

FAMILY EDUCATION STRATEGIES IN SUPPORTING EARLY CHILDHOOD DEVELOPMENT

Imam Muthie^{1,2}, Khairul Alfahani², Ary Kiswanto Kenedi³, Nanda Pratiwi⁴, Al Wafi⁵
Universitas Negeri Padang^{1,2}, Universitas Samudra³, Universitas Riau⁴, Universitas Muhammadiyah Sumatera Utara⁵

ABSTRACT

High-quality research on family education has increased significantly over the past decade, with 1,040 documents recorded in Scopus. This study aims to analyze research trends, identify key terms, highlight the most active journals, examine author collaboration and citation networks, determine author affiliations and funding sources, map contributions by country, and explore related scientific fields. Data were collected from Scopus.com and analyzed using VOSViewer. The results show a positive trend with steady annual growth. Family education is closely linked to early childhood education, parenting, early intervention, and overall quality of life. *Frontiers in Psychology* is the most active journal in its field. Landier, W., is the most influential author. The top contributing institutions include Harvard Medical School and the University of Washington. Primary funding sources are the National Institutes of Health and the U.S. Department of Health and Human Services. The United States leads in publication output, followed by China and Canada. Most articles are from the fields of medicine and social sciences. These findings highlight family education as a growing multidisciplinary field with wide-ranging impacts. The results guide policymakers in creating targeted parental training on digital literacy and emotional regulation, while education practitioners can apply family-centered interventions to enhance parental involvement in early learning.

Keywords: family education; early childhood; child development; bibliometric.

INTRODUCTION

Family education plays a crucial role in child development, influencing cognitive, emotional, and social growth from a very early age. Research indicates that family education is influenced by several factors, including parental educational background, income, social status, and parental involvement (Lerner et al., 2022; Noble et al., 2015). These elements affect the quality of stimulation, emotional support, and learning opportunities children receive at home, which in turn impact their developmental outcomes. Additionally, the family stress model highlights that high parental stress can significantly reduce positive parent-child interactions. For example, Adam et al. (2021) found a 30% decrease in engagement during periods of elevated parental stress, which correlates with delays in language acquisition and emotional regulation. Chronic stress can further risk psychological well-being and strain family relationships (Masarik & Conger, 2017). Therefore, effective family education extends beyond academic support to fostering a stable, supportive home environment that mitigates stress and promotes holistic child development (Koivuhovi et al., 2025).

Successful family education strategies frequently emphasize early stimulation, responsive communication, and active parental involvement. Activities like reading books (Hutton et al., n.d.), interactive play (Nacher et al., 2016; Xiong et al., 2022), and creating rich learning environments (Bento & Dias, 2017) have been shown to enhance language and cognitive skills. Moreover, responsive parental communication supports social-emotional development by encouraging

Corresponding Email:
imammuthie@unp.ac.id

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children's expression and engagement (Rudi et al., 2015). Given that early childhood is a critical period for shaping various developmental domains—including cognitive, motor, moral, and emotional aspects—the role of family is especially vital. The World Health Organization (2020) emphasizes that early childhood development is a fundamental human right and a cornerstone of sustainable development. Research also demonstrates that warm, responsive parenting enhances children's emotional intelligence and resilience (Kuppens & Ceulemans, 2019), preparing them to navigate future challenges.

In today's digital era, family education faces new challenges alongside opportunities. Access to technology requires parents to guide children effectively to avoid negative impacts such as impaired social skills and emotional dysregulation (Livingstone & Blum-Ross, 2020). Parental communication remains crucial for instilling moral values, ethics, and responsible technology use in children (Budiono, 2024). Consequently, family education must adapt by integrating digital literacy and moral guidance to remain relevant and practical. Studying parenting education in this context is crucial for developing effective strategies and interventions that support families in promoting healthy child development. This focus not only addresses emerging technological and social challenges but also strengthens family resilience in a rapidly changing world.

To better understand how family education influences early childhood development, this study uses a bibliometric approach to analyze research trends and collaborations in the field (Donthu et al., 2021). By identifying key focuses and publication patterns, the study aims to guide future research directions and inform evidence-based policies and practices that enhance family education globally.

METHOD

This study employs a quantitative approach using the Systematic Literature Review (SLR) method. The data source was obtained from Scopus (scopus.com), which was selected for its unquestionable quality, quantity, credibility, and reliability as one of the world's largest scientific databases. Data were filtered using the following search query: TITLE-ABS-KEY ("family education") AND PUBYEAR > 2014 AND PUBYEAR < 2025 AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (DOCTYPE, "ar")). The research instruments used include: 1) Mendeley Reference Manager for storing and managing references, 2) VOSViewer for analyzing and visualizing data, and 3) Microsoft Excel for processing and visualizing data. The selection of articles was based on Table 1.

Table 1. Article Selection Criteria

Inclusion criteria	Exclusion criteria
Articles in English	Articles not in English
Articles with high relevance	Articles with low relevance
Publications from the last 10 years (2015-2024)	Publications outside the 2015-2024 range
Articles with more than one author	Articles with only one author
Articles from the Scopus database with full access	Articles with access limited to abstracts or specific sections
Clearly defined research methods that can be replicated	Unclear research methods that cannot be replicated

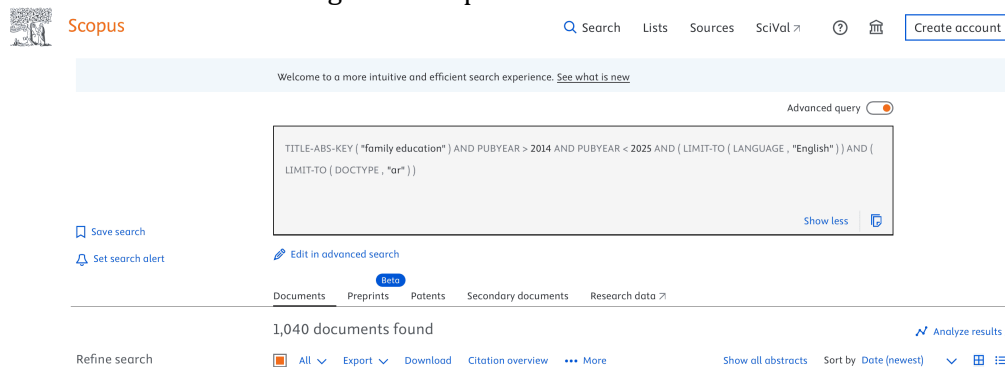
Source: Data processed by the author, 2025.

The primary focus of this research is family education and its role in supporting early childhood development. Therefore, this study aims to identify: 1) Research trends, 2) Key terms, 3) Publishing journals, 4) Author collaboration and citation networks, 5) Affiliations and funding sources, 6) Articles based on country, and 7) Fields related to the research topic.

RESULTS

The data search was conducted on 2 March 2025, using the predefined keywords and selection criteria (Figure 1).

Figure 1. Scopus Database Search

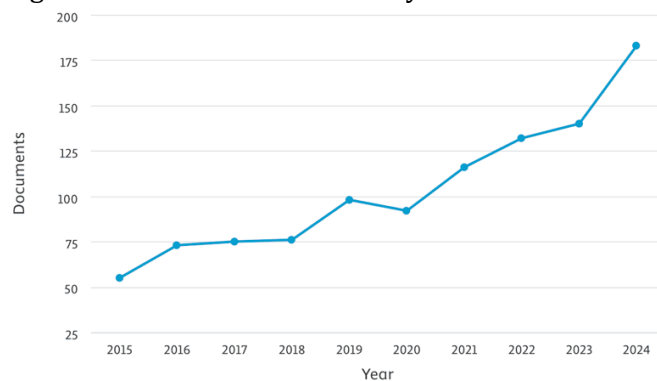


Source: Scopus.com, 2025.

Over the past decade, 1,040 articles indexed in Scopus have been identified using the keyword "family education." Mathematically, this equates to approximately 104 scientific publications per year. This number suggests that family education is a compelling topic for academic discussion. The high level of interest demonstrates that there is still much to explore and develop in this field. This suggests that family education is recognized globally as a crucial research area, encouraging further investigations by scholars worldwide.

Frequency distribution per year

Figure 2. Global Trends in Family Education Research



Source: Scopus.com, 2025.

Based on the data, the trend of family education research from 2015 to 2024 is presented in Figure 2, showing a significant increase in the number of publications over this period. In 2015, there were 55 publications, which increased to 183 by 2024. This trend indicates that family education is gaining increasing attention in academic research. The year-over-year publication growth percentage is presented in Table 2 below:

Table 2. Article Growth Rate

Year	Number of Documents	Percentage Growth from The previous Year
2016	73	↑ 32,7%
2017	75	↑ 2,7%
2018	76	↑ 1,3%
2019	98	↑ 28,9%
2020	92	↓ 6,1%
2021	116	↑ 26,1%
2022	132	↑ 13,8%
2023	140	↑ 6,1%
2024	183	↑ 30,7%

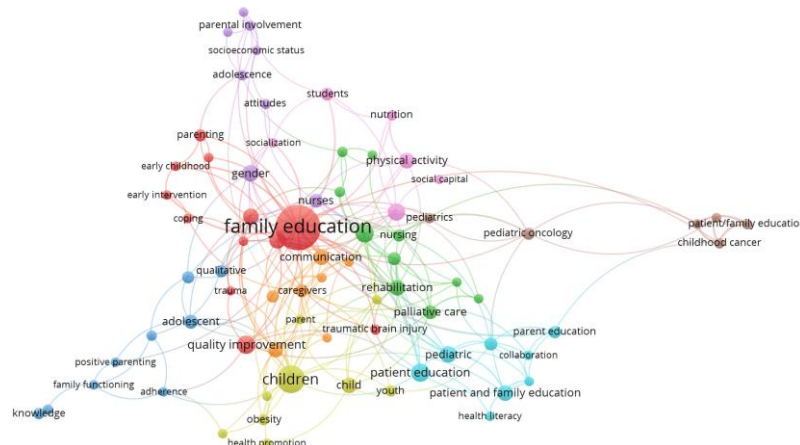
Source: Data processed by the Author, 2025.

The most significant increase occurred during the 2015–2016 and 2018–2019 periods, indicating a surge in interest in family education research. The slight decline in 2020 was likely due to the impact of the COVID-19 Pandemic on research activities. However, the trend rebounded afterward, demonstrating that this research field continues to grow and remain relevant. The high number of publications in recent years reflects the growing academic emphasis on the role of family education in various aspects of life, including child development, character development, and parental involvement in learning. This growth may also indicate that educational policies are increasingly emphasizing the importance of family involvement in formal education. If this trend continues, the number of publications in 2025 and beyond is expected to rise further, given the steady and increasing growth pattern each year. Thus, family education will remain a relevant topic in academic research and educational policy development in the future.

Keyword Analysis, Overlay Visualization, and Density Visualization

The following image (Figure 3) presents a keyword network visualization in family education research, generated using VOSviewer software. The primary keyword, "family education," is positioned at the center with the largest size, indicating that it serves as the primary focus in the analyzed literature.

Figure 3. Keyword Network Visualization



Source: Vos Viewer, 2025.

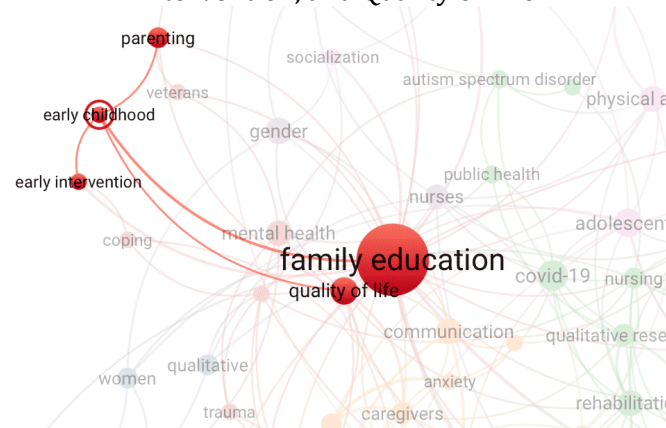
Other keywords closely related to "family education" are distributed across various color clusters, representing thematic relationships between topics. The main identifiable clusters include:

- Red Cluster: Focuses on social and psychological aspects, including parenting, gender, adolescence, socialization, and early childhood. This indicates a strong connection between family education and children's behavioral and social development.

- Green Cluster: Related to health and nursing fields, featuring keywords such as nursing, pediatrics, rehabilitation, palliative care, and traumatic brain injury. This highlights the crucial role of family education in patient care and support for children's health.
- Blue Cluster: Associated with parent education, patient and family education, and health literacy, emphasizing the importance of family involvement in health education and disease prevention.
- Yellow Cluster: Linked to children and healthy lifestyles, including keywords like children, obesity, health promotion, and youth. This reflects the role of family education in promoting healthy habits and child well-being.
- Purple Cluster: Highlights socioeconomic aspects and parental involvement, featuring terms such as socioeconomic status, parental involvement, and social capital, which illustrate how social background influences family education.

Overall, the keyword network map demonstrates that family education has strong multidisciplinary connections with social sciences, psychology, health, and education. These findings reflect the growing academic interest in family education across various life aspects, including childcare, family health, and parental education.

Figure 4. The Relationship Between Early Childhood, Family Education, Parenting, Early Intervention, and Quality of Life

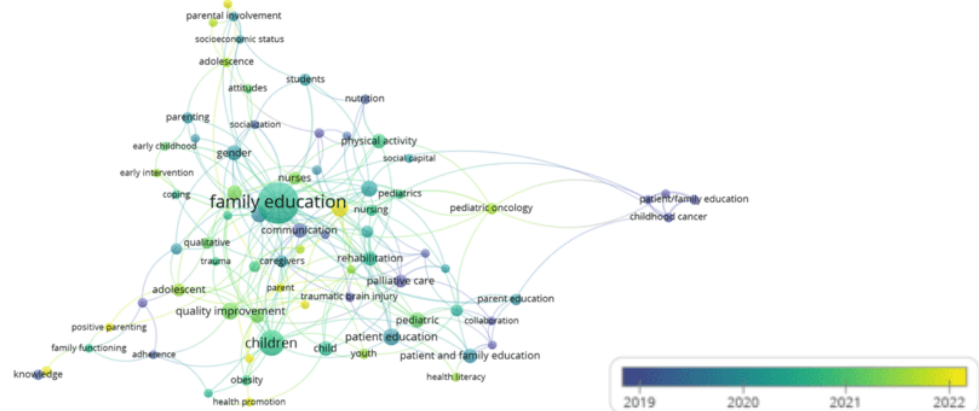


Source: Vos Viewer, 2025.

In the keyword network visualization shown in Figure 4, early childhood is grouped within the red cluster, alongside family education, parenting, and early intervention. The red cluster comprises approximately 35% of the total keywords, demonstrating its dominance in family education research. The large node size of 'family education' underscores its central position in the research network, reflecting the strong interconnection between these concepts in the context of family education and early childhood development. This relationship highlights the pivotal role of family education in shaping children's learning experiences from a young age. The direct connection between early childhood and family education underscores the notion that the family environment lays the foundation for all aspects of a child's development. Additionally, its link to parenting suggests that parenting styles and practices have a significant influence on children's growth and development, both in terms of educational stimulation and character formation. Furthermore, the connection to early intervention suggests that early childhood education is often linked to intervention programs designed for children with special needs or developmental delays. This highlights the importance of early support through intervention programs such as therapy, inclusive education, or psychological guidance, both within family settings and school environments. The red cluster also highlights the connection between early childhood and quality of life, indicating that optimal education and parenting from an early age can have a profoundly positive impact on children's long-term well-being. Thus, the

interconnections within the red cluster underscore the importance of a holistic approach to early childhood education, where family education, parenting, and early intervention are key factors in fostering well-rounded child development.

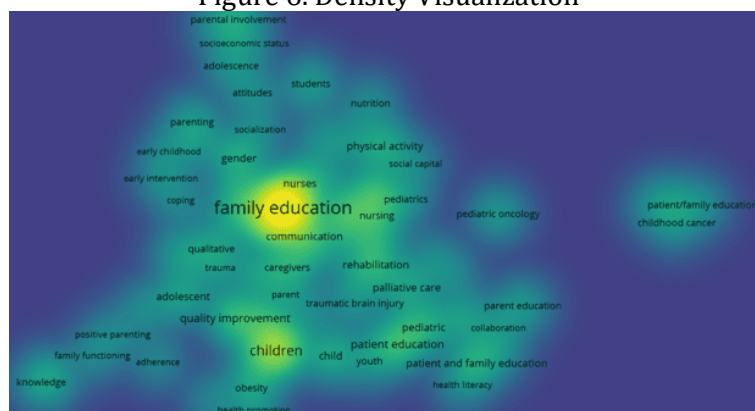
Figure 5. Overlay Visualization



Source: Vos Viewer, 2025.

Furthermore, based on the overlay visualization in Figure 5, there has been a development in research trends related to family education from 2019 to 2022. The main keywords, such as family education, children, and parenting, appear in blue-green shades, indicating that these topics have been the center of research attention since around 2020 and continue to grow. However, newer keywords, such as positive parenting, health promotion, and parental involvement, appear in yellow tones, signifying that recent studies increasingly emphasize parental roles and health promotion in family education. Additionally, some topics, such as pediatric oncology, childhood cancer, and patient and family education, remain in the blue-purple spectrum, suggesting that research in these areas was more prevalent before 2020 and has not seen significant development in recent years. In contrast, the connection between early childhood, coping, and early intervention appears in green-yellow tones, indicating that early childhood education research is expanding with a focus on intervention strategies and early support programs. Thus, the overlay visualization reveals that recent studies on family education are increasingly focused on early intervention, positive parenting, and health promotion. In contrast, some medical-related topics in family education have stagnated or shown limited growth in recent years.

Figure 6. Density Visualization



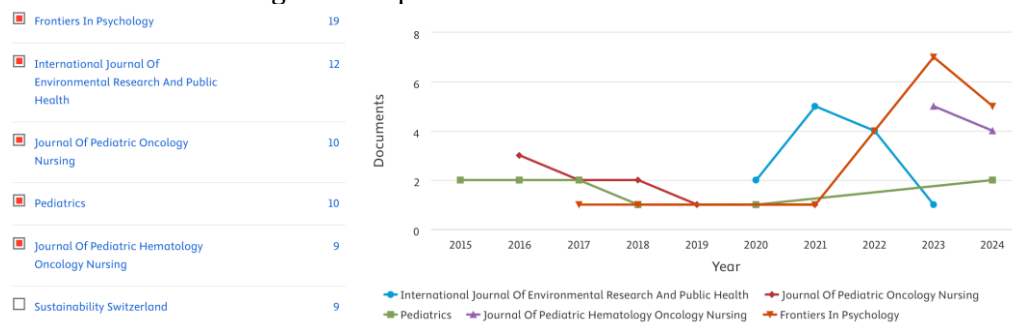
Source: Vos Viewer, 2025.

The density visualization in Figure 6 highlights family education as the most frequently researched topic, represented by a bright yellow color at the center of the map. Other frequently appearing and highly relevant keywords, such as children, communication, nurses, and quality improvement, are displayed in yellow-green tones, indicating significant academic attention in these areas. Meanwhile, terms like patient/family education and childhood cancer appear in duller areas, suggesting that these topics have a lower research frequency compared to the main themes. Overall, this density map suggests that family education research is rapidly expanding, particularly in areas such as communication, the role of healthcare professionals, and the improvement of family education quality. However, the medical aspects of family education appear to receive less academic focus in comparison.

Most Publishers

Figure 7 shows the results of publication analysis using the keyword "family education" in the Scopus database.

Figure 7. Top 5 Most Productive Publishers

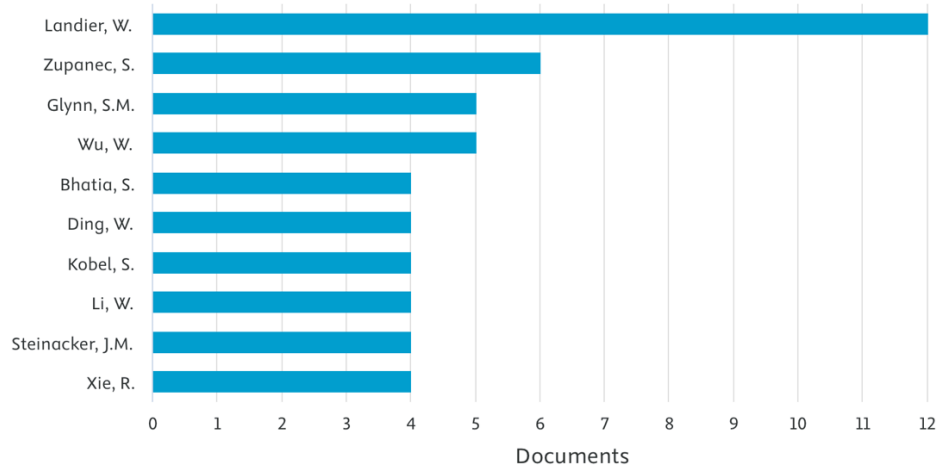


Source: Scopus.com, 2025.

Out of the 1,040 documents identified, the journal with the highest number of publications is Frontiers in Psychology, with 19 documents (approximately 1.83% of the total). It is followed by the International Journal of Environmental Research and Public Health, which has 12 documents (1.15%), while both the Journal of Pediatric Oncology Nursing and Pediatrics have 10 documents (0.96%) each. Additionally, the Journal of Pediatric Hematology Oncology Nursing and Sustainability Switzerland each published nine documents (0.87%), while PLOS One contributed eight documents (0.77%). The publication trend graph indicates a significant increase in the number of publications since 2020, with the highest surge occurring in 2023, particularly in Frontiers in Psychology. This trend suggests a growing research interest in family education, particularly in the areas of child health and psychology. Furthermore, journals related to health and environmental studies have also become key publication platforms in this field, demonstrating that family education is increasingly recognized as a multidisciplinary issue involving psychology, public health, and pediatric medicine.

Author and Co-Authorship Analysis

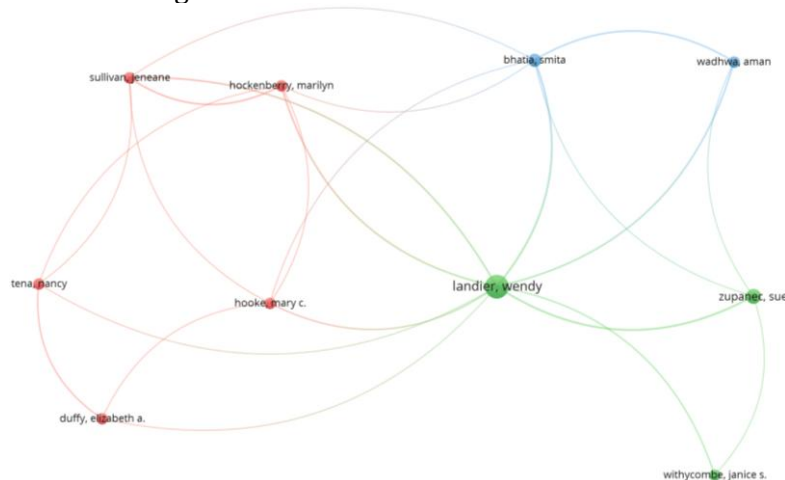
Figure 8. Top 10 Most Productive Authors



Source: Scopus.com, 2025.

From the list of contributing authors in Figure 8, Landier, W., has the highest number of publications, with 12 documents, followed by Zupanec, S., with six documents. Other productive authors include Glynn, S.M., and Wu, W., each with five documents, while Bhatia, S., Ding, W., Kobel, S., Li, W., Steinacker, J.M., and Xie, R., each have four publications. The displayed graph illustrates the distribution of publications among the top authors in this field of research. Landier, W. dominates with a significantly higher number of publications compared to others, indicating their primary role in this area of study. Meanwhile, the other authors have a more balanced contribution, reflecting extensive collaboration among researchers. Additionally, Figure 9 provides further details on author collaboration networks. Landier, Wendy is positioned at the center of the network, indicating collaborations with multiple researchers, including Zupanec, Sue; Bhatia, Smita; and Withycombe, Janice S.. Furthermore, another research group, led by Marilyn Hockenberry, Jeneane Sullivan, and Mary C. Hooke, forms a subgroup within the collaboration network. These connections emphasize that Landier, W. has a broad influence in this field, both as a lead researcher and as a collaborator in various multidisciplinary studies.

Figure 9. Author Collaboration Network

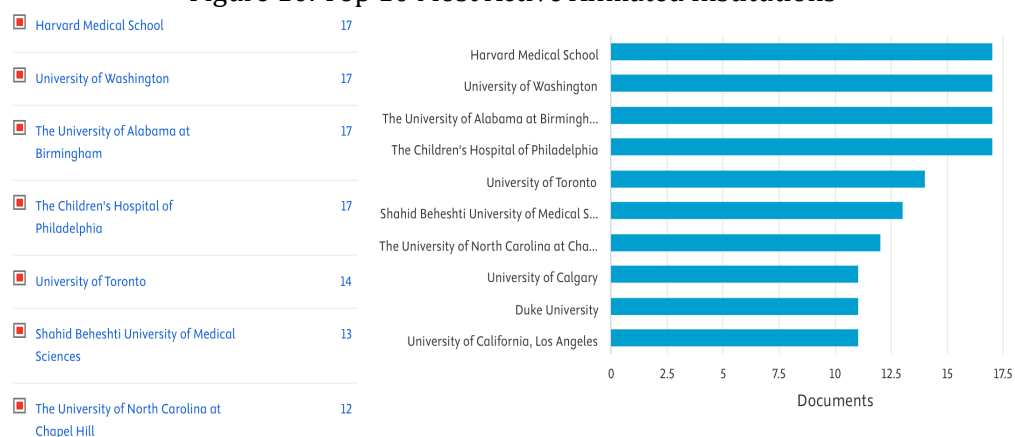


Source: Vos Viewer, 2025.

Most Affiliates and Funding Sponsors

The distribution of publications by affiliation reveals that Harvard Medical School, the University of Washington, the University of Alabama at Birmingham, and The Children's Hospital of Philadelphia have the highest number of publications, each contributing approximately 17 documents (1.63% of the total). The University of Toronto follows these with 14 documents (1.35%), Shahid Beheshti University of Medical Sciences with 13 documents (1.25%), and the University of North Carolina at Chapel Hill with 12 documents (1.15%). Other institutions, such as the University of Calgary, Duke University, and the University of California, Los Angeles, each contributed 11 documents (1.06%). This analysis indicates that research on "family education" is widely distributed among leading health and academic institutions worldwide, with a dominance of medical institutions and major universities in the United States, alongside contributions from several international universities. This further reinforces the high relevance of this topic in both the health and education fields. Additionally, the decentralized distribution of research suggests that various institutions worldwide are contributing, allowing for a broader and more diverse perspective in family education studies.

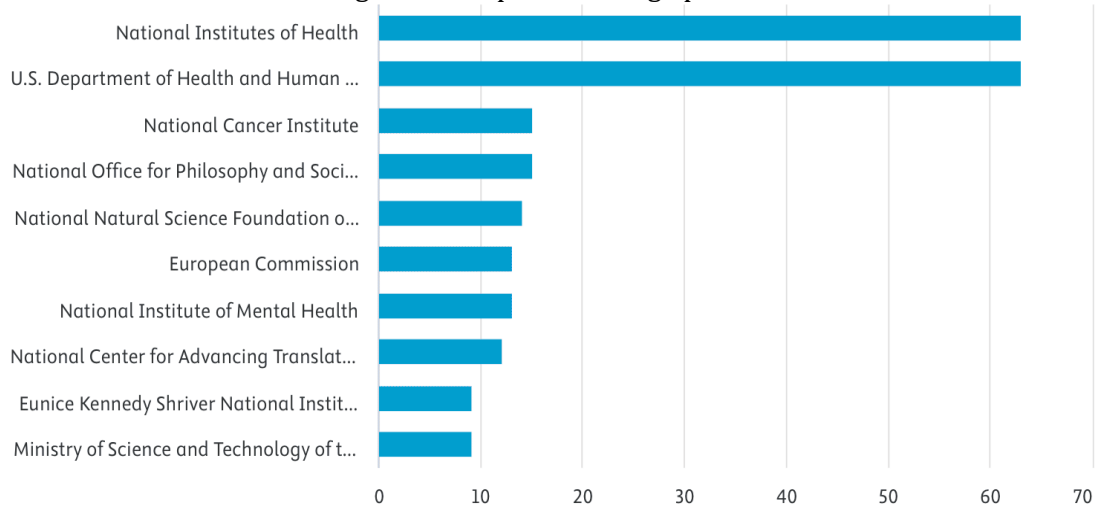
Figure 10. Top 10 Most Active Affiliated Institutions



Source: Scopus.com, 2025.

The analysis of research funding institutions, as shown in Figure 11, reveals that the National Institutes of Health (NIH) and the U.S. Department of Health and Human Services each funded 63 documents, accounting for approximately 12.1% of the total publications. The National Cancer Institute and the National Office for Philosophy and Social Sciences contributed 15 documents each (1.44%), while the National Natural Science Foundation of China funded 14 documents (1.35%). Additionally, the European Commission and the National Institute of Mental Health supported 13 documents each (1.25%). Other institutions contributed fewer than 12 documents. This analysis suggests that most research funding originates from U.S.-based health and social science institutions, reflecting their significant influence in funding studies related to health and social policy. The involvement of the European Commission and the National Natural Science Foundation of China indicates some contributions from outside the U.S., though on a smaller scale. This funding distribution highlights a global research trend, where medical and social studies receive significant attention within the scientific community.

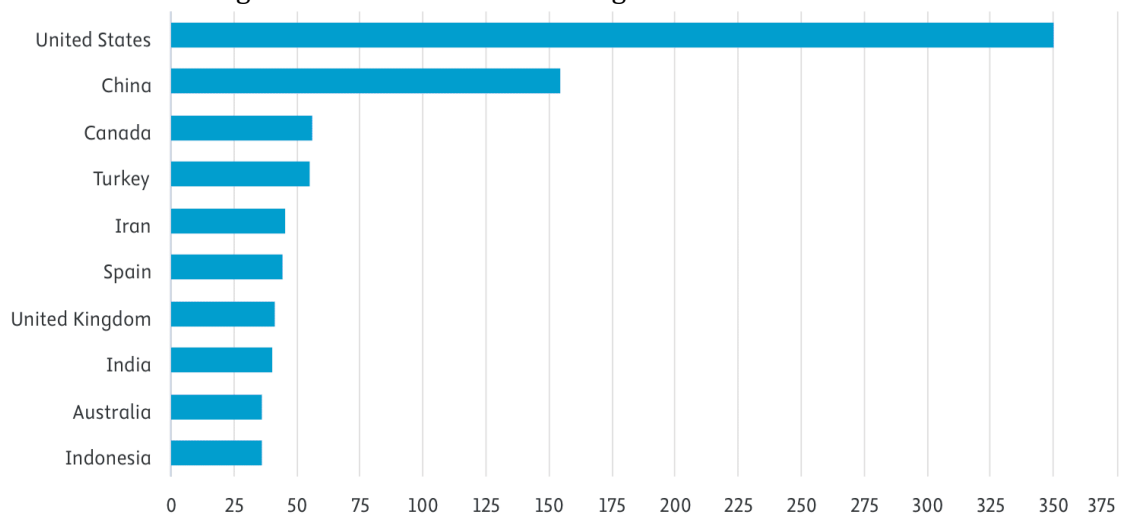
Figure 11. Top 10 Funding Sponsor



Source: Scopus.com, 2025.

Document by Country

Figure 12. Countries with the Highest Number of Articles

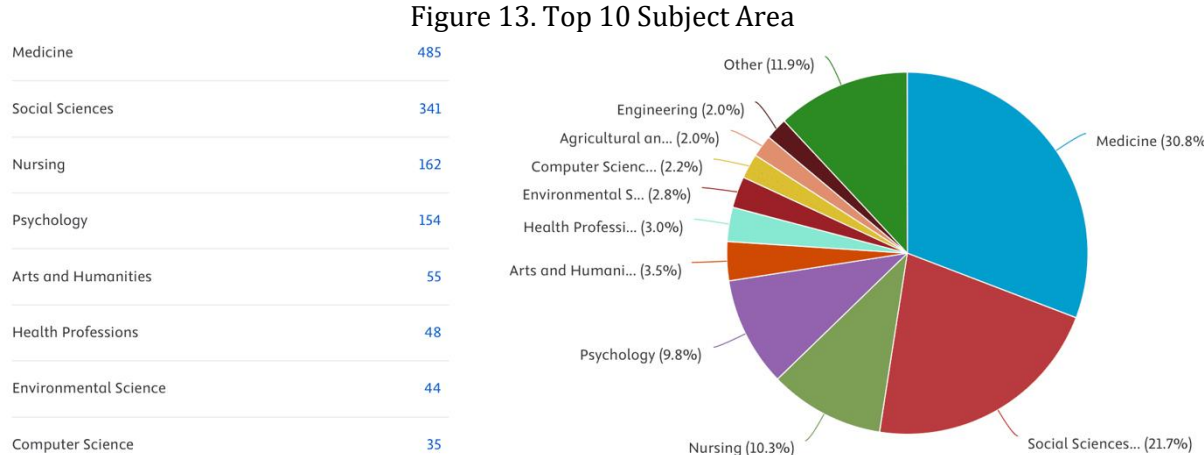


Source: Scopus.com, 2025.

Figure 12 presents the Scopus publication analysis on "family education" from 2015 to 2024, identifying a total of 1,040 documents across various countries. The United States is the leading contributor, with 350 documents (33.65%), followed by China with 154 documents (14.81%) and Canada with 56 documents (5.38%). Other countries with notable contributions include Turkey (5.29%), Iran (4.33%), Spain (4.23%), the United Kingdom (3.94%), India (3.85%), Australia (3.46%), and Indonesia (3.46%). The dominance of the United States reflects its strong academic focus on family education, likely influenced by social policies and extensive research in education and family psychology. This analysis suggests that most research on family education is concentrated in developed countries, particularly the United States and China. This trend may indicate a higher level of academic interest and government policies supporting family-based education in these nations. Meanwhile, Indonesia, with only 36 published documents, shows that research in this field still needs further development to provide deeper insights into family education policies and practices within the country. Enhancing the number of publications can be

achieved through international collaborations, increased research funding, and stronger institutional support to encourage more active engagement in family education research.

Subject Area



Source: Scopus.com, 2025.

The mapping of articles by scientific field (Figure 13) shows that the majority of documents are from the medical field, with 485 articles (30.8%), followed by social sciences with 341 articles (21.7%), nursing with 162 articles (10.3%), and psychology with 154 articles (9.8%). Other fields include arts and humanities, with 55 articles (3.5%); health sciences, with 48 articles (3.0%); environmental sciences, with 44 articles (2.8%); computer science, with 35 articles (2.2%); and agricultural and biological sciences, with 31 articles (2.0%). The distribution of documents by subject suggests that family education research is primarily oriented toward health and social sciences, with a dominance of publications in medicine and nursing. However, the substantial proportion of documents in social sciences indicates that family education is also studied from social and cultural perspectives. The presence of publications in arts and humanities, environmental sciences, and computer science, although relatively small, suggests that family education research is expanding into various interdisciplinary fields.

DISCUSSION

This bibliometric analysis reveals a consistent growth in research related to family education over the past decade, with a notable increase in scholarly attention, particularly in the last five years. The keyword analysis shows that family education is conceptually and thematically connected to early childhood, parenting, early intervention, and quality of life, all of which are clustered in the red group, comprising approximately 35% of the total keywords. This dominance highlights the pivotal role of family education in shaping various aspects of child development. The strong linkage between family education and early childhood, particularly in the first years, reinforces existing evidence on the importance of parental roles, structured home environments, and early support interventions (Sanders et al., 2015; Davis-Kean et al., 2021). In addition, keywords such as positive parenting, health promotion, and parental involvement have emerged more prominently in recent years, reflecting a shift in research focus toward preventative strategies and holistic well-being.

The most productive journals include *Frontiers in Psychology* and the *International Journal of Environmental Research and Public Health*, both of which reflect the interdisciplinary nature of this research area that combines insights from psychology, health, and education. The prominence of health-related journals, such as the *Journal of Pediatric Oncology Nursing and Pediatrics*, further indicates that family education is being studied extensively within medical and caregiving contexts. These publication patterns highlight the increasing recognition

of family education as not only a pedagogical concern but also a determinant of health and emotional resilience.

Analysis of author networks reveals that Landier, W., is the most prolific contributor, with strong collaborative ties to other researchers such as Zupanec, S., and Bhatia, S. The presence of multiple co-authorship clusters indicates that the research community around family education is relatively decentralized, with a wide range of international collaborations. Nevertheless, it is dominated by scholars affiliated with institutions in the United States. The institutional analysis confirms this pattern, showing that Harvard Medical School, the University of Washington, and other U.S.-based universities are the leading contributors. Their consistent output underlines the academic infrastructure and funding availability that support family-centered research.

Regarding funding, the majority of research is supported by U.S. agencies, particularly the National Institutes of Health (NIH) and the U.S. Department of Health and Human Services, each contributing to 63 documents (12.1% of the total). This reflects a national prioritization of research in child and family welfare. While some contributions also come from the European Commission and Chinese funding bodies, overall funding remains concentrated in a few high-capacity countries. This may influence the research agenda and result in an underrepresentation of culturally diverse family education models from the Global South.

The disciplinary mapping reveals that most publications fall under the categories of medicine (30.8%) and social sciences (21.7%), followed by nursing (10.3%) and psychology (9.8%). This highlights the multidisciplinary nature of family education research, which bridges health promotion, child psychology, parenting strategies, and educational practices. Nevertheless, the relatively lower proportion of studies from the arts, humanities, and computer sciences suggests that interdisciplinary expansion is still ongoing and that future research may benefit from more integrative perspectives.

Despite the breadth of data captured, this study has several limitations. First, the analysis relies solely on the Scopus database, which may exclude relevant articles indexed in other databases, such as Web of Science, ERIC, or Google Scholar, particularly non-English publications that may offer important cultural insights. Second, while VOSviewer visualization helps identify keyword networks and author collaborations, it is limited in capturing the conceptual depth and quality of individual publications. This study does not provide a narrative synthesis or comparative evaluation of specific family education models; thus, it serves primarily as a high-level mapping rather than a guide to best practices. Future research should integrate bibliometric and qualitative content analysis to yield more actionable recommendations for practitioners and policymakers. To enrich the findings, further research is recommended to combine the bibliometric approach with systematic content analysis or meta-synthesis in order to explore the meaning and quality of each publication's contribution more deeply. It should focus on underrepresented regions, especially the Global South, to explore culturally diverse family education models and broaden the current Knowledge base. Researchers are encouraged to investigate technology-based parenting interventions to assess their effectiveness in supporting early childhood development and parental involvement. Additionally, studies targeting specific health outcomes, such as childhood anxiety, can provide valuable insights into how family education impacts emotional well-being and resilience.

CONCLUSION

The findings of this study suggest that family education is a continually evolving, multidisciplinary field, with a notable increase in research trends over the past decade. The strong correlation between family education and various aspects, such as early childhood development, parenting, early intervention, and quality of life, underscores the need for a holistic approach to family

education that effectively supports children's growth and development. This is further supported by a bibliometric analysis of 1,812 articles in parenting style research (Arora, 2023), which reveals a consistent expansion of themes related to parenting practices, cultural variation, and developmental outcomes such as health, behavior, and academic performance. The use of citation and co-citation analysis also demonstrates the growing academic attention toward early intervention and its integration into broader family education frameworks.

These findings reinforce that family education is not only an area of academic interest but also plays a crucial role in shaping social and educational policies on a global scale. The practical implications of this study emphasize the need for evidence-based and interdisciplinary family education programs. Education practitioners and policymakers should consider cross-disciplinary collaboration, incorporating insights from psychology, health sciences, and social sciences to develop effective policies and interventions for families and children. Additionally, with the increasing exposure of children to digital technology, parents must be equipped with communication and parenting strategies that align with modern developments to minimize negative impacts and maximize the positive potential of technology in family education. Moving forward, future research opportunities should focus on exploring the most effective strategies for supporting family education across different social and cultural contexts. Further studies are also needed to understand the long-term effects of parental involvement on children's academic achievement and overall well-being. These findings can serve as a foundation for developing more inclusive, adaptive, and sustainable family education models that will support future generations.

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