

A Systematic Literature Review on Developing a Parenting Toolkit to Enhance Motivation among Parents of Children with Autism Spectrum Disorder

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<https://doi.org/10.17977/um065.v6.i11.2026.4>

Article history

Submitted: 8 May 2026

Revised: 1 June 2026

Accepted: 2 June 2026

Published: 3 June 2026

Keywords

Autism spectrum disorder

Parenting motivation

Parenting self-efficacy

Parenting toolkit

Systematic literature review

Abstract

This study aims to review scientific literature on parenting toolkit development as a strategy to enhance motivation among parents of children with Autism Spectrum Disorder (ASD). This study employs a Systematic Literature Review (SLR) approach following the PRISMA protocol, complemented by bibliometric analysis using Biblioshiny. Data were retrieved from Scopus and Google Scholar databases within the publication range of 2016–2025. Out of 835 identified articles, 31 met the inclusion criteria and were analyzed further. Analysis shows accelerated global publication trends in ASD parenting interventions during 2024–2025. Four thematic clusters revealed that parenting stress directly diminishes parental self-efficacy and motivation. Most existing interventions are rigid, time-intensive, and clinically face-to-face, leaving caregivers highly vulnerable to burnout. Although limited to Scopus and Google Scholar, this study theoretically underscores the critical need to shift from child-centered behavioral mechanics toward parent-mediated interventions that reinforce the caregiver's internal psychological constructs. Practically, it provides empirical guidance for practitioners to design flexible, self-mediated family support tools by simplifying instructions and incorporating accessible delivery methods like telehealth. Socially, sustaining parental motivation enhances the quality of life and emotional resilience of families raising children with ASD, reducing the risks of diagnosis denial and therapy discontinuation. The originality lies in combining thematic bibliometric mapping with qualitative synthesis to provide a scientific justification for developing a "Parenting Toolkit," proving that tactical behavior management must be anchored by strengthening parental self-efficacy and intrinsic motivation.

1. Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by impairments in social communication, repetitive behavioral patterns, as well as heterogeneous limitations in cognitive flexibility that affect an individual's overall quality of life. Globally, the prevalence of ASD continues to experience a significant increase, with recent estimates ranging between one to three percent of the total child population worldwide, making it one of the developmental health issues that urgently requires multidimensional intervention responses (Curley et al., 2023). In Indonesia, data shows that the number of children with ASD has also risen over time; however, structured and easily accessible family-based services remain highly limited, particularly outside major urban areas. This condition places parents as the primary actors in the daily caregiving process, which is full of challenges and demands complex psychological adaptation (Marlina & Irdamurni, 2018).

Consequently, parents, especially mothers of children with ASD, frequently face significantly higher caregiving pressure (parenting stress) compared to parents of children with other special needs. A child's atypical behavior, communication limitations, and the need for intense intervention are the primary factors triggering this stress (Kumar, 2025). This situation directly impacts the decline of parenting motivation, which in turn can weaken parental consistency in executing therapeutic roles at home. In fact, active parental involvement in the caregiving process has proven to be a decisive variable for the success of development in children with ASD across various domains, ranging from communication skills and social skills to the reduction of maladaptive behaviors (Vanoncini et al., 2025). Accordingly, maintaining and increasing parental motivation in raising children with ASD is not merely an emotional matter, but rather an urgent clinical and intervention need that must be prioritized.

Theoretically, parenting motivation is influenced by various psychological constructs, one of which is parenting self-efficacy, namely the subjective belief of parents regarding their ability to manage and execute caregiving tasks effectively. The self-efficacy theory formulated by Bandura emphasizes that belief in one's own

capabilities serves as the foundational basis for motivational regulation, which influences behavioral choices, persistence, and resilience in facing obstacles (Clark-whitney et al., 2026). In the context of ASD, mothers with high levels of parenting self-efficacy tend to be more capable of choosing appropriate caregiving strategies, are more resilient to stress, and actively participate more in child intervention programs (Mavroei et al., 2024). Conversely, low parental self-efficacy is associated with increased anxiety, decreased therapeutic involvement, and a weakening of the parent-child relationship. These findings emphasize that strengthening the psychological dimension of parents must become an integral part of every family-based intervention approach.

The dynamics of this home-based reinforcement, in its development, need to be synergized with the child's educational environment. In addition to being at home, interventions for children with ASD prove to be crucial when aligned with practical strategies in inclusive schools (Marlina & Rahmahtrisilvia, 2021). Prior research has proven that the implementation of a peer-mediated Self-Management Strategy (SMS) in inclusive kindergartens is effective in improving children's social behaviors, such as initiating conversations, initiating games, and maintaining interaction. The success of this independent strategy, validated through the Social Response Scale from teachers, underscores that continuity between adaptive parenting at home and structured self-regulation at school is the main key to optimizing the child's overall adaptive functioning (Marlina, 2018, 2017).

The dynamics of this home-based reinforcement, in its development, need to be synergized with the child's educational environment. The role of parents has proven to be highly crucial as the primary facilitators in supporting school learning, maintaining study routines, and providing continuous emotional support (Atikah et al., 2021). The success of this synergy is even visible in the effectiveness of tactical strategies in the classroom; prior research proves that behavioral interventions such as a peer-based Self-Management Strategy (SMS) in inclusive schools can run optimally and consistently if supported by readiness as well as adaptive parenting patterns from parents at home. Therefore, the success of interventions for children with ASD cannot be separated from how parents are able to align the structured self-regulation program from school into daily activities at home.

Various prior studies have sought to develop parent-based programs (parent-mediated intervention) as a strategy to increase such caregiving capacity. A meta-analysis indicates that interventions implemented by parents yield moderate to strong impacts on improving children's social and language skills (Higgins et al., 2022). Furthermore, the Integrative Parents' Autism Training (IPAT) project has been proven to improve the quality of life of parents (Higgins et al., 2022), while a combination of training with motivational interviewing techniques is effective in increasing self-efficacy as well as reducing long-term caregiving burdens (Chen et al., 2022). Nevertheless, program models that are practically and applicably integrated for parents in Indonesia remain very limited. Based on this gap, this study aims to conduct the Development of a Parenting Toolkit to Increase the Caregiving Motivation of Parents of Children with Autism Spectrum Disorder as an effort to provide an independent, adaptive, and sustainable intervention medium.

Although a number of parent-based intervention approaches have proven effective, a significant research gap remains within the existing literature. First, most available studies focus on measuring child outcomes as the primary dependent variable, whereas intrinsic parenting motivation is rarely utilized as a central focus of measurement ((Costa & Roama-alves, 2023). Second, the development of practical tools that can be used independently by parents, specifically in the form of a comprehensive and structured parenting toolkit, remains highly scarce, particularly within the context of Indonesian culture which possesses distinct characteristics of social support and family dynamics. Third, stakeholder perspectives, including parents and clinicians, are still rarely involved meaningfully in the design process of intervention tools, even though such involvement has been proven to enhance program relevance, acceptability, and effectiveness. Fourth, interventions that specifically target the enhancement of parenting motivation as a distinct construct rather than merely a derivative of stress reduction have not been widely developed and systematically tested.

Based on this scientific void, this study offers novelty in the form of developing a parenting toolkit, a multicomponent caregiving guide package that integratively combines psychoeducational elements, self-efficacy strategies, behavioral management techniques based on Applied Behavior Analysis (ABA), and a child progress monitoring module. This parenting toolkit is designed participatively by involving parents and professional clinicians as design partners, thereby ensuring high contextual relevance. The novelty aspect of this study lies in its explicit focus on parenting motivation as the primary outcome, rather than merely a mediator variable, as well as in the packaging of a supportive tool that can be implemented independently by parents without relying fully on clinical availability.

Based on the identified gaps, this study formulates three interconnected lines of inquiry. First, it investigates the developmental dynamics of global publication trends and scientific contribution patterns specifically focusing on author and institutional networks within the literature on parenting interventions for children with Autism Spectrum Disorder (ASD) in the Scopus database. Second, this review unpacks the main thematic clusters formed from the bibliometric mapping of ASD parenting literature and evaluates how the

material focuses of each cluster interact with one another. Finally, it critically examines the methodological characteristics and synthesizes key findings regarding the effectiveness and challenges of existing parenting interventions, thereby establishing how these future opportunities ground the novelty of the proposed Parenting Toolkit aimed at increasing the motivation of parents of children with ASD.

2. Method

2.1. Research Design and Data Sources

This study applies a Systematic Literature Review (SLR) approach to examine the role of the Parenting Toolkit in increasing parenting motivation for parents with children with autism spectrum disorder. This method aims to systematically identify, evaluate, and synthesize relevant literature to obtain a comprehensive overview of existing practices, challenges, and interventions. In its execution, this review process refers to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines developed (Snyder, 2019). This standard is used to encourage consistency and minimize bias to ensure transparency, objectivity, and rigor during the literature selection process.

Furthermore, the PRISMA approach in this study encompasses three main stages consisting of identification, screening (including eligibility assessment), and literature inclusion. Each stage is carried out carefully to ensure that all analyzed sources possess validity, relevance, and a significant contribution to the research topic. The detailed workflow of the process is visually illustrated in the PRISMA flow diagram.

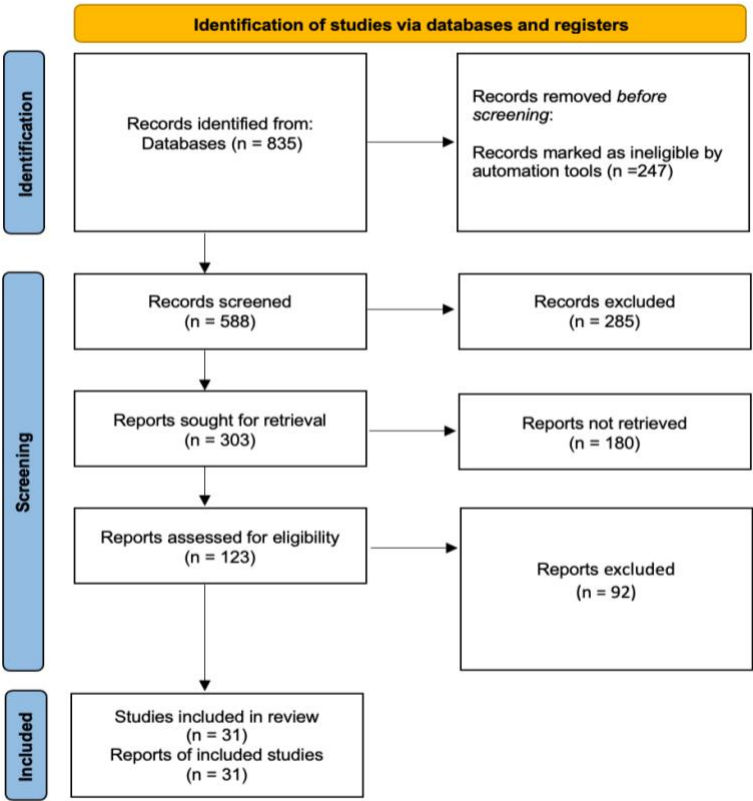


Figure 1. PRISMA Flow Diagram

2.2. Database

The literature search was conducted using the scopus.com academic database, which aggregates articles from various scientific journals, offering broad and diverse coverage. The selection of this database ensures access to multidisciplinary research, allowing for a comprehensive review of the topics explored in this study. This timeframe ensures the inclusion of recent and relevant studies. A structured literature search was performed using the scopus.com database, employing structured search terms to capture a comprehensive range of studies related to parenting toolkits in increasing the caregiving motivation of parents supporting children with autism spectrum disorder (ASD).

To compile a comprehensive and multidisciplinary dataset, the literature search was systematically conducted using the scopus.com academic database. This platform was selected because it aggregates peer-reviewed articles from a diverse range of high-quality scientific journals, thereby ensuring robust and broad

coverage of the research topic. The search timeframe was strictly structured to encompass recent and relevant studies published within the last decade. In executing the search strategy, a precise combination of targeted search terms and Boolean operators was applied to capture all critical dimensions of the study. Specifically, the search queries were integrated into a unified string combining three main conceptual blocks: ("parenting toolkit" OR "parenting intervention" OR "parenting training") AND ("parents" OR "caregivers") AND ("autism" OR "autism spectrum disorder"). This structured approach effectively captured a comprehensive range of global literature focusing on parent-mediated toolkit developments and their direct impact on increasing the caregiving motivation of parents supporting children with Autism Spectrum Disorder (ASD).

2.3. Data Inclusion and Exclusion Criteria

To maintain objectivity and methodological rigor during the evaluation phase, the refinement of the compiled literature was guided by a set of explicit filtering parameters. The retrieved documents were meticulously evaluated against specific benchmarks, distinguishing between studies that provided immediate relevance to the research objectives and those that fell outside the intended scope. These parameters encompassed strict specifications regarding document type, linguistic medium, and the publication timeframe. The detailed operational breakdown of these screening boundaries, which highlights the precise justification for containing or omitting literature from the final systematic analysis, is comprehensively presented in Table 1.

Table 1. Inclusion and Exclusion Criteria for Literature Selection

No	Category	Criteria
1	Exclusion Criteria	Document type limited to books
		Publications written in languages other than English
		Publications published outside the period of 2016 to May 2026 (08:00 WIB)
2	Inclusion Criteria	Document type limited to journal articles
		Articles written in English
		Articles published within the period of 2016 to May 2026 (08:00 WIB)

2.4. Data Extraction

Data extraction was obtained based on the author's name and year; country of origin of the study; research objectives; participant characteristics (parents and children with autism spectrum disorder); methodology; components of the parenting toolkit; strategies for increasing parenting motivation; and key findings regarding the effectiveness of the toolkit in supporting the parental role.

2.5. Documents Included in the Analysis

Following the screening and eligibility process, 31 documents that met the inclusion criteria were selected for further analysis. Figure 1 illustrates the selection process. The dataset was merged into a CSV file for bibliometric analysis using RStudio and Biblioshiny. This approach integrates empirical and systematic literature, thereby providing in-depth information regarding the use of a parenting toolkit in increasing the caregiving motivation of parents with children with autism spectrum disorder.

2.6. Quality and Credibility

The data collection process in this study was strictly conducted to ensure that only articles meeting the quality criteria were included in the analysis. Each bibliographic metadata entry was thoroughly reviewed to ensure the accuracy and completeness of the information gathered from 31 articles related to parenting toolkits and parenting motivation. This verification process included checking key details such as titles, authors, publication years, keywords, and citations, which are essential for maintaining the quality of the data used in the bibliometric analysis. This ensures that the results of the study are reliable and valid.

The results from Table 2 indicate that most core metadata elements have a very high completion rate. Crucial elements such as Abstract (AB), Affiliation (C1), Author (AU), References (CR), DOI (DI), Document Type (DT), Journal (SO), Keywords (DE), Language (LA), Publication Year (PY), Title (TI), and Total Citations (TC) were recorded as 100% complete with no missing data (0% missing). The absolute availability of this core metadata guarantees that the article screening process and the analysis of research patterns regarding interventions for parents of children with autism spectrum disorder can be carried out with precision.

Although the integrity of the primary data is very high, there are some gaps in the complementary metadata elements. Based on the missing data analysis, Corresponding Author (RP) has a missing percentage of 6.45% with a "Good" predicate, while Keywords Plus (ID) shows a loss of 29.03% (a "Poor" predicate). The Science Categories (WC) element was recorded as completely unavailable (100% missing). However, because fundamental elements such as titles, abstracts, and main keywords hold an "Excellent" predicate, the validity of the bibliometric analysis and Systematic Literature Review (SLR) in mapping parenting motivation strategies remains highly robust and free from the risk of information bias.

Table 2. Completeness of Bibliographic Metadata

Metadata	Description	Missing Counts	Missing %	Status
AB	Abstract	0	0	Excellent
C1	Affiliation	0	0	Excellent
AU	Author	0	0	Excellent
CR	Cited References	0	0	Excellent
DI	DOI	0	0	Excellent
DT	Document Type	0	0	Excellent
SO	Journal	0	0	Excellent
DE	Keywords	0	0	Excellent
LA	Language	0	0	Excellent
PY	Publication Year	0	0	Excellent
TI	Title	0	0	Excellent
TC	Total Citation	0	0	Excellent
RP	Corresponding Author	2	6.45	Good
ID	Keywords Plus	9	29.03	Poor
WC	Science Categories	31	100	Completely missing

Although the integrity of the primary metadata is optimally maintained, there are several data gaps in the supporting variables that warrant critical review. The Cited References (CR) and Corresponding Author (RP) variables show minimal missing rates of 6.45% and 7.69%, respectively, both holding a "Good" status. On the other hand, the Keywords Plus (ID) variable records a missing rate of 29.03% ("Poor"), and the Science Categories (WC) variable experiences a complete absence of data (100%). Nonetheless, the incompleteness of these secondary variables does not systematically reduce the validity of the analysis. This is because key variables used for citation pattern mapping, author impact analysis, and content synthesis remain comprehensively available, ensuring that the objectivity of the study's findings is well-maintained.

Overall, the solidity of the bibliometric data shown in Tabel 2 provides a rigorous foundation for mapping the research trajectory regarding the use of parenting toolkits in enhancing the parenting motivation of parents of children with autism spectrum disorder (ASD). The absolute completeness of the abstract and reference aspects allows for an in-depth identification of key references and intervention effectiveness parameters. Consequently, the quality of this metadata ensures that the resulting synthesis is capable of making a significant contribution to the development of a more precise parental support model, while minimizing technical limitations in the bibliographic data extraction procedure.

This study comprehensively maps the dynamics of literature regarding strategies to strengthen the role of parents through parenting toolkits by integrating the Systematic Literature Review (SLR) method and bibliometric analysis, where mapping trends, citation patterns, and researcher collaborations serve as crucial indicators in understanding the evolution of this psychosocial intervention model. The solid bibliometric data, characterized by absolute completeness in the abstract and reference metadata (0% missing data), provides profound insights into research trajectories and key references related to parenting capacity enhancement. Although the exclusion of certain metadata elements such as Science Categories (WC) and limitations in Corresponding Author (RP) restrict specific analytical dimensions, the availability of other primary metadata guarantees the rigor and integrity of this study. Thus, this study remains capable of presenting an objective synthesis of the validity of toolkit interventions without compromising the depth of systemic analysis, while simultaneously contributing significantly to the development of an educational model that is more precise and sensitive to the needs of parents of children with ASD.

2.7. Data Analysis

The type of data analysis used is thematic analysis with a narrative synthesis approach. This approach was chosen because the data obtained from the included studies are qualitative and descriptive quantitative, and they demonstrate diversity in methodology, context, and the form of parenting toolkit interventions in enhancing parenting motivation among parents of children with autism spectrum disorder (ASD).

3. Results and Discussion

3.1. Results

3.1.1. Main findings

Based on the synthesis of the included literature, Table 3 provides a comprehensive summary of the main findings from the 31 scientific articles analyzing parent training involvement, adaptation, and effectiveness for children with Autism Spectrum Disorder (ASD) across diverse global contexts. The methodological characteristics summarized within the table reflect a wide variation in research designs; these range from

qualitative and descriptive studies exploring parental perspectives and evolving readiness (e.g., Gentles et al., 2020; Preece et al., 2017) to mixed-methods frameworks evaluating cultural adaptations like the K-RUBI program (J. D. Lee et al., 2026), and rigorous Randomized Controlled Trials (RCT) measuring the empirical impact of interventions on adaptive behaviors (Scahill et al., 2016). Taken together, the systematized data in this table highlight that successful intervention outcomes are heavily contingent upon family motivation, robust social support, cultural relevance, and the integration of digital delivery models such as telehealth to mitigate geographical barriers.

Table 3. Main Findings from Articles Included in the Synthesis

Author & Year	Title	Design	RQ Focus	Key Findings
(Ros-DeMarize et al., 2023)	Behavioral parent training engagement among young children with autism spectrum disorder	Descriptive quantitative study	Analyzing parental engagement in behavioral parent training programs for young children with ASD	Parental engagement is influenced by motivation, family support, and access to intervention services.
(J. D. Lee et al., 2026)	Cultural adaptation of RUBI intervention with Korean families (K-RUBI): a mixed method study	Mixed methods	Testing the cultural adaptation of the RUBI program for Korean families	Cultural adaptation enhances the acceptance, relevance, and effectiveness of the intervention for Korean families.
(Stuttard et al., 2016)	An evaluation of the Cygnet parenting support programme for parents of children with autism spectrum conditions	Program evaluation / quasi-experimental	Evaluating the effectiveness of the Cygnet parenting support program	The program increases parents' understanding of ASD and reduces parenting stress.
(Scahill et al., 2016)	Effect of parent training on adaptive behavior in children with autism spectrum disorder and disruptive behavior: Results of a randomized trial	Randomized controlled trial (RCT)	Assessing the effect of parent training on adaptive and disruptive behavior	Parent training improves adaptive behavior and reduces problem behaviors in children with ASD.
(Preece et al., 2017)	Accessing parental perspectives to inform the development of parent training in autism in south-eastern Europe	Qualitative study	Identifying parents' perspectives regarding the development of parent training	Parents emphasize the importance of accessibility, cultural sensitivity, and emotional support.
(Sankey et al., 2019)	Supporting parents of a child with autism spectrum disorder: the French awakening	Descriptive / qualitative study	Exploring support for parents of children with ASD in France	Social support and parent education improve family coping skills.
(Gentles et al., 2020)	Coming to understand the child has autism: A process illustrating parents' evolving readiness for engaging in care	Qualitative study	Examining the process of parents' readiness in accepting an ASD diagnosis and engaging in intervention	Parents' readiness evolves gradually and influences their engagement in intervention services.
(Tsami et al., 2019)	Effectiveness and acceptability of parent training via telehealth among families around the world	Evaluative study / mixed methods	Assessing the effectiveness and acceptability of telehealth-based parent training	Telehealth is considered effective, flexible, and capable of increasing access to global services.
(Decroocq et al., 2020)	Facilitators' perspectives on a psychoeducational program for parents of an autistic child	Qualitative study	Exploring facilitators' perspectives on a psychoeducational program	The program helps increase parents' knowledge and the quality of family interactions.
(Rooks-Ellis et al., 2020)	Effects of a parent training using telehealth: Equity and access to early intervention for rural families	Intervention study	Testing the effectiveness of telehealth in improving intervention access for rural families	Telehealth expands access to services and reduces geographical barriers.
(Meleady et al., 2020)	While quarantined: An online parent education and training model for families of children with autism in China	Descriptive study	Evaluating an online training model during the COVID-19 quarantine period	Online programs help maintain intervention support during the pandemic.

Author & Year	Title	Design	RQ Focus	Key Findings
(Meleady et al., 2020)	Family adaptation among parents of children on the autism spectrum without a comorbid intellectual disability: A test of the Double ABCX model	Quantitative study	Testing the Double ABCX model on the family adaptation of children with ASD	Family adaptation is influenced by stressors, family resources, and coping strategies.
(Turgeon et al., 2021)	Effects of an interactive web training to support parents in reducing challenging behaviors in children with autism	Intervention study	Testing a web-based interactive training in reducing challenging behavior	Interactive training effectively improves parents' behavior management skills.
(Rothschild et al., 2022)	Parents matter: Parent acceptance of school-based executive functions interventions relates to improved child outcomes	Correlational study	Assessing the relationship between parental acceptance and school-based executive function interventions	Parental acceptance is associated with improved child developmental outcomes.
(Leung et al., 2022)	Building self-efficacy in parenting adult children with autistic spectrum disorder: An initial investigation of a two-pronged approach in role competence	Exploratory study	Developing self-efficacy in parents of adult children with ASD	A training approach increases role competence and parental self-confidence.
(Sharma et al., 2022)	Effectiveness of parent-to-parent support group in reduction of anxiety and stress among parents of children with autism and attention deficit hyperactivity disorder	Quasi-experimental	Assessing the effectiveness of a parent support group	The support group reduces anxiety and parenting stress.
(Gentile et al., 2022)	A parent-mediated telehealth program for children with autism spectrum disorder	Intervention study	Assessing a telehealth program based on parent-mediated intervention	The program improves child learning stimulation skills and reduces parenting stress.
(Dai et al., 2023)	An initial trial of OPT-In-Early: An online training program for caregivers of autistic children	Pilot study	Testing the feasibility of the OPT-In-Early online training program	The program demonstrates the potential to improve caregiver skills.
(Kenworthy et al., 2023)	An initial trial of OPT-In-Early: An online training program for caregivers of autistic children	Pilot study	Evaluating the initial effectiveness of an online training for caregivers	The online intervention is deemed feasible and supports caregiver engagement.
(Bhana et al., 2024)	Photographs and parent training to support conversations about past events between caregivers and children with autism	Intervention study	Using photographs and parent training to support communication	The use of visual media improves child communication skills and caregiver interaction.
(van Mourik et al., 2024)	Building Parental Capacity: Outcomes of a Therapeutic Parent Group Run Concurrently with a Social Skills Group for Their Young Person	Evaluative study	Evaluating a therapeutic parent group run concurrently with a child's social skills group	The program increases parenting capacity and family social support.
(Rauen et al., 2025)	A qualitative pilot study of the virtual implementation of the WHO caregiver skills training program in Brazil	Qualitative pilot study	Exploring the virtual implementation of the WHO caregiver skills training	Virtual implementation is deemed feasible and helps improve caregiver skills.
(Shkel et al., 2025)	A pilot randomized controlled trial of motivation-based social skills group treatment with parent training	Pilot randomized controlled trial	Testing motivation-based social skills training with parent training	The intervention demonstrates an increase in social skills and parental engagement.
(Mutschler Collins et al., 2025)	Parents' perspectives regarding support for raising a child on the autism spectrum in	Mixed methods	Exploring parents' perspectives regarding parenting support	Parents require multidisciplinary support and access to sustainable services.

Author & Year	Title	Design	RQ Focus	Key Findings
	Switzerland: A mixed-methods study			
(Ding et al., 2025)	Incorporating a Three-Tier Parent Education Model into ImPACT Curriculum in Taiwan	Intervention study	Integrating a parent education model into the ImPACT curriculum	The three-tier model increases engagement and the effectiveness of parent training.
(Şahin Büyük & Özmen, 2025)	Effectiveness of a parent empowerment program for parents of children with autism: A randomized controlled trial	Randomized controlled trial	Assessing the effectiveness of a parent empowerment program	The program increases empowerment, coping, and parenting skills.
(Gong et al., 2025)	Heart-Mind-Behavior Parent Training: Randomized controlled trial for Chinese parents of young children with ASD	Randomized controlled trial	Testing the effectiveness of Heart-Mind-Behavior training	The intervention improves child behavior regulation and parental competence.
(Dahiya et al., 2025)	Using a Mobile App to Support Parents of Children with Behavior Problems	Development / intervention study	Testing the use of a mobile application to support parents	The mobile application helps monitor behavior and increases access to support.
(Breider et al., 2026)	Parent training for disruptive behaviors in referred children with autism spectrum disorder: A randomized controlled trial	Randomized controlled trial	Assessing the effectiveness of parent training on disruptive behavior	Parent training effectively reduces disruptive behavior in children with ASD.
(Ramos et al., 2026)	Exploring the Impact of a Culturally Adapted Parent-Directed Training Program for Latine Parents of Children With Autism	Mixed methods	Exploring the impact of a culturally adapted training program for Latine families	Cultural adaptation increases participation and family satisfaction.
(J. Lee et al., 2024)	Mobile app-assisted parent training intervention for behavioral problems in children with autism spectrum disorder: Pilot randomized controlled trial	Pilot randomized controlled trial	Testing a mobile app-assisted parent training intervention	Mobile applications support the effectiveness of parent training in reducing behavioral problems in children.

Key findings in this table emphasize that the effectiveness of interventions highly depends on the emotional readiness and social support received by the family. The synthesis results show that parent training not only increases their understanding of ASD conditions, but also significantly reduces parenting stress levels and improves children's adaptive behavior. Additionally, aspects of cultural adaptation and emotional sensitivity are crucial factors for intervention programs to be accepted relevantly by families from diverse backgrounds.

Specifically, this table provides a strong foundation for answering research questions regarding the optimization of service access through technological innovation. The use of telehealth was found to be an effective, flexible solution capable of overcoming geographical barriers for families in remote areas. By summarizing various factors influencing parental involvement ranging from internal motivation to family support the table serves as a scientific evidence map to support the need for a family-centered intervention approach to enhance the quality of interaction and the well-being of children with developmental challenges.

3.1.2. Descriptive Analysis Results

This study analyzes 31 research articles concerning the parenting toolkit in increasing the parenting motivation of parents of children with autism spectrum disorder, published within the timeframe between 2016 and 2026. The data in Figure 2 shows that the annual growth rate (Annual Growth Rate) reached 4.14%. A total of 196 authors contributed to this publication, in which there is one article written individually (1 author on a single-authored article). The level of international collaboration is classified as quite high, with 9.7% of the articles featuring co-authors from various countries. On average, each article involves 6.52% authors, reflecting a strong collaborative nature in research regarding this parenting toolkit in increasing the parenting motivation of parents of children with autism spectrum disorder.

The analyzed literature includes 196 unique keywords from authors, which reflect a specific thematic focus. The average document age is 3.71 years, highlighting the novelty as well as contemporary relevance of studies in that field. Furthermore, the average number of citations reaches 18.74 per document with a total of 1,683 references used. Research regarding the parenting toolkit in increasing the parenting motivation of parents of children with autism spectrum disorder shows a stable academic influence. Overall, Figure 2 presents comprehensive demographic information related to the final dataset used in the study.



Figure 2. Demographic Distribution Results

3.1.3. Annual Publication Trends

The figure 3 illustrates fluctuations in the annual number of publications related to the development of parenting toolkits aimed at enhancing the parenting motivation of parents of children with Autism Spectrum Disorder (ASD) from 2016 to 2026. In 2016, there were 2 published articles recorded; however, the trend subsequently showed a sharp decline, leading to zero published articles (0 articles) in 2018. This condition began to exhibit significant dynamics in the following period, where the number of publications surged to 4 articles in 2020.

Despite a brief decline back to 2 articles in 2021, research interest strengthened again in 2022 with a total of 4 publications. Following a stable phase at 3 articles in 2023 and 2024, the research trend reached its massive peak in 2025 with a total of 7 published articles. Overall, this graph depicts publication dynamics that are fluctuating yet possess a significantly increasing tendency in recent years, indicating that the topic of parenting motivation through supporting tools (toolkits) is increasingly gaining widespread attention in academic literature.

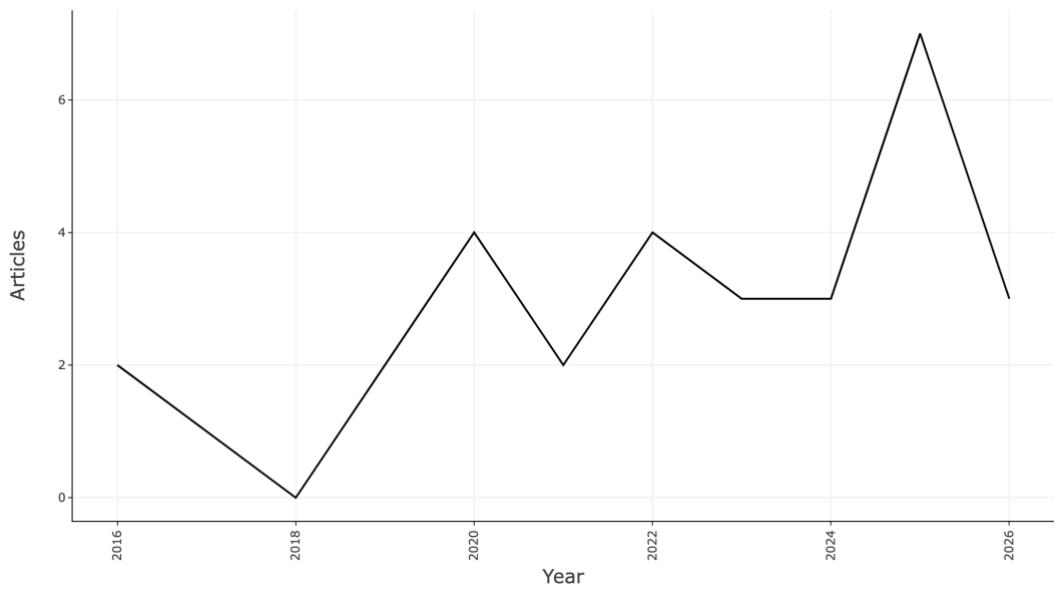


Figure 3. Annual Publication Trend

3.1.4. Country-Level Analysis

As illustrated in Figure 4, the country-level analysis indicates that the USA dominantly leads in the cumulative number of research publications concerning parenting interventions and the motivation of parents of children with autism, reaching a total of nearly 60 documents by 2026. The figure provides detailed

information regarding the growth dynamics of articles based on the primary contributing countries, where the USA shows a highly significant surge starting from 2022 and continues to maintain the top position with an exponential growth trend.

Subsequently, Brazil recorded a notable publication output after experiencing rapid growth during the 2024–2025 period. Meanwhile, Korea and the United Kingdom show stable contributions, standing at 7 and 5 articles, respectively. The United Kingdom appears to have a highly consistent graph since 2017, whereas other countries such as the Netherlands only began to show active publication emergence in 2026. Overall, this figure illustrates an increasingly diverse global contribution map, with the USA serving as the primary driver in the development of literature within this field.

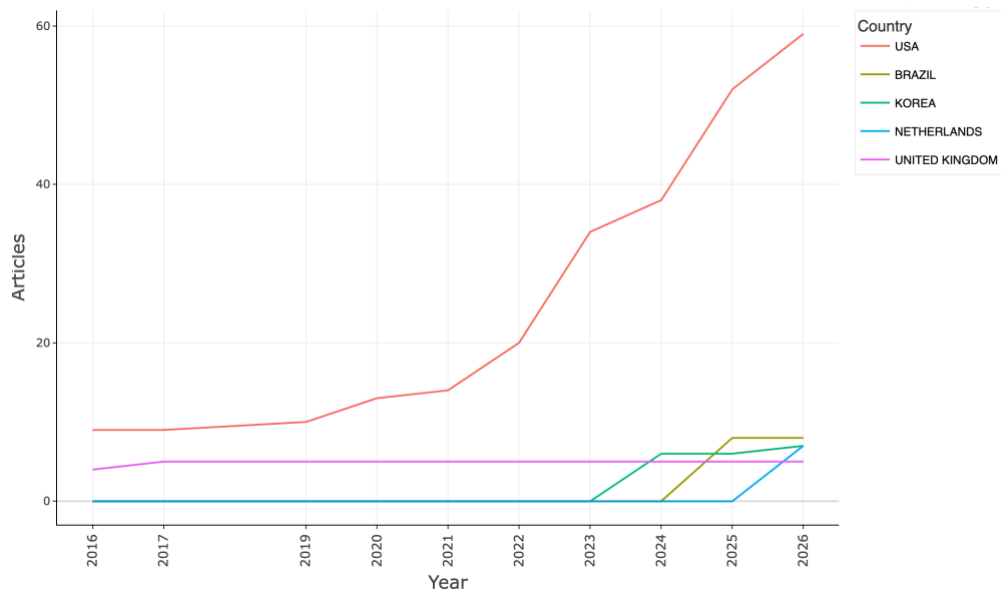


Figure 4. Country-Level Analysis

3.1.5. Primary Contributors and Influential Institutions

3.1.5.1. Most Relevant Authors

By analyzing the authors who contribute to this field, we identified several academics who have published articles related to parenting toolkit interventions and the parenting motivation of children with autism between 2016 and 2026, as detailed in Table 4. The table presents a list of relevant authors along with the number of articles and the Articles Fractionalized values they have produced. Based on the data, there is a group of authors with the highest productivity, each contributing 2 research articles, including Anthony, Laura G.; Bearss, Karen; Cappe, Emilie; Kenworthy, Lauren; Sankey, Carol; and Verbalis, Alyssa; meanwhile, other authors such as Ahmed, Kelli B.; Albright, Jordan; and Alexander, Katie C. have each contributed 1 research article.

Although quantitatively several authors have the same number of articles, the Articles Fractionalized value indicates differences in contribution weight within team collaborations. Specifically, the authors with the highest fractional values in this list are Cappe, Emilie and Sankey, Carol, with scores of 0.37 each, followed by Bearss, Karen (0.20), indicating a more intensive individual contribution or involvement in smaller collaborative writing teams on the topic. Overall, these data show a fairly competitive distribution of contributions among key researchers, thereby strengthening the literature base regarding instrument development in this domain.

Table 4. Most Relevant Authors

Author	Articles	Articles Fractionalized
ANTHONY, LAURA G	2	0.16
BEARSS, KAREN	2	0.20
CAPPE, EMILIE	2	0.37
KENWORTHY, LAUREN	2	0.16
SANKEY, CAROL	2	0.37
VERBALIS, ALYSSA	2	0.16
AHMED, KELLI B	1	0.06
ALBRIGHT, JORDAN	1	0.12
ALEXANDER, KATIE C	1	0.08
ALLEGRA, MARIO	1	0.1

3.1.5.2. Author Productivity

Author productivity indicates that most researchers have only written a single article, while a small minority have contributed two articles to this literature. Based on the data in the table 5, we found that the vast majority of authors, namely 190 people (96.9%), only contributed one research document. Meanwhile, there are only 6 authors (3.06%) who have published two articles related to the development of a parenting toolkit to increase parenting motivation in parents of children with autism spectrum disorder. The dominance of authors with a single work indicates that although interest in this topic is quite broad, sustained research consistently by the same individuals remains limited. Overall, the data reflect that the contributor base in this field is very broad yet still at an early exploration stage for most researchers.

Table 5. Author Productivity

Documents written	N. of Authors	Proportion of Authors
1	190	0.969
2	6	0.030

3.1.5.3. Author Impact: h-index, g-index, and m-index

Author impact analysis was conducted by evaluating several key bibliometric metrics to measure the quality and overall scientific contribution within the topic of parenting toolkits for children with autism. In addition to assessing the number of publications (NP), this study also considers impact through the h-index, g-index, and m-index. Based on the data in the table 6, it is evident that most authors have an h-index between 1 and 2, indicating that the researchers within this dataset possess works that have been consistently cited.

Although the average productivity is at the development stage, several authors demonstrate a highly significant impact through high Total Citations (TC) values, such as Bearss, Karen, who has accumulated 108 citations since commencing publications in 2016. The use of the m-index in the table also provides an overview of the author impact comparison based on their career duration, where Albright, Jordan exhibits the highest impact efficiency with a value of 0.5. Overall, these data indicate that even though the majority of new authors contribute a limited number of documents (NP = 1 or 2), the generated works possess strong relevance and quality within academic literature, as evidenced by the quite significant accumulation of gathered citations.

Table 6. Author Indexing Impact

Author	h_index	g_index	m_index	TC	NP	PY_start
ANTHONY LAURA G	2	2	0.4	28	2	2022
BEARSS KAREN	1	2	0.09	108	2	2016
CAPPE EMILIE	2	2	0.25	27	2	2019
KENWORTHY LAUREN	2	2	0.4	28	2	2022
SANKEY CAROL	2	2	0.25	27	2	2019
VERBALIS ALYSSA	2	2	0.4	28	2	2022
AHMED KELLI B	1	1	0.25	6	1	2023
ALBRIGHT JORDAN	1	1	0.5	1	1	2025
ALEXANDER KATIE C	1	1	0.25	21	1	2023
ALLEGRA MARIO	1	1	0.2	24	1	2022

3.1.5.4. Affiliation Distribution Analysis

Table 7 presents detailed insights regarding the affiliation distribution of researchers contributing to literature within this field. Based on the analysis results, it is identified that several prominent institutions dominantly shape the development of this research topic. Universidade Federal do Paraná clearly leads the contribution with a dominant total of 8 articles. This institution is followed by a group of prominent organizations contributing 2 articles each, which includes the National Institute of Mental Health and Neuro Sciences, the University of Groningen, and Yale University.

Furthermore, a wide range of other institutions such as the Accare Child Study Center, Alfred Mental and Addiction Health, American University, Arizona State University, Baylor College of Medicine, and Boston University have each produced 1 research article. This distribution indicates that while the core research output is heavily driven by a leading South American federal university, academic interest remains globally distributed across various prestigious medical networks, specialized child study centers, and international research universities.

Table 7. Affiliation Distribution Results

Affiliation	Articles
UNIVERSIDADE FEDERAL DO PARANÁ	8
NATIONAL INSTITUTE OF MENTAL HEALTH AND NEURO SCIENCES	2
UNIVERSITY OF GRONINGEN	2
YALE UNIVERSITY	2
ACCARE CHILD STUDY CENTER	1
ALFRED MENTAL AND ADDICTION HEALTH	1
AMERICAN UNIVERSITY	1
ARIZONA STATE UNIVERSITY	1
BAYLOR COLLEGE OF MEDICINE	1
BOSTON UNIVERSITY	1

3.2. Discussion

3.2.1. Global Trends and Collaboration Networks in ASD Parenting Intervention Research

Analysis of data extracted from the Scopus database provides a comprehensive overview of global publication trends and the map of scientific contributions regarding parenting interventions for children with Autism Spectrum Disorder (ASD). Based on the annual publication volume trend analysis, global academic attention toward psychological capacity issues and parenting media support for parents of children with ASD shows a fluctuating yet consistent trend of positive acceleration over the past decade. In the initial phase prior to 2017, the number of scientific articles examining this topic was observed to be highly limited and sporadically distributed. However, entering the period from 2018 onwards, a highly significant surge in publication volume occurred. This trend reached its peak stability in the most recent period, namely between 2024 and 2025, with a consistent annual draft article volume remaining at its highest numbers. This phenomenon indicates a paradigm shift within the global scientific community, where the success of interventions for children with ASD is no longer viewed centralistically through clinical child therapy alone, but is heavily reliant on strengthening the motivation, resilience, and readiness of parents as primary caregivers within the home environment.

In line with the growth of publication trends, analysis of scientific contribution patterns highlights a strong integration and collaborative networking among leading researchers and cross-country academic institutions. Research contributions in this field are pioneered by global researcher networks based in major universities that consistently build a scientific roadmap for the parenting of children with special needs. Senior researchers such as (Scahill et al., 2016; DeMarize et al., 2023) serve as crucial contributors representing Western institutions in testing the effectiveness of large-scale parent training programs through rigorous experimental designs. The scientific impact of their publications has become a primary foundation in establishing intervention behavioral standards that are adopted internationally.

On the other hand, this contribution pattern also demonstrates interesting decentralization dynamics through active contributions from academic institutions in Asia and Europe. This is evidenced by the scientific contributions of researchers such as (Lee et al., 2026), who focus on the cultural adaptation of family intervention programs in Korea, and (Preece et al., 2017), who map parenting needs in Southeast Europe. Locally, contributions from national researchers such as (Marlina, 2018) further reinforce the strategic role of domestic higher education institutions, which consistently strive to bridge child behavior regulation programs between inclusive school environments and independent parenting activities at home. This close integration between author networks and global multi-institutions emphasizes that the scientific impact of ASD parenting literature has currently expanded into an international academic partnership movement oriented toward providing flexible parenting media (toolkits), which are easily accessible and sensitive to the diversity of family cultural backgrounds.

3.2.2. Thematic Clusters and Interactions in ASD Parenting Literature

Based on the results of the keywords co-occurrence analysis (keywords co-occurrence analysis) using Biblioshiny software on the synthesized literature of parenting for children with Autism Spectrum Disorder (ASD) (n = 31), four primary thematic clusters have been identified that map the scientific landscape of this field. These four clusters do not stand alone in isolation; instead, they demonstrate a network of strong interactions and interdependencies among the materials within the bibliometric network.

This dynamic interaction is initiated by a causal relationship between Cluster 1 (Parenting Stress and Psychological Well-being) and Cluster 4 (Parental Motivation and Self-Efficacy). Substantively, the literature in Cluster 1 uncovers the veil of psychological burden, anxiety, and extreme parenting stress (parenting stress) faced by parents due to the atypical behavioral characteristics of children with ASD. This chronic emotional pressure directly interacts negatively with the domain in Cluster 4, where unmitigated parenting stress is

proven to be a primary factor that weakens self-efficacy (parenting self-efficacy) and undermines parents' intrinsic motivation in carrying out long-term parenting roles (Stuttard et al., 2016). Conversely, when an intervention is capable of strengthening internal psychological constructs in Cluster 4 namely boosting parents' self-confidence and internal motivation the psychological burden and parenting stress in Cluster 1 can simultaneously be significantly reduced, creating stronger family resilience (resilience).

On the other hand, this network of psychological conditions interacts practically and operationally with Cluster 2 (Parenting Training and Behavior Intervention) and Cluster 3 (Parenting Tools and Digital Toolkit Development). Parents' mental readiness and motivation (Cluster 4) serve as the primary fuel determining the success rate and consistency of implementing tactical behavior modification training programs found in Cluster 2. Various tactical strategies, such as the Self-Management Strategy (SMS) transferred from inclusive schools to the home, or behavioral parent training frameworks, will run optimally if parents possess high motivation and self-efficacy to mediate it independently at home, a dynamic closely tied to overall parental engagement factors (Ros-DeMarize et al., 2023). Furthermore, the structural transfer of these behavior interventions often requires strategic refinement to match specific family settings, showing that successful behavioral execution in Cluster 2 is highly contingent upon programmatic relevance and systematic adaptation (J. D. Lee et al., 2026).

However, prior research indicates the existence of a gap (gap) in the field: training programs in Cluster 2 are often too rigid, time-intensive, and based on face-to-face clinical sessions, which risk triggering parents' physical exhaustion and subsequently increasing parenting stress in Cluster 1. This is where Cluster 3 emerges as a bridge of solutions and a space for future integration. The development of practical learning media, self-instructional modules, to interactive technology adaptation (parenting toolkit) in Cluster 3 serves to ease accessibility and simplify the implementation of behavioral strategies within Cluster 2. Through this flexible toolkit medium, delivery barriers can be minimized and clinical training can be scaled efficiently via digital modes like telehealth, expanding service equity across geographical boundaries (Rooks-Ellis et al., 2020). By making interventions highly flexible and low-burden, the parenting weight can be tactically trimmed to maintain parents' emotional stability (Cluster 1), which ultimately and simultaneously boosts their self-efficacy and internal motivation (Cluster 4) in sustainably guiding the growth and development of children with ASD.

3.2.3. Research Gaps and Future Directions in ASD Parenting

Based on the evolutionary trends and thematic cluster interaction analysis, several strategic agendas and critical gaps have been identified for future research integration. First, there is an urgent need to transition from conventional face-to-face training designs to the integration of hybrid or fully digitalized systems. Future research should focus on developing interactive parenting toolkits that are integrated with Artificial Intelligence (AI) or machine learning features to deliver hyper-personalized intervention content tailored to the unique behavioral dynamics of each child and the stress capacity of the family. The urgency of this digital evolution is heavily supported by recent evaluative frameworks showing that digital delivery models, such as telehealth, serve as a highly flexible and acceptable medium to increase global access to services without expanding parental burnout (Tsami et al., 2019). Furthermore, telehealth platforms have been empirically proven to effectively expand service equity and successfully dismantle geographic or physical barriers for underserved families (Rooks-Ellis et al., 2020).

Second, the exploration of cultural adaptation elements must be significantly deepened. Most existing literature remains heavily centered on Western contextual standards, leaving a major gap in family-centered intervention models that accommodate the collective cultural values, spiritual belief systems, and extended family support structures prevalent in developing nations, particularly within Asian and African contexts. Prior intervention models underscore that systematic cultural adaptation significantly enhances the acceptance, perceived relevance, and overall clinical effectiveness of parent training programs when tailored to non-Western family structures (J. D. Lee et al., 2026). Therefore, future studies must deliberately incorporate localized cultural variables to bridge the gap between standardized clinical manuals and diverse familial realities, ensuring that interventions are responsive to the specific socio-emotional needs and structural formats of local communities (Preece et al., 2017).

Finally, methodologically, future research agendas must expand longitudinal research designs to track the long-term sustainability of intervention impacts. Research should not merely measure immediate, short-term reduction in parenting stress post-intervention, but must systematically evaluate how the internal motivation and self-efficacy built through toolkit media can be sustained as a permanent protective factor across the child's developmental transitions from early childhood through adolescence to independence. This longitudinal focus aligns with the evolving understanding that a parent's psychological readiness and capacity for engagement are not static, but rather evolve gradually through distinct developmental stages of accepting a child's diagnosis and managing long-term care (Gentles et al., 2020). Bridging these gaps will effectively shift the paradigm of ASD parenting literature from a focus on short-term clinical management toward building a sustainable, globally accessible ecosystem for long-term family resilience.

3.3. Implications

Theoretically, this study shifts the landscape of our understanding regarding interventions for children with Autism Spectrum Disorder (ASD). For a long time, literature focus has often been biased toward direct, child-centered behavioral modifications. However, findings from this synthesis of 31 articles underscore that the key to intervention sustainability actually lies in strengthening the parents' internal psychological conditions. Through a mapping of intertwined clusters, this study demonstrates that parenting self-efficacy and intrinsic motivation act as a primary buffer that reduces parenting stress. This conceptual implication offers a new direction for academicians to begin integrating motivational frameworks, such as Self-Determination Theory, into the design of family intervention programs for children with special needs.

On a practical and clinical level, this bibliometric analysis provides strategic guidance for practitioners, psychologists, and assessment tool developers. The limitations of conventional, rigid, and time-consuming training programs can now be bridged through the development of more flexible learning media, such as parenting digital toolkits. These findings highlight the urgency of shifting intervention delivery modes from face-to-face clinical sessions toward leveraging communication technology like telehealth. Through this efficiency, the physical and emotional burden on parents can be minimized, while the reach and equity of intervention services can be significantly expanded, particularly for families facing geographical constraints and limited access to centralized clinical facilities.

3.4. Limitations

Despite offering a comprehensive overview of the research landscape, several limitations within this review study warrant acknowledgment. The first concerns the constraints of data sourcing. The analysis in this study relies entirely on scientific articles indexed within the Scopus and Google Scholar databases. Although both platforms cover a vast body of literature, relevant articles published in other niche databases or institutional clinical reports (gray literature) might have been overlooked during the screening process. Furthermore, restricting the language criteria strictly to English-language documents potentially introduces a publication bias, considering that local ASD management dynamics in various non-Western countries might be heavily documented in their respective national languages.

Secondly, a significant limitation stems from the geographical bias and cultural context inherent in the available literature. Based on spatial data visualization, research contributions in this domain remain overwhelmingly dominated by developed nations, particularly the United States. Consequently, generalizing the findings regarding the effectiveness of parenting toolkits or the dynamics of parental motivation in this review may not yet be fully sensitive to the cultural values of developing societies. Collective parenting patterns, the active involvement of extended families, and strong spiritual belief systems prevalent in Asian or African regions are not yet balanced in representation within the synthesized global literature. This inevitably limits our comprehensive understanding of how toolkit-based interventions operate within diverse family structures across varying cultural backgrounds.

4. Conclusion

Through a comprehensive bibliometric mapping approach on literature from 2016 to 2026, this study successfully unravels the macro-development trends and micro-interaction dynamics of themes regarding parenting toolkits to increase parenting motivation in parents of children with Autism Spectrum Disorder (ASD). Structurally, global interest in this topic shows a promising positive acceleration trend over the last decade, with the United States acting as the primary driving country. At the thematic level, the synthesized network of 31 selected articles demonstrates a strong, mutually continuous integration between the domains of parents' internal psychological conditions (stress, motivation, and self-efficacy) and tactical, operational fields (behavioral training programs and digital toolkit intervention support). Substantively, this research confirms a critical paradigm shift: the digitalization and flexibilization of training media through parenting toolkits serve as an essential bridging agent that simplifies complex behavioral procedures, lowers the psychological burden of parenting, and simultaneously maintains parents' internal motivation sustainably. However, research gaps related to AI-based personalization, deep adaptation to Eastern collective cultures, and long-term longitudinal evaluations across children's developmental transitions remain major tasks for future research agendas. Ultimately, this study provides a solid scientific evidence baseline to encourage a shift in the ASD intervention ecosystem toward a more modern, adaptive, inclusive, and family-centered direction.

Author Contributions

All authors contributed equally to this paper. All authors have read and approved the final manuscript.

Funding

No funding support was received.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/ or publication of this article.

Data Availability

The datasets generated during and/ or analyzed during the current study are available from the corresponding author on reasonable request.

Declaration on AI Use

The authors declare that no artificial intelligence (AI) or AI-assisted tools were used in the preparation of this manuscript.

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