



A Review on Early Intervention Systems

Kristen Tollan^{1,2} · Rita Jezrawi³ · Kathryn Underwood²  · Magdalena Janus³

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Abstract

Purpose of Review Early intervention programs have been shown to increase the overall socio-emotional and physical well-being of children in early childhood and educational settings. The goal of this narrative review is to explore recent literature that describes implementation of these systems and highlights innovative practices in the early childhood intervention sector.

Recent Findings Twenty-three articles were included, and we identified three themes in this review. The literature addressed concepts of innovative techniques in relation to childhood disability interventions; policy practices that promote child, family, and practitioner wellbeing; and attention to the importance of trauma-informed care in education for children and families who face the impacts of social marginalization such as racism and colonization.

Summary Notable shifts in the current early intervention paradigms are approaches to understanding disability informed by intersectional and critical theories, as well as systems level thinking that goes beyond focusing on individual intervention by influencing policy to advance innovative practice in the sector.

Keywords Early interventions · Early childhood education · Child policy · Developmental disability

Introduction

The early years of life are crucial for setting the foundation for healthy child development. The benefits of early interventions on the health of disabled children with intellectual and developmental disabilities have been well established albeit with varying levels of evidence of effectiveness [1–5].

Health and education service sectors have focused efforts on early identification, screening, prevention models, and early treatment options for disabled children. However, there is little research on the social conditions and contexts within which children and families access early intervention services.

Current debates in the field include the evidence-based ability to assess effectiveness and usefulness of different types of early interventions. Existing evidence is based mostly on North American data; yet despite the Western focus, differences within countries with provincial or state-governed health and education systems are apparent and result in discrepancies in availability, access, and effectiveness of early interventions. For instance, variability in funding, delivery, and design of services is evident within and between jurisdictions; policy decisions are made for private versus public funding, direct versus indirect financial support, and whether services will be integrated and delivered in school or clinical settings [6]. Population level data are also critical in tracking the social determinants of health such as family, socioeconomic, and geographic characteristics that contribute to the success and experience in early interventions. Population-level monitoring may also inform strategies to mediate the impacts of racism, colonialism, and other inequities that influence child health.

✉ Kathryn Underwood
kunderwood@ryerson.ca

Kristen Tollan
ktollan@yorku.ca

Rita Jezrawi
jezrawir@mcmaster.ca

Magdalena Janus
janusm@mcmaster.ca

- ¹ Department of Communication and Culture, York University, Toronto, ON M3J 1P3, Canada
- ² School of Early Childhood Studies, Toronto Metropolitan University, Toronto, ON M5B 2K3, Canada
- ³ Offord Centre for Child Studies, Department of Psychiatry and Behavioural Neurosciences, McMaster University, Hamilton, ON L8S 4L8, Canada

As early interventions continue to be a key preventive and mitigation strategy in early childhood special education and healthcare, it is crucial that policymakers and professionals address the causes of bias and racism within systems and further promote wellness and equity [7•]. Best practices, such as collaboration and partnerships between families and professionals, as well as family-centred and strengths-based approaches in the face of the diverse and complex needs of individual families and limited resources are best candidates for optimal service delivery [8]. The purpose of this narrative review was to synthesize emerging evidence and recent research on interventions in early childhood and identify avenues for improvement in the field.

Methodology

We conducted a narrative review of English-language peer-reviewed research articles describing or evaluating education-focused early interventions for children with developmental and intellectual disabilities from 2018 to 2022.

Prior to the review, an initial scan of recent literature was conducted by one of the authors (KT), and we identified three main topic areas that were discussed frequently in the articles (social model, policy, and trauma-informed care). We then conducted the review using the Education Resources Information Center (ERIC) database through three searches based on the topic areas we identified. Search terms in strings of various combinations were used and interchanged with synonymous and related terms. Sample search terms for the topic areas included the following: early childhood education, early intervention, innovation, policy, policy evaluation, public health, service delivery, early intervention policy, developmental disability, intellectual disability, special needs, child, family, and trauma. In the first search, the focus was on early childhood education for children who have dealt with traumatic experiences. The second search focused on childhood disability and interventions for young children with disabilities. Educational policy and the development of interventions systems for early childhood settings was the focus of the third search. Additional relevant articles were identified through reference list checking, personal libraries, and additional searches on Google Scholar, ProQuest, and PubMed databases. After extracting the titles and eliminating duplicates, articles were screened by title and abstract for relevance and applicability to the main research questions. We included articles that specifically focused on early childhood education settings, services, and interventions, rather than medical or paediatric settings. The articles for potential inclusion in the review were also assessed in full-text for relevance by two of the authors (KT & RJ), and the main details of each article were extracted in a spreadsheet. We did not assess the quality or

conduct pooled analysis of the articles, because our interest was in the current discourses in the field of early intervention. Of the 468 unique articles located, 71 received the full text review by two authors (KT & RJ), and 23 were included in the final review.

Findings and Discussion

As indicated above, we identified three main themes in recent work related to early childhood intervention systems in the selected literature through preliminary search. The first theme addressed the outcomes of disabled children in early intervention settings, as well as the mitigation of impairment, and social approaches to understanding childhood disability. The second theme was centre-based policies and programs in early intervention. The third theme was trauma-informed practice. The research on childhood trauma was not limited to a particular type of trauma, but rather reflects the influence of social factors such as racism, economic difficulties, and colonization on the trajectory of children exposed to these issues early on in their lives. We discuss each of these themes in greater detail below.

Intersectional Approaches to Disability and Early Intervention

Early intervention systems are commonly accessed by and aim to serve disabled children and their families. Much of the research in this area focuses on mitigating sub-optimal outcomes of childhood disability and testing individual interventions in early childhood education and care. However, more recent literature on this topic recognizes disability as a complex categorization of children that includes both the impact of individual impairments and the influence of societal barriers [10•]. Theoretical models of disability are rapidly changing how we think about early intervention. Disabled Children's Childhood Studies as a field is informed by an understanding that childhood both influences later outcomes and is a time for important experiences in the present. Further, this field critiques the focus of early intervention on rehabilitation, finding additional value in the diversity of characteristics in childhood [10•, 11, 12•].

For example, Guralnick proposes a developmental system approach to all early childhood education and care programs that values inclusive practice and individualized goals for both children and their families [9•]. This is a more traditional discourse for understanding early childhood intervention; however, when Guralnick first proposed their developmental systems approach, it was quite innovative for the time. This approach presented an opportunity to link sociological perspectives to intervention policy, as well as seeing

the child as a part of a broader, interactive system rather than just a need for intervention. In this approach, Guralnick identifies three key principles for inclusive early childhood systems: relationships, comprehensiveness, and continuity in interactions with families and children [9•].

Critical Approaches to Understanding Childhood

Park and colleagues turn away from the medical model of understanding disability and not only use a social model of disability for their framework, but they use a “DisCrit” theory to analyse their data, recognizing that race is a critical factor in understanding disability experiences [13•]. DisCrit studies combine critical disability studies and critical race theory and recognize the interconnection between ableism, racism, and other forms of discrimination, calling for a shift to affirming recognition of the place of disabled children in society, particularly disabled children of colour [14, 15]. Using video footage of one early childhood classroom, Park and colleagues identified the “humanizing” approaches to teaching disabled students. In this classroom, educators reimagined assistance for children through giving time and space and assisting and centring the child [13•]. The educators allowed students to transition from activities on their own time and in the manner they desired, which promoted independence and individuality and also advanced justice for the children of colour by allowing them to be themselves, rather than who the adults wanted them to be. The authors of this study also applied DisCrit to their analysis in early educational settings. They noted that a culture of surveillance is often experienced in special educational settings by children of colour with disabilities in which they are asked to behave in certain ways and monitored for adherence to those requests [13•]. The educators in this classroom ultimately emphasized shifts from the typical special education classroom: from surveillance to responsiveness and from a deficit view of students to a humanizing one.

Boone and colleagues similarly examine systemic racism in early intervention, advocating for the implementation of equity-informed intervention systems in early childhood [7•]. They believe that acknowledging social stratifications and centring children of colour is critical in advancing equity in these systems, something they term “ally-designed” in contrast to a typical “saviour-designed” approach. In line with many recent calls, the authors argue that it is the systems that need to be reformed in order to achieve a change that will result in sustainable, equitable access and quality of early intervention for all children who need it.

Love uses the framework of heterotopias, originally coined by Foucault, to describe early childhood education and care where the real and the unreal are colliding in the same space [16•]. Love sees this as a divide

between the physical existence of the children, teachers, and their classroom materials and the socially constructed interpretations of developmental norms, differences, and the overall understanding of the function of the classroom and the school environment. Furthermore, Love argues that early childhood administrators serve as the “architects” of these heterotopias, as they are responsible for the implementation of inclusive practices in their centres [16•]. The placement of a disabled child within a “general education” classroom does not necessarily ensure inclusive practices that support the needs of the child, in what is called the “façade of inclusion.” She argues that inclusion that is defined by placement alone promotes a binary understanding of children as disabled or not disabled, a concept predicated on “typical” development that does not address the effects of intersectionality discussed later in this paper [16•]. Furthermore, Love believes that “categorizing children based on whether they have an identified disability or not obscures nuances of both children and their developmental context, which can undermine efforts to be responsive to their multiple identities and strengths” (p. 140) [16•]. Love states that place-based inclusion forces the child into a box dictating that they be ready to perform in certain ways and adhere to certain practices expected of a “typically developing” child, whereas her framework of heterotopias suggests that schools must be prepared and ready to include all students, promoting the value of and response to children’s diverse needs and abilities. Ultimately, she argues that to achieve this expansive conceptualization of inclusive education, children of all backgrounds must be included, not just disabled children, but that inclusiveness must also consider socioeconomic status, race, and language.

Early Intervention Policies and Programs

Policies and programs for disabled children are often predicated on early intervention approaches that require the support of multi-sectoral services and funding in order to conduct early identification of disorders and ease the transition between services and supports across the various sectors involved in care. The early learning and early intervention systems have a high degree of variability in the scope and range of services that are provided to families because of a lack of legislation or guidelines to ensure services are implemented, utilized, and evaluated [6]. However, jurisdictions may consider curating their early intervention services with key aspects of high-quality early intervention systems: early identification and screenings; easy transitions between early childhood clinical, educational, and therapeutic programs; and a high degree of family/educator involvement.

Early identification

The identification of a disorder through developmental screening programs is often a precursor to accessing early intervention, but socioeconomic inequalities between groups may affect the availability and utilization of diagnostic services. In the USA, Sheldrick and colleagues investigated the use of a multistage autism screening protocol in early intervention sites to mitigate the impact of socioeconomic status, racial or ethnic minority status, and non-English speaking status on autism screening [17•]. The authors found that multistage screening protocols are associated with an increased diagnosis of autism particularly for Spanish-speaking families who traditionally have lower incidence rates [17•]. Placing greater importance on collaborative clinician and parent-decision making in the case of multistage assessments can improve early intervention service utilization and create opportunities for families to access services requiring an official diagnosis.

Transitions

Transitions between early childhood education and care, and school-based services are prevalent in the literature. In a meta-synthesis of 196 caregiver experiences, Douglas, Meadan, and Schultheiss explored transitions from home- and childcare-based early intervention to early childhood special education programs. They identified interagency infrastructure and policies and alignment and continuity of service delivery as critical to communication between caregivers, service coordinators, and teachers in early childhood special education programs [17•]. The transitions from early interventions delivered in home or childcare settings to specialized early childhood education and care programs within the preschool systems were described by Douglas and colleagues as difficult for families [18•]. Similarly, families describe poor communication between educators and therapists as they transition from the early years into school and lower perceptions of quality of care [19, 20•]. Several studies identify a lack of interest or formal procedure for school-based staff to learn from early years' programs and services in developing programs for disabled children. Further, a lack of resources allocated to transition processes has been identified, and families can face further gatekeeping from services that are only accessible for specific diagnoses [20•, 21]. The presence of guidelines for transition teams who can regularly meet with parents and educators to provide teaching strategies, therapeutic equipment, or logistical planning improves the transition process and level of support from early years to kindergarten [21].

Several studies examined the structure of early childhood and early intervention services with the goal to enhance coordination and create access to support. Hemmeter et al.

evaluated a pyramid model that provides targeted developmental support through program-wide support [22•]. Despite concerns with attrition rates of children and classrooms, program-wide support such as training and coaching teachers on this model was shown to create positive classroom and individual outcomes for children, particularly for managing challenging behaviour and enhancing social skills [22•]. Similar data-guided approaches incorporate external feedback using validated indicators and summaries of socio-emotional development of children to inform educators [23•]. Preschool educators can then identify children at risk and modify teaching strategies to improve their self-regulation, relationships, and behaviours [23•]. Transition teams also need a variety of skilled specialists to coordinate interventions and liaise with families and school providers. Children accessing early intervention services are often described as having complex needs that require staff-intensive collaboration to deliver applied behaviour analysis treatment approaches. In our research, we note that it may be the service system that is complex. Hagopian and colleagues described a neurobehavioural continuum of care program to treat co-occurring conditions and behaviours through an interdisciplinary model that involves behaviour therapists and education coordinators who manage education delivery from the child's home school [26•]. The continuum of care comprised an outpatient program, an intensive outpatient program, and inpatient neurobehavioral unit, as well as follow-up, medication, and consultation services [26•]. Data gathered from two decades of the program found function-based behavioural interventions reduced target problem behaviour (e.g. aggression, self-injury), and caregivers were well trained to deliver this outpatient treatment in most cases [26•]. However, effectiveness of behavioural intervention programs can be controversial as there are concerns about the quality of research on which they are based [27•]. An important example of a shift in addressing such issues in behavioural interventions, also reflected in the literature, is the inclusion of autistic people on research teams, and the recognition of concerns raised by autistic people themselves about the ethics of behavioural intervention [28•].

Future Directions

Service agencies, providers, and policymakers had to pivot their regular services during the COVID-19 pandemic restrictions. Telehealth emerged as a response to early intervention service disruptions during the pandemic and could be a valuable addition to regular programming for some families, with the proper training and technological resources. Telehealth is also a critical mechanism for access to early intervention and other health services in rural and remote communities as well as in the face of staffing shortages or disruptions [24]. Barring caregiver resistance or

limitations with technology, telehealth offers a high degree of caregiver participation which may result in greater feelings of caregiver empowerment and confidence with implementing strategies posed by early intervention providers [25•]. However, it is not clear how effective telehealth is for direct engagement with children as most providers report working primarily with caregivers to coach them on interventional strategies [25•]. Further, there is a need for more research on the equity implications and relational limitations of these services.

For policymakers and families alike, there may be some challenges in choosing which interventions to fund or purchase that would provide the most return on investment in terms of improved developmental outcomes. One future direction for policies could incorporate a host of early interventions into one overarching program. The cumulative effects of participating in more than one type of early intervention was studied by Molloy and colleagues [29•]. Data from the Longitudinal Study of Australian Children were used to compare the combined effects of five early interventions—antenatal care, home visiting, preschool, parenting programs, and early years of school. The increase in total service use and participation from birth to 5 years old was associated with better reading scores at 8 and 9 years old [29•]. In contrast, a cumulative risk score from 0 to 5 years old accounted for exposure to risk indicators across all five services; results showed that these indicators were associated with lower reading skills and included inadequate/lack of service use, inadequate resources within programs, and differences in parenting behaviours and communication styles [29•].

Mental Health and Trauma-Informed Care in Early Intervention

Many researchers address the reality that children who experience trauma at an early age are more likely to have access to educational settings than dedicated mental health supports, and as such, it is important to have resources to deal with trauma in educational environments. Recent literature indicates that nearly 1 in 4 preschool children have been exposed to a traumatic event at least once, yet only 2.5% of these children have access to professional mental health care [30, 31•]. Schools and educational settings are becoming the first point of intervention for trauma-exposed children, while research shows that teachers need further training on dealing with trauma and children who have experienced trauma in these settings.

Educational Settings as Points of Intervention

Bartlett and Smith state that the needs of trauma-exposed preschoolers are often overlooked due to misconceptions

about their memory and the belief that they will recover from trauma easily [31•]. While the literature demonstrates a solid understanding that most children do not have sufficient access to mental health support, there is also notable progress towards early childhood education and care programs becoming the first point of intervention. Loomis explored the recent literature as evidence for the importance of implementing early childhood trauma interventions in education and care settings [30]. Loomis suggests creating consistent trauma-informed environments across early childhood education and care organizations and services, as well as ongoing workplace development and support for staff, psychoeducational support between educators and families, and support for teachers' mental health.

Training Teachers to Deal with Trauma

Limited research presently exists on the impact of training about trauma for teachers and education staff and whether this contributes to overall well-being within early childhood settings. Loomis and Felt identify the foundations of successful trauma-informed practices, noting the relationship between trauma-informed training content, trauma-informed attitudes, and overall stress in their sample of 111 preschool staff [32•]. They found that those educators who received further training on trauma-informed skills and also had opportunities for self-reflection had stronger, more effective, trauma-informed attitudes than those with only knowledge-based training and no reflection. Similarly, Bartlett and Smith identified a need for further education around trauma-informed practices in early childhood education, stating that it is essential to understand the current landscape of trauma interventions in early childhood education, alongside the impacts of trauma and support needed for children exposed to such events [31•]. They posit that trauma-exposed children often exhibit behaviours that can create greater stress for educators and suggest that educators play a critical role in helping children heal from trauma by ensuring that they have a routine, safe, respectful, and welcoming school environment [31•]. However, they also note that few trauma-informed education-based interventions have been thoroughly studied. There are many current literature reviews on the influence and importance of trauma-informed practices, but our search found few recent articles that investigated these approaches further.

Conclusion

Every child's experience must include access to diverse learning opportunities, meaningful interactions with peers, and development of a sense of belonging; and yet for many, it also needs to include individualized supports. To ensure

optimal experiences for all children, administrators should be aware of both historical and contemporary inequities in education and support the ongoing reflection on and promotion of equitable practices that include and accommodate diverse experiences of children and their families in early childhood environments [13•, 16•]. Some of the articles included in this review reflect a shift to encompassing the influence of socially stratifying factors and marginalization as part of the experiences addressed by trauma-informed educational practices. By acknowledging that disability is a major factor in shaping people's experiences and worldviews that can further marginalize those with different abilities, such practices are aligned with the modern social models of disability described in our review. While we admit the limitation of the existing research evidence, we also are optimistic that the near future will bring more actionable evidence that could be used to provide effective, equitable, and successful early intervention experiences for children and their families.

Author Contribution All authors contributed to the study conception and design. All authors contributed comments and edits to the manuscript. All authors read and approved the final manuscript.

Data Availability Not applicable.

Code Availability Not applicable.

Declarations

Conflict of Interest The authors declare no competing interests.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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