

The Research Hotspots and Frontiers of Adolescent Students' Physical Health and Parental Rearing Behavior: An international Bibliometric Analysis

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Abstract

Using the Web of Science Core Collection as the data source for research literature on the theme of "adolescent students' physical health and parenting styles," this study employs CiteSpaceV software for visualization and analysis to review the current status and hotspots of research on adolescents' physical health and parenting styles, grasping frontier trends and developmental trajectories. The study indicates that the number of studies on this topic shows an overall increasing trend. The issue of adolescents' physical health has become a growing global concern, prompting scholars to explore effective methods and strategies to improve adolescents' physical health. The United States not only publishes the most articles but also has the closest connections with researchers from other countries, positioning it as a key hub in the international research on adolescent students' physical health and parenting styles. The research spans multiple disciplines, with social sciences being the most active. Research hotspots mainly focus on adolescents, children, behavior, and physical activities..

Keywords

Primary and Secondary School Students; Children and Adolescents; Physical Fitness Levels; Parenting Styles; Parenting Behavior.

1. Introduction

The physical health of children and adolescents is a crucial component of the national fitness of China and has garnered widespread attention globally [1, 2]. The World Health Organization (WHO) defines health as "not merely the absence of disease, but a state of complete physical, mental, and social well-being" [3]. The physical health of children and adolescents has become a universal concern across the world [4]. In China, nearly one-third of children and adolescents face varying degrees of health risks; almost a quarter of primary and secondary school students are overweight or obese, and the myopia rate is the highest globally [5]. The physical fitness of

Chinese children and adolescents has been declining for over 20 years, and the overall situation is extremely worrying [6].

Previous studies have suggested that parenting styles influence children's self-esteem, personality, academic performance, and peer relationships, all of which can directly or indirectly affect adolescents' physical health. As the first teachers in their children's lives, parents' upbringing methods have a subtle yet profound impact on children and adolescents [7]. This is not only a relatively stable behavioral tendency displayed during the upbringing and education of their children but also a comprehensive reflection of their educational concepts and behaviors [8]. Children and adolescents are in a rapid growth stage of physical and mental development, making them highly malleable in various aspects. Parenting styles can potentially influence their interests, abilities, health, socialization, and motivation [9]. A meta-analysis by Haolei1 (2018) found that reasonable parenting styles significantly impact the physical and mental health of primary and secondary school students, with parental care, warmth, intimacy, and emotions substantially affecting their psychological and social adaptation [10]. Arantxa (2019) indicated that positive parental behaviors and upbringing methods are negatively correlated with adolescents' anxiety, depression, and suicidal tendencies and positively correlated with their physical health, influencing their physical development and fitness [11]. Dong Yaqi (2019) discovered through a cross-sectional study that parenting styles mediate children's physical self-efficacy, exercise motivation, social motivation, and enjoyment motivation [12].

Although many scholars have conducted extensive research on this topic, most have focused on specific areas of the impact of parenting styles on the physical health of children and adolescents. No study has comprehensively explored the current status, hotspots, and frontiers of international research on the physical health of adolescent students and parenting styles. Therefore, this study uses the bibliometric analysis software Citespace to analyze research literature on adolescent students' physical health and parenting styles from the "Web of Science" database. The study aims to interpret the current status of international research on adolescents' physical fitness and parenting styles, explore publication characteristics and research hotspots, and provide developmental ideas for related research in China, offering suggestions for the research in the field of children's and adolescents' physical health.

2. Research methods

2.1. Data Sources

The study retrieved data from the Web of Science Core Collection database, with the search cut-off date being March 25, 2022. The search language was set to English, and the document type was set to Article. The search theme terms (TS) were defined as follows: TS1 = parental rearing behavior, parenting style, parental rearing practices, parental rearing patterns, parent behavior, parental rearing styles; TS2 = healthiness, physical health, health status, physical constitution, physical quality; TS3 = adolescents, teenagers, youngsters, schoolboy, schoolgirl, pupils, school students. The search query was constructed as TS1 AND TS2 AND TS3, excluding conference abstracts, books, and other non-article literature, resulting in a final retrieval of 4782 articles.

2.2. Research Tools

This study used the data analysis and visualization tool CiteSpace 5.3, developed by Professor Chen Chaomei's team, to create knowledge maps and identify the most active research frontiers and development trends [13].

2.3. Analysis Procedures

This study conducted co-occurrence analysis on the annual publication volume, countries, institutions, disciplines, highly cited papers, and keywords of the related literature to

understand the research hotspots. In the visualized maps, the size of the nodes represents the frequency of occurrence, and the color of the node rings indicates the publication time. In the co-citation analysis, nodes represent elements such as authors and countries, with node size indicating the number of citations, and the lines between nodes representing the connections between them.

3. Results and Discussion

3.1. Annual Publication Volume Analysis

The study results show an overall increasing trend in the number of publications from 1991 to 2022. During the eleven years from 1991 to 2001, the development was slow, with fewer than 30 publications in all years except for 1999, which had 35 publications. Since the beginning of the 21st century, the number of publications has shown an increasing trend year by year. Although there were slight declines in some years compared to the previous year, the overall trend of increase is very clear, with significant increases in 2008, 2013, and 2019, each exceeding 56 more publications than the previous year. By 2021, the number of studies had reached 436. According to the Leps curve prediction, the number of studies on this topic will continue to increase in the future. These data indicate that the number of international studies on adolescent students' physical fitness and health status and parenting styles is steadily increasing, suggesting that adolescent physical health has become a growing global concern among scholars who are beginning to explore the causes, strategies, and methods to improve adolescent physical fitness and health.

3.2. Analysis of Publications by Countries and Institutions

As shown in Figure 1, the United States (USA) has the highest number of publications on this research topic (1932 articles), followed by Australia (336 articles) and England (315 articles). The number of publications in the United States is 2.97 times the combined total of the second and third places. These three countries account for 41.5% of the total international publications, with other countries having fewer than 300 articles each. In terms of centrality of publications by country, the United States ranks first with 0.86, followed by Australia with 0.09, while the centrality of other countries is below 0.08. This indicates that the United States not only has the highest number of publications but also the closest connections with researchers from other countries, positioning it as a key hub in the research topic of adolescent students' physical fitness and health status and parenting styles. The centrality of other countries is below 0.1, indicating relatively low levels of cooperation with researchers from other countries.

As shown in Figure 2, the institutions with the highest number of publications on this research topic are the University of Minnesota (110 articles), University of North Carolina (100 articles), Deakin University (66 articles), Harvard University (60 articles), and Ghent University (57 articles). The institutions ranked sixth to tenth also have publication volumes between 50 and 56 articles. Overall, the top ten institutions are all well-known universities from abroad or regions, demonstrating strong research capabilities. However, the centrality values of all these universities are relatively low (≤ 0.1), indicating that the degree of cooperation and connection between these universities on this research topic is relatively low, and no university has yet played a key hub role in the knowledge cooperation network.

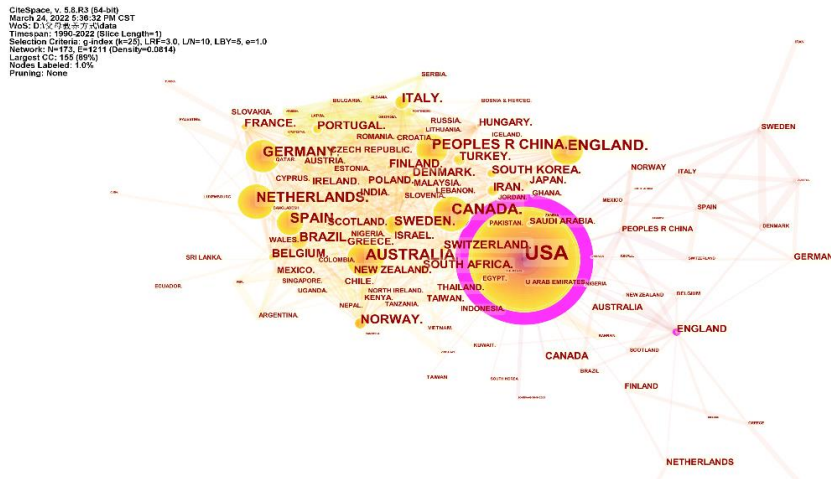


Figure 1 Analysis of national documents

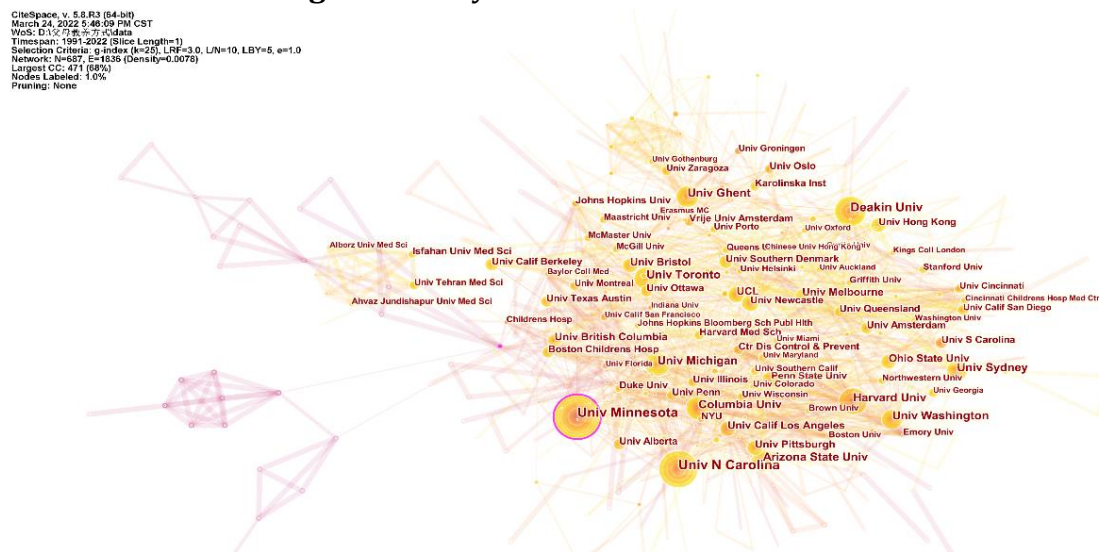


Figure 2 Analysis of institutional publications

3.3. Disciplinary Analysis

In the disciplinary distribution of this research topic, the studies are mainly concentrated in the field of Social Science, followed by Public, Environmental & Occupational Health, Psychology, Pediatrics, Psychiatry, and Nutrition & Dietetics. In terms of publication volume, Social Science leads significantly with 2412 publications, followed by Public, Environmental & Occupational Health with 1382 publications, and Psychology with 1008 publications. Other disciplines have fewer than 800 publications each. In terms of centrality, Social Science ranks the highest at 0.89. The disciplines with a centrality greater than 0.1 are Psychology (0.3) and Public, Environmental & Occupational Health (0.15). This indicates that these disciplines play a crucial role in integrating knowledge, promoting cooperation and exchange in the research theme related to adolescents' physical health and parental rearing practices, and acting as key hubs in the network of knowledge dissemination.

3.4. Research Hotspot Analysis

The keyword hotspot analysis results (Figure 3) show that the keywords with the highest frequencies are Adolescent (1669 times), Children (1220 times), Behavior (1120 times), Physical Activity (1111 times), and Health (871 times). Following these are Mental Health (520 times), Overweight (515 times), Obesity (513 times), and Prevalence (504 times). Among these, Adolescent, Children, Behavior, and Physical Activity appeared more than 1000 times. The top 15 high-frequency keywords indicate that the research subjects are mainly adolescents and

children, suggesting that the studies on students' physical fitness and health status and parental rearing practices are primarily focused on this group and their behaviors and physical activities. In terms of keyword centrality, besides Adolescent (0.08) and Children (0.05), Behavior (0.05) and Physical Activity (0.04) are among the high-centrality keywords, indicating that these frequently occurring keywords play an essential intermediary and linking role between different research themes and directions in the field of adolescents' physical fitness, health status, and parental rearing practices, holding a core hub position.

In this study, the high frequency of keywords such as children's behavior and physical activity highlights the significant impact of parental rearing practices on adolescents' and children's exercise motivation. During adolescence and childhood, individuals are highly malleable, and parental interventions can help form correct lifestyle and exercise behaviors [14, 15]. Parents' behaviors in daily life also influence the motivation of adolescents and children to participate in physical activities. Enhancing adolescents' and children's exercise motivation and stimulating their drive to engage in physical activities not only strengthens parent-child emotional communication but also increases children's interest in sports, cultivates lifelong exercise habits, and enhances physical health levels [16].

CiteSpace, v. 5.8.R3 (64-bit)
 March 24, 2022 9:16:35 PM CST
 Mod. Q: 0.9727
 Mean Silhouette: 0.9727
 Timespan: 1991-2022 (Slice Length=1)
 Selection Criteria: q-index (k=25), LRF=3.0, L/N=10, LBY=5, e=1.0
 Network: N=846, E=10111 (Density=0.0283)
 Largest CC: 838 (89%)
 Nodes Labeled: 1.0%
 Pruning: None

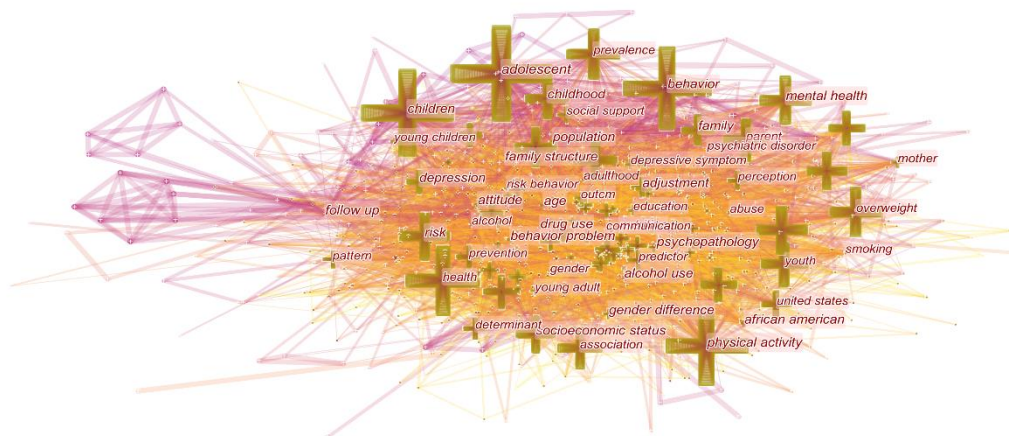


Figure 3 Keyword frequency analysis

3.5. Frontier Analysis

As shown in Figure 4, the topics with a prolonged burst duration include Health Status, Chronic Illness, Cigarette Smoking, Behavior, Adjustment, Drug Use, Body Image, and Population. In recent years, the keywords with significant burst strength are Weight Status, Benefit, Anxiety, Autism Spectrum Disorder, and Barrier. The burst detection reveals high-intensity bursts in Chronic Illness, Health, Behavior, and Health Status. Chronic diseases in adolescents and children, characterized by long cycles and recurrent episodes requiring long-term treatment, directly affect their growth and development. Family rearing practices can achieve healthy adaptation in adolescents and children [17], aiding in the recovery from chronic diseases. Numerous studies have confirmed that empathetic parenting of "sick children" and providing care can improve the condition of adolescents and children with chronic illnesses [18].

Parental rearing styles are determined by parental attitudes and influenced by the parents' personalities and habitual practices. As parents increasingly focus on physical and mental health [19], adolescents and children are gradually affected by this attention. Strict parenting can provoke rebellious tendencies in adolescents and children, create conflicts, and lead to irritable or even violent behaviors. Conversely, overly indulgent parenting can result in selfish and irresponsible traits in adolescents and children [20].

Actions speak louder than words; adolescents often imitate their parents' behaviors. Parents' various actions subtly influence every aspect of an adolescent's life [21]. In a positive family environment, parents should serve as role models for adolescents and children, demonstrating healthy habits and civilized behavior. By improving their own well-being, parents not only promote health awareness in their children but also influence their behaviors in terms of consciousness, attitudes, and emotions [22].

Top 25 Keywords with the Strongest Citation Bursts

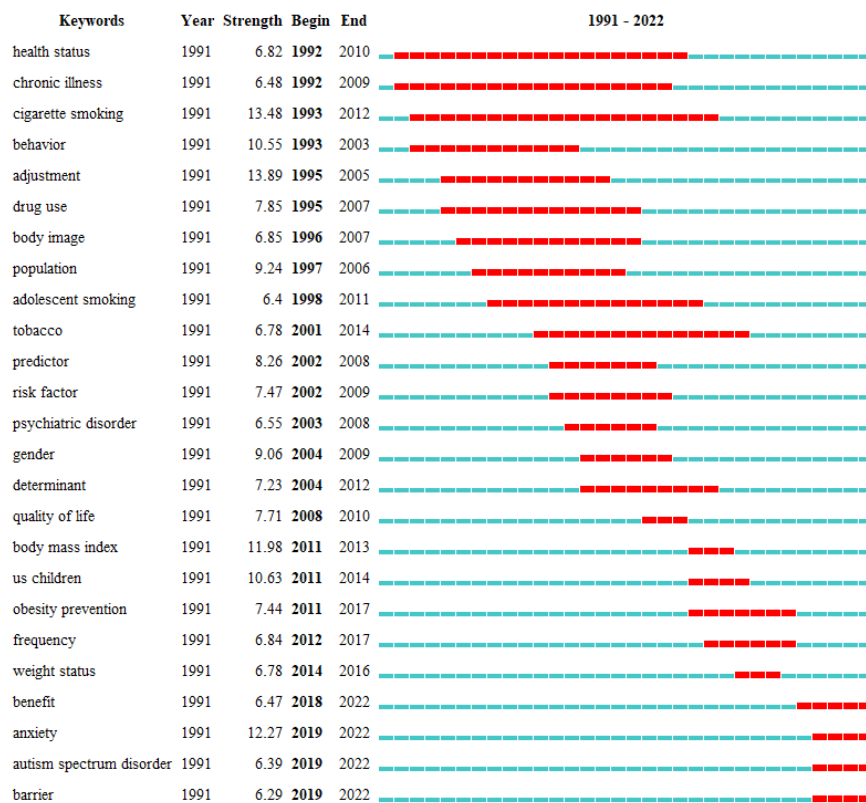


Figure 4 Keyword prominence analysis

4. Conclusion

In recent years, the number of studies on the impact of parental rearing styles on the physical health of adolescents and children has been steadily increasing. Countries such as the United States, Australia, and the United Kingdom have played significant roles in this field of research. Notable contributions have come from institutions including the University of Minnesota, the University of North Carolina, Deakin University, and Harvard University. This research theme involves multidisciplinary studies, encompassing fields such as Public, Environmental & Occupational Health, Psychology, Pediatrics, Psychiatry, and Nutrition & Dietetics. Current research hotspots focus on behavior, physical activity, and health, while future research frontiers are expected to concentrate on topics such as weight status, benefits, anxiety, and autism spectrum disorder.

Just as understanding the nuances of various exercise forms is essential for your ongoing work in preventing falls among the elderly, identifying and analyzing the key trends in this area of adolescent health will be crucial. The intersection of different disciplines and collaborative efforts, much like those seen in the studies you are involved in, highlights the importance of a comprehensive approach to research that can lead to significant improvements in health outcomes.

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