Physical and Psychological Health Challenges Among Secondary School Adolescents: A Comprehensive Review

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ABSTRACT:

SSAPPH refers to the physical and psychological health status of adolescents during the secondary school stage.Secondary school adolescents play a crucial role in shaping and developing their physical and psychological health. This systemic review analyzed 521 papers on secondary school adolescent physical and psychological health (SSAPPH) in the Scopus database from 2005 to 2025, showing the extensive attention of interdisciplinary scholars. The research results show that many scholars pay special attention to the physical and psychological problems of adolescents, and Chinese scholars have shown significant interest in this topic. Keyword co-occurrence analysis highlighted concepts such as "physical activity", "self-efficacy", "body mass index", and "psychological health", showing their core status in SSAPPH research. In terms of research methods, quantitative methods dominate, while multidimensional analysis is universal, which reflects the researchers' emphasis on multi-angle interpretation of data. In terms of the application of theoretical frameworks, "self-determination theory (SDT)", "social cognitive theory (SCT)" and "ecological system theory (EST)" have become the three most commonly used theories, providing solid theoretical support for SSAPPH research. Research further identifies personal, family, school, and social factors as key determinants of SSAPPH outcomes. Finally, the paper offers insights into future research directions, aiming to foster the continued development of the field and to provide more comprehensive scientific guidance for improving the physical and psychological health of adolescents.

Keywords: physical and psychological health, secondary school adolescents; systematic review; antecedent; geometric size

1. Introduction

About one-sixth of the world's population is adolescent, and adolescence is a critical period of transition from childhood to adulthood (WHO, 2024). Adolescence is an important growth stage with rapid physical and psychological

development and facing multiple growth issues. Adolescents are a high-risk group for psychological health problems worldwide (WHO, 2024). In today's society, the physical and psychological health of middle school adolescents has become a focus of attention in the fields of education and public health. With the development of science and technology and changes in lifestyle, adolescents are facing unprecedented physical and psychological health challenges, such as poor eyesight, overweight and obesity, anxiety and depression (Mofatteh, 2021). According to the survey, most of the physical and psychological health problems of adolescents are caused by social competition pressure, school and family expectations, and their own cognition and self-regulation ability, lack of good exercise habits, Internet addiction, academic pressure, bad eating habits, Inadequate sleep duration, etc. (Jiang et al., 2022). Adolescents are the pillars of the economy,the inheritors of culture,the promoters of innovation,and the source of social vitality. The growth and development of secondary school adolescents significantly influence the nation and community, while positive childhood experiences can help reduce the risk of adverse health outcomes (Duong et al., 2021, Mitani et al., 2024). Through a comprehensive analysis of existing literature, this paper will explain the research overview of the physical and psychological health of middle school adolescents, clarify the research subject, and explore its role in personal growth and social progress. This paper will employ both qualitative and quantitative research methods, integrated with a theoretical framework, to perform an in-depth analysis of the factors influencing the physical and psychological health of middle school adolescents. On the analysis of SSAPPH related literature, this paper provides an overview of SSAPPH research, explains the research methods and theoretical progress of SSAPPH, summarizes the measurement methods and antecedents of SSAPPH, and proposes possible future research directions. It is hoped that it can provide theoretical reference and guidance for future research by interested scholars. At the same time, it provides a knowledge base for parents, educators, and policy makers.

2. The definition of SSAPPH

In the history of Western medicine, Hippocrates, the father of medicine in ancient Greece, was one of the first people to emphasize the connection between physical and psychological health. Health is considered a state of balance among the various elements of the body, reflecting an early understanding of the overall well-being of both body and mind(Marcum, 2017). Over time, the in-depth research of psychology and medicine in the early 20th century promoted the further development of people's understanding of the relationship between psychological health and physical health. In particular, the rise of psychosomatic medicine, a field that focuses on how psychological factors affect physical health, thus emphasizing the inseparable connection between the two (Alexander, 1950). In 1948, the World Health Organization (WHO) proposed a landmark definition of health in its charter, further clarifying the concept of health: "Health is a state of physical, psychological and social well-being and not merely the absence of disease or infirmity." This definition played a key role in the popularization and acceptance of the concept of "physical and psychological health" internationally (WHO, 1995). In Chinese culture, ancient Chinese medicine theory also emphasizes overall physical and psychological health. For example, the Yellow Emperor's Classic of Internal Medicine has the idea of "unity of form and spirit", which believes that the body and spirit are interdependent and mutually influential (Loukas et al., 2010). Adolescence is a golden period for the formation of personality, values and healthy habits, which has a profound impact on the long-term development of individuals and the overall well-being of society. This period not only witnesses profound changes in the biological, cognitive, social-psychological and emotional fields, but also a period of major transformation in personal relationships and the environment (Backes et al., 2019). Paying attention to the physical and psychological health of middle school adolescents will help them build confidence, cope with challenges, and cultivate a healthy lifestyle that lasts into adulthood, which

is key to ensuring future prosperity and social progress (Lee et al., 2023, Solmi et al., 2022).

3. Methodology

A systematic review is a critical method for academic synthesis of evidence on a clearly defined topic. The purpose of a systematic review is to identify and evaluate strategies to promote collaboration between researchers from different disciplinary backgrounds (Chalmers et al., 2024) and is a comprehensive and systematic literature review method that aims to conduct an in-depth analysis of a specific topic or research question (Varsha et al., 2024). Therefore, a systematic review is more comprehensive, rigorous, bias-reducing, and highly reproducible than other reviews such as narrative reviews. (Brignardello-Petersen et al., 2024). In recent years, systematic reviews have also been frequently used to analyze adolescent physical and psychological health literature, such as physical and psychological health (Gkintoni et al., 2024), psychological health (Ekinci, 2024), and adolescent health (Sakhvidi, et al.,2023). This study conducted a systematic analysis of 521 peer-reviewed articles published from 2005 to 2025 to assess the current state of research in secondary school adolescent physical and psychological health (SSAPPH). The data encompassed a comprehensive range of factors, including publication years, journals, the geographical distribution of the first authors, and the thematic focus indicated by keywords. Additionally, the analysis delved into the research background, methodologies employed, theoretical frameworks guiding the studies, and the specific content of the research, which included dimensions and measurements of SSAPPH as well as the identified antecedents. This multifaceted approach aimed to provide a thorough overview of the scholarly discourse within the SSAPPH domain. The review employed a triad of analytical methods to enhance the comprehension of the research literature. Qualitative analysis was initially utilized to delve into the research literature, unearthing the predominant concepts and central themes. Subsequently, frequency analysis was applied to quantitatively assess the publication year, journal, first author region, research background, methodology, and theoretical framework, shedding light on the distribution and trajectory of scholarly work. Finally, keyword co-occurrence analysis, facilitated by VOSviewer software, visualized the relationships and patterns of co-occurrence among research topics, offering a novel lens through which to view the field's research dynamics. The amalgamation of these analytical approaches establishes a holistic and multifaceted framework for research analysis.

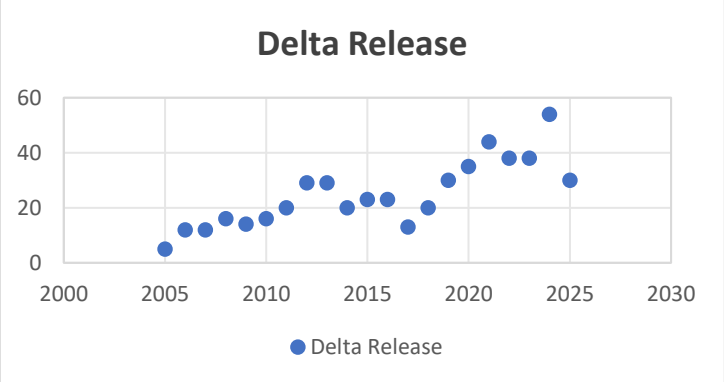
4. Results

Published papers.

Published papers by year

Figure 1 shows the number of papers published on SSAPPH in the past decade (2005 -2025). As can be seen from Figure 1, the number of high-level papers published in this field has generally increased from 2005 to 2025, especially in the past two decades, the number of publicly published papers from 2019 to 2025 accounted for 46 %, indicating that people's interest in this research field is increasing.

Figure. 1 Number of published papers about SSAPPH (data from Scopus)



Published papers by journal

Table.1 presents the published papers on SSAPPH by journal for the period from 1178-1194. Research on this topic is widely distributed across 159 journals, As shown in Table 1, research output is heavily concentrated in a few core journals, with the top three 《International Journal of Environmental Research and Public Health》 (9.54%), 《BMC Public Health》 (7.47%), and 《PLOS ONE》 (5.15%) - accounting for over 20% of publications, while 78% of the 159 journals published three or fewer articles. This journal distribution aligns with the disciplinary focus shown in Figure 2, where Medicine dominates at 53.6%, followed by Psychology (10.5%) and Social Sciences (8.3%), indicating SSAPPH's strong medical foundation with interdisciplinary extensions into psychology, social sciences, and environmental science (5.2%).

Table 1. Number of published papers on SSAPPH by journal

Journal	N	Percent
International Journal of Environmental Research and Public Health	37	9.54%
BMC Public Health	29	7.47%
Plos One	20	5.15%
BMJ Open	18	4.64%
Journal of School Health	11	2.84%
Children	9	2.32%
Trials	8	2.06%
Journal of Adolescence	7	1.80%
Journal of Adolescent Health	7	1.80%
Chinese Journal of School Health	6	1.55%
European Child and Adolescent Psychiatry	5	1.29%
Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz	4	1.03%
Child Abuse and Neglect	4	1.03%
Frontiers in Public Health	4	1.03%
Pediatrics	4	1.03%
Quality of Life Research	4	1.03%

Figure 2. The Field of The Journal Source

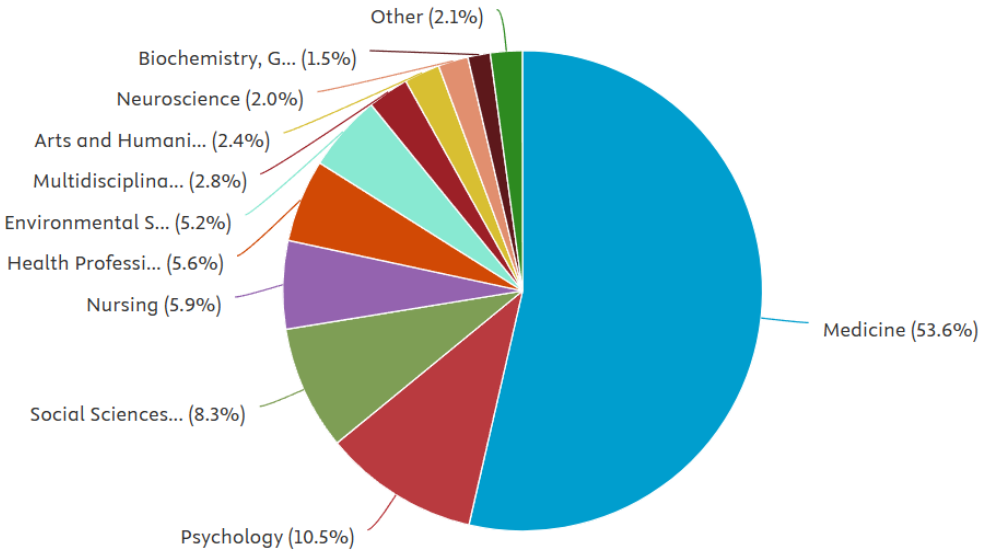
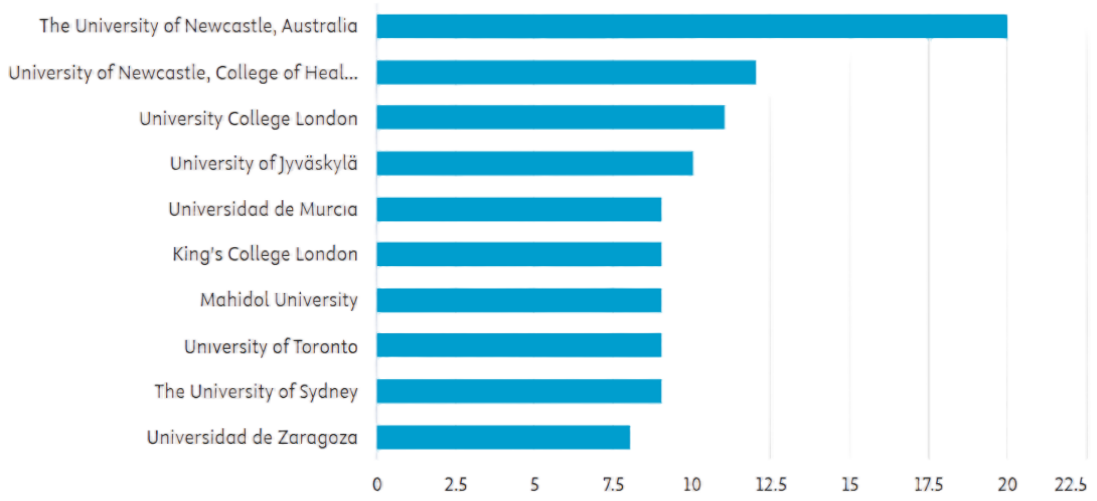
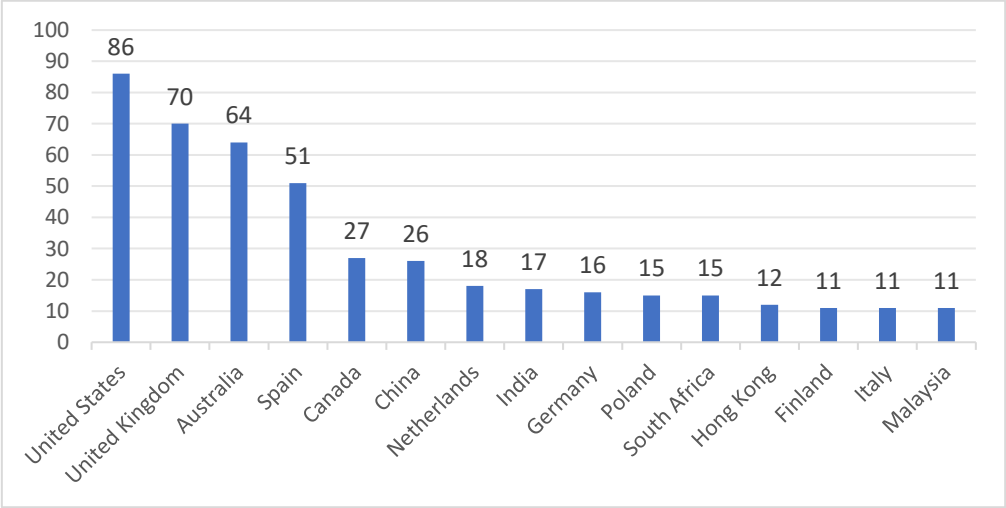


Figure 3. The number of documents of the affiliated institution of SSAPPH



The institutional landscape in Figure 3 mirrors this concentration pattern, with Australian institutions like The University of Newcastle leading in research output, followed by UK universities such as University College London and King's College London, reflecting the Anglophone academic dominance seen in Figure 4's authorship data. Notably, while China's mainland institutions rank sixth with 26 authors (3.75%), the combined contribution of Greater China (including Hong Kong's 12 authors) would significantly strengthen the region's standing in SSAPPH research. This integrated view reveals a research ecosystem where a small set of medical-focused journals, Western institutions, and Anglophone countries drive most output, though with meaningful participation from diverse disciplines and regions, including growing contributions from Chinese academia. The patterns suggest both the maturation of SSAPPH as a research field and persistent geographic and institutional imbalances in knowledge production.

Figure. 4 The first author of the published papers by region



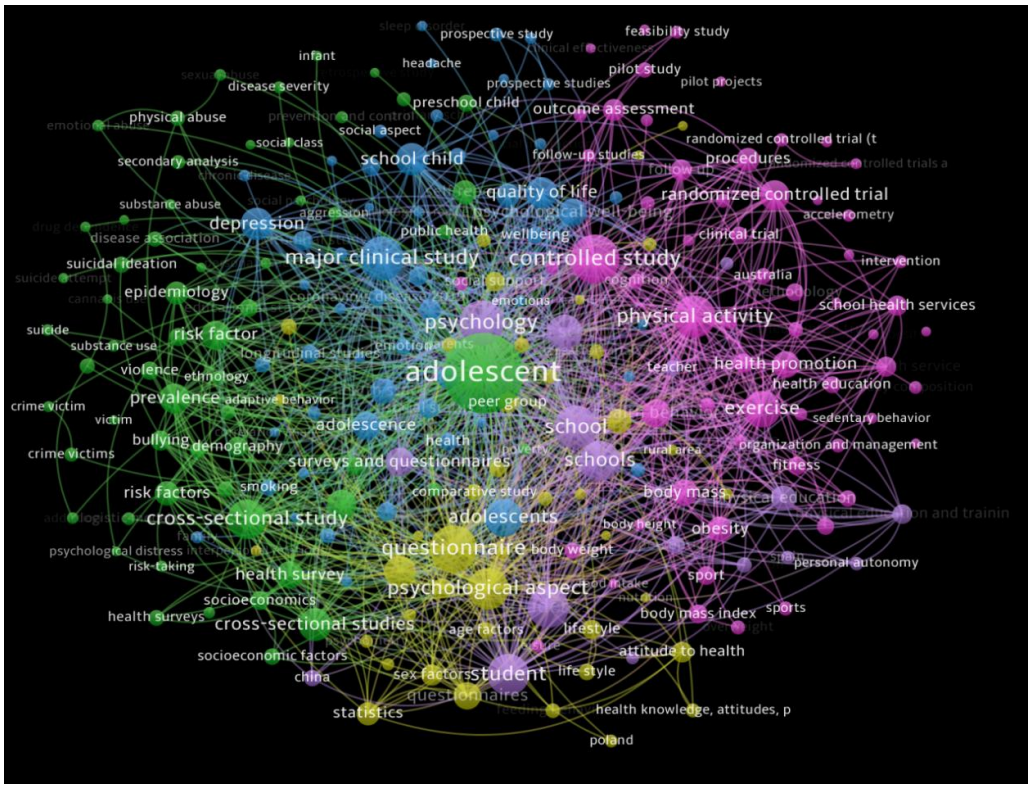
Published papers for each author

Table.2 shows authors who have published more than 4 papers in the field of SSAPPH. The most and second most published authors are Lubans, D. R. and Morgan, P.J. all from Australia.

Table 2. Published papers over 4 for author in SSAPPH.

Rank	Author	Documents	Citations	Total link strength
1	Lubans, D. R.	19	381	33
2	Morgan, P. J.	11	230	28
3	Peltzer, K.	8	182	26
4	Eather, N.	8	200	23
5	Lonsdale, C.	8	305	20
6	Pengpid, S.	7	135	20
7	Smith, J. J.	7	85	8
8	Plotnikoff, R. C.	5	84	8
9	Tabak, I.	4	12	0
10	Leahy, A.A.	4	12	0
11	Leatherdale, S.T.	4	12	0

Trends in keywords



A co-occurrence analysis based on VOS viewer software to examine the usage trends of SSAPPH-related keywords (Figure 5 and 6). The study found that adolescents, physical activity, self-efficacy, body mass index, and psychological health appeared frequently between 2005 and 2025.

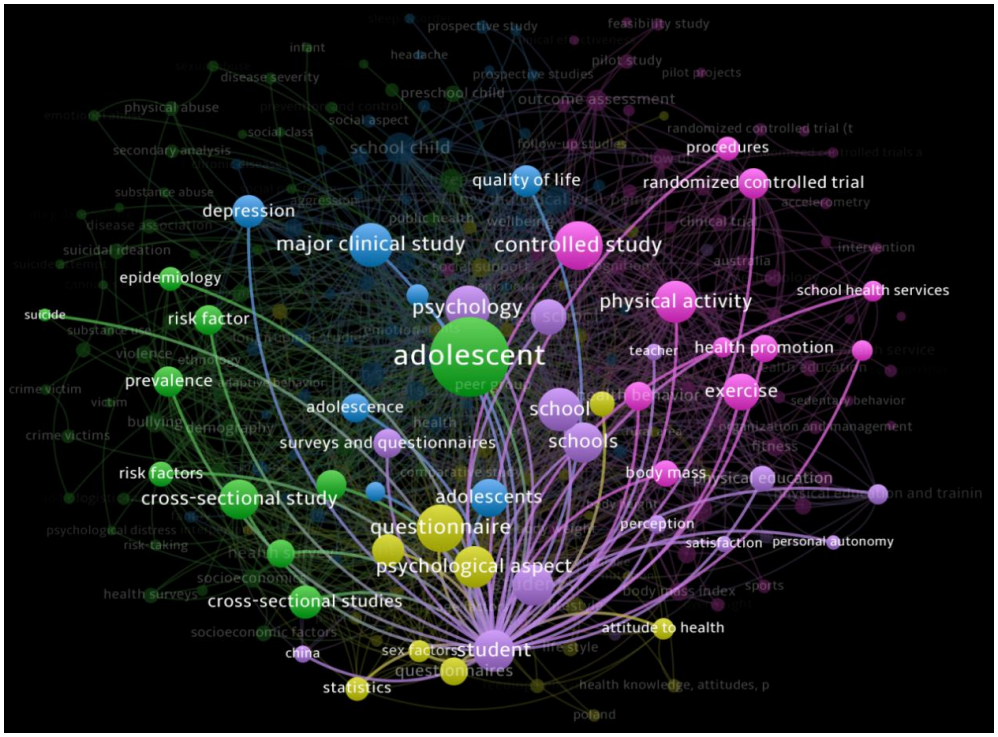


Figure 5 and 6. The keywords used more than 10 times in SSAPPH

Research Background of SSAPPH

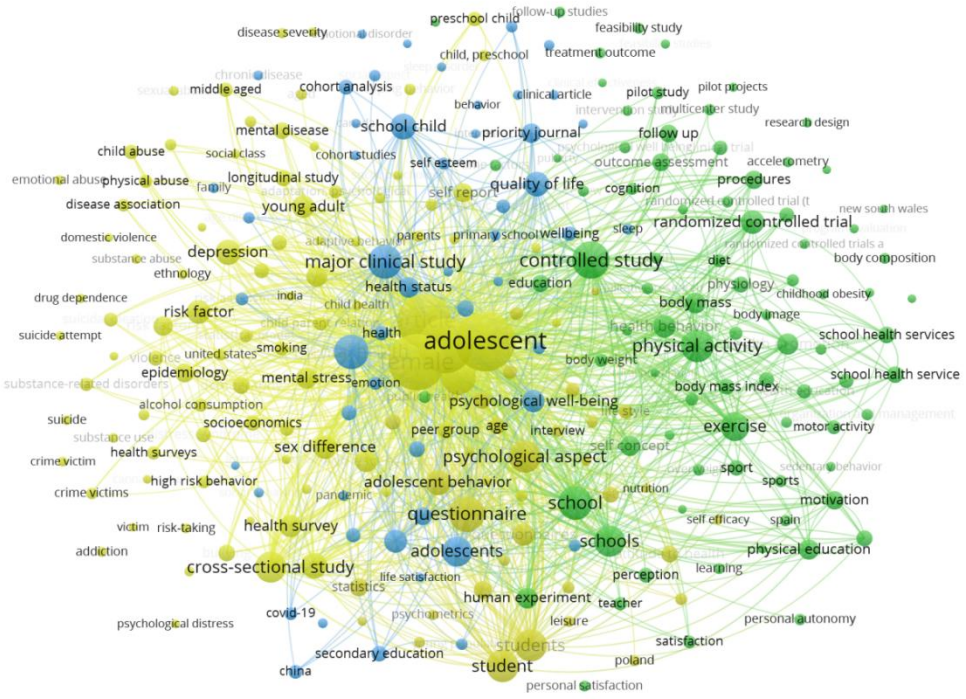
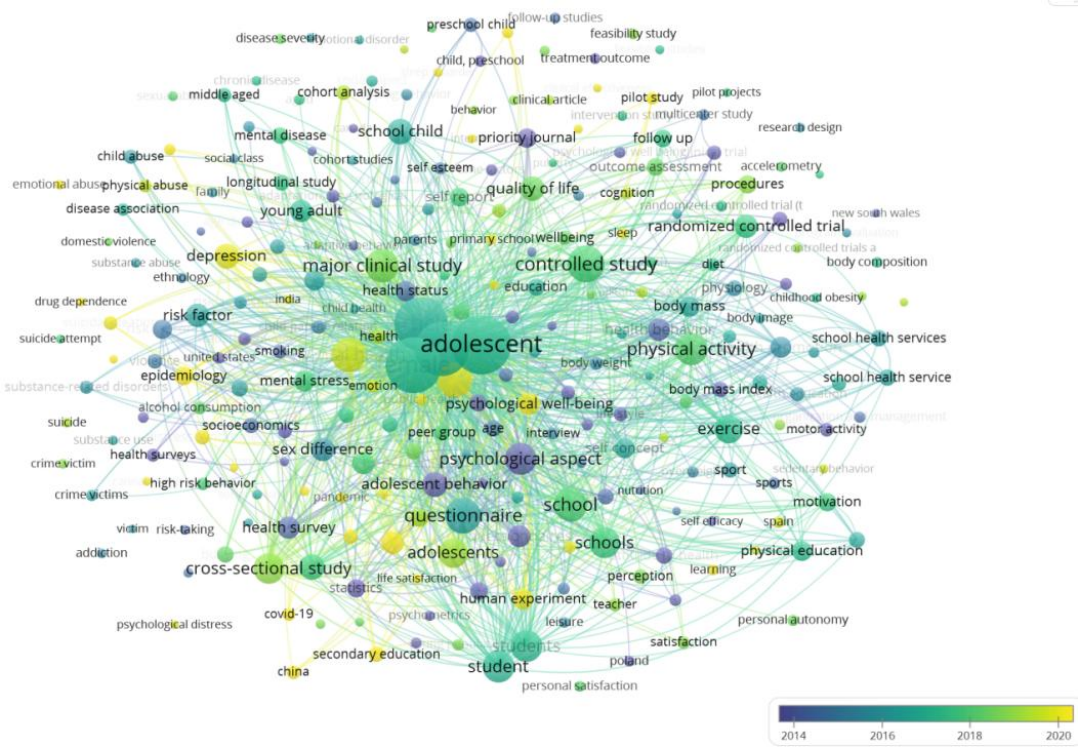


Figure 7 and 8 presents a global perspective on the physical and mental health issues of adolescents, covering BMI values, mental health, physical activity and healthy lifestyles and risky behaviors, the influence of social environment, as well as educational interventions and health promotion strategies. Notably, the figure highlights that the studies focus on the multi-faceted health problems affecting adolescents. This emphasis underscores the critical importance of paying attention to the physical and mental health of this group and indicates a

strong research interest in this topic. In recent years, research has placed greater emphasis on the physical and mental health of adolescent students and has explored solutions to health problems through targeted surveys or experiments on physical activities and lifestyle control.

Figure 7 and 8. Co-occurrence analysis on the trend of keywords in SSAPPH



Research Methods

Among the 521 research articles, 415 (79.65%) used quantitative methods, 87 (16.70%) used qualitative methods, and 19 (3.65%) used mixed models, As shown in Quantitative research is favored for its objec8tivity, accuracy and repeatability. It collects data through surveys and experiments, and uses statistical software such as SPSS for analysis, which is suitable for large-scale data collection and predictive model construction. Qualitative research focuses on in-depth understanding of the context, meaning and process of human behavior and social phenomena, revealing deep insights through interviews, observations and text analysis, and is particularly suitable for exploring complex and multi-dimensional social issues. Mixed method research combines the advantages of quantitative and qualitative research, and enhances the depth and breadth of research by using both methods at the same time, provides a more comprehensive perspective of data, and increases the credibility and validity of research. It is especially suitable for complex research problems that need to understand the quantitative characteristics and qualitative background of phenomena at the same time. This comprehensive approach allows researchers to analyze data from different perspectives, resulting in richer and more accurate results.

The theory of SSAPPH

Most of the papers in the research review linked SSAPPH with other theories (Table 3). Commonly used theories include self-determination theory (SDT), social cognitive theory (SCT), ecological system theory (EST), planned behavior theory (PBT), cross-context model (TCM), etc. Among them, self-determination theory (SDT), social cognitive theory (SCT) and ecological system theory (EST) are the most commonly used. According to theoretical classification, this theory mainly involves fields such as psychology, education, management and public health.

Table 3. Theories used in SSAPPH.

Theory	N	Examples
Self-Determination Theory	25	Murillo Pardo et al., (2019), Chen & Chen, (2021), White et al., (2022); Meerits et al., (2023); Demetriou & Bachner, (2019), Jago et al., (2011) et al...
Social Cognitive Theory	3	Demetriou & Bachner, (2019), Jago et al., (2011), Dewar et al., (2013),
Ecological System Theory	3	Murillo et al., (2019), Fakunmoju & Bammeke, (2015), Chen et al., (2021)
Theory of Planned Behavior	2	Kawabata et al., (2018), Liu et al., (2022)
Cross-context model	2	Lee et al., (2021), Polet et al., (2019)
Secondary control theory by Heckhausen et al.	1	Hamm et al., (2015)
Achievement Emotion Control-Value Theory	1	Fierro-Suero et al., (2020)
Intervention mapping protocol	1	Ten et al., (2016)
Environmental Impact Theory	1	Ward et al., (2016)
Values Confirmation Theory	1	Yan et al., (2023)
Health Promotion Model	1	Robbins et al., (2019)
Health Education Theory	1	Królicki, (2006)
Cognitive susceptibility-stress theory	1	Li et al., (2023)

Self-Determination Theory (SDT) used in SSAPPH

Self-determination theory (SDT), proposed by American psychologists Deci and Ryan in the late 1970s, is an important branch of positive psychology (Mullan, 1998). SDT focuses on the three major psychological needs of autonomy, competence and relationship, and believes that the satisfaction of these needs is crucial to stimulating the intrinsic motivation of individuals (Meerits et al., 2023). The theory distinguishes between intrinsic motivation, extrinsic motivation and de-motivation, and further refines the different types of extrinsic motivation, emphasizing the importance of autonomous motivation when individuals participate in activities because of the fun and satisfaction of the activities themselves. SDT not only predicts individual behavior and emotional responses but is also closely linked to psychological health. In the field of physical and psychological health of middle school adolescents, SDT guides educators to meet these basic psychological needs of students by creating a supportive environment, promoting their positive development and reducing problem behaviors (Lamoneda Prieto et al., 2024). In educational practice, the application

of SDT shows that if teachers' support strategies can meet these basic psychological needs of students, they will effectively enhance students' intrinsic motivation and learning engagement, thereby improving academic performance and reducing academic burnout (Su et al., 2024). SDT provides educators with a framework that provides a theoretical basis and practical direction for the comprehensive development of individuals by creating a supportive environment, meeting students' psychological needs, promoting their positive development, and reducing problematic behaviors.

Social Cognitive Theory (SCT) used in SSAPPH

Social cognitive theory (SCT) was proposed by Albert Bandura in the late 1970s. It aims to integrate cognitive factors to go beyond traditional behaviorism and explain the social learning process of individuals. The theory is based on the triadic interactive determinism and believes that individual behavior is the result of the interaction of personal factors, behavioral factors and environmental factors (Wood & Bandura, 1989). SCT emphasizes individual initiative and believes that behavior is not only influenced by external stimuli, but also by the individual's expectations and cognitive ability of the consequences of the behavior (Schunk & Usher, 2012). Observational learning, as a key component of SCT, enables individuals to imitate and learn new behaviors through sub-processes such as attention, retention, action reproduction, and motivation reinforcement (Khemka, 2022). SCT is widely used in education, management, communication and other fields. Especially in the field of education, it guides educators to promote positive learning attitudes and behaviors by enhancing students' self-efficacy and outcome expectations, thereby helping students build confidence and effectively cope with challenges. Self-efficacy, as an individual's belief in his or her ability to complete a task, affects task selection and persistence, and is influenced by factors such as personal experience, observational learning, and social persuasion. In the study of the physical and psychological health of middle school adolescents, SCT can be used to design and evaluate intervention programs to help adolescents establish a healthy lifestyle and cope with psychological problems (Leahy et al., 2019). As a comprehensive theoretical framework, SCT not only explains individual behavior and learning process, but also emphasizes the mutual influence between cognition, environment and behavior, and provides theoretical support for practice in multiple fields.

Ecosystem Theory (EST) used in SSAPPH

Ecology (Greek oikos = house, environment, logos = knowledge) in the biological sense is the teaching of the dependence of organisms on their surroundings, the ecosystem. American psychologist Urie Bronfenbrenner studied the dependence between people and the environment and proposed the ecological system theory in the 1970s, which aims to comprehensively explain the environmental system that affects individual development (Ryan, 2001). Recently, this theory has been renamed biological ecological system theory. It emphasizes that the child's own biology is the primary microenvironment and the fuel for development (Härkönen, 2001). Bronfenbrenner believes that the theory emphasizes that individual growth is jointly influenced by environmental systems at different levels from micro to macro, including micro systems (immediate environment such as family and school), meso systems (connections between micro systems), exo systems (such as parents' work environment),macro systems (sociocultural context such as culture and policy),and time latitude systems (considering the impact of time factors on individual development) (Crawford, 2020) . EST aims to provide a more comprehensive perspective to understand individual development, emphasizing the interaction and dynamic relationship between environmental factors and individuals, helping researchers and practitioners to identify and understand the multi-level environmental factors that affect individual development, so as to more effectively design educational and social interventions (Hoelting et al., 2024). The application of EST is particularly important in the field of physical and psychological health of middle school adolescents. It guides educators

and psychological health professionals to consider the development needs of adolescents from multiple levels, including family, school, peer relationships, and a broader sociocultural context. By understanding how these different environmental systems interact and jointly affect adolescents, professionals can more comprehensively assess adolescents' behavioral problems and psychological health needs, and thus provide more precise educational and psychological health support (Chau & Chau, 2024, Webster et al., 2024). In addition, EST also emphasizes the importance of time factors, pointing out that individuals will go through different stages of development during their life, and each stage may bring new development opportunities and challenges.

Theory of Planned Behavior

The theory of planned behavior (TPB) was proposed by Icek Ajzen in 1985 (Ajzen,1985) and further developed in 1991 to explain and predict human behavior, especially those behaviors that are not completely controlled by personal will (Madden et al., 1992). TPB is based on the theory of reasoned action (TRA) and adds the concept of perceived behavioral control (PBC) to more comprehensively explain the relationship between behavioral intention and actual behavior (Conner, 2020). TPB believes that an individual's behavioral intention is the direct antecedent of actual behavior, and these intentions are jointly influenced by three main factors: attitude, subjective norm, and perceived behavioral control (Hagger et al., 2022). Attitude refers to an individual's positive or negative feelings about a behavior; subjective norm refers to social pressure or others' expectations of an individual's behavior; perceived behavioral control reflects an individual's perception of whether he or she can perform a certain behavior, including internal factors such as personal ability, and external factors such as resources and opportunities. In the field of physical and psychological health of middle school adolescents, the application of TPB can promote adolescents to adopt healthy behaviors by improving their positive attitudes towards healthy behaviors, enhancing social support through the influence of peers, parents and teachers, and enhancing their self-efficacy by providing necessary resources and support (Zhang et al., 2020, Rezazadeh et al., 2015). Educators can use this theory to design effective health promotion strategies to help adolescents establish a healthy lifestyle, reduce health risk behaviors, and improve their overall well-being.

Trends in SSAPPH

Table 4. Trends in SSAPPH.

Time	Causes	Dimensions	Measurement	Hot Trends
1178-1194	Cardiovascular risk factors	Cardiovascular risk factors	Secondary analysis	The focus is on adolescents' quality of life, psychological health, eating behaviors, physical activities, and the impact of school environment on their physical and psychological health.
	Imbalance between energy intake and expenditure	Physical activity level, physical health	Randomized controlled trials, etc.	
1178-1194	School Sports Opportunities	Sports activities	Three-level linear model	The focus has shifted to more specific physical and psychological health issues, such as chronic diseases, psychological health problems, Internet addiction, and the impact of socioeconomic factors on adolescents.
	The impact of physical activity on child abuse	Physical health, depression, self-esteem	Children and Youth Rights Survey	

Time	Causes	Dimensions	Measurement	Hot Trends
1178-1194	Cross-context model	Sports injury prevention behaviors	Questionnaire	Research is beginning to focus on adolescent social anxiety, the impact of online education, and the impact of school policies on adolescent psychological health.
	COVID-19 Anxiety and Compulsion	COVID-19 Anxiety and Compulsion	Self-administered questionnaire	
1178-1194	Motivation and emotional experience of students in physical education	Movement intention, motivation, and emotional experience	Questionnaire	Research hotspots include the impact of the COVID-19 pandemic on adolescent psychological health, online intervention programs, and adolescents' self-perceived health status.There is also the impact and improvement of post-pandemic sports activities and lifestyles on obesity, myopia, scoliosis and other conditions.
	The impact of peer bullying on psychological resilience	Psychological resilience and psychological dimensions of quality of life	Linear regression analysis	

According to Table 4, the focus of research in different periods has shifted from general physical and psychological health issues to more specific psychological health issues and social adaptation issues. For example, from 2005 to 2009, the focus was on the quality of life, psychological health, eating behavior, physical activities and the impact of school environment on adolescents' physical and psychological health (Karila et al., 2007, Masmoudi et al., 2009). Studies between 2010 and 2014 began to focus on the impact of Internet addiction and social media on adolescents (Madge et al., 2011, Haapala et al., 2014),while studies between 2015 and 2019 focused on the impact of social anxiety and online education (Meade & Dowswell, 2015, Abdullah et al., 2019). By 1178-1194, the COVID-19 pandemic became a research hotspot, and researchers began to explore the impact of the pandemic on adolescent psychological health and the effectiveness of online intervention (Donnelly et al., 2023, Contardo et al., 2024). From the post-pandemic period to 2025, mental health issues among teenagers have significantly intensified, and digital intervention and school support measures have gradually become the key focuses for addressing these problems.

The measurement method also changes as the research focus changes. Early studies mostly used questionnaires (Boyes et al., 2014, Zarytovskaia & Kalmykova, 2012) and secondary analyses (Sharma et al., 2017, Bowman et al., 2009, Fuller-Thomson et al.,2010). In recent years, with the development of technology, researchers have begun to use more diverse measurement tools, such as online surveys (Glaser et al., 2022, Marchhoff et al., 2022), self-administered questionnaires (Huang et al., 2024) and methods that combine physiological measurements (such as accelerometers) (Wood et al., 2023, Barth et al., 2021, Hendy et al., 2025) and psychological measures (Feng et al., 2024, Pei et al., 2023, Liu et al., 2025). These changing trends reflect the impact of social environment and technological progress on the research of adolescent physical and psychological health. For example, the popularity of social media and online education has made researchers begin to pay attention to the impact of these emerging factors on adolescents. At the same time, the global pandemic of the new crown epidemic has also

prompted researchers to explore the role of online interventions in supporting adolescent psychological health. With the development of society and the advancement of technology, future research may pay more attention to interdisciplinary methods and personalized interventions.

5. Discussion

This study conducted a systematic literature review of journal articles on SSAPPH published between 2005 and 2025. The analysis showed that the number of articles has gradually increased since 2005, indicating that the academic community has a growing interest in this topic. In terms of published journals, there are 521 peer-reviewed papers, including education, management, psychology, health, and hygiene, indicating that research in this field has attracted the attention of scholars from different disciplines. The articles cover a wide range of regions, with a high degree of participation from Chinese scholars. The most common research on physical and psychological health is adolescent physical health and psychological health. Keyword co-occurrence analysis showed that researchers mainly focus on SSAPPH. Most of the selected analysis papers use quantitative methods, mainly relying on SPSS, and qualitative research and comprehensive research account for only a small part. Due to the complexity of SSAPPH, researchers lack consensus on the dimensions and scales of SSAPPH, but multidimensional analysis is still the most commonly used analysis method by researchers. The articles mainly use relevant theories, and the most commonly used ones are self-determination theory (SDT), social cognitive theory (SCT), and ecological system theory (EST). On this basis, the researchers discussed the trends of SSAPPH, including antecedents, dimensions, measurement methods and hot trends, from focusing on quality of life and school environment impact from 2005 to 2009, to focusing on Internet addiction and social media from 2010 to 2014, focusing on social anxiety and online education from 2015 to 2019, And the research on mental health, online intervention during the COVID-19 pandemic from 2020 to 2025, and the promotion of physical activities and healthy lifestyles on the physical and mental health of adolescents after the pandemic. The measurement methods have also evolved from traditional questionnaires and secondary analysis to online surveys and diversified tools combining physiological and psychological measurements. This reflects the profound impact of scientific and technological progress and social changes on research methods and focus. In general, this study also helps to better understand the research progress and related research content of SSAPPH.

6. Conclusion

This paper adopts a systematic approach to comprehensively demonstrate the research results and outline SSAPPH,which is conducive to promoting the development of SSAPPH-related research. However,Faces several limitations. First,the scope of this review Relying on a single database, Scopus, may miss important studies from other databases, which may affect the comprehensiveness of the literature review and the representativeness of the results. Scopus may focus more on publications in certain languages or regions, which can lead to an uneven view of the global research landscape. Second,this study focuses on middle school adolescents and physical and psychological health ,but not children and adults. The physical and psychological health of adults affects the applicability of the study to a certain extent. Third,Although SSAPPH research has made progress in data collection and initial intervention through online tools, existing research is still limited by insufficient interdisciplinary integration and a lack of consideration of multicultural contexts. Finally, the dimension and measurement analysis of SSAPPH lacks a clear summary of the measurement items. The analysis of the individual,family,school,social,and environmental combined factors of SSAPPH is not detailed enough. Therefore,future research should expand SSAPPH research and deeply analyze the impact and promotion methods of SSAPPH under multiple dimensions. Secondly,multidisciplinary and interdisciplinary comparative studies require subsequent supplementary and improvement research. In

addition,the measurement and antecedents of SSAPPH also need more systematic analysis and explanation.

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Author Declaration

We confirm that this manuscript is original, has not been published previously, and is not under consideration for publication elsewhere.

We declare that there are no conflicts of interest related to this work.