

Based on Citespace V: The Development and Enlightenment of Research on Foreign Obese Adolescent's Sports

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Abstract: By using Citespace V, this paper made a metrological analysis and visualization analysis of 2265 papers about foreign obese adolescent's sports from 1991 to 2021, which were downloaded from SCIE, SSCI and A&HCI of web of science. Conclusions: (1) The publication of papers in the United States ranks first, followed by Australia, Spain, Canada and England respectively. Countries such as Sweden, Finland, Denmark and South Africa have rare papers, but achieve great influence relatively. (2) The researched papers are distributed in 523 journals. Among them, BMC Public Health ranks first in the number of articles published, followed by Journal of School Health. Journal of Physical Activity & Health ranks third. (3) Keywords such as adolescent, physical activity, obesity and health have led the research trend in the field of foreign obese adolescents' sports in the past 30 years.

Keywords: Obese adolescents; Sports; Research trends; Citespace V; Foreign

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1. Introduction

In 2016, the Outline of the Healthy China 2030 Plan issued by the Central Committee of the Communist Party of China and the State Council was emphasized that it is necessary to improve the physical fitness of all people. On May 25, 2020, Hong Cheng who is a member of the Chinese People's Political Consultative Conference (CPPCC) National Committee and vice chairman of Beijing CPPCC, insisted that "healthy China" starts with the health of children and adolescents. However, in the past few decades, the obesity rate of adolescents in China has continued to increase ^[1]. In 2012, the rate of adolescent obesity was 6.4% ^[2]. Under the background of "Healthy China Strategy", it is very urgent and necessary to vigorously improve the physical health of the whole people, especially for the young people.

By reading the literature previously, it is found that the research of obese youth sports in China mainly involved aerobic exercise prescriptions ^[3,4], aerobic exercise combined with diet prescriptions ^[5] and aerobic diet combined with resistance training prescriptions ^[6,7]. Various scientific studies have undoubtedly greatly promoted the development of obese youth sports research. Compared with China, the published papers on foreign obese youth sports have shown a rapid growth trend in the past two decades ^[8-12].

Under the comprehensive background that modern sports theories are more inclined to the integration of multidisciplinary research, the research on obese youth sports in China should keep pace with the times and make up for shortcomings. By analyzing the research of foreign obese youth sports, the scholars can

learn advanced research concepts and methods in time. With the continuous advancement of science and technology, a method of mapping knowledge domains based on the analysis of knowledge units is booming. Using this method, the data of massive literature in the frontier fields of science can be converted into visual images which can show the overall picture, development trend and structural characteristics ^[13]. Therefore, based on Citespace V, the purpose of this paper is to use a visual analysis method to explore research hot-spots and the newest dynamics on obese youth sports research, and predict developing trends and hot issues in the future.

2. Methods

This paper use Citespace V based on JAVA platform, a software of visual analysis, to visually analyze the knowledge graph of 2265 papers. The data of SCIE, SSCI and A&HCI from the web of scienceTM was used. “Obese youth sports,” “Article,” and “English” were selected as the search topic, the literature type and the language respectively. #1 “sport* OR physical education” and #2 “obese teenager*OR overweight teenager* OR obese adolescent* OR overweight adolescent* OR obese youth* OR overweight youth” were set as the subject terms. The literature obtained for this paper are 145020 and 23519 respectively. Then, the term was researched again with #3 (#1 and #2), and finally 2265 papers were obtained, showed in **Table 1**. The literature researched time was December 14, 2021.

Table 1. Sources of data

Content	
Data Sources	SCIE, SSCI and A&HCI (Web of Science TM)
Subject terms	(sport* OR physical education) and (obese teenager* OR overweight teenager* OR obese adolescent* OR overweight adolescent* OR obese youth* OR overweight youth)
Literature published time	from 1991-01-01 to 2021-12-14
Literature type	Article
Language	English
Results	2265 papers

3. Results and discussion

3.1. Analysis of main countries

The parameters were set in the Citespace V software, in which Time Slicing was from 1991 to 2021, and the Node Types was Country. In addition, the author cut one slice every one year. The threshold item was “top N 50 per slice”; that is, the 50 items with the highest frequency in each time slice were selected to obtain the distribution map of countries on foreign obese youth sports (**Figure 1**). Among them, each circle (node) represents a country, and the size of the circle represents the publication of papers while the purple ring on the outermost layer of the circle represents the centrality of the papers, and the width of the ring is proportional to the centrality.

A total of 2265 papers about obese youth sports were retrieved in this research. Among them, the number of papers published in the United States ranks first, with 871 papers, which is followed by Australia (171 articles). Spain, Canada, England, Brazil, China, Germany, Italy, and Netherlands are behind with number of 147, 134, 124, 100, 94, 89, 86, and 80 papers respectively. From the perspective of the centrality of the papers, the United Kingdom (0.75) and Australia (0.17) are ranked first and second respectively. Followed by Sweden (0.1), France (0.08), Finland (0.07), Germany (0.07), Italy (0.07), Brazil (0.05), Denmark (0.05) and South Africa (0.05). These countries with higher centrality play a very important role

in the research of obese youth sports. Sweden, Finland, Denmark, and South Africa have rare publications, but they still have greater influence. The number of publications in China has made some progress, but its centrality is only 0.02, which investigates that the differences in language, cultural background, and disciplinary development are one of the main reasons of restricting the Chinese researchers from publishing relevant research in international journals.



Figure 1. Distribution map of countries on foreign obese youth sports

3.2. Analysis of main journals

By analysis of journals, the author can determine the distribution of core journals in a certain research field [14]. This paper analyzed the papers published in journals and found that the 2265 papers retrieved are distributed in 523 journals. Ten main journals that each journal published more than 35 papers were showed in **Table 2**. The publications of papers in those journals accounts for 25.298% of the total published papers. Among them, BMC Public Health ranks first with publications of 123 articles. Followed by Journal of School Health with 73 articles. Journal of Physical Activity & Health published 58 articles, ranking third. International Journal of Environmental Research and Public Health, Medicine and Science in Sports and Exercise and International Journal of Obesity etc., are ranked behind respectively. It can be seen that the published papers of obese adolescents' sports are distributed in many academic fields such as sports, medicine, public health and nutrition. On the other hand, the impact factors of those top ten journals are all greater than two. According to the distinction of the Chinese Academy of Sciences, International Journal of Behavioral Nutrition and Physical Activity (IF=6.457) is located in district 1. Medicine and Science in Sports and Exercise (IF= 5.411), International Journal of Obesity (IF=5.095), Pediatrics (IF=7.124) and Obesity (IF=5.022) are located in district 2. Which can be seen that foreign scholars have a certain depth and height in the study of obese youth sports. The papers published in those journals above undoubtedly play a significance role in the writing and submission in the field of obese youth sports for Chinese scholars.

3.3. Analysis of keyword co-occurrence network map

Keywords or terms is the core of the paper's condensing and refining, and its frequency reflects the research hotspots in a certain field. 2265 of related literature were imported into Citespace V for metrological analysis. Time Slicing was from 1991 to 2021 while Node Types was set as Keyword. In addition, the author cut 1 slice every 2 years and set the threshold item as "top N 10 per slice"; that is, the 10 items with the highest frequency in each time slice were selected. The algorithm chose "Pathfinder" and "Pruning Sliced Networks," to get 80 nodes and 308 co-occurrence network map of keywords (**Figure 2**).

Table 2. The main journals of foreign obese youth sports (top 10)

No	Journals	IF	Country	Number of papers
1	BMC PUBLIC HEALTH	3.295	England	123
2	JOURNAL OF SCHOOL HEALTH	2.118	USA	73
3	JOURNAL OF PHYSICAL ACTIVITY & HEALTH	2.592	USA	58
4	INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH	3.390	Switzerland	53
5	MEDICINE AND SCIENCE IN SPORTS AND EXERCISE	5.411	USA	51
6	INTERNATIONAL JOURNAL OF OBESITY	5.095	England	48
7	PEDIATRICS	7.124	USA	46
8	INTERNATIONAL JOURNAL OF BEHAVIORAL NUTRITION AND PHYSICAL ACTIVITY	6.457	England	44
9	PUBLIC HEALTH NUTRITION	4.022	England	42
10	OBESITY	5.022	USA	35

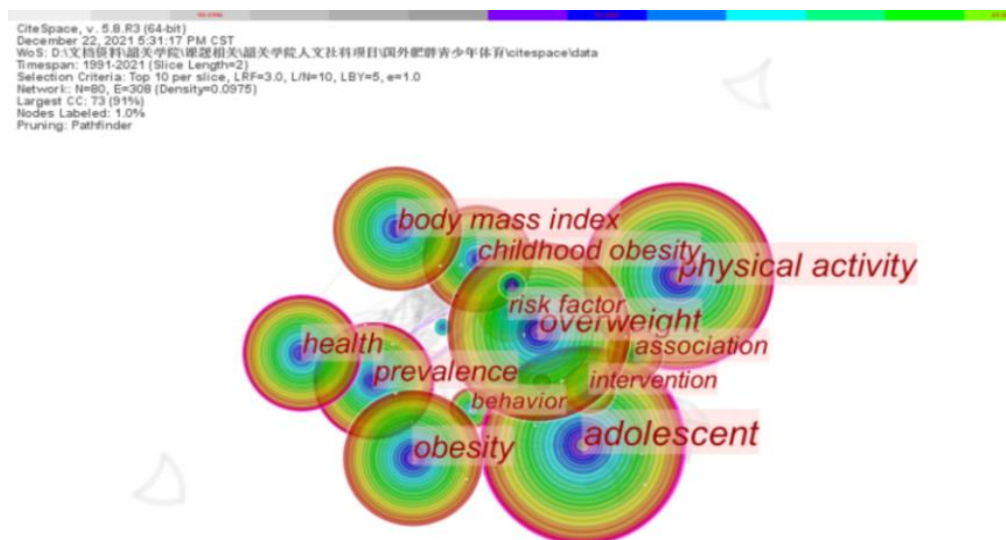


Figure 2. Keywords co-occurrence network map

Figure 2 shows that the keyword hot-spots have a strong neutrality, indicating the research on obese youth sports is relatively concentrated. Which theoretically reflects the hot-spots. It can be seen from **Figure 2** and **Table 3** that adolescent has the highest frequency because it is the subject of this research. The keywords such as physical activity, obesity, and health are the top ten high-frequency words in the field of obese adolescent sports (**Table 3**). And they have led the trend of research in this field in the past 30 years. On the other hand, keywords that has a centrality greater than 0.08 and has strong influence in this field include: women (0.23), prevalence (0.21), blood pressure (0.2), body composition (0.15), men (0.11), body mass index (0.08). By comprehensive analysis of the keyword co-occurrence map and high-frequency keywords, it is found that the frontier of obese youth sports research is always consistent with the hot issues of human concern. That is to conduct research on related influencing factors in the field of sports and health of obese adolescents as well as the multi-dependent variables and explanatory variables between them. And explore the theoretical and practical issues of physical exercise and health promotion for obese adolescents from multiple perspectives.

Table 3. High-frequency and high-centrality of keywords (top 10)

No	High-frequency keywords		High-centrality keywords	
	Keywords	Frequency	Keywords	Centrality
1	adolescent	1701	adolescent	0.53
2	overweight	1146	physical activity	0.37
3	physical activity	1064	women	0.23
4	obesity	726	prevalence	0.21
5	body mass index	495	health	0.21
6	prevalence	446	blood pressure	0.2
7	health	411	body composition	0.15
8	childhood obesity	363	men	0.11
9	association	187	adolescent girl	0.09
10	risk factor	169	body mass index	0.08

4. Conclusion

In order to comprehend the relevant research trends intuitively and the research hot-spots, this paper used the method of combining scientometrics and information visualization. By analyzing the data from SCIE, SSCI and A&HCI, the conclusions are as follows:

(1) The publication of papers in the United States ranks first, followed by Australia, Spain, Canada and England respectively. Countries such as Sweden, Finland, Denmark and South Africa have rare papers, but achieve great influence relatively. It is seen that the foreign scholars have a certain depth and height in the study of obese youth sports.

(2) The researched papers are distributed in 523 journals. Among them, BMC Public Health ranks first in the number of papers published, followed by Journal of School Health. Journal of Physical Activity & Health ranks third.

Keywords such as adolescent, physical activity, obesity and health have led the research trend in the field of foreign obese adolescents' sports in the past 30 years.

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Disclosure statement

The authors declare no conflict of interest.

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