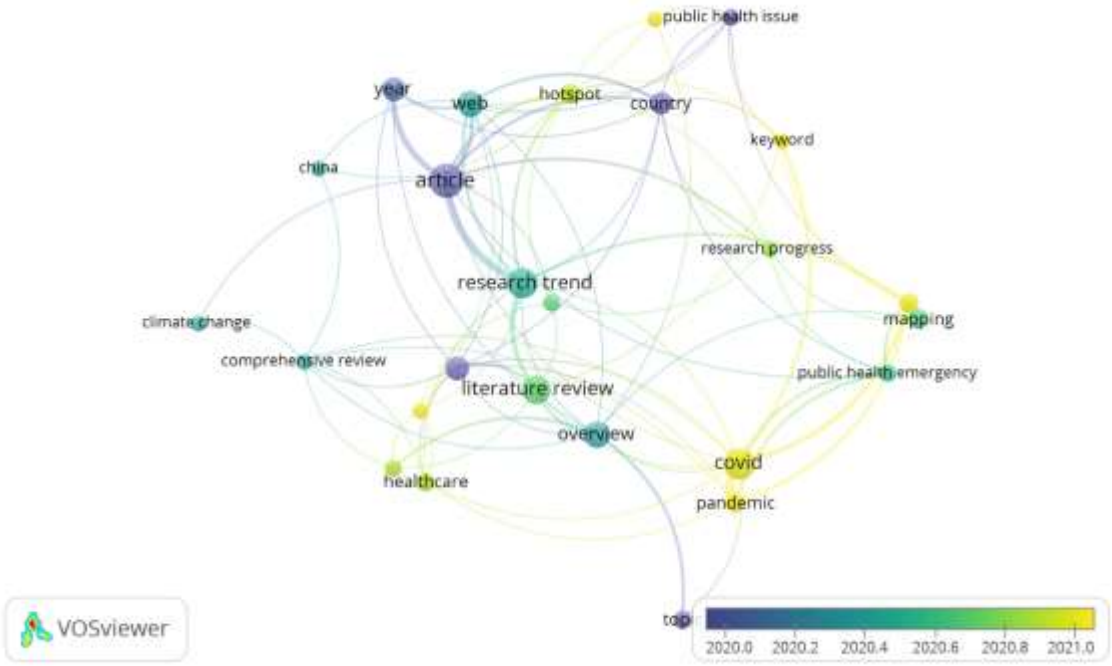


Figure 2 above is an image obtained by bibliometric analysis conducted through VOS viewer. The data collection was obtained through publish or operate. Then take googlee scoolar. Then keywords are entered so that journals that discuss those related to this research appear, for papers that are published, namely 200 papar. The picture above is an image of overlay visualization. Overlay visualization is a technique used in various fields, such as computer science, computer graphics, and data visualization. It refers to the process of displaying multiple graphical elements or data on the same layer to create a richer and more informative visual representation. Overlay Visualization in Public Health and Bibliometry has great implications in visualizing data and information that are important for research, analysis, and decision-making. In Public Health, overlay visualization is used to combine different types of relevant data, such as demographic data, disease incidence, risk factors, or other health information. For example, overlay visualization can be used to display a map with the incidence rate of a particular disease in a region, while also displaying environmental or social factors that may have influenced the spread of that disease. By combining these data in a single view, health professionals can gain a more comprehensive insight into the patterns and factors affecting population health.

In the field of Bibliometrics, overlay visualization helps in understanding the relationships between scientific publications, authors, topics, and networks. For example, overlay visualization can display graphs that show the connections between different scientific articles that cite each other, the relationships between collaborating authors, or the trends of evolving research topics. By using overlay visualization, bibliometricians can identify important research trends, focal points, and scientific collaborations within a field of knowledge. The main advantage of overlay visualization in both fields is that it brings

together information from different sources in a single view, allowing for a more holistic understanding. In Public Health, it allows health professionals to identify patterns that might be missed if the data were displayed separately. In Bibliometrics, overlay visualization allows researchers to to view and analyze complex relationships between various entities in a given research domain. However, there are challenges in overlay visualization in these two fields, including the complexity of big data, the possibility of information overload, as well as the need for effective visual design so that the information displayed is easily understood by users. The development of overlay visualization in Public Health and Bibliometry requires creativity, a deep understanding of the data at hand, and the use of appropriate visualization tools so that the information provided can provide better understanding in analyzing and making decisions.

Figure 3: Density Visualization Reproductive Public Health, Bibliometric.

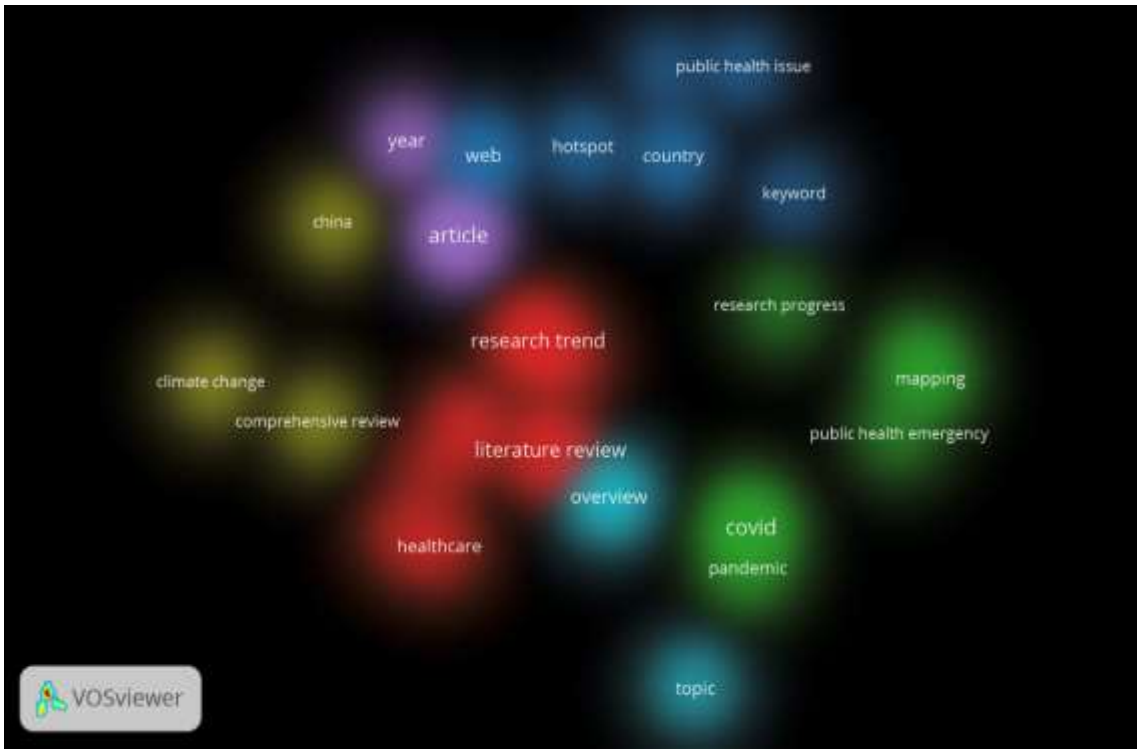


Figure 3 above is a Density Visualization image. In the figure it can be seen that each cluster is already in its respective category. Clusters that often appear are sky-colored ones such as web, hotspot, country, keyword, and public health issue. Density Visualization is a visualization method used to describe or analyze the distribution or density of a phenomenon or entity along a certain space or time. When applied in the context of Reproductive Health in Public Health, this technique can provide a deeper understanding of the distribution patterns of events or factors related to reproductive health in the population. In Reproductive Public Health, Density Visualization is used for distribution patterns of reproductive health diseases or events. This technique allows to display the spatial or temporal distribution of a particular disease or reproductive health issue in a population. For example, it can show the density of sexually transmitted disease (STD) cases in a geographic area over a period of

time. Furthermore, access to reproductive health services. Density Visualization can help identify areas that have limited or distant access to reproductive health services. This can include density of health facilities, location of prevention programs, or distribution of reproductive health services such as family planning clinics. Finally, for the analysis of risk factors and determinants of reproductive health By visualizing the density of risk factors or determinants of reproductive health such as behavioral patterns, environmental conditions, or socio-economic conditions, researchers and health professionals can see the relationship between these factors and reproductive health problems.

Public health is faced with a number of complex and diverse challenges. Some of the major challenges include the first infectious diseases and pandemics. Global pandemics such as COVID-19, which highlight the vulnerability of the global health system and require a rapid and coordinated response. Increasing antimicrobial resistance to antibiotics, which poses a serious threat in the treatment of infections. Both mental health Stigma and Service Access: Stigma associated with mental health disorders remains a barrier to seeking help. Access to affordable and quality mental health services is also an important issue. Third health inequalities and access to health services. Health Inequalities: Inequalities in access to health services across regions or socioeconomic groups remain a serious problem. Global vs. Local Health Crisis: The focus on global issues is often leading to decreased attention to local health issues. Fourth, climate change and environmental health. Impacts of Climate Change: Climate change impacts health through the spread of vector-borne diseases, poor air quality, natural disasters, and other environmental issues. Pollution and Health: Air, water and soil pollution continue to pose a serious threat to human health. Fifth technology and ethics. Use of Health Data: Challenges related to data privacy, information security, and the ethical use of technology in storing and analyzing health data. Digital Health Literacy: Inability of some groups to optimally utilize health technologies due to lack of digital literacy. Sixth, reproductive and population health. Challenges related to increasing cases of infertility and reproductive health issues. Changing Demographics: Aging populations and changing family patterns are changing the demands on the healthcare system. Finally, an integrated health system. Difficulties of Interdisciplinary Coordination: Challenges in integrating mental, physical and environmental health services to provide holistic care.

Staying healthy in the community has a tremendous impact, both individually and collectively. Here are some of the benefits of maintaining health in the community. 1. Better Health Individually. Improves Quality of Life: With good health, individuals can live a better life, free from illness or health problems. 2. Productivity and Economic Wellbeing. Better Performance: Good health contributes to higher productivity at work. Reduced Health Costs: Reduced high medical care and treatment costs due to preventing preventable diseases or conditions. 3. Decreased Burden on Health System. More Efficient Health Entities: With a healthier population, health systems can focus on prevention, reducing the burden of unaffordable care due to preventable diseases. 4. Reduced Health Inequalities. Enabling equal access to healthcare for all members of

society, reducing health disparities between social or economic groups. 5. Prevention of Chronic Diseases and Conditions. Reduces premature mortality: Minimize the risk of developing chronic diseases such as diabetes, cardiovascular or other lifestyle-related diseases. Better Mental Health: Taking care of your mental health also prevents mental disorders that can affect your daily life. 6. Environmental Quality and Sustainability. Healthier Environment: Raising awareness of the importance of a clean and healthy environment for the overall well-being of society. Ecological Balance: Maintaining public health is also linked to environmental sustainability and ecological balance. 7. Health of Future Generations Improved Health of Next Generations: Efforts to maintain the health of communities today form the foundation for the health of future generations. 8. Positive Role in Social Development. Stronger Social Cohesion: Healthier societies tend to have better levels of social interaction, forming communities that are more solidary and concerned about shared health.

CONCLUSION

Based on the results and discussion above, it can be concluded that public health is an important field of study in an effort to understand and improve the quality of life of the entire population. By understanding the meaning of public health, identifying public health challenges, understanding the role of public health in modern society, and proposing measures to improve public health, we can understand how important public health is in maintaining the health and well-being of the entire population. In this conclusion, we have touched on some important issues in public health, but there are many more aspects that can be explored to deepen our understanding of the field. This bibliometric review provides a deeper understanding of public health research trends in the span of 2018-2022. The analysis highlights the main research foci, the development of key themes, and the collaborations between researchers that support efforts to find solutions to increasingly complex health challenges. This understanding has important implications for guiding future research directions in support of strengthening global public health. By paying attention to the research trends revealed, health policy makers, researchers, public health practitioners and research institutions can direct their resources to support research that has the greatest impact on improving population health. In addition, this review can also serve as a foundation for the development of more effective health policies and better-targeted public health intervention strategies.

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