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EFFECTIVENESS OF EARLY INTERVENTION PROGRAMMES FOR SUPPORTING AUTISTIC CHILDREN IN THE UK: A SYSTEMATIC REVIEW

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ABSTRACT

Background: This systematic review examines the effectiveness of early intervention programmes in supporting autistic children in the United Kingdom. While international literature suggests that early intervention can improve communication skills, adaptive functioning, and family wellbeing, there remains limited synthesis of UK-specific evidence evaluating the effectiveness of early intervention programmes across healthcare, educational, and community service contexts. The aim of the study was to critically evaluate UK-based evidence on early intervention approaches and their impact on developmental, behavioural, and family-related outcomes.

Methods: A systematic search was conducted across three electronic databases: PubMed, EBSCOhost, and JSTOR. The review followed PRISMA 2020 guidelines to ensure a transparent and rigorous methodology. A total of 277 records were identified, with 15 studies meeting the inclusion criteria after screening and eligibility assessment. Included studies comprised randomised controlled trials, feasibility studies, cross-sectional study, longitudinal observational study, and economic evaluations.

Results: The findings indicate that early intervention programmes are associated with improvements in social communication, behavioural regulation, sleep outcomes, and caregiver wellbeing. Parent-mediated interventions emerged as particularly effective, enhancing both child development and parental confidence. Communication-focused and school-based interventions also demonstrated positive outcomes, while targeted interventions addressed specific functional challenges such as sleep and feeding difficulties.

Conclusion: The review highlights the importance of early, accessible, and family-centred intervention within the UK context. The findings support current policy frameworks emphasising early identification and multi-agency collaboration. Further research is recommended to examine long-term outcomes and improve consistency in evaluation methods.

Keywords: Effectiveness, Early intervention, Autistic children, UK

1 INTRODUCTION

Autism is a lifelong neurodevelopmental condition characterised by differences in social communication, restricted interests, and repetitive behaviours [1]. In the United Kingdom, approximately 1 in 100 children are identified as autistic, with diagnosis rates increasing in recent years due to greater awareness and improved screening practices [2]. Despite enhanced recognition, autistic children continue to experience disparities in educational attainment, mental health outcomes, and access to timely specialist support. Early childhood represents a critical developmental period in which neuroplasticity may allow targeted intervention to positively influence cognitive, behavioural, and social trajectories [3]. Consequently, early intervention has become a central focus of UK policy and practice, particularly within frameworks such as the Children and Families Act (2014) and the Special Educational Needs and Disabilities (SEND) Code of Practice (2015), which emphasise early identification, family involvement, and multi-agency collaboration [4].

Early intervention programmes for autistic children vary substantially in their theoretical foundation and delivery model. These interventions aim to enhance communication skills, social interaction, cognitive development, and behavioural regulation through evidence-based strategies implemented by professionals, caregivers, or educators [5]. Research has consistently emphasised that early developmental periods represent critical windows during which targeted interventions may produce significant and lasting benefits for autistic children [6]. Behavioural approaches, such as Applied Behaviour Analysis (ABA), focus on structured skill acquisition and behaviour modification [7]. Developmental and social communication models, including parent-mediated interventions such as the Preschool Autism Communication Trial (PACT), prioritise enhancing parent–child interaction and communication [8]. School-based interventions, psychoeducational caregiver programmes, and strengths-based models further diversify early support provision within the UK context. While international literature suggests that early intervention can improve communication skills, adaptive functioning, and family wellbeing [5], there remains limited synthesis of UK-specific evidence evaluating the effectiveness of early intervention programmes across healthcare, educational, and community service contexts. The extent to which UK-based programmes demonstrate consistent and robust effectiveness remains subject to debate. Differences in service structure, funding models, and implementation within the National Health Service (NHS) and local authorities necessitate a context-specific synthesis of UK primary research [1].

The aim of this systematic review is to critically evaluate the effectiveness of UK-based early intervention programmes in improving developmental, behavioural, and family outcomes for autistic children. The objectives of this review are: 1) to examine and compare outcomes across different early intervention approaches, including behavioural, developmental, school-based, and parent-mediated models; 2) to critically appraise the methodological quality of the included studies and assess potential risks of bias within the existing evidence base; and 3) to identify gaps within current UK research in order to inform future research, practice, and policy development related to early autism intervention.

2 METHODOLOGY AND METHODS

2.1 Research Design

This study employed a systematic review methodology to synthesise and critically evaluate UK-based primary research examining the effectiveness of early intervention programmes for autistic children aged 2–12 years. A systematic review was selected to ensure a transparent, structured, and reproducible process of identifying, screening, and analysing relevant evidence. The review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines to enhance methodological rigour, minimise bias, and improve reporting transparency [9].

2.2 Search Strategy

A comprehensive literature search was conducted across three major electronic databases covering health, psychology, and education research. These databases included PubMed, EBSCOhost (incorporating PsycINFO and Education Research Complete), and JSTOR. Searches were conducted using Boolean operators to combine keywords related to autism, early intervention, and UK context. An example of the search string used is as follows: (autism OR autistic children) AND (early intervention OR parent-mediated OR behavioural intervention OR school-based intervention) AND (United Kingdom OR UK)

Filters were applied to limit results to peer-reviewed journal articles published between 2019 and 2025, ensuring inclusion of contemporary UK evidence reflecting current service provision and policy frameworks. The search was

restricted to English-language studies involving human participants. The database search identified 277 records. After removal of 48 duplicate records, 229 studies remained for title and abstract screening.

2.3 Inclusion and Exclusion Criteria

Clear eligibility criteria were established prior to screening to ensure consistency and reduce selection bias [10]. Studies were included if they were conducted within the United Kingdom, published between 2019 and 2025, and reported peer-reviewed primary empirical research. Eligible study designs included randomised controlled trials, feasibility studies, longitudinal observational study, cross-sectional and economic evaluation designs. To meet the inclusion criteria, studies were required to evaluate a clearly defined early intervention programme delivered to autistic children, or to their caregivers where the intervention was intended to produce measurable improvements in child outcomes. Included studies were also required to report measurable developmental, behavioural, social, emotional, educational, or family-related outcomes associated with the intervention.

Studies were excluded if they were conducted outside the United Kingdom, focused on adolescents or adults, were secondary research, did not evaluate a defined early intervention, or did not report measurable outcomes related to intervention effectiveness.

2.4 Study Selection Process

Following duplicate removal, titles and abstracts of 229 records were screened against the inclusion criteria. 179 records were excluded at this stage due to being conducted outside the UK context, not constituting primary research, involving an ineligible age group, or lacking a clearly defined intervention focus.

Full-text articles were sought for the remaining 50 studies, all of which were successfully retrieved. These 50 articles were assessed for eligibility. Thirty-five studies were excluded at full-text review for the following reasons: not UK-based ($n = 12$), wrong age group ($n = 8$), no defined early intervention ($n = 9$), and absence of measurable developmental, behavioural, or family-related outcomes ($n = 6$). A total of 15 studies met all eligibility criteria and were included in the final review. The selection process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines [9], and the flow of study identification and screening is presented in the PRISMA diagram. This structured process ensured methodological transparency and strengthened the validity of the final synthesis.

2.5 PRISMA 2020 flow diagram

The study selection process followed PRISMA 2020 guidelines [9]. The flow diagram in Figure 1 below outlines the stages of study identification, screening, eligibility assessment, and final inclusion.

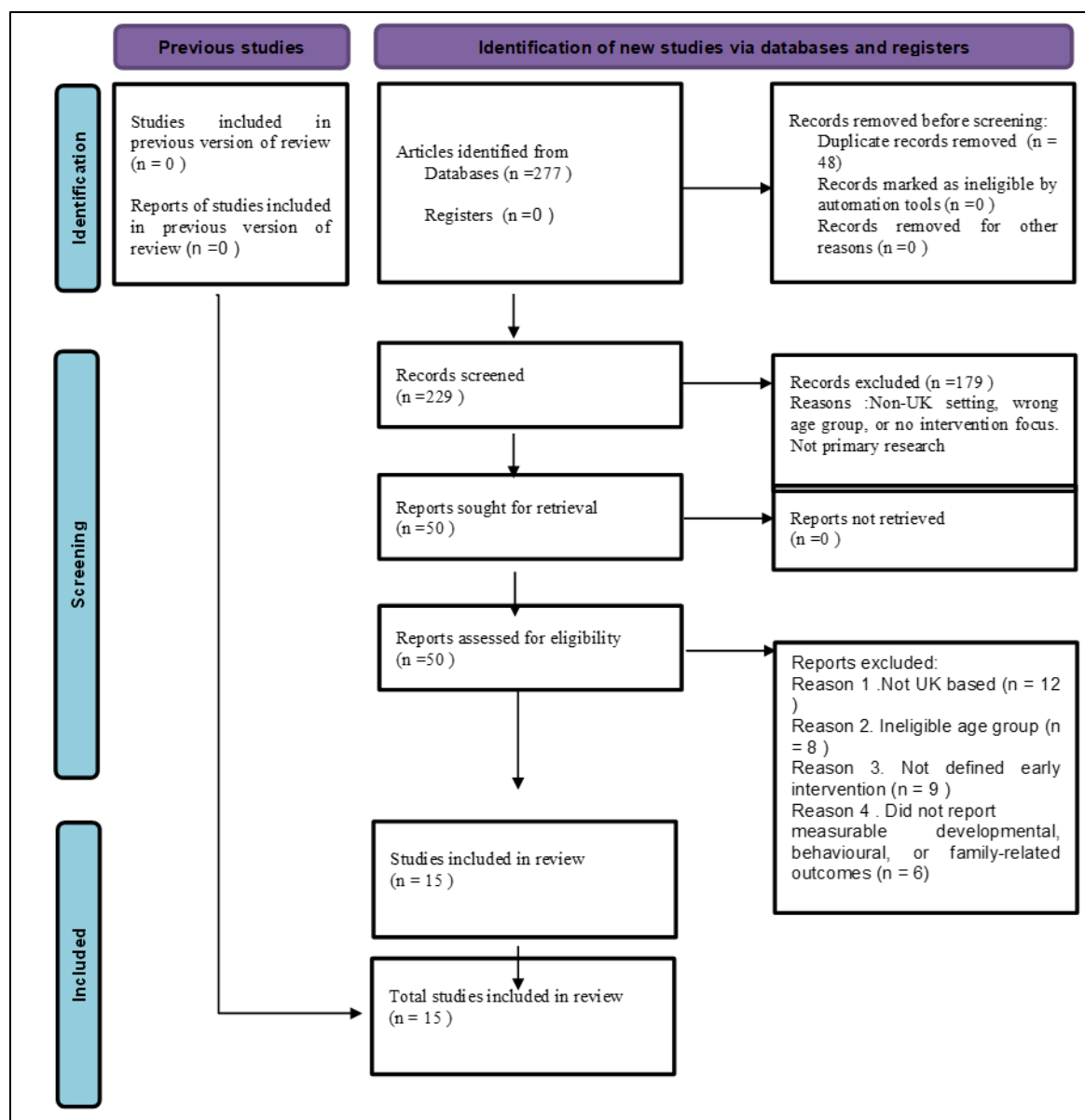


Figure 1: PRISMA flowchart

2.6 Quality Appraisal and Risk of Bias Assessment

The methodological quality of the 15 included studies, identified through searches of EBSCO, PubMed, and JSTOR, were assessed using the Critical Appraisal Skills Programme (CASP) checklists, selected according to study design [11]. The appraisal examined study validity, clarity of intervention description, sampling methods, outcome measurement reliability, and potential sources of bias.

Randomised controlled trials were generally rated as higher methodological quality due to structured randomisation and comparative design [11]. Pilot and feasibility studies were assessed as moderate quality due to smaller sample sizes and exploratory nature. Common risks of bias identified included small sample sizes, short follow-up periods, and reliance on parent-reported outcome measures.

2.7 Data Extraction and Synthesis

Data were extracted using a structured literature matrix, including author, year, study design, participants, intervention type, outcome measures, key findings, and limitations. Due to heterogeneity in intervention models and outcome measures, statistical meta-analysis was not appropriate. Therefore, a narrative synthesis approach was adopted to group studies thematically and compare patterns of effectiveness [12].

3 RESULTS

3.1 Characteristics of Included Studies

The 15 included studies were published between 2019 and 2025 and represent recent UK-based evidence on early intervention programmes for autistic children. The studies demonstrate methodological diversity across research designs. Several studies were randomised controlled trials (RCTs), including the ASTAR parenting intervention [13], the PACT-G social communication intervention [14], the ASSSIST-2 Social Stories school intervention [15], and the Sleeping Sound behavioural sleep trial [16]. Additional studies included feasibility trials, intervention studies, and economic analyses, reflecting a broad range of research approaches used to examine early autism interventions in the UK [17 -19].

The interventions examined varied in focus and delivery approach. Several programmes were parent-mediated or caregiver-focused interventions designed to improve communication and behavioural outcomes, such as PACT-G [14], the EarlyBird parent support programme [17], and the Empower-Autism/REACH-ASD caregiver programme [20]. School-based interventions were also represented, including Social Stories [15] and early autism identification pathways implemented in primary schools [21]. Other targeted interventions addressed specific areas such as numeracy skills [22], sleep difficulties [16,19], feeding challenges [18], and behavioural outcomes associated with Applied Behaviour Analysis programmes [23].

Most studies focused on preschool and primary school-aged children. Interventions were delivered across multiple settings, including family homes, schools, community services, and clinical environments. Outcome measures commonly assessed behavioural functioning, social communication, sleep, and parental outcomes. However, variation in intervention intensity, measurement tools, and follow-up periods was observed across the studies. Table 1 below indicates data extraction on early intervention programmes supporting autistic children in the UK.

3.2 Literature Matrix of Included Studies

Table 1: Data Extraction on Early Intervention programmes Supporting Autistic Children

No.	Study (Author, Year)	Study Type	Intervention Programme /	Participants (Age)	Key Outcomes	Setting
1	[13] Charman et al. (2021)	Randomised Controlled Trial (RCT)	Autism Spectrum Treatment and Resilience (ASTAR) Predictive Parenting Programme	Children 4–8 years (Autistic children) & parents	Reduced behavioural difficulties; reduced parent stress	UK community settings
2	[14] Green et al. (2022)	Parallel single-blind RCT	PACT-G (Preschool Autism Communication Therapy – Group): Home and School Social Communication Therapy	Children 2–11 years (Autistic children)	Improved parental synchrony; modest autism symptom improvements	UK home & school
3	[24] Carruthers et al. (2023)	Long-term Follow-up RCT Study	PACT (Preschool Autism Communication Therapy)	Children receiving early therapy (Autistic children)	Sustained long-term social communication improvements	UK early intervention
4	[25] Carruthers et al. (2024)	Longitudinal Observational Study	Play-based social communication intervention	Children (Autistic children)	Improved generalisation of communication skills	Home & school
5	[15] Wright et al. (2024)	Pragmatic Cluster Randomised	Autism Spectrum Social Stories In Schools Trial 2 (ASSSIST-2) – Social Stories™ intervention	Children 4–11 years (Autistic children)	Improved socio-emotional functioning	UK primary schools

		Controlled Trial (RCT)				
6	[21] Wright et al. (2021)	Feasibility Study	School-based early autism assessment pathway	Reception children 4–5 years (Autistic children identified)	Improved early identification; reduced inequality	UK primary schools
7	[17] Palmer et al. (2019)	Feasibility Study	EarlyBird Parent Support Programme	Parents of preschool children (Autistic children)	Increased parental knowledge; improved child communication & behaviour	UK community settings
8	[20] Leadbitter et al. (2025)	Randomised Controlled Trial (RCT)	Empower-Autism / REACH-ASD (Resilience, Education and Autism Care for Health – Autism Spectrum Disorder) psychoeducation programme incorporating Acceptance and Commitment Therapy (ACT)	Caregivers of children 2–12 years (Autistic children)	Reduced caregiver stress; improved adjustment to diagnosis	UK NHS clinical services
9	[22] Alallawi et al. (2022)	Cross-sectional observational Study	Parent-Mediated Numeracy Programme	Primary-aged children (Autistic children) & parents	Improved numeracy skills; increased parental engagement	UK education settings
10	[23] Hodgson et al. (2022)	Economic Evaluation	Intensive Applied Behaviour Analysis (ABA)	Preschool children (Autistic children)	Cost-effectiveness; behavioural improvement	UK services
11	[16] Pattison et al. (2024)	Randomised Controlled Trial (RCT)	Sleeping Sound Behavioural Intervention	Primary-aged children (Autistic children)	Improved sleep duration; improved behaviour	UK clinical services
12	[26] Pattison et al. (2022)	Randomised Controlled Trial (RCT)	Sleeping Sound Acceptability Evaluation	Parents of children (Autistic children)	Acceptability; parental experience	UK
13	[19] Engel et al. (2025)	Economic Evaluation	Brief Behavioural Sleep Intervention	School-aged children (Autistic children)	Cost-effectiveness; sleep outcomes	UK
14	[18] Connor et al. (2024)	Co-design Feasibility Study	Feeding Support Toolkit	Children approx. 2–12 years (Autistic children) & caregivers	Improved caregiver confidence in managing feeding difficulties	UK healthcare context

15	[27] Hendry et al. (2025)	Feasibility Randomised Controlled Trial	START (Supporting Toddlers with Attention, Regulation and Thinking Skills) Programme	Children 2–4 years (Autistic children)	Evaluates feasibility and potential improvements in early attention and communication	UK early years services
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The above table presents a structured overview of the 15 included studies, summarising study design, intervention type, participant characteristics, and primary outcomes. Collectively, the studies demonstrate methodological diversity, including randomised controlled trials, feasibility trials, intervention studies, qualitative evaluations, economic analyses, and co-design research.

The matrix indicates that interventions primarily focused on parent-mediated programmes, social communication therapies, school-based supports, behavioural interventions, and targeted functional supports such as sleep and feeding-related interventions [23]. Several studies were delivered within educational settings [15], while others were implemented through caregiver-led, home-based, or clinical service models [20].

Overall, the table reflects a varied but structured UK evidence base within the 2–12-year age range, with differences evident in study design, intervention format, and outcome measurement. These variations are explored further in the subsequent synthesis section.

3.3 Synthesis of Intervention Findings

Due to the diversity of intervention types, study designs, and outcome measures across the included studies, a narrative thematic synthesis was undertaken to identify common patterns of effectiveness [12]. Collectively, the evidence highlighted four main intervention themes: behavioural and parenting interventions [13], social communication interventions [14], school-based interventions [15], and targeted functional support programmes.

3.4 Behavioural and Parenting Interventions

Several studies examined interventions designed to strengthen parenting strategies and support behavioural regulation among autistic children. Programmes such as the ASTAR Predictive Parenting Programme [13], the EarlyBird parent training programme [17], and the Empower-Autism/REACH-ASD caregiver intervention [20], reported improvements in parental knowledge, confidence, and child behavioural outcomes. These interventions primarily focused on equipping parents with practical strategies to manage behavioural challenges and support communication within everyday routines. Similarly, evidence from these studies suggested that strengthening caregiver involvement contributed to improved parent–child interaction and reductions in parental stress.

3.5 Social Communication and Interaction Interventions

Improving social communication represented a central focus across several studies. The PACT-G intervention [14] demonstrated improvements in parental synchrony and modest improvements in autism-related communication outcomes. Additionally, follow-up research on the Preschool Autism Communication Therapy programme reported sustained improvements in social communication skills over time [24]. Similarly, play-based communication interventions were found to support the generalisation of communication skills across different settings [25]. Collectively, these findings highlight the importance of early communication-focused support in promoting social development among autistic children.

3.6 School-Based Interventions

School-based programmes also contributed to early intervention support within educational contexts. The Social Stories™ intervention evaluated in the ASSSIST-2 trial demonstrated improvements in socio-emotional understanding and social interaction within primary school settings [15]. Additionally, research examining school-based early autism assessment pathways highlighted the role of educational institutions in facilitating earlier identification and referral for specialist services [21]. These findings suggest that schools can play a significant role in supporting early developmental needs and promoting inclusive learning environments.

3.7 Targeted Functional Support Interventions

Several studies focused on interventions addressing specific developmental challenges. Behavioural sleep interventions, including the Sleeping Sound programme, demonstrated improvements in sleep duration and associated behavioural outcomes among autistic children [16]. Additionally, economic evaluation research suggested that brief behavioural sleep interventions may provide cost-effective improvements in sleep outcomes [19]. Similarly, other

targeted interventions addressed functional skills such as numeracy development [22] and feeding challenges through caregiver-focused support programmes [19]. Collectively, these findings indicate that targeted interventions addressing specific functional difficulties can contribute to improved daily functioning for autistic children and their families.

Overall, the synthesis suggests that early intervention programmes in the UK demonstrate positive outcomes across multiple developmental domains, including social communication, behavioural regulation, caregiver wellbeing, and functional skills. However, variability in intervention intensity, outcome measures, and follow-up duration across studies indicates a need for further research examining long-term effectiveness and implementation within diverse service contexts.

3.8 Risk of Bias Across Included Studies

Assessment of the 15 included studies identified several potential sources of bias that may influence the interpretation of findings. Randomised controlled trials, such as those evaluating ASTAR, PACT-G, ASSSIST-2, and the Sleeping Sound intervention, generally demonstrated stronger methodological rigour due to the use of randomisation and controlled comparison groups. However, some of these studies still presented risks of bias related to participant attrition, limited follow-up periods, and reliance on parent-reported outcome measures.

Feasibility and pilot studies, including the EarlyBird programme and the START intervention, were associated with moderate risk of bias due to smaller sample sizes and exploratory research designs. Additionally, qualitative and co-design studies, such as the feeding support toolkit evaluation, were subject to potential researcher and participant interpretation bias. Economic evaluation studies also depended on assumptions within cost-effectiveness modelling. Collectively, these factors suggest that although the included studies provide valuable insights, caution is required when interpreting the generalisability and long-term effectiveness of the reported intervention outcomes.

3.9 Gaps in the Existing Literature

Despite the positive outcomes reported in the included studies, several gaps remain within the current UK evidence base on early intervention programmes for autistic children. One important limitation is the lack of long-term follow-up research [5]. Most studies focused on short- to medium-term outcomes such as improvements in social communication, behavioural functioning, sleep patterns, and parental wellbeing. Consequently, there is limited evidence examining whether the benefits of early intervention are sustained over longer developmental periods, including their influence on educational attainment and long-term social participation.

Additionally, the literature demonstrates considerable variation in intervention approaches, outcome measurement tools, and study designs, making direct comparison between studies challenging. Many studies also involved relatively small samples and were conducted within specific service settings. Furthermore, minority ethnic representation was inconsistently reported despite increasing demographic diversity within the United Kingdom. Greater attention to culturally responsive adaptation and inclusive recruitment strategies is therefore necessary to improve equity in early intervention research.

4 DISCUSSION

4.1 Interpretation of Findings

This systematic review aimed to evaluate the effectiveness of early intervention programmes for supporting autistic children aged 2–12 years in the United Kingdom. The synthesis of the 15 included studies indicates that early intervention programmes demonstrate positive outcomes across several developmental domains, including social communication, behavioural regulation, sleep patterns, caregiver wellbeing, and functional skills. Collectively, the findings suggest that early intervention can play a significant role in improving developmental outcomes and supporting families when implemented within healthcare, community, and educational contexts.

Parent-mediated interventions emerged as a particularly prominent theme across the included studies. Programmes such as the ASTAR Predictive Parenting Programme, the EarlyBird parent training programme, and the Empower-Autism/REACH-ASD intervention demonstrated improvements in parental knowledge, confidence, and child behavioural outcomes. These findings align with wider literature suggesting that empowering parents to support their children's communication and behaviour can enhance developmental progress and strengthen parent-child interactions [5]. Early parent-mediated approaches are considered beneficial because they integrate intervention strategies into daily routines, thereby increasing opportunities for consistent developmental support.

Similarly, communication-focused interventions demonstrated positive outcomes across several studies. The PACT-G programme reported improvements in parental synchrony and modest improvements in autism-related

communication outcomes. Follow-up evidence from Preschool Autism Communication Therapy also suggested that early communication interventions may produce sustained improvements in social communication skills [14]. These findings are consistent with previous research indicating that interventions targeting social communication during early developmental stages can contribute to improved social engagement and adaptive functioning among autistic children [8].

School-based interventions also contributed to the evidence base identified in this review. The Social Stories intervention evaluated in the ASSSIST-2 trial demonstrated improvements in socio-emotional understanding and social interaction among autistic pupils in mainstream primary schools. Additionally, research examining school-based early autism assessment pathways highlighted the potential role of educational institutions in supporting early identification and referral processes. These findings reinforce the importance of collaborative approaches between healthcare services and educational institutions in delivering early support for autistic children [4].

In addition to broader behavioural and communication programmes, several studies examined targeted interventions addressing specific developmental challenges. Behavioural sleep interventions such as the Sleeping Sound programme demonstrated improvements in sleep duration and associated behavioural outcomes [16]. Similarly, other interventions targeted functional skills such as numeracy development and feeding difficulties [22, 18]. These findings highlight that early intervention can effectively address specific developmental needs that influence daily functioning and family wellbeing. Overall, the results suggest that a combination of broad developmental interventions and targeted support programmes may provide the most comprehensive approach to supporting autistic children in the UK.

4.2 Integration with Wider Literature

The findings of this review are broadly consistent with international research indicating that early intervention can improve communication, adaptive functioning, and behavioural regulation among autistic children [5]. However, important contextual differences exist between intervention models implemented internationally and those used within the United Kingdom. In many North American studies, early intervention frequently emphasises high-intensity Applied Behaviour Analysis delivered through private healthcare systems. In contrast, UK early intervention programmes are typically delivered through publicly funded, multi-agency systems that prioritise parent training, collaboration, and family involvement [4, 28]. This distinction highlights the importance of examining UK-specific evidence when evaluating intervention effectiveness.

Similarly, wider literature emphasises the value of parent-mediated and relationship-based intervention approaches. Research has shown that interventions supporting parent–child interaction can improve social engagement and communication outcomes among autistic children [29, 30]. The strong representation of parent-mediated programmes within the included UK studies therefore reflects a broader international shift toward naturalistic and family-centred intervention models.

Nevertheless, differences in service structure remain significant. While international research often evaluates intensive clinic-based interventions, UK programmes are commonly embedded within multi-agency, community, educational, and health service contexts. National frameworks such as the NICE autism guidelines and the NHS Long Term Plan emphasise early identification and coordinated support across services [1, 28]. The findings of this review suggest that early identification must be accompanied by accessible, evidence-based interventions to ensure meaningful developmental outcomes for autistic children.

4.3 Limitations of the Included Evidence

Despite the positive findings identified in this review, several limitations within the included studies should be considered. First, many studies involved relatively small sample sizes or were conducted as feasibility or pilot trials. While these studies provide valuable insights into intervention implementation and acceptability, smaller samples may limit the generalisability of findings.

Second, variation in outcome measurement tools and intervention intensity across studies makes direct comparison difficult. Different studies used a range of behavioural scales, observational measures, and parent-reported outcomes, which may introduce variability in the assessment of intervention effectiveness [8, 14]. Furthermore, several studies relied heavily on parent-reported outcomes, which may be influenced by reporting bias [13, 17].

Another limitation relates to the relatively short follow-up periods reported in many studies. While short-term improvements in behavioural functioning, communication skills, and caregiver wellbeing were frequently observed, fewer studies evaluated long-term developmental outcomes. As a result, the sustained effectiveness of early intervention programmes over longer developmental periods remains unclear.

4.4 Limitations of the Review Process

Several limitations related to the review process should be acknowledged. This review was restricted to peer-reviewed journal articles published between 2019 and 2025, and grey literature or unpublished service evaluations were not included. As a result, some emerging practices or local service innovations may not have been captured. In addition, the search was limited to English-language publications, which may introduce language bias, although this limitation is less significant within a UK-focused review.

Furthermore, the diversity of intervention types and outcome measures prevented the use of statistical meta-analysis. Consequently, a narrative synthesis approach was adopted to compare findings across studies. While this method is appropriate for heterogeneous evidence, it may involve a degree of interpretive judgement.

4.5 Implications for Practice and Policy

The findings of this review have several implications for practice and policy within the United Kingdom. First, the results highlight the importance of early identification and timely access to intervention services for autistic children. Early intervention programmes involving parents, educators, and healthcare professionals can improve communication skills, behavioural regulation, and family wellbeing. These findings support national priorities that emphasise early support for children with developmental conditions.

Second, the findings suggest that parent-mediated interventions should remain a key component of early autism support services. Training caregivers to apply communication and behavioural strategies within everyday interactions may strengthen parent-child relationships and support children's development. This approach aligns with the Special Educational Needs and Disabilities (SEND) Code of Practice, which promotes family-centred support and collaboration between professionals and parents [4].

From a policy perspective, the results also highlight the importance of integrated support across health, education, and community services. Collaborative approaches between the NHS, schools, and local authorities may improve early identification and access to support. These priorities are reflected in the NHS Long Term Plan, which aims to strengthen services for children with neurodevelopmental conditions, including autism [28].

4.6 Implications for Future Research

Future research within the United Kingdom should prioritise large-scale and multi-centre studies to strengthen the evidence base on early intervention programmes for autistic children. Larger samples and research conducted across multiple service settings would improve the reliability and generalisability of findings. In addition, greater consistency in outcome measurement tools is needed to allow clearer comparison across studies and to support more robust synthesis of evidence in future systematic reviews [5].

Further research should also examine the long-term impact of early intervention programmes. Many existing studies focus on short- to medium-term outcomes, while the sustained effects of interventions on social communication, adaptive functioning, and educational participation remain less clearly understood. Longitudinal studies following children over extended developmental periods would therefore provide valuable insights into the durability of intervention outcomes [8].

Additionally, future research should aim to include more diverse participant populations, reflecting the cultural and socio-economic diversity of families across the United Kingdom. Improving representation in research may help address disparities in autism diagnosis and access to services [1]. Finally, further economic evaluations and cost-effectiveness analyses are needed to inform policy decisions and support effective allocation of resources within publicly funded systems such as the National Health Service.

5 CONCLUSION

This systematic review critically evaluated the effectiveness of early intervention programmes for autistic children aged 2–12 years within the United Kingdom. The findings demonstrate that early intervention can produce meaningful improvements across multiple developmental domains, including social communication, behavioural regulation, sleep patterns, caregiver wellbeing, and functional skills. Overall, the evidence indicates that early intervention programmes play a significant role in supporting both autistic children and their families, particularly when delivered through integrated healthcare, educational, and community-based settings.

The high efficacy of parent-mediated interventions is one of the main conclusions of this review. Programmes such as ASTAR, EarlyBird, and Empower-Autism/REACH-ASD emphasise the importance of equipping caregivers with the skills required to support behaviour and communication in everyday life. These approaches not only improve child outcomes

but also reduce stress and enhance parental confidence. Furthermore, communication-focused interventions demonstrated long-term benefits in improving social communication skills, particularly those centred on social interaction and parent–child engagement. School-based interventions further promoted early identification and inclusive support, underscoring the importance of collaboration between healthcare and education sectors. Targeted interventions addressing specific developmental challenges, such as feeding and sleep difficulties, also showed positive results, suggesting that a combination of general and specialised strategies may offer the most comprehensive support.

Despite these positive findings, the review identified important limitations within the existing evidence base, including small sample sizes, variability in outcome measures, and limited long-term follow-up data. These limitations highlight the need for cautious interpretation and emphasise the importance of further high-quality research.

The findings of this review have significant implications for practice and policy within the UK. They support current national priorities that emphasise early identification, family-centred intervention, and multi-agency collaboration. Strengthening access to evidence-based early intervention services across the National Health Service and educational settings is essential to improving outcomes for autistic children.

Future research should prioritise large-scale, longitudinal studies to evaluate the long-term impact of early intervention programmes. Greater consistency in outcome measures and increased representation of diverse populations are also needed to enhance the generalisability and inclusivity of findings.

In conclusion, early intervention represents a critical component of support for autistic children in the UK. Continued investment in accessible, evidence-based, and collaborative intervention models is essential to promoting positive developmental outcomes and improving quality of life for autistic children and their families.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

Disclosure of conflict of interest

The authors declare no conflicts of interest regarding this manuscript

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