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Mapping The Landscape of Childhood Obesity Research: Insights from A Comprehensive Bibliometric Analysis in Scopus Journals

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ABSTRACT: This study aims to determine the development of scientific publications, mapping the scope and theme of publications related to obesity in early childhood published in Scopus indexed journals from 2013-2023. This study uses the Scopus database which is retrieved using the publish or perish application. From the results of data extraction, 200 articles were obtained with keywords in the article titled Childhood obesity. This research uses keyword co-occurrence analysis to identify and explore the main fields and topics that appear in publications. The application used to analyze the data is Vos Viewer. Based on the results of the analysis, 7 clusters were obtained. This study provides information to researchers, especially researchers in Indonesia about publication trends related to Childhood obesity. It is hoped that this research can be a foundation for further research, scientific development, and implementation in the fields of early childhood, health, and physical education.

Keywords: childhood obesity, early childhood education, bibliometrics.

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1 INTRODUCTION

Childhood obesity is a major global health issue that has been on the rise worldwide, affecting both developed and developing countries (Kawuki et al., 2021). According to the World Health Organization, there has been an alarming increase in its prevalence globally, with over 41 million children under the age of five estimated to be overweight or obese in 2016. This condition affects both developed and developing countries, with approximately half of the obese children living in Asia and one quarter in Africa (World Health Organisation, 2021). The increase in children affected by obesity has significantly risen, as seen in China where between 2000 and 2011, the prevalence of childhood obesity almost tripled from 6.5% to 16.8%. This increase in prevalence can be attributed to several factors such as unhealthy eating habits, lack of physical activity, and family history. (Ji & Cheng, 2008; Jia et al., 2017; Min et al., 2018).

The increase in children affected by obesity has significantly risen, as seen in China where between 2000 and 2011, the prevalence of childhood obesity almost tripled from 6.5% to 16.8%. This increase in prevalence can be attributed to several factors such as unhealthy eating habits, lack of physical activity, and family history (Ji & Cheng, 2008; Jia et al., 2017; Min et al., 2018). Childhood obesity makes children vulnerable to several chronic health conditions such as diabetes, high cholesterol, hypertension, heart disease, asthma, and joint pain (Biro & Wien, 2010; Zhang et al., 2018). If left unchecked, obese children are likely to continue to be overweight during adolescence and adulthood, which is linked to a high risk of life-limiting comorbidities (Milliken et al., 2019; Russell & Russell, 2019; Zhang et al., 2018). Moreover, it also affects children's self-esteem, leading to poor self-image and depression.

In Indonesian based on the survey conducted by the Ministry of Health in 2018, the prevalence of obesity among children aged 5-12 in Indonesia reached 12.8% (Kesehatan RI, 2021). The Indonesian Pediatric Society (IDAI) reported in 2020 that 17.6% of children in Indonesia suffered from obesity, with the highest rate found in Jakarta (27.4%) and the lowest in Maluku (7.3%). A 2019 study by the Faculty of Medicine at the University of Indonesia found that 26% of children aged 6-12 living in urban areas suffered from obesity. In addition, a 2018 study by the University of Indonesia found that the prevalence of obesity among children aged 3-5 in Jakarta was 18.5%. According to the results of the Riskesdas survey in 2018, approximately 11.8% of children aged 0-5 in Indonesia suffered from obesity.

The study on Childhood obesity is interesting to explore. This research aims to identify publications on Childhood obesity and describe the characteristics of these studies. Bibliometric analysis is used in this study to explore the characteristics of publications on Childhood obesity and to understand the research trends in this field. Based on this, this study aims to examine the development of publications and mapping the research coverage of Childhood obesity. The objective of this article is to offer in-depth insights into the diversity and trends of childhood obesity research through a comprehensive bibliometric analysis of articles indexed in Scopus journals. By mapping the research

landscape, we seek to identify key developments, researcher collaborations, and primary research focuses in addressing and understanding the issue of childhood obesity. Through the analysis of bibliometric data, this article aims to provide a profound understanding of future research directions and make a positive contribution to global efforts in the prevention and management of childhood obesity.

2 METHOD

This research uses an impartial academic approach called a systematic literature review (SLR) to attempt to find and assess all related literature regarding Mapping the Landscape of Childhood Obesity Research to conclude the existing problems. To address a given subject, a systematic literature review finds, chooses, and evaluates relevant research. In particular, the "publish or perish" mentality allows for the integration of evidence into the systematic framework for gathering and synthesizing research results to provide a more thorough understanding of a given phenomenon or topic (Osunsan et al., 2022).

2.1 *Data source*

The data source of this bibliometric research is from Scopus data, with the help of the publish or perish tool. Data was retrieved on 01 March 2023 using the keyword "Childhood obesity" from 2013-2023 publication sources from the Scopus database with a maximum disbursement of 500. From the search results using the publish or perish tool, 200 articles from the journal were obtained, then the data was saved using a file with the RIS/References manager extension so that the data was tidier, the researcher used the Mendeley tool to update the identity of the journal article. To present data mapping and keyword co-occurrence analysis, researchers used the Vos Viewer application.

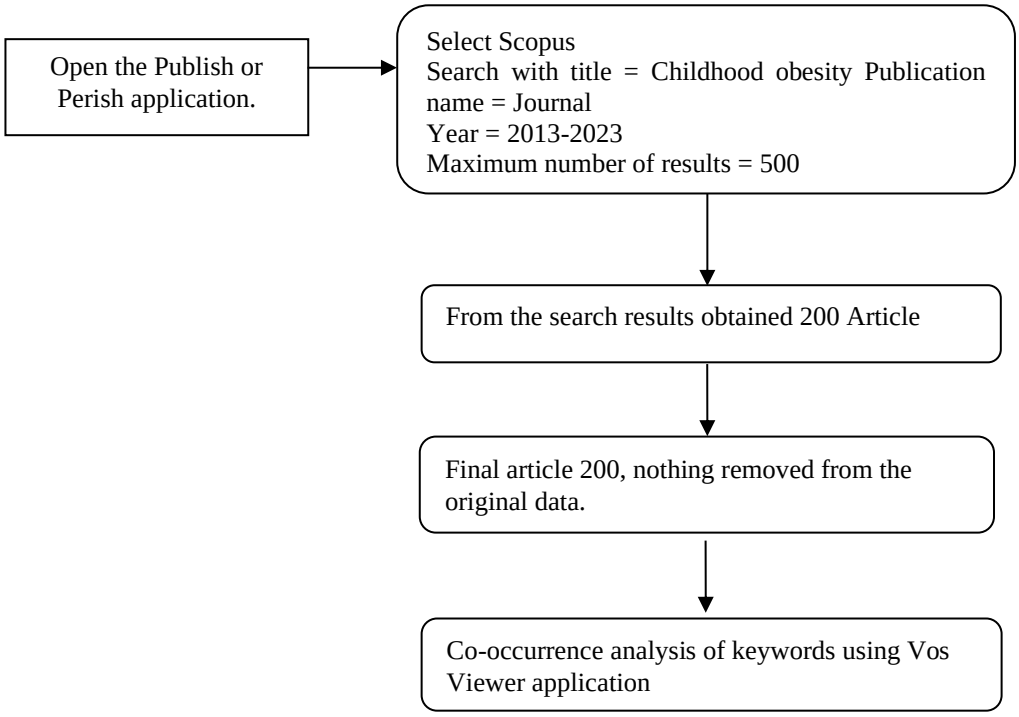

Figure 1. Article metadata from Scopus using publish or perish application.

2.2 *Procedure*

The study concentrated on conference papers, original publications, and reviews. Duplications were thoroughly examined and eliminated to guarantee the review's quality. Before inclusion, a comprehensive review of the abstracts of the articles under consideration was carried out for analysis and purification to guarantee the quality and relevance of the material. Later, in the selection process, a more thorough assessment of the papers was done. The research process is focused on answering the following research questions: (1) How has the publication on Childhood obesity developed? (2) Who are the main contributors (Authors and Journal names) to the published articles? (3) What are the themes related to Childhood obesity? (4) What themes are the most interesting to investigate in the future?

3 RESULT AND DISCUSSION

3.1 *Result*

3.1.1 *Development of research on physical activity*

Publication of articles with the title Childhood obesity published in the Scopus database from 2013 to 2023 has decreased. In a period of ten years, 2013 was the largest number with 50 publications and in 2022 and 2023 no articles were found on Childhood obesity in Scopus indexed journals. For more details regarding the development of research on Childhood obesity in Scopus indexed journals can be seen in Figure 2.

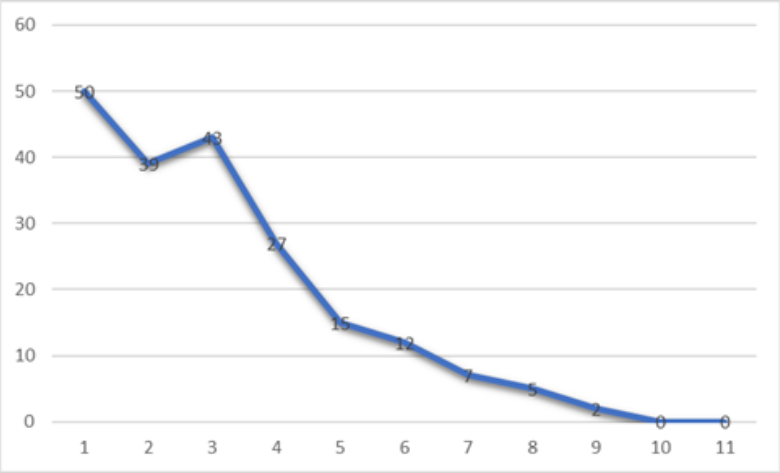

Figure 2. Childhood obesity publication chart

3.1.2 *Articles that are heavily cited*

Citation is one of the indicators that a publication has an impact or not, the higher the number of citations, the more useful it is for the academic world. Based on data obtained from publish or perish about Childhood obesity published in the Scopus database in the range of 2013-2023, the most cited article is the writing of Ogden et al., (2014) with 6319 citations, in second place followed by Simmonds et al., (2016) the number of citations 810. Here are the top five citation rankings related to Childhood obesity.

Table 1. Articles with the highest number of citations

Cites	Authors	Title	Year	GS
6319	C.L. Ogden	Prevalence of childhood and adult obesity in the United States, 2011-2012	2014	1
810	M. Simmonds	Predicting adult obesity from childhood obesity: A systematic review and meta-analysis	2016	2
687	S. Kumar	Review of Childhood Obesity: From Epidemiology, Etiology, and Comorbidities to Clinical Assessment and Treatment	2017	3
527	J. Woo Baidal	Risk Factors for Childhood Obesity in the First 1,000 Days: A Systematic Review	2016	4
452	A. Danese	Childhood maltreatment and obesity: Systematic review and meta-analysis	2014	5

Based on Table 2, the most cited article titles are Prevalence of childhood and adult obesity in the United States and Predicting adult obesity from childhood obesity: A systematic review and meta-analysis, 2011-2012 when looking at these two articles many authors cite or want to know the impact and causes of obesity on early childhood.

3.1.3 *Cluster Childhood Obesity*

Based on the results of network visualization analysis using Vos Viewer from the research data, it is found that words that often appear with the minimum number of occurrences of keywords 2 option are obtained 28 thresholds from 156 keywords. The words that appear most often include 'physical activity' 'exercise' 'public health' 'covid-19' 'mental health'. Profiles of 10 keywords that often appear from a total of 66 research keywords can be seen in table 2.

Table 2. Publication profile on Childhood Obesity

No	Keyword	Occurrences	Total Link strength
1	Obesity	34	73
2	Children	10	26
3	Overweight	8	22
4	Child	7	19
5	Childhood	6	17
6	Adolescent	4	16
7	Body mass index	6	15
8	Prevention	5	15
9	Meta-analysis	4	11
10	Systematic review	3	11

Source: Disbursement of articles in the Scopus database using publish or perish analyzed using Vos Viewer (01 December 2022)

The ratio of the number of entries in a data matrix to the area of the data graphic is known as data density. A bibliometric network's key regions may be quickly viewed using density visualizations. For example, overlay visualizations may be used to display changes over time. While the Density Visualization of this research can be seen in Figure 3.

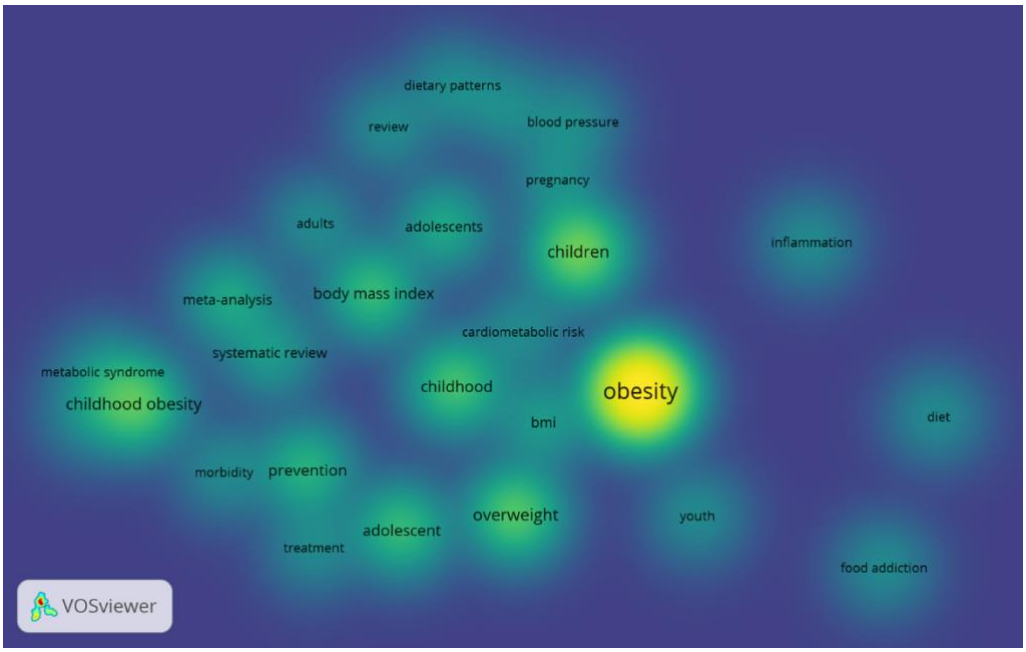

Figure 3. Occurrence Visualization of the Keyword Childhood Obesity (Source. Disbursement of articles in the Scopus database using publish or perish analyzed using Vos Viewer (01 December 2022)).

Furthermore, co-occurrence analysis based on the highest frequency of keywords forms clusters related to Childhood obesity. The process of grouping unlabeled data or data points into distinct clusters so that like data points are grouped and distinct data points are grouped separately is known as clustering. To put it simply, the goal of the clustering process is to identify and group together individuals that share similar characteristics. The division of clusters can be seen in Figure 4.

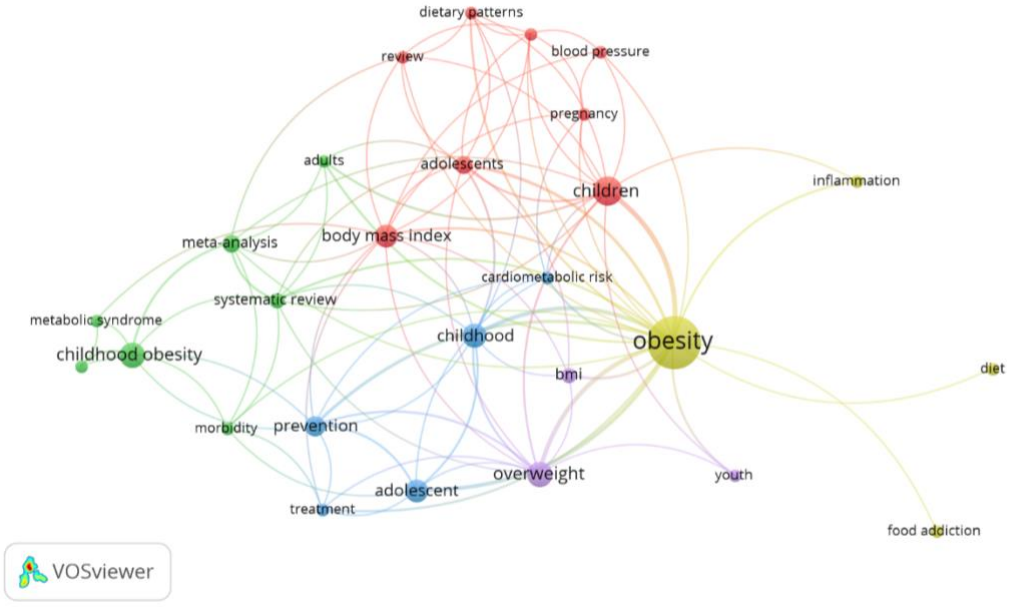

Figure 4. Frequency of frequently occurring keywords in Childhood obesity. (Source: Disbursement of articles in the Scopus database using publish or perish analyzed using Vos Viewer (01 December 2022)).

From Figure 4, it is visually divided into 5 clusters, namely 1) Adolescents 2) adults 3) adolescents 4) diet 5) body mass index. The Vos Viewer application presents data related to the development of publications on Childhood obesity from year to year, based on data analyzed from 2013-2023 visually presented in Figure 5.

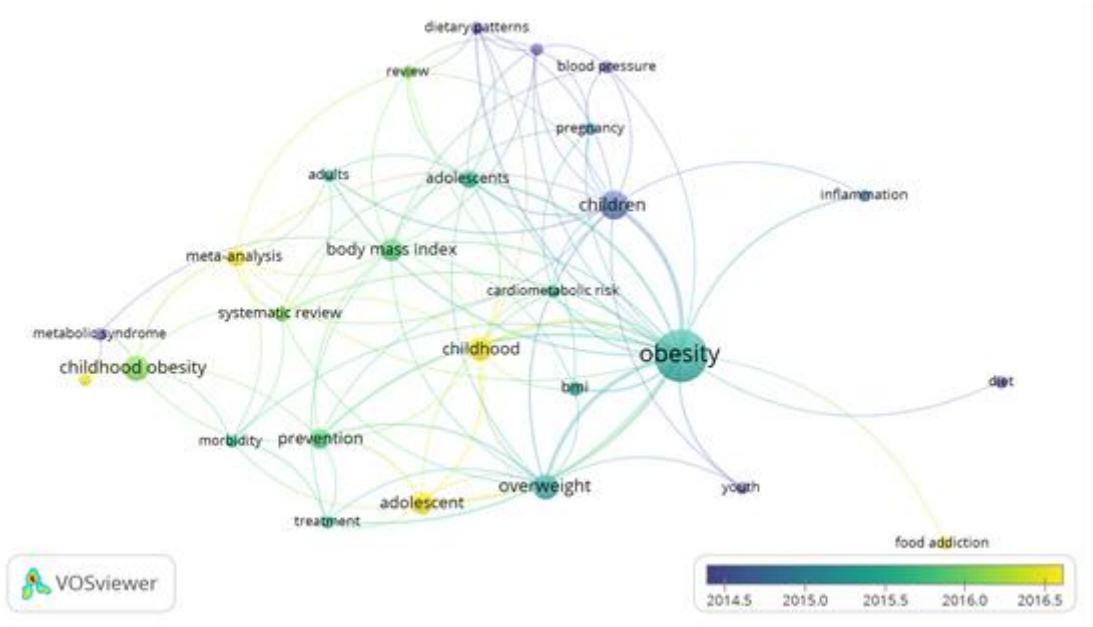

Figure 5. Average highest frequency by year of publication in Childhood obesity. (Source: Disbursement of articles in the Scopus database using publish or perish analyzed using Vos Viewer (01 December 2022)).

Based on Figure 5, the brighter the color, the more recent the research. This means that obesity research related to childhood, adolescence, meta-analysis was conducted in the range of 2016.

3.2 *Discussion*

Based on the results of research from 200 journal articles published in Scopus indexed journals on obesity in early childhood, 95% of the articles were published in journals with a focus on the causes and effects of obesity in early childhood such as an article entitled Prevalence of childhood and adult obesity in the United (Ogden et al., 2014b) published in the Journal of the American Medical Association, an article entitled Risk Factors for Childhood Obesity in the First 1,000 Days: A Systematic Review of Childhood Obesity: From Epidemiology, Etiology, and Comorbidities to Clinical Assessment and Treatment was published in the International Journal of Environmental Research and Public Health. Thus, the study of obesity in early childhood tends to be related to health.

When analyzed from the country of origin of the author, of the 200 journal articles, the authors came from America An, (2020), Cunningham et al., (2014), Australia Giles et al., (2015), India Ranjani et al., (2016). Research related to childhood obesity in Indonesia has no authors from Indonesia. This is certainly an opportunity for researchers in Indonesia to conduct research related to childhood obesity so that it is expected to be published in Scopus indexed journals.

In bibliometric research related to childhood obesity using Vos Viewer tools, the trend of this research has decreased from 2013, as evidenced in 2023 there were no articles published in the Scopus database related to childhood obesity. However, there are some interesting studies to be researched in the future, namely related to the increase in the number of obese children after the pandemic. This is because in previous studies there were many reviews related to childhood obesity during the pandemic, so further research needs to be carried out regarding the impact of habits during the pandemic on childhood obesity. the current state of childhood obesity research reflects a global interest in exploring its causes and effects, with opportunities for researchers in various regions, including Indonesia, to contribute and fill existing gaps in the literature. The declining trend in recent years and the emergence of pandemic-related research avenues highlight the evolving nature of this field, emphasizing the need for ongoing and targeted investigations to address the multifaceted challenges posed by childhood obesity.

The prevailing focus on understanding the causes and effects of childhood obesity in the analysed literature highlights the global commitment to addressing this critical health issue (Huang et al., 2012; Reyes-Olavarría et al., 2020). The prominent contributions from countries like the United States, Australia, and India underscore the international collaboration in tackling childhood obesity (Famelia et al., 2018; Gao et al., 2019), but the absence of Indonesian authors suggests an area for potential growth and collaboration. The bibliometric analysis using Vos Viewer tools reveals a concerning decline in childhood obesity research since 2013, with no articles found in the Scopus database in 2023. However, the pandemic has introduced a new dimension to this research landscape, with the potential consequences of lifestyle changes during lockdowns on childhood obesity becoming an intriguing avenue for further exploration (Genin et al., 2021). Moving forward, researchers should seize the opportunity to contribute to the discourse on childhood obesity, particularly in regions where representation is currently limited. Collaborative efforts across nations can enhance the comprehensiveness of research findings and foster a more holistic understanding of this complex issue. Additionally, future investigations should address the impact of the pandemic on childhood obesity, providing insights that can inform public health strategies and interventions.

In essence, while the current literature reflects a strong commitment to unravelling the intricacies of childhood obesity, ongoing efforts are crucial to adapting to emerging challenges and ensuring a comprehensive, globally informed approach to prevention and intervention strategies. The evolving research landscape calls for renewed dedication to unravelling the multifaceted factors contributing to childhood obesity and devising effective strategies to mitigate its prevalence and associated health risks.

4 CONCLUSION

The analysis of 200 journal articles on childhood obesity, as indexed in Scopus, underscores a predominant focus on exploring the causes and effects of obesity in early childhood. Approximately 95% of these articles emphasize health-related aspects, reflecting a global commitment to comprehending and addressing this critical health

issue. Noteworthy contributions from countries like the United States, Australia, and India highlight international collaboration in tackling childhood obesity, revealing the breadth and depth of research in this field. The absence of Indonesian authors suggests an area for potential growth and collaboration. Looking forward, researchers have an opportunity to contribute meaningfully to the discourse on childhood obesity, particularly in regions with limited representation. Collaborative efforts across nations should be encouraged to enhance the comprehensiveness of research findings. Future investigations should delve into the impact of the pandemic on childhood obesity, offering insights to inform public health strategies and interventions. In essence, this conclusion does not merely restate data but provides a substantive reflection on the research findings. It aligns with the research objectives, answering key hypotheses, and emphasizes the need for ongoing efforts in understanding childhood obesity. The implications for future research applications are evident, suggesting the importance of expanding our understanding of this multifaceted issue. This concise and clear conclusion avoids repetition of the abstract or experimental results and encourages a continuous pursuit of knowledge in the field of childhood obesity.

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