



# Mapping the Evolution of Research on Left-Behind Children in China: A CiteSpace Bibliometric Analysis

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## Abstract

**Summary:** The increase in the number of left-behind children in China has recently attracted significant attention in academic research. The objective of this study is to comprehensively examine important academic literature on left-behind children in rural China, using the resources provided by CNKI.

**Purpose:** This study aims to comprehensively analyse and integrate the existing research literature on left-behind children, a unique group of individuals. It will investigate the current state of research, the methodologies used, the findings, and identify potential areas for future investigations in this field.

**Method:** A comprehensive investigation was conducted on the main Chinese literature that focuses on rural left-behind children, as well as the CSSCI journals that are accessible in the CNKI database. A grand total of 1619 relevant literary works were obtained, encompassing the time period from 2000 to 2023. Subsequently, a visual analysis was performed on these documents using CiteSpace.

**Results:** The CiteSpace programme was utilised to aggregate statistical data on literature pertaining to left-behind children, which was sourced from Chinese core and CSSCI journals published between 2000 and 2023 on CNKI. The primary areas of research concerning left-behind children primarily focus on their psychological well-being, their experiences in rural environments, and the factors that influence their overall welfare.

**Conclusion:** The findings highlight the complex and serious nature of the situation of left-behind children. This study provides significant insights that can contribute to the development of theoretical frameworks, practical applications, and prospective solutions for addressing the issues experienced by left-behind children in rural China.

**Keywords:** Left-behind Children, Resilience, Hot Topics, Psychological Problems, Mental Hygiene

**Introduction**

According to data from the China Bureau of Statistics in 2020, the number of children affected by population migration was 138 million, which accounts for around 46.4% of China's child population. Out of the total, more than 60 million children are categorised as left-behind children, which refers to those whose parents had been away from home for more than 6 months before they turned 18. Lack of a linguistically stimulating environment frequently leads to language difficulties in children who are left behind, resulting in difficulties in communication and later psychological problems like as social isolation and indifference (Wu, 2023). Moreover, the absence of parental guidance increases the likelihood of these children acquiring detrimental behaviours and habits (Cui & Xu, 2021). As a result, experts have made the plight of left-behind children a central focus.

Although many research have examined the difficulties experienced by children who are left behind, there is a significant lack of literature reviews that utilise CiteSpace bibliometric tools. This study aims to fill this void by utilising samples from the literature on left-behind children in Chinese core and CSSCI databases of CNKI ranging from 2000 to 2023. The study utilises CiteSpace bibliometric software to visually analyse the main areas of research focus related to left-behind children. The research methods are somewhat innovative. This study reveals the current research status and hot spots of left-behind children in China by studying relevant literature on left-behind children in China over the past 20 years. The research conclusions can enrich the research theory on left-behind children in rural China and provide reference for solving the problem of left-behind children.

**Method**

CiteSpace is a widely used visualisation software that is specifically designed for quantifying and analysing data from scientific literature. It is widely used in various study fields both nationally and globally. CiteSpace is highly proficient in illustrating the organisation, regularities, and distribution of scientific knowledge. Visualisation not only depicts the structure of scientific knowledge but also reflects the dynamic evolution of the scientific landscape (Zhang & Xu, 2023).

In addition, CiteSpace is a useful tool for doing numerous studies, including identifying research hotspots, delineating research frontiers, tracing research evolution paths, discovering research groups, and exploring intersections and flows between disciplines, areas, and knowledge. Utilising CiteSpace for analysis allows for a thorough comprehension of the current research status, defined focal points, and evolving patterns within a certain topic.

This study aims to employ CiteSpace to conduct co-occurrence and cluster analysis of terms obtained from the China National Knowledge Infrastructure. This study intends to identify focal points and patterns in research pertaining to left-behind children in China, with the goal of providing valuable perspectives on the existing research environment about this topic. The results are expected to be a helpful resource for future comprehensive studies in the field of study on children who have been left behind.

**Data**

The data used in this study is obtained from the China National Knowledge Infrastructure. In order to achieve thorough data gathering, the search phrases include "left-behind children," "left-behind students," "left-behind children," and "college students with left-behind

experience." The selected document type is journal articles, specifically limited to Chinese core and CSSCI journal Chinese documents. The designated time period encompasses the years 2000 to 2023, yielding a total of 1957 documents retrieved. After eliminating non-journals and publications that are not directly relevant to the primary topic based on keywords and abstracts, a total of 1619 articles remain.

The gathered data is subsequently transformed and imported into CiteSpace for examination, with the specified parameters: (1) the duration of the study spans 23 years, and (2) the time interval is defined as 1 year. The node type is specified as a keyword, and the node filtering method is g-index, which serves as the criterion for filtering nodes in each time slice. The network size can be modified by changing the proportion parameter k, where a value of k=25 represents the desired network size. (3) When it comes to Keywords and Terms, the node type is chosen as "Circle" in the Node Shape.

## Results

### The categorization of journals based on their disciplinary focus

Through statistical analysis, a reliable sample of 1,619 documents was found from a pool of 204 periodicals. Out of the total, 763 papers were published in educational theory and educational management journals, making up 32.23%. Psychology journals published a total of 348 papers, which accounted for 14.74% of the total. Journals that specifically focused on Chinese policy and international politics published 213 articles, making up 9.02% of the total. 193 publications (8.17%) were included in journals specifically focused on social learning statistics, while preventive medicine and hygiene journals contained 166 articles (7.03%). The journals affiliated with political parties and mass organisations provided a total of 133 articles, accounting for 5.63% of the total. Secondary education journals presented 80 articles, making up 3.39% of the total. Adult education and special education journals included 55 articles, representing 2.33% of the total. Each of the journals in the domains of library, information, and digital library science published 57 articles, accounting for 2.41% of the total. The distribution is graphically depicted in Figure 1 below.

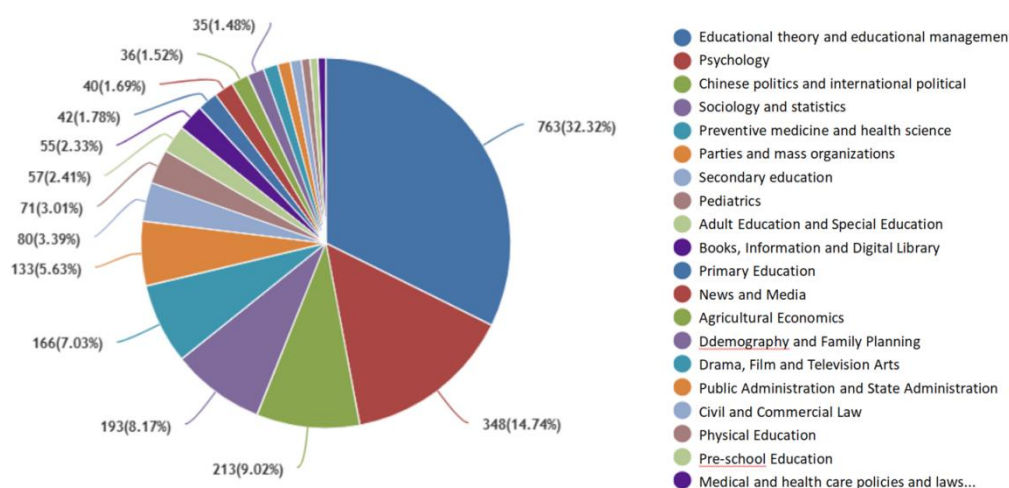


Figure 1: The disciplinary distribution of the journals

**Trend in the Number of Posts**

Figure 2 illustrates the statistical analysis of the differences in the quantity of sample documents. From 2000 to 2011, there was a consistent increase in the quantity of documents, reaching a peak of 140 articles by 2011. From 2012 to 2020, the amount of documents consistently followed a pattern, consistently exceeding 110 articles per year. Nevertheless, there is a forecasted decrease in the number of published papers from 2020 to 2023, with a projected annual count of less than 100 articles. The specifics are depicted in Figure 2 below.

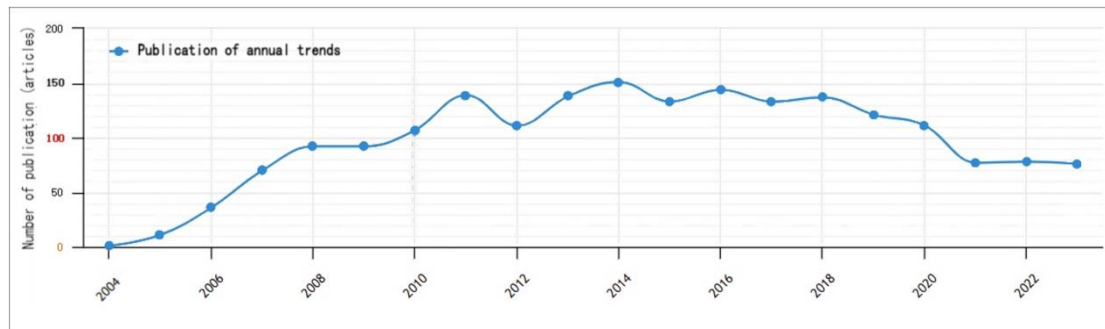


Figure 2 Trend in number of posts

**Analysis**

The CiteSpace software was employed to graphically analyse the literature keywords that were found, in order to explore the dominant study themes on left-behind children in China during the past twenty years. The keyword co-occurrence map quantified the value of keywords based on the node's citation count (word frequency), acting as a pivotal indicator of keyword prominence. Fields that regularly include words that are often spoken are typically considered to be active fields of research (Jie Li, 2017). Expanding on this, the top 8 keywords were identified based on their frequency of occurrence. The findings of this ranking are displayed in Table 1. The prominent keywords that frequently appear together are "left-behind children," "mental health," "children," "rural area," "rural population," "mental health," "social support," and "influencing factors."

Table

*Keyword co-occurrence analysis word frequency ranking results (top 8)*

Serial number	Keyword	Count	Cent..
1	Left-behind children	859	1.4
2	Mental health	93	0.08
3	Child	85	0.12
4	Countryside	81	0.06
5	Rural population	56	0.02
6	Mental health	53	0.01
7	Social support	43	0.03
8	Influencing factors	37	0.01

**The primary cluster, distinguished by a concentration of 1.40, revolves around the subject of left-behind children.** The scholarly research on left-behind children began to significantly expand in 2005, resulting in a total of 859 published documents. Jia (2007) identified several crucial aspects that impact the moral development of left-behind children. These factors

include troubled parent-child interactions, inconsistent moral feelings, lack of parental role models, less parental supervision, and a feeling of moral confusion. The discussion on left-behind children generally centres around macro-level theoretical frameworks in the fields of pedagogy and moral education. Nonetheless, it is crucial to confront particular obstacles in practical situations, converting conceptual theories into concrete and feasible resolutions, as underscored by (Dai, 2022). In 2005, Chi Xixin proposed a realistic strategy to address moral development challenges in left-behind children. This method focuses on leveraging the available educational resources in rural areas, enhancing moral instruction in rural schools, and integrating psychological counselling services.

**The second major cluster revolves with mental health**, exhibiting a centrality score of 0.08 and a documented count of 93. This genre of writing was first introduced in 2006. A field study conducted in 2006 by Ye Man, Zhang Jingping, and He Daren examined 600 left-behind children in Long'an County and Ningming County, Guangxi. The study revealed the complex psychological issues experienced by these children, which were influenced by their interactions with themselves, parents, guardians, schools, and society. According to Fan and (Fan & Wu, 2020) report, the survey revealed that 64.4% of guardians have infrequent or no communication with their children, and 54.3% of guardians have participated in domestic violence. Intergenerational guardianships are common within the guardian factors, often including grandparents who serve as guardians for children who have been left behind. This group is distinguished by a generally low level of cultural sophistication and rather antiquated and basic educational ideals (Yang, 2012). Guardians often prioritise the financial and practical needs of left-behind children, while overlooking their spiritual and psychological welfare. Nevertheless, the lack of supervised guardianship frequently results in left-behind youngsters experiencing loneliness, which increases their vulnerability to developing undesirable behavioural patterns, as stated by (Zhou, 2013) and (Jia Li & Feng, 2008). Researchers propose the advancement of the mental health growth of left-behind children through diverse and comprehensive contacts (Ye et al., 2006).

**The third significant cluster is related to children**, with a centrality score of 0.12 and consisting of 85 documents. Given that children represent the future and the potential for society, they deserve thorough care and safeguarding. Left-behind children, as a separate demographic, face supplementary difficulties and concerns. According to (Wu, 2023), adults frequently employ a unilateral communication strategy when interacting with youngsters, displaying a lack of equal involvement. Children's susceptibility to depressive illnesses is amplified by their underdeveloped psychological and physical state, together with their heightened responsiveness to external stimuli, as shown by (Liu et al., 2023). Concurrently, the improvement of the family's socioeconomic condition has a good effect on the growth of children who have been left behind, mainly by strengthening the bond between parents and children, as emphasised by (Cui, 2023). This emphasises the crucial significance of the parent-child interaction in the growth and progress of children who are left behind.

**The fourth significant cluster is centred on rural areas**, with a centrality score of 0.06 and consisting of 81 documents. Studies conducted by Zhao Jie, Lin Yanyan, and Cao Guanghai in 2008, and Wang Fengsheng, Sun Yehuan, and Yang Linsheng in 2009 have examined the factors affecting the mental health of rural left-behind children and analysed their behaviour in real-life situations. Extensive studies have been conducted to comprehend the mutual influence of psychological problems in rural left-behind children on their daily lives (LI, 2009).



Exemplified this in their works by presenting a systematic summary of the numerous difficulties experienced by left-behind children in rural regions.

**The fifth prominent cluster focuses on the rural population**, with a centrality score of 0.02 and includes 56 texts. Significant numbers of rural residents relocate to metropolitan regions in search of more lucrative job prospects, resulting in their offspring becoming rural left-behind children, as emphasised by (Cui & Wu, 2023). The significant movement among the rural population has resulted in a big group of youngsters that are left behind in rural areas. The movement of people from rural areas to cities not only increases the income of farmers but also presents difficulties for the education and skill development of children left behind in rural areas, as argued by (Bai et al., 2023). The rural floating population has been continuously increasing due to the ongoing reforms in the rural economic sector. According to (Wang, 2017), rural areas are experiencing a decrease in younger and middle-aged populations, resulting in a higher proportion of children and elderly individuals. This demographic shift has led to a significant increase in the number of children who are left behind in these regions.

**The sixth prominent cluster is focused on mental health**, with a centrality score of 0.01 and includes 53 texts. Mental health, often known as psychological hygiene, encompasses the beliefs and methods related to safeguarding and improving persons' mental well-being, as described by (Zhou et al., 2007). In their research endeavours, (Wu et al., 2005) were among the early proponents who emphasised the significance of addressing the psychological challenges experienced by left-behind children. Zhou et al (2005) also contributed to this cause.

Left-behind children, as per social comparison theory, have specific psychological difficulties after their parents' departure, characterised by a lack of parental warmth in comparison to their peers. This inadequacy results in psychological imbalances and emotional problems, as explained by (Liu, 2020). According to (Wu et al., 2005), emotional issues such as despair, restlessness, melancholy, and rage are mainly caused by a strong desire for family affection. Left-behind children may experience a deficiency in interpersonal interactions and self-confidence compared to children who have parents present in their lives. Nevertheless, LI (2009) found no substantial disparities in terms of loneliness, social anxiety, and academic adjustment when comparing these youngsters to their peers. The aforementioned circumstances highlight the significant and intricate influence of the "left-behind" phenomena on the psychological growth of rural children, requiring additional comprehensive investigation.

Zhou et al (2005) discovered that left-behind children may face difficulties in social interaction and have a deficiency in social skills as a result of the absence of intimate companions and familial assistance. In addition, the absence of essential familial assistance and protection can lead to diminished self-confidence, cultivating sentiments of inadequacy, as highlighted by (Zhou et al., 2007). Given the psychological difficulties experienced by children who are left behind, it is crucial for families, society, and the government to work together in order to provide enhanced care and support, thereby establishing a nurturing educational and developmental setting for these children.

**The seventh significant cluster focuses on social support**, with a centrality value of 0.03 and including 43 texts. Huang et al (2022) have found evidence of a positive relationship between social support and the social adaptation of rural left-behind children. This suggests that greater social support has a beneficial impact on their ability to transition to society.

Currently, the general degree of social support for children who are left behind is insufficient compared to that for children who are not left behind. Ye et al (2017) found that left-behind children experience particular disadvantages in terms of social support, including objective support, subjective support, and support utilisation, when compared to children who are not left behind.

Social support comprises both external aid and the interactive interaction between the supplier and the recipient. Studying the behavioural decisions made by children who are left alone in the context of different levels of trust in their connection can help us better understand how much independence these children have within the social support system, as suggested by (Zhang, 2014).

**The eighth significant cluster is characterised by influencing factors**, with a centrality value of 0.01 and consisting of 37 documents. Factors that have an impact on mental health are particularly important in the field of education for children who have been left behind. The significant influx of migrant workers has presented considerable difficulties for family education and mental health education for these children, resulting in a state of emptiness in family life, mental health education, and parent-child education, as described by (An, 2021). This highlights the substantial influence of familial elements on the psychological well-being of children who are separated from their parents.

According to a study conducted by Liao et al (2023), the social adaptation of left-behind children is significantly influenced by the interpersonal interactions within families and schools, in addition to family characteristics. Furthermore, the socioeconomic position of the family plays a significant role in determining the positive development of left-behind children. (B. Cui, 2023) emphasises that left-behind children from higher socioeconomic backgrounds experience more favourable positive development results.

## **Discussion**

This analysis is based on literature concerning left-behind children sourced from Chinese core and CSSCI publications published between 2000 and 2023. The study use CiteSpace software to do quantitative analysis on the relevant literature, with the objective of examining the primary content and patterns within this body of literature. The use of CiteSpace enables a thorough investigation of the co-occurrence of keywords, resulting in the subsequent discoveries.

### ***Left-behind children predominantly experience psychological issues***

Left-behind children, as a unique group, often experience frequent separations from their parents, leading to a notable absence of attention from their caretakers. The limited support and protection provided by schools and communities make rural left-behind children more vulnerable to developing various psychological issues as they grow up, which contributes to their mental health challenges (Dai et al., 2022). Left-behind children commonly experience cognitive biases, unpleasant emotions, and behavioural disorders. Some may even display psychiatric traits like personality disorders, interpersonal challenges, and adjustment disorders (Dai, 2012).

Studies suggest that children who are left behind encounter heightened levels of psychological maltreatment and emotional disregard in comparison to their peers who are not left behind. Psychological abuse, as defined by the World Health Organisation, refers to behaviours and attitudes that have a negative impact on the emotional and intellectual

development of children (Cheng et al., 2010). Childhood exposure to psychological trauma not only impacts the development and structure of the brain but can also result in mood problems. This emotional disorder has a significant impact on the cognitive development of children who are left behind. Additionally, it contributes to both externalising and internalising problems, such as engaging in criminal behaviour, displaying aggression, abusing substances, having low self-esteem, experiencing anxiety, post-traumatic stress disorder, and depression (Gao & Chen, 2022). Extended emotional neglect experienced by children who are left behind can result in an inability to develop self-affection, a deficient comprehension of emotional self-control, and a lack of concern for the emotional requirements of others. As a result, the bond between parent and kid eventually weakens. Therefore, it is imperative for families and society to offer left-behind youngsters with heightened company, nurturing, and a conducive living environment.

### ***Practicing mental hygiene can enhance individuals' mental well-being***

In addition to addressing mental disease, mental hygiene enables individuals to proactively confront psychological issues and make active attempts to overcome them. Moreover, mental hygiene has the capacity to impact the formation of one's character and augment personal emotions, thereby promoting the preservation of a sound psychological condition for persons (Pan, 2021). Due to the variability of psychological and physiological traits across individuals at different life phases, a range of psychological disorders may emerge. Mental health initiatives will provide customised preventive interventions based on the specific psychological issues individuals encounter, with the goal of preventing internal conflicts (Dai, 2012).

### ***Enhancing the fortitude of children who have been left behind can be achieved through both individual and societal assistance***

Researchers are increasingly interested in exploring approaches to improve the resilience of left-behind children, given the possible psychological issues they encounter. Resilience, also known as psychological toughness or psychological resilience, refers to an individual's ability to keep a positive and confident mindset in the face of adversity, pressure, and disappointments. It demonstrates the capacity to handle difficulties efficiently, promoting a favourable mental state that assists in adjusting to the changes and obstacles of life. Resilience allows individuals to rapidly return to their initial condition and potentially achieve better results while facing stress, frustration, or trauma (Zhou et al., 2020).

Research suggests that harsh situations do not always hinder the individual development of left-behind children. These children, with resilience, can maintain a positive trajectory and potentially exceed the development level of their classmates who were not left behind. Resilience plays a crucial role in personal growth, increasing the chances of normal development in difficult situations and strengthening the capacity to overcome challenges caused by unfavourable surroundings (Zhao, 2015).

The gender of children who are left behind is a significant aspect that affects their ability to bounce back from difficult situations. In general, girls tend to show greater resilience than boys. The resilience of left-behind children seems to be minimally affected by age. The resilience of children is greatly influenced by the particular circumstances surrounding their parents' migration. Children whose moms travel generally show lower levels of resilience, but those with migrating fathers tend to demonstrate higher levels of resilience (Li et al., 2008).



Therefore, it is suggested that fathers contemplate migration while moms assume the responsibility of guardianship.

The process of fostering resilience in children who are left behind is characterised by constant change and is influenced by the continual interactions between their local environment and personal traits (Li & Du, 2016). Hence, forthcoming intervention activities should give priority to enhancing the local surroundings of children who have been left behind.

### **Conclusion**

The CiteSpace programme was employed to gather data on literature pertaining to left-behind children in the Chinese core and CSSCI journals of the China National Knowledge Infrastructure from 2000 to 2023. The primary areas of research focus on left-behind children are their psychological well-being, their experiences in rural environments, their mental health, the consequences of being left behind, and the variables that influence them. The research findings indicate that left-behind children frequently experience psychological difficulties, including anxiety and loneliness. This highlights the urgent requirement for greater focus and support.

Concurrently, the educational issues of children who are left behind require considerable focus, highlighting the need to improve the allocation of educational resources and raise the standard of education. Moreover, the physical health problems faced by left-behind children require serious attention, which calls for enhanced health education and medical protection measures. In order to improve the entire growth environment for left-behind children, it is crucial to establish collaborative partnerships among families, schools, and government bodies. This will provide a supportive and healthy developing atmosphere. The research findings on left-behind children provide crucial information and inspiration for activities focused on improving their developmental environment.

### **Future Research Situation**

***A multidisciplinary study thoroughly investigates the issue of children who are left behind.*** (C. Xu & Zhang, 2023) highlighted that the problem of being left behind transcends the scope of children and affects the entirety of rural areas. The high occurrence of left-behind children in rural areas is a direct result of the unequal progress in development between urban and rural regions. In order to effectively deal with the difficulties experienced by left-behind children, it is essential to address the root problem of imbalanced urban-rural growth. It necessitates the investigation of localised strategies for the advancement of rural social work. Future research can expand the scope of studying left-behind children to include geographical, subjective, and differential aspects. Examining the subjective experiences of children left behind during migration and addressing the difficulties faced by local left-behind children due to childhood disparities are promising areas of research. Chen et al (2022) emphasised the need of studying left-behind children by considering the geographical aspects that affect them. Xu & Qin (2020) believe that a thorough knowledge of the issues faced by left-behind children can be achieved by incorporating research on psychological, educational, sociological, anthropological, and other topic aspects.

**Research that specifically examines the social surroundings and conditions experienced by children who have been left behind by their parents**

An investigation into the familial environment of left-behind children can be expanded to include an analysis of their wider social context, with particular emphasis on their perception and experience of respect in social interactions. In their study, Han et al (2023) proposed that further investigation should focus on exploring the adverse emotional indicators experienced by children who are left behind. This may involve studying several dimensions of aggressiveness, including physical aggression, verbal aggression, rage, hostility, and aggression. Additionally, it entails analysing the factors that contribute to disparities in these measures when comparing left-behind children to non-left-behind children.

Further investigation into the provision of spiritual care for children who have been left behind is an additional area that warrants examination. According to Wu (2023), focusing on the improvement of language literacy can enable these youngsters to effectively express their emotions and feelings in their everyday activities. Cultivating a healthy mentality and promoting active expression of emotions in left-behind children is believed to be achieved by providing them with a language-rich environment during their physical and mental development.

Future research could investigate the underlying causes of the growing epidemic of addiction to mobile phone games among left-behind children, who are increasingly relying on them. In their study, Wang & Zheng (2023) proposed the investigation of the notion of "electronic probiotics" as a means to explain the underlying mechanism behind the reliance of left-behind youngsters on mobile games. This approach utilises breakthroughs in science and technology to get a holistic comprehension of the phenomenon.

**Conflict of Interest**

The authors declare no potential conflicts of interest related to this article's research, authorship, and publication.

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