

RESEARCH

Open Access



A scoping review of mental health prevention and intervention initiatives for infants and preschoolers at risk for socio-emotional difficulties

Alan McLuckie¹, Ashley L. Landers^{2*}, Janet A. Curran³, Robin Cann³, Domenica H. Carrese², Alicia Nolan³, Kim Corrigan¹ and Normand J. Carrey³

Abstract

Background: Infant mental health has emerged as a unique area of practice and research distinguished from child and youth sub-specialties by its advocacy for a relational practice framework with an emphasis on parents/caregivers being integral to assessment, treatment, and prevention initiatives. A diverse array of initiatives offered across a broad spectrum of delivery methods is available to clinicians. However, to date, a large-scale mapping of the research evidence regarding these interventions has yet to be completed to help inform clinician's decisions regarding the best approaches for their clients. To address this knowledge gap, this study aimed to report on the landscape of research pertaining to mental health interventions for infants and preschoolers (0–5 years), and their families at risk for socio-emotional difficulties and negative developmental outcomes.

Method: A scoping review methodology was used to conduct a large-scale mapping of the intervention research pertaining to infants and preschoolers (0–5) at risk for socio-emotional difficulties. We searched MEDLINE, PsycINFO, EMBASE, Web of Science, The Cochrane Library, CINAHL, LILACS, ProQuest Nursing & Allied Health Source, World Cat, and ClinicalTrials.gov, from inception to December 31, 2012. We extracted information regarding publication date, geographical location, study design, level of risk, population, key intervention mechanism, and outcome measures.

Results: We identified 533 potential studies from 1233 title and abstracts after the first round of screening. Full text article review in the second round of screening resulted in a total of 162 included articles for the final analysis. Results indicated that over 50% of interventions evaluated were randomized controlled trials conducted in Westernized countries. Most studies could be subdivided by level of risk within a preventative public health framework including universal, selected, indicated, and direct treatment for children formally diagnosed with a mental disorder. Risk factors experienced by children and their families were heterogeneously defined and numerous outcome measures across included studies. The results of this study are limited to the last search date of 2012.

Conclusions: Key intervention mechanisms spanned a range of approaches including parenting groups, dyadic, in-home, cognitive-behavioral therapy, and day care-based interventions. The findings are discussed in terms of implications for broad trends and gaps in research and policy for this population.

* Correspondence: Land0552@vt.edu

²Department of Human Development, Virginia Polytechnic Institute & State University, 7054 Haycock Road, Falls Church, VA 22043, USA

Full list of author information is available at the end of the article



Background

Infant mental health (IMH) has emerged as a unique area of practice and research distinguished from child and youth sub-specialties by its advocacy for a relational practice framework with an emphasis on parents/caregivers being integral to assessment, treatment, and prevention initiatives [1]. Interest in IMH was driven initially by clinical research in the areas of childhood attachment, socialization, and development [2–6] and by large-scale US-based social initiatives of the 1960s and 1980s, such as *Head Start*, that focused public attention on the merits of prevention-based programs to invest in infant well-being. Attachment theorists and proponents of pre-school programming for at-risk families [7] have helped to drive research forward and solidify the field's knowledge-base as to the effectiveness of various programs for positive developmental trajectories. In addition, advances in assessment and treatment as well as longitudinal studies over the last 30 years have demonstrated that psychopathology which results from the combination of environmental and genetic risk factors can be reliably identified in preschoolers [1]. Therefore, infancy and early childhood are key developmental periods during which precursors to significant and lasting mental disorders may emerge, while at the same time representing key timeframes for prevention and early intervention.

The study of risk factors for early-onset mental health issues has evolved to recognize the dynamic interaction between individual genetics and temperament with the child's environment in shaping developmental outcomes. The absence of secure parent-child attachment and the presence of adverse or traumatic experiences, especially during sensitive and/or critical periods of development are believed to be key to the onset and continuance of early childhood emotional and/or behavioral issues [8, 9]. This age group is also considered to be most at risk for experiencing abuse and/or neglect [10, 11]. Other specific risk factors associated with the presence of mental health difficulties in infants and preschool children include maternal depression, parental substance abuse, family violence, limited parental education, poverty, and neighborhood safety issues [12, 13].

Early childhood behavioral problems, including disruptive behaviors, oppositional defiance, and/or aggression, represent one of the most common referrals for mental health intervention [14, 15] with anxiety disorders being the second most frequent concern [16, 17]. Prevalence rates of preschool psychopathology vary between 7 and 28% [18] and show developmental continuity with later childhood and adolescent psychopathology [14]. In Early Childhood Education (ECE) settings, estimates suggest that as many as 30% of children require special attention within their programs due to emotional regulation or

behavioral difficulties [19]. While some risk factors may be transient and not affect the child's developmental trajectory, the cumulative interaction of environmental and genetic risk factors in some children may lead to enduring problems without intervention [1].

Research on the effectiveness of infant and preschool psychosocial interventions and prevention initiatives has grown significantly since the emergence of IMH as a distinct sub-specialty in the late 1970s. Treatment initiatives for children diagnosed with mental disorders and/or those with emergent difficulties typically involve attempts to alter the child's deviant behavior or emotional dysregulation, and/or negative interactions within the infant-caregiver dyad, either through direct work with this dyad or indirectly through parent education programming. Regardless, in most cases, treatment for IMH issues considers the parent-child relationship as the principal mechanism for change. Although the parent-child relationship is typically the primary focus of assessment, intervention, and prevention initiatives, the functioning of the child's broader contexts, such as family and community factors, are also viewed as important influences shaping developmental trajectories and are thus included in treatment interventions and prevention initiatives [1].

Due to the shifting influence of risk factors during this developmental period, conceptual frameworks for infant and child mental health programming must include both prevention and intervention initiatives. One such framework, commonly used in public health reporting [1, 20, 21], categorizes prevention initiatives according to the level of risk targeted by the intervention and/or the degree with which a particular health problem may be experienced by each social stratum within the population under examination. Initiatives are sub-classified as programs that are universal, selective, indicated, and direct treatment for children diagnosed with and/or experiencing mental disorders. Universal programs are offered to the broadest range of infants, preschoolers, and families, and are considered beneficial regardless of the presence of unique risk factors, problems, or need for professional intervention (e.g., state-wide/provincial subsidized high quality daycare). There is a growing body of selective prevention initiatives targeting groups deemed at-risk for future developmental outcomes. The best researched of these initiatives is the federally funded US-based *Head Start* programs, which provide comprehensive early childhood education, health care, nutrition, and parenting programming for groups considered at-risk due to systemic poverty. Indicated programs are provided to children demonstrating sub-clinical problems of recognizable difficulties and/or developmental issues that if left unaddressed, will likely develop into full-scale syndromes or disorders requiring professional treatment

interventions [22, 23]. A further category is direct treatments by mental health professionals to children diagnosed with mental disorders as defined by mostly categorical criteria [1].

This diverse array of interventions offered across a broad spectrum of delivery models, raises several questions including: What populations are serviced by the various approaches? What are the aims of these interventions? In what settings are these interventions conducted? What research methods, including measurement tools and/or data-collection are used? To date, a large-scale mapping of the landscape of the research regarding infant and pre-school early interventions and prevention initiatives has not yet been conducted. Therefore, in order to answer these questions and determine the composition of the research landscape, a scoping review was conducted [24, 25]. A scoping review is a process of mapping key concepts, the main sources, and types of evidence available as well as gaps in a research area especially where an area is complex or not previously reviewed in a comprehensive manner [26]. Our objective therefore is to determine the scope of the mental health intervention and prevention research pertaining to infants and preschoolers (0–5 years), and their families at-risk for socio-emotional difficulties and negative developmental outcomes.

Methods

The methods for this scoping review were informed by the six-step procedure outlined by Daudt, van Mossel, and Scott [27], an extension of Arksey and O'Malley's [24] approach and reported following PRISMA statement extension for scoping reviews [28] (Additional file 1). Our team's "interpretation of how the consultation is achieved" [27, p. 7] was to adopt an integrated knowledge translation and exchange (IKTE) approach, which involved consulting with our knowledge users (KU) through each step of the review procedure.

For the initial step, to define the research questions, we worked closely with the project's KU group, comprised of professionals representing social services, tertiary health care, public health, and early childhood education. Together, we refined the parameters of our scoping review by posing three research questions: (a) What intervention and/or prevention programs currently exist for children ages 0–5 at risk for mental health difficulties, and their caregivers and families? (b) What populations participated in these interventions and prevention programs? (c) How are these programs evaluated? In order to transform these questions into searchable queries consistent with research database requirements, we worked with an information scientist to define our key constructs including "at risk for mental health," "intervention and prevention programs," "caregivers," and "families." We defined "at risk for mental

health" as an infant or toddler displaying deviant behavior and/or emotional patterns, interpersonal difficulties, or those demonstrating psychopathology, or diagnosed with a disorder, or exposed to known risk factors for the same, including maternal mental health issues, caregiver substance abuse, poverty, and residing in a community with safety concerns. Caregivers were defined as a parent and/or a primary caregiver responsible for providing day-to-day care and the emotional developmental needs of the child. Family was defined as including the primary caregiver/parent as well as siblings and relatives or those considered family residing in same family home and/or taking on responsibility for caregiving of the preschooler. Intervention and prevention programs were defined as any or all models, services, strategies, and/or techniques provided by professional, para-professional, or lay person purported to address, remediate, accommodate, offset, or reduce the chances of onset or continuance for mental health difficulties or disorders, behavioral or emotional deviance, or developmental issues.

In the second stage of our review, we endeavored to identify all relevant studies. Conducted in collaboration with our information scientist, we engaged a systematic search of all relevant online research databases, as well as used snowball search methods and reference tracking (i.e., checking reference lists of included sources and checking database alerts) to identify additional articles. Database searches included MEDLINE, PsycINFO, EMBASE, Educational Resources Information Centre (ERIC), Clinicaltrials.gov, Cumulative Index to Nursing and Allied Health Literature (CINAHL), The Cochrane Library, including the Cochrane Central Register of Controlled Trials (CENTRAL), ProQuest Nursing & Allied Health Source, Latin American and Caribbean Literature on the Health Sciences (LILACS), Web of Science, and World Cat. Key search terms, including synonyms and medical subject headings (MeSH terms), were entered into these databases in systematic manner by a library scientist. Search parameters for dates of publication included all eligible studies published from inception through December 31 of 2012. Additional file 2 contains the search terms employed for Medline Ovid. Medline was searched first because it was considered the most relevant for our study's objectives. Terms were subsequently modified as required for each search of the various databases engaged in the current review. We also conducted a search of the gray literature via the following portals: Canadian Institutes of Health Research; Centre of Excellence for Early Childhood Development; CMA Infobase; Institute for Research on Public Policy; International Network for Early Child Development; International Organization for Early Intervention; National Guidelines Clearinghouse; Offord Centre for Children at Risk; World Health Organization; World

Association for Infant Mental Health. We also conducted a hand search of the table of contents for the *Infant Mental Health Journal*, *Child Development*, the *Journal of the American Academy of Child and Adolescent Psychiatry*, and the *Journal of Child Psychology and Psychiatry* for articles published between 2008 and 2012.

The third phase of the review, study selection, began with two reviewers independently screening titles and abstracts against specified inclusion and exclusion criteria to determine suitability for inclusion in the study. Duplicate citations were removed automatically from our *RefWorks* library. During the next stage of screening, the same reviewers independently screened the full text articles deemed relevant in the first stage of citation screening. Disagreements regarding study inclusion during the title/abstract or full text review processes were resolved by a senior member of the research team (N.C.) if consensus could not be achieved through discussion. This process was required for 20 articles during the title/abstract review phase for which consensus was not achieved, which represents an inter-rater reliability for inclusion of 98.4%. Consistent with our published scoping review research protocol [29], we considered for inclusion any/all studies demonstrating a clearly articulated and research methodology, including quantitative (i.e., randomized controlled trials, quasi-experimental designs, single group pre-post with and without follow-up, case-control), qualitative (case studies, phenomenology, ethnography, grounded theory), or mixed methodologies. We excluded review articles or studies presenting filtered information (i.e., systematic reviews, scoping reviews, evidence syntheses, narrative reviews, qualitative syntheses). Qualitative studies were also included where rigorous qualitative methodologies were clearly reported, including those adhering to a case study methodology. However, papers offering clinical scenarios, vignettes, case descriptions, or clinical examples that failed to report a research methods consistent with qualitative case study methods were excluded. Specific a priori inclusion criteria required that all included studies were (a) primarily related to the examination of and/or reporting on psychosocial interventions involving at-risk preschooler; (b) parents demonstrating risk factors or adversity (e.g., depression, substance abuse), or the parent-child relationship demonstrating risk factors or adversity (e.g., negative parenting practices, abuse); (c) a reliable assessment of baseline mental health diagnosis or risk factors and at least one child-related mental health outcome; (d) a child sample/population at risk for socio-emotional difficulties (e.g., anxiety, depression, aggression); and (e) a child sample/population 0–5 years of age, or a sample/population of parents of children 0–5 years of age, or the sample/population being reported upon is the long-term follow-up of a population that was 0–5 years of age in the original study. Studies were excluded if they (a)

primarily examined autism (autism spectrum disorder) or developmental disorders including intellectual or emotional impairment (i.e., mental retardation, severe fetal alcohol syndrome), language/communication disorders (i.e., receptive, expressive disorders); (b) studies focusing primarily on assessment with no intervention component and no outcome measures; and (c) generic parenting groups not targeting change in the parent-child relationship and/or the child's current or future socio-emotional/developmental outcomes.

In the fourth stage of the review, we charted data, first by developing an extraction tool used in combination with an Excel spreadsheet to systematically record pertinent information for included studies. Categories included in the data extraction tool and spreadsheet were as follows: (a) publication year, (b) author, (c) location of study (country), (d) setting for study (i.e., clinic, community, home), (e) population targeted, (f) age of participants, (g) type of intervention, (h) outcome measures used, (i) study outcomes, (j) duration of intervention, (k) number of participants, (l) cost of program, (m) professional background of treatment provider, (n) methodology for study, and (o) whether the study was a replication. Consistent with Levac and colleagues' [25] suggestion, two senior members (N.C. and A.M.) of the research team applied the extraction tool to the same five studies to determine the inter-agreement of our processes. Following this process, two reviewers used this tool to independently extract the data from each study included in this scoping review with discussions at regular intervals to ensure coding accuracy. As an extra degree of inter-agreement, a senior member of the research team (A.M.) reviewed 10% of completed extractions and compared these to the original full text articles to further verify the inter-agreement of our extraction process. No concerns were found with the extraction process.

The fifth stage of the review, known as the collating, summarizing, and reporting phase, was the most intensive stage of the study where we analyzed the data, reported the results, and applied meaning to these results [25]. To efficiently and effectively conduct the analysis, we examined the data-extraction chart corresponding to each study included in the review. Two members of the research team (A.M. & R.C.) analyzed this material to identify key themes and/or commonalities and differences between and across studies.

The sixth stage, the consultation process, involved an iKTE process whereby project researchers collaborated closely with project KUs in order to ensure the relevance and usefulness of the final product. Although this is described as the final stage in the review process, it actually occurred throughout each stage. We collaborated with our KU partners through face-to-face meetings,

teleconferences, and email document exchange to refine the research questions, finalize terms for the search strategy, identify important data extraction elements, and interpret findings.

Results

We identified 533 potential studies from 1233 title and abstracts after the first round of screening. Full text article review in the second round of screening resulted in a total of 162 included articles for the final analysis. Figure 1 shows the study selection procedure in PRISMA format. A table presenting key extracted data from all 162 articles can be found in an online appendix (Additional file 3), which also includes key extracted data from 23 studies not referred to elsewhere in this manuscript.

Timeline (dates) for research

The earliest identified study meeting our inclusion criteria was published in 1974 [30]. Little growth in IMH research occurred for the next 20 years with only one or two publications per year in the 1980s ($n = 7$) and only a few each year in the 1990s ($n = 20$). This trend changed at the turn of the century with a rise in publications rates between 2000 and 2006 ($n = 40$) and a spike in research ($n = 94$) from 2007 through 2012 (see Fig. 2 for the number of publications per year).

Location (country) of research

Empirical studies on IMH initiatives have largely been driven by researchers from the USA (54%; 88) and Australia (17%; $n = 28$). Together, research from these two countries represented 72% of all studies included in the current review. Research was also conducted in the UK ($n = 14$), Canada ($n = 6$), the Netherlands ($n = 6$), Romania ($n = 3$), Sweden ($n = 3$), China ($n = 2$), Germany ($n = 2$), Japan ($n = 2$), South Africa ($n = 2$), Ireland ($n = 1$), Israel ($n = 1$), Pakistan ($n = 1$), Puerto Rico ($n = 1$), and Switzerland ($n = 1$). One study did not report country of origin.

Study designs

A diverse range of research methods was employed within the studies included in this scoping review. The majority were randomized controlled trials (RCTs; 51%; $n = 82$) representing half of the total number of studies included in the current review. There were also nine ($n = 9$) long-term follow-ups on previously conducted RCTs, as well as five ($n = 5$) clustered RCTs, with one ($n = 1$) long-term follow-up. Two ($n = 2$) studies conducted latent transition analysis on previously conducted RCTs. Quasi-experimental designs (QED) in various form represented the next most common research methodology (23%; $n = 37$). Of these 37 QED studies, 20 were pre and post intervention comparisons, and ten were

pre-post with follow-up conditions, three were QED repeat measures, and two could only be identified as quasi-experimental. Additional study designs included seven ($n = 7$) one-group pre-test post-test designs with follow-up and without follow-up ($n = 8$), four qualitative methods case study design ($n = 4$), one ($n = 1$) repeat measures design, two ($n = 2$) case control, one ($n = 1$) qualitative methods content analysis design, one ($n = 1$) prospective single group repeat measures designs, one ($n = 1$) prospective cohort design, as well as one ($n = 1$) mixed methods design (i.e., quantitative data via archival and survey methods and qualitative data via focus group and in-depth interviews).

Level of intervention and population targeted

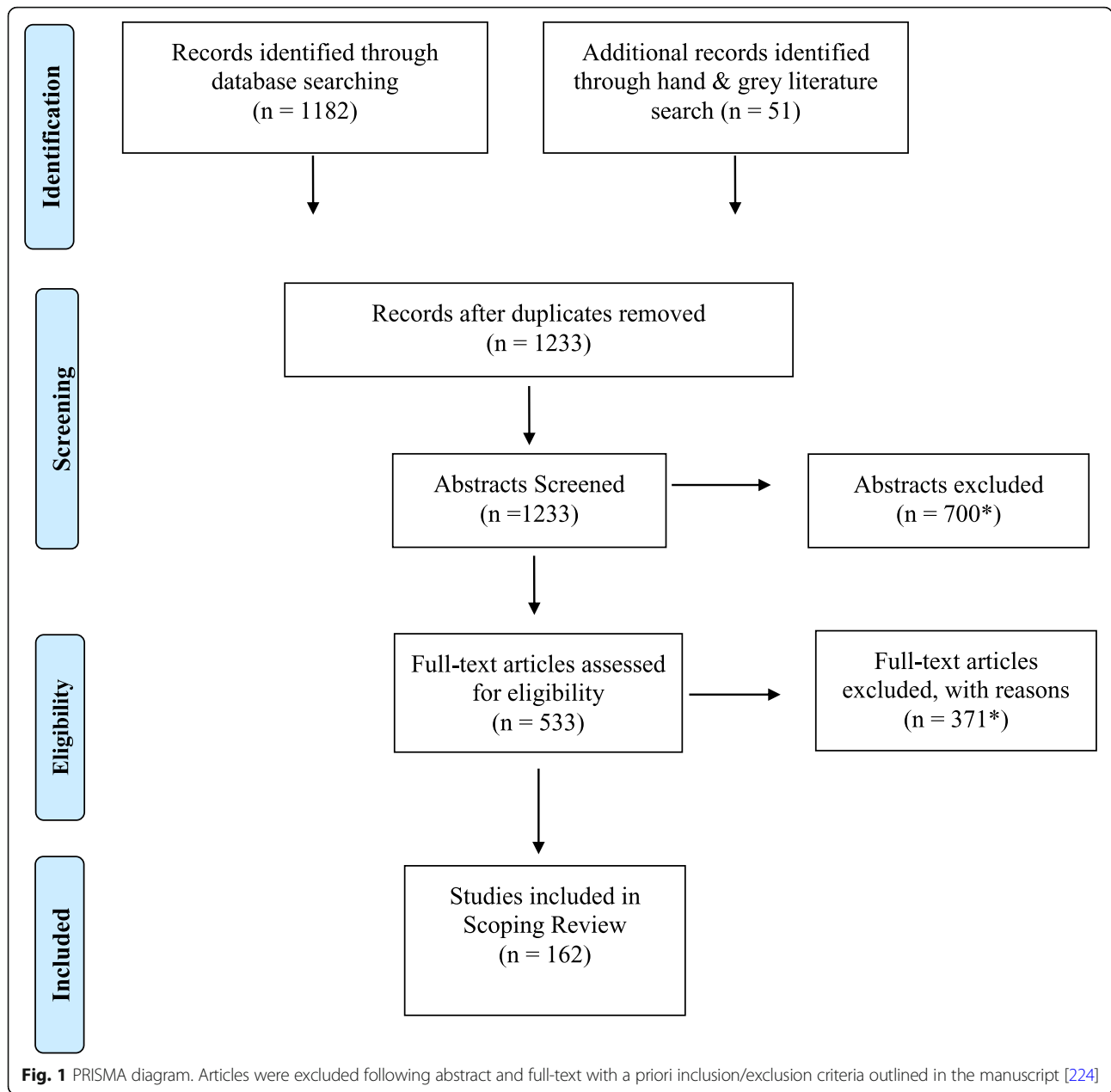
In the current scoping review, the characteristics of the majority of programs/interventions examined along with the populations they targeted (i.e., their research samples) aligned with a nested public health framework proposed by Haggerty and Mrazek [21] and others [20]. Using the child as the reference point for the intervention (i.e., the identified patient), the interventions/programs were organized into the four categories of (a) direct treatments for children with diagnosable mental disorders, (b) indicated prevention initiatives for children with sub-clinical problems of recognizable difficulties and/or developmental issues, (c) selective prevention programs that target children and/or families who are at high risk for mental and/or developmental problems, and (d) universal programs offered to children and families regardless of existing risk factors. The following section addresses these categories in order of prevalence amongst the included studies.

Selective prevention programs

The majority of programs and interventions described in research studies were considered to be at the selective level of intervention (58%; $n = 94$). These interventions were provided to populations deemed to be at-risk by experiencing broader structural factors such as poverty, familial risk factors (e.g., parental mental health issues), and temperamental factors (e.g., child sleep problems or behavioral difficulties). One study conducted by Kennedy, Rappee, and Edwards [31] could be considered to be both selective prevention and direct treatment, as the research sample targeted parental anxiety and the children included were diagnosed with mental disorders.

Indicated prevention programs

Indicated prevention programs were the second most common initiatives (26%; $n = 42$) identified in the included studies. These studies investigated interventions provided to children without formal diagnoses but who



displayed behavior problems and/or elevated behavioral scores on screening tools. The study by Bor, Sanders, and Markie-Dadds was identified under this category because it could also be categorized with the selective prevention group due to their recruitment strategy “targeting disadvantaged families” ([32], p. 574). However, the decision was made to align this intervention with the indicated group because the study’s inclusion criteria required children to score in the elevated range for behavioral problems on the Eyberg Child Behavior Inventory [33]. Similar categorizations were made for other studies sharing similar recruitment/inclusion criteria that focused on the presence of subclinical child

behaviour problems as well as the presence of sociodemographic and/or familial risk [34–45]. The Connell et al. [46] study was assigned an asterisk because it could also fit into two categories of intervention. This study’s sample conforms with both the indicated group because its recruitment targeted children with sub-clinical behavioral problems, as well as with the selective prevention group due to inclusion criteria related to risk factors such as poverty and family/parental history of mental disorder.

Universal and direct interventions

Universal interventions and direct treatment by a mental health professional for a diagnosed mental disorder were

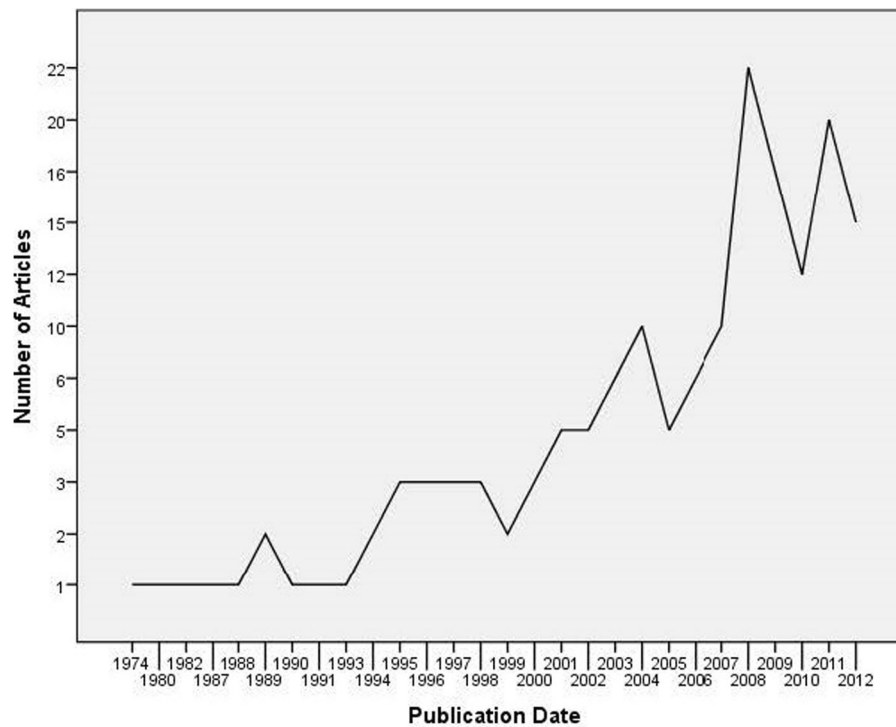


Fig. 2 Infant mental health publications per year

the least common within the current review. Universal interventions represented 7% ($n = 12$) of the included studies. Direct psychosocial interventions by a mental health professional for children diagnosed with a mental disorder represented 9% ($n = 14$) of the interventions. Children with a formal DSM diagnosis included oppositional defiant disorder (ODD), ADHD, ADHD with ODD, conduct disorder, anxiety, and major depressive disorders. Some studies did include autism spectrum disorder and global developmental delay but the sample sizes representing these categories in these studies were small. One of the studies, Abrahamse and colleagues [47], was identified with an asterisk because it could fit into the direct category, due to its sample being comprised of a subset of children diagnosed with a mental disorder (45.9% of the sample) or within the indicated group due to over half of its sample with subclinical disruptive behavioral issues. Similarly, in the study conducted by Levac and colleagues, only “some children” ([48], p. 81) met diagnostic criteria for conduct disorder and/or ADHD, while the remainder of the sample demonstrated subclinical aggressive behaviour patterns.

Throughout all levels of the prevention intervention framework, no consensus existed as to a common definition of “risk,” what factors were necessary and sufficient for risk to be actual versus theoretical, and agreement on how best to measure risk. We analyzed how risk was defined in the most populated prevention category (i.e.,

selective prevention). Children were considered “at-risk” due to elevated scores on behavioral measures, such as the ECBI [38–40, 49–51], parents were deemed “at-risk” via elevated scores on measures such as the Centre for Epidemiological Studies Depression Scale [52, 53], and families were considered “at-risk” due to elevated scores on measures such as the Family Stress Checklist [54, 55]. The child and/or family were also considered in some studies to be “at-risk” due to the presence of adverse family circumstances including teen pregnancy/teen mothers [56–58] or caregiver attachment issues [59–61]. The two most common adverse family conditions cited in the research were parental mental health and addictions issues [31, 53, 62–70], in particular maternal depression [52, 60, 63, 71–81] and low income or poverty [30, 34, 82–92]. Risk was also determined by the family residing in “at-risk” communities [93–96] or due to the child and/or family’s involvement in certain programs or agencies, typically used as a proxy for their “at-risk” status, for example, enrolment in early *Head Start* programs or similar [52, 62, 97–113] or involvement with child welfare services [114–118].

Key mechanisms of interventions and principle settings of implementation

Embedded within each of the treatment interventions and prevention initiatives included in the current review

lie mechanisms of therapeutic change considered central to achieving the desired outcomes. Interacting with contextual variables associated with the study's settings and populations, these therapeutic mechanisms can be distilled into a few key mechanisms common across several of the interventions and prevention initiatives. Five key mechanisms were apparent in the current review including parent-education/skills training, dyadic parent-child relational interventions, interventions where home visitation was the central mechanism of change, pre-school/daycare-based interventions and programs, as well as cognitive behavioral therapy-based programs.

Initiatives and programs included in the current review were also conducted in a variety of settings such as clinic-based, community-based, home settings, or a combination of these. Only the key therapeutic mechanisms and the principal settings for the interventions/initiatives are reported and in the case of studies with comparison conditions (i.e., RCTs), only details pertaining to the intervention/treatment condition are reported.

Parent education programming and/or skills-based programming directed at the parent/caregiver/family typically to effect change in the child's behavior were offered mostly within clinic-based settings focused on mental health interventions ($n = 28$) and community-settings, such as community centres and/or parenting-centres ($n = 12$). Some were offered in dual locations, including home and community-based initiatives, clinic and home, clinic and phone, school-based setting, school and community, clinic and community, a university/research setting, or at the service-user's home.

Dyadic parent-child relational interventions were also offered most commonly in clinic-based settings ($n = 26$) but relative to parenting skills programs were provided more frequently within the service users home ($n = 17$). Dyadic-relational interventions were also offered in joint home and clinic settings ($n = 5$), in schools, between a combination of clinic and community-based settings, and within university/research settings.

Home visitor models were also popular within the current review ($n = 25$). Typically conducted by public health or nursing professionals, these intervention and prevention initiatives considered engaging service users within their own home as central to the therapeutic model as well as successful outcomes. As the name implies, home-visitation initiatives are typically conducted within the service user's home; however, there are examples of these programs also engaging with the family in other settings, such as hospitals, prior to the discharge of a mother following childbirth.

Other key mechanisms to note include programs based on cognitive behavioral therapy (CBT) models and pre-school/daycare-based programs. The CBT-based initiatives included in the current review were clinic or

home-based services for children who were victims of sexual abuse. Early intervention programs were offered within pre-school/daycare-based programs often for children deemed "at-risk" due to poverty. Pre-school-based programming was also offered in conjunction with programming provided to the service users within their own home or within community-based settings and home.

Several treatment interventions or prevention initiatives and their key mechanisms did not fall under the aforementioned categories of parent education programming, dyadic parent-child relational interventions, or home visitation. These included direct treatment initiatives for mothers with depression and/or other mental disorders. These programs were offered to mothers in mental health clinics [73, 75–77, 119, 120] or via phone-based intervention [71]. Other studies investigated family-based interventions provided in residential settings [53, 116, 121], or focused on wrap-around type services [42], or that targeted increased family access to community resources for parenting [112]. Still other studies examined experiential interventions including music therapy [122], play-based therapy [123], and interventions targeting educators in order to indirectly impact the child's wellbeing [43, 98, 109].

Our analysis considered the role of fathers as potential contributors to therapeutic interventions. Fathers continue to be only marginally involved in research pertaining to treatment, early intervention, and prevention programs for children (see online Additional file 3). Only a few of the studies included in the current review [65, 124–126] focused on fathers and/or had a high level of participation (i.e., within direct service or completion of measures) from fathers. Some studies examining the role of "caregivers," "parents," or "families" within interventions offered a gendered analysis (i.e., differential impact of mothers/fathers on outcomes) of the intervention [44, 68, 69, 74, 101, 106, 119, 127–133], while most studies relied almost exclusively on mothers reporting on assessment and outcome measure and/or participation in treatment interventions [30, 32, 35, 38, 46, 60, 75, 134–138] or mothers represented the vast majority (i.e., 84%, 90%, 94%, 96%) of the parent/caregiver participant from the family in the included studies [48, 84, 88, 114–116, 118, 139–146]. Understanding the differential impact of mothers and fathers within these interventions was further frustrated by studies [34, 36, 122, 147–151] that failed to provide clear indication of the specific composition of the parent/caregiver participants by providing numbers of mothers and fathers.

Outcome measures

Outcome measures spanned a range of children's social, emotional, cognitive/intellectual, and behavioral functioning,

as well as a range of parental social, emotional, and behavioral functioning. Outcome measures were a combination of parent self-completed measures or reports pertaining to their own functioning, parent-completed measures pertaining to the child's functioning, parent-completed ratings of the nature/quality of the parent-child interactions or relationship, educator-completed measures or reports pertaining to the child's functioning, performance-based testing of the child's functioning by psychologists, as well as third-party observation of parental functioning, child functioning, and/or the nature/quality of the parent-child interactions or relationship. There appeared to be little consensus on the measures used (e.g., a gold standard) even within studies that were similar in nature, making it difficult to interpret the impact of interventions on outcome. Our team looked at the measures for a few of the most popular interventions to understand the landscape of measures employed including parent-child interaction therapy (PCIT), a dyadic-based intervention and incredible years (IY), a parenting group intervention, two modalities representing different intervention mechanisms. In addition to frequency of studies within each intervention, these approaches are manualized and theoretically should have a greater rationale between aim of intervention and outcome measures.

In relation to PCIT, multiple measures were used for child functioning/behavior, parent functioning, and/or parenting and for the parent-child relationship. Across 11 studies that explicitly stated their model of intervention to be PCIT, there was an array of child functioning measures with only two measures showing any consistent use across studies including the ECBI [47, 130, 152–156] and the Child Behavior Checklist [124, 155–157], with a variety of other measures used with little consistency across the studies. Refer to Additional file 3 for a list of the other child-based measures employed within the PCIT studies [124, 130, 146, 153, 154, 157, 158]. Although some of the heterogeneity in child measures may be accounted for by the differing ages of children across the research, this was largely not the case as most studies were providing interventions to children approximately 4 years of age. Furthermore, heterogeneity of measure due to age would not explain the diversity of measure used for parenting and/or parental well-being.

A similar pattern was noted in the diverse usage of parent functioning/parenting measures. The Beck Depression Inventory (BDI) was the most often used outcome measure for parent (i.e., maternal) mental health [124, 130, 153, 158], and the Parenting Stress Index (PSI) was the most often used in the studies for parenting-related factors [146, 152, 156]. Refer to the Additional file 3 for a listing of the other measures employed with the studies [130, 146, 156]. Interestingly, despite PCIT's central therapeutic mechanism purported to be the parent-child dyad, only three of the 11 PCIT

studies employed measures to determine change in this relationship, which included the Dyadic Parent-Child Interaction Coding System-III (DPICS-III) [124, 155] and the Interview Schedule for Social Interaction [157].

A similar pattern of heterogeneity of measures was found when we examined the nature of the 15 studies [34, 36, 38–40, 48, 51, 62, 84, 129, 132, 137, 140, 141, 149] that explicitly stated their model of intervention to be the IY program. In relation to the child's functioning, the ECBI was the most commonly used [34, 36, 38–40, 51, 138] followed by the Strengths and Difficulties Questionnaire [34, 39, 40, 51]. Refer to Additional file 3 for other child-focused measures used in these studies [34, 38, 40, 51, 84, 129, 132, 137, 140, 141]. The BDI was the measure most often used within the IY studies to gauge parent (typically maternal) mental health and the PSI was the most common outcome measure for parenting-based factors [34, 39, 51, 137], although a variety of other measures were used across studies [34, 38, 39, 51, 62, 129, 137]. Interestingly, measures of the parent-child relationship were employed in IY studies [39, 40, 51, 62, 84, 129, 132, 140] more commonly than in the PCIT, despite these interventions typically being more known for a focus on parent education, skill building, and behavior change in the child. The most common measure was the DPICS-III used in multiple studies [39, 40, 51, 62], although several other measures were used across the studies [62, 84, 140].

Discussion

The primary strength of this scoping review is its comprehensive nature, including 162 articles following the full-text assessment of 532 studies; the only review of its type ever conducted in relation to the 0–5 population. Due to its breadth, we were able to achieve the goals of the scoping review methodology as articulated by Arksey and O'Malley [24]. That is to examine and report on the extent, range, and nature of mental health-related interventions and prevention initiatives for children 0–5 and their families. We comprehensively examined trends in publication dates, geographic locations, institutional settings of the research, research methodologies employed, level of the intervention within a public health framework, key therapeutic mechanisms underpinning the interventions, and the outcome measures utilized.

Timing of publication rates

Publication dates showed little growth from the mid-1970s throughout the 1980s, then a modest increase occurred in the 1990s followed by an upward spike around 2000 and a major growth spike around 2007. To make sense of these trends, we considered the broader changes occurring within medicine, psychiatry, and the mental health field during this overall 40-year time

period. During the mid-1980s and early 1990s, IMH shifted from a field relying on practitioners' authority-based decision-making to inform treatment decisions toward a decision-making process incorporating empirical evidence, commonly referred to as evidence-based medicine (EBM). The upward trend in publication frequency appears consistent with the growth curve for the increased usage of the term EBM within the medical literature [159]. Consistent with the EBM movement in 1992, the US government established the Substance Abuse and Mental Health Services Administration (SAMHSA) with the objective of making substance use and mental disorder information, services, and research more accessible. The timeframe of the first publication spike occurred between the years 1999 and 2004 coinciding with the Hawaii Department of Health's launching in 1999 of the Hawaii Empirical Basis to Services Task Force (HEBSTF). This task force provided an interdisciplinary evaluation of interventions common in children's mental health by using research on controlled treatment studies to produce what is commonly referred to as the *Hawaii Blue Menu* [160]. The next publication spike in the field occurred between 2005 and 2008, coinciding with SAMHSA's 2007 launch of the National Registry of Evidence-based Programs and Practices (NREPP), an online searchable database to help the public learn more about available evidence-based programs and inform their decision making.

Other factors impacting research on IMH include the launch of the first book titled *Infant Psychiatry* [161] and the launch of key journals including the *Zero-to-Three Journal* in 1977 and *Infant Mental Health Journal* in 1980. Rising publication rates in the 2000s may also be partially explained by researchers having deliverables from studies investigating the prevention-based *Head Start* programs of the 1980s and 1990s, most of which were published between 2003 and 2012 [52, 62, 97–99, 101, 102, 107–112]. Furthermore, for attachment-informed interventions, the codification of Ainsworth's Strange Situation was the impetus for observational and longitudinal studies on the importance of primary caregiver interactions in the early years [2].

Geographic locations

The majority of the studies were based on samples of children, caregivers, and/or families residing in Western or English-speaking countries including the USA (55%), Australia (17%), the UK (9%), and Canada (4%) representing 85% of the studies. The majority of studies were conducted by research teams comprised of, or led by Western-based researchers (i.e., researchers identifying their affiliations at university settings within Western countries). Studies conducted on Romanian-based populations of infants [162–164] were conducted by a team

of US-based researchers, and the studies conducted on South African [93, 94] and Pakistani [80] children and families were led by UK-based researchers. The disproportionate rate of Western publications may arise as an artifact of our studying children's mental health and more specifically psychosocial interventions for this population, which are both decidedly Westernized concepts [165]. However, such a pronounced imbalance seems inconsistent with infant and maternal mental health's world-wide popularity, as evidenced by the growing memberships in international organizations with global representation, including the World Health Organization, Pan American Health Organization, World Association for Infant Mental Health, and the International Association for Child and Adolescent Psychiatry and Allied Professions. Our results support the conclusions of other researchers, such as Iverson [166], Maj [167], and Singh [168], who outlined concerns regarding the paucity of research from non-Western countries.

Research designs

RCTs were the overwhelming methodology of choice for researchers, representing 51% ($n = 82$), or 54% ($n = 87$) with clustered RCTs. When quasi-experimental designs are included, controlled intervention studies represented 77% ($n = 124$) of all studies. This figure is not surprising considering that our review focused on psychosocial interventions by researchers with related research agendas to establish program effectiveness in the relatively new field of IMH. Although US researchers conducted the majority of RCTs (57% of RCTs), this methodology was also employed proportionally in Australia, the UK [34, 36, 38, 40, 49, 103], Canada [117, 134, 139], Romania [162–164], Netherlands [59, 169], Sweden [170, 171], China [150], Germany [161], Ireland [51], Israel [126], Puerto Rico [130], and South Africa [138, 94]. Therefore, it is not the US-based research driving the overrepresentation of RCTs within the field, as this methodology is used proportionally by other countries. In addition to our focus on psychosocial interventions, the preponderance of RCTs and quasi-experimental designs within our review may be due to the EBM climate, organizational pressures to use "evidence-based" programming, and the related financial incentive from funding agencies as different approaches compete for "market share" [172–174].

Numerous gaps in the literature base as it relates to research methodologies were detected. For example, there were a relatively small number of long-term follow-ups on RCTs [7, 75, 87, 90, 91, 135, 155, 175, 176], clustered RCTs [79], and/or quasi-experimental designs [81, 92]. In order to understand the impact of treatments, and in particular prevention-based programs, it is imperative to track the impact of an

intervention over time. These methods, along with larger epidemiological studies, would allow researchers to accurately determine what risk factors carry what weight in the onset and continuance of disorders and how those who experienced intervention and/or prevention may fair developmentally, relative to their controls. In addition, important contextual variables, such as gender, age, ethnicity/culture, language and geographic setting, and how these interact with therapeutic mechanisms to influence the desired outcome(s) of intervention, remain unexplored. These questions may require newer methodologies, such as mixed methodologies and qualitative meta-analyses to account for this dynamic interplay between context, therapeutic mechanism, and outcome [177].

Level of intervention, and populations

Interventions, and/or the populations targeted, aligned in general with the nested public health preventative levels of risks framework [1, 20, 21]. Most research focused on selective prevention (58%; $n = 94$) followed by indicated prevention (26%; $n = 42$) with only a modest commitment to universal programming (7%; $n = 12$) and direct treatment interventions (9%; $n = 14$). Thus, a major finding of the review is that over half of the interventions are in the selective category.

While this aligns with the field's focus on prevention, the definition of "at-risk" varied widely within and between the selective and indicated categories. There was no consensus on definitions of risk as it pertained to theoretical or probabilistic risk (belonging to a target group at-risk), versus actual risk (subclinical but detectable deviant behavior problems), and in certain studies the populations studied had variations of both selective and indicated risk. In the indicated category, subclinical thresholds for risks as defined by various child and adult measures need to be better defined and agreed upon by researchers as clinically relevant or not. The diversity of risk definitions between intervention studies is a key area for further research in order to achieve greater clarity as to what specific risk factors most accurately predict future mental health issues thereby allowing more effective targeting by selective or indicated interventions. Despite these concerns, there is strong evidence to show that early interventions with children deemed at-risk for the most common presenting concerns of early childhood are the most cost effective [178] and more effective than similar interventions carried out during later periods of development, such as adolescence [179].

Our results showed a paucity of truly universal programs for infants, caregivers, and families regardless of the presence of unique risk factors and/or problems. The appeal of universal programs lies in their ability to reduce access-to-service barriers and to stigma arising from being

considered a member of an "at-risk" group and/or being diagnosed with a mental disorder [180]. Higher implementation and evaluation costs, relative to more targeted prevention initiatives and lower effect sizes compared to more direct interventions, [181] are some of the barriers to universal program implementation.

Research pertaining to direct interventions for preschoolers diagnosed with a mental disorder was only marginally more popular than universal programming. Mental health professionals are reluctant to formally diagnose children due to the questionable validity of the *Diagnostic and Statistical Manual (DSM-V; APA, 2013)* for this age group, prompting the development of the age sensitive-diagnostic classification system, *Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood, Revised Edition DC:0-3R* [182] and now *DC:0-5* [183] which are starting to be studied for their developmental validity. Currently, the field of children's mental health has been shifting away from organizing treatments and associated intervention research around psychiatric diagnosis, favoring instead to rely on symptom ratings garnered through the use of standardized measure observations /or observations [160]. We noted that close to 30% of the interventions included children with problem severity levels surpassing the sub-clinical range, but who continued to be described as "aggressive," "defiant," or as experiencing "conduct difficulties" rather than being engaged in a formal diagnostic process.

Due to the limited number of studies that sampled populations of children 0–5 with formal diagnoses, it is difficult to understand claims made in relation to popular intervention programs regarding their effectiveness to remediate specific mental disorders. Intervention programs, such as PCIT or IY, often attest to their effectiveness to remediate specific mental health categorical disorders (e.g., attention-deficit/hyperactivity disorder [ADHD]) while few studies actually examined populations of children 0–5 years with formal psychiatric diagnoses. In relation to PCIT, these studies include ADHD [47, 130, 154], oppositional defiant disorder (ODD) [152, 153, 155], or major depression [146, 158]. In relation to incredible years (IY), these studies include ADHD or conduct disorder [48], or ODD [137]. The vast majority of children involved in these studies were noted as displaying elevated behavioral difficulties via standardized measures such as the ECBI or displaying behavioral problems, aggressive, or having conduct difficulties without these terms being adequately operationalized. As developmentally sensitive tools such as the DC: 0-5 and the Preschool Age Psychiatric Assessment (PAPA) [14] are being developed, our findings have identified a gap in research regarding how researchers might achieve greater rigor and consistency in how they operationalize child problem categories.

Key therapeutic mechanisms and outcomes

The results of our review provided a picture that parent education/skills groups, dyadic parent-child relational interventions, and home visitation programs represent the three main pillars of direct practice for children 0–5 at risk for, or experiencing mental disorders. Each approach is distinct in its therapeutic mechanism having a discrete ideological/theoretical foundation, but interestingly, all three seek similar aims for children, parents, and families. A fourth pillar, the preschool/daycare-based initiatives, was distinct in mechanism, relative to these direct practices, by being upstream targeting infants and families “at-risk” representing the bulk of the evidence-based early intervention and/or prevention initiatives. The fifth pillar, CBT approaches, is relatively new but represents parentally mediated skill-based practices for anxiety and trauma, indirectly tapping into the child-parent relationship.

Each major result category could have been cross-referenced within and between other categories, but these sub-analyses were beyond the scope of this paper. For example, dyadic therapies made up 32 and 24% of the indicated and selective categories respectively, suggesting that some researchers may have perceived this modality as applicable to theoretical versus actual risk in the child, or the parent or the parent-child relationship. Setting may influence choice of modality, but it is not clear if this is driven by consumer or researcher preferences as well as recruitment portals. A key therapeutic ingredient lacking in IMH research and intervention was paternal involvement. Barriers to fathers’ participation may be associated with the incompatibility of the schedules maintained by researchers and mental health professionals, underestimation of impact of fathers’ roles in attachment theory, and stereotypes about male roles [184]. Finally, the choice of outcome measures employed by researchers showed great heterogeneity even within similar interventions at times depending on the perceived therapeutic mechanism.

Limitations

There were several limitations to our study that should be highlighted. Firstly, despite the ambitious breadth of this scoping review, it is not meant to be exhaustive in nature. It was intentionally decided that due to our exclusion/inclusion criteria, some interventions with their associated populations were left out. We excluded young children with severe developmental challenges such as children primarily diagnosed with autism spectrum disorder or fetal alcohol syndrome, as these children and families required interventions of a qualitatively different nature than children with socioemotional difficulties. It may be argued that they should have been included in the direct treatment category as many of these children

have important socioemotional comorbidities. Secondly, due to the descriptive nature of scoping reviews, we were unable to provide further mechanisms beyond general trends, thus putting together interventions that have vastly different key therapeutic mechanisms. For example, in the field of parent-child interactions, the dyadic child-parent psychotherapies have a different focus than dyadic parent-child interactional therapy. Thirdly, there were many invaluable cohort studies informing the processes of child development and the role of risk and protective factors but due to the study criteria of only including intervention studies, no cohort studies were included in this review.

Lastly, a key limitation of the current scoping review is a challenge common to review studies. The length of time that elapsed between the end-date of the search (i.e., December 31, 2012) and the time of publication, spanning a 7-year time frame, limits our ability to fully report on the true landscape of the research pertaining to interventions for at-risk young children (0–5). Establishing review criteria with such a broad scope to reporting on all intervention studies for this population create a unique challenge of identify a tremendous amount of research, requiring our research team to balance the need for rigorous analysis and reporting with expedience in publication, as new research, not captured in our search parameters, is ever emerging within this burgeoning field, as has been the trend since the early 2000s (see Fig. 2). In order to determine if this trend continues, the research team extended our hand search of key journals including *Infant Mental Health Journal*, *Child Development*, the *Journal of the American Academy of Child and Adolescent Psychiatry*, and the *Journal of Child Psychology and Psychiatry* between January 12, 2013 and February 28, 2019. Our hand search confirmed the upward trend continues for intervention research to be conducted with this vulnerable population by identify 39 new studies [185–223]. This finding underlines the importance of conducting future and ongoing reviews that adhere to best practices in scoping and/or systematic review, the need for which cannot be diminished by our hand search. Although, we did not integrate those articles identified through the hand search into the main analysis of the current scoping review, we did include the findings within the full table that includes the results of the 162 studies (see Additional file 3). While none of the original interventions in the 162 studies were delivered in an online or digital format, some of the intervention studies since 2013 were delivered online (216,237). Our intention here is only to locate this recent research within the broader landscape of research, but we underline caution in drawing any conclusions related to the field of research between 2013 and 2019 based on 39 drawn from only four specialized journals.

Conclusions

Through this review, we were able to identify key gaps in the early years mental health intervention literature, including the need for future research from non-Western countries, better definitions of risk factors and associated outcomes, and the role of fathers' involvement in IMH initiatives. This scoping review was able to examine and describe the intervention literature within the parameters of an accepted model of public health [1, 20, 21] with an overlapping "nested" view of prevention and intervention. As such, both the current scoping review and the public health framework chosen are heuristic concepts which reflect the dual realities of prevention and intervention continua in the early years, but the model is more descriptive rather than predictive. More research on risk factors, therapeutic mechanisms, and outcomes is needed to separate out children and families with differing trajectories or "developmental assets" in order to match need to risk level and build more comprehensive "ecologically valid" intervention models.

Additional files

Additional file 1: PRISMA-ScR Checklist. (DOCX 83 kb)

Additional file 2: MEDLINE search strategy. (DOCX 13 kb)

Additional file 3: Overview of studies included in review. (DOCX 143 kb)

Abbreviation

IMH: Infant mental health

Acknowledgements

Not applicable.

Funding

This work was supported by a knowledge synthesis grant from the Canadian Institutes of Health Research (FRN: 126591). Acknowledgement of support is due to Virginia Tech's Open Access Subvention Fund (OASF). We also would like to thank the Robin Parker and the library scientists of the IWK Health Centre for their assistance with search strategy for this scoping review.

Availability of data and materials

All data generated or analyzed during this study are included in this published article and its supplementary information files.

Authors' contributions

AMcL: contribution to research conceptualization, analysis, writing of article, editing, and revising. ALL: contributions to analysis, writing of the manuscript, substantial revisions, formatting, updating analyses, editing, and submission. JAC: contribution to research conceptualization. RC: contribution to analysis, writing of article, and editing. DHC: contributions to analysis, substantial revisions, formatting, and submission. AN: contribution to writing the manuscript, formatting, and editing. KC: contribution to writing and editing. NJC: contribution to research conceptualization, writing of article, and editing. All authors read and approved the final manuscript.

Ethics approval and consent to participate

Not applicable. This manuscript did not report on or involve the use of human data, rather is secondary data analysis.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Author details

¹University of Calgary, Calgary, Canada. ²Department of Human Development, Virginia Polytechnic Institute & State University, 7054 Haycock Road, Falls Church, VA 22043, USA. ³Dalhousie University, Halifax, Canada.

Received: 9 November 2018 Accepted: 13 May 2019

Published online: 23 July 2019

References

- Zeanah CH, Zeanah PD. The scope of infant mental health. In: Zeanah CH, editor. *Infant Mental Health*. 3rd ed. New York: Guilford; 2009. p. 5–21.
- Aisworth MDS, Blehar M, Waters E, Wall S. Patterns of attachment. Hillsdale: Lawrence Erlbaum and Associates; 1978.
- Bell RQ. A reinterpretation of the direction of effects in studies of socialization. *Psychol Rev*. 1968;75(2):81–95. <https://doi.org/10.1037/h0025583>.
- Bowlby J. Attachment and loss: retrospect and prospect. *Am J Orthop*. 1982; 52(4):664. <https://doi.org/10.1111/j.1939-0025.1982.tb01456.x>.
- Main M, Solomon J. Discovery of a new, insecure-disorganized/disoriented attachment pattern. In: Brazelton TB, Yogman M, editors. *Affective development in infancy*. Cambridge: Cambridge University Press; 1986. p. 95–124.
- Sroufe LA, Fox NE, Pancake VR. Attachment and dependency in developmental perspective. *Child Dev*. 1983;54(6):1615–27. <https://doi.org/10.2307/1129825>.
- Vandell DL, Belsky J, Burchinal M, Steinberg L, Vandergrift N. Do effects of early child care extend to age 15 years? Results from the NICHD study of early child care and youth development. *Child Dev*. 2010;81(3):737–56. <https://doi.org/10.1111/j.1467-8624.2010.01431.x>.
- Olson S. Research issues in early childhood development. In: Grohman E, McShane C, editors. *Neurons to neighborhoods: an update: workshop summary*. Washington: National Academies Press; 2012. p. 9–24.
- Tamminen T, Puura K. Infant mental health. In: Thapar A, Pine DS, Leckman JF, Scott S, Snowling MJ, Taylor EA, editors. *Rutter's child and adolescent psychiatry*. 6th ed. Malden: Wiley-Blackwell; 2015. p. 79–92.
- Stahmer AC, Leslie LK, Hurlburt M, Barth RP, Webb MB, Landsverk J, Zhang J. Developmental and behavioral needs and service use for young children in child welfare. *Pediatrics*. 2005;116(4):891–900. <https://doi.org/10.1542/peds.2004-2135>.
- Trocme N, Fallon B, MacLaurin B, Sinha V, Black T, Fast E, et al. Canadian incidence study of reported child abuse and neglect—2008: major findings. Ottawa: Public Health Agency of Canada; 2010.
- Japel C, Tremblay RE, Côté S. La qualité, ça compte! : résultats de l'Étude longitudinale du développement des enfants du Québec concernant la qualité des services de garde. IRPP. *Choices*. 2005;11(5):4–42 Available from <http://irpp.org/fr/research-studies/la-qualite-ca-compte/>.
- Japel C. Risques, vulnérabilité et adaptation: les enfants à risque au Québec. Institut de recherche en politiques publiques; IRPP. *Choices*. 2008;14(8):2–46 Available from https://www.researchgate.net/publication/242558848_Risques_vulnerabilite_et_adaptation_Les_enfants_a_risque_au_Quebec.
- Egger HL, Angold A. Common emotional and behavioral disorders in preschool children: presentation, nosology, and epidemiology. *J Child Psychol Psychiatry*. 2006;47(3–4):313–37. <https://doi.org/10.1111/j.1469-7610.2006.01618.x>.
- Loeber R, Burke JD, Lahey BB, Winters Z, Zera M. Oppositional defiant and conduct disorder: a review of the past 10 years. *J Am Acad Child Adolesc Psychiatry*. 2000;39(12):1468–84. <https://doi.org/10.1097/00004583-200012000-00007>.
- Costello EJ, Egger HL, Angold A. The developmental epidemiology of anxiety disorders: phenomenology, prevalence, and comorbidity. *Child Adolesc Psychiatr Clin N Am*. 2005;14(4):631–48. <https://doi.org/10.1016/j.chc.2005.06.003>.

17. Rapee RM, Schniering CA, Hudson JL. Anxiety disorders during childhood and adolescence: origins and treatment. *Annu Rev Clin Psychol.* 2009;5:311–41. <https://doi.org/10.1146/annurev.clinpsy.032408.153628>.
18. Bufferd SJ, Dougherty LR, Carlson GA, Rose S, Klein DN. Psychiatric disorders in preschoolers: continuity from ages 3 to 6. *Am J Psychiatry.* 2012;169(11):1157–64. <https://doi.org/10.1176/appi.ajp.2012.12020268>.
19. Raver CC, Knitzer J. Ready to enter: what research tells policymakers about strategies to promote social and emotional school readiness among three- and four-year-olds: National Center for Children in Poverty, Columbia University; 2002. <https://doi.org/10.7916/D82V2QVX>.
20. Gordon RS Jr. An operational classification of disease prevention. *Public Health Rep.* 1983;98(2):107–9.
21. Haggerty RJ, Mrazek PJ, editors. Reducing risks for mental disorders: frontiers for preventive intervention research. Washington: National Academy Press; 1994.
22. Campbell SB. Behavior problems in preschool children: a review of recent research. *J Child Psychol Psychiatry.* 1995;36(1):113–49. <https://doi.org/10.1111/j.1469-7610.1995.tb01657.x>.
23. Lavigne JV, Arend R, Rosenbaum D, Binns HJ, Christoffel KK, Gibbons RD. Psychiatric disorders with onset in the preschool years: I. Stability of diagnoses. *J Am Acad Child Adolesc Psychiatry.* 1998;37(12):1246–54. <https://doi.org/10.1097/00004583-199812000-00007>.
24. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol.* 2005;8(1):19–32. <https://doi.org/10.1080/1364557032000119616>.
25. Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implement Sci.* 2010;5:69. <https://doi.org/10.1186/1748-5908-5-69>.
26. Mays N, Roberts E, Popay J. Synthesising research evidence. In: Fulop N, Allen P, Clarke A, Black N, editors. *Studying the organization and delivery of health services: research methods.* London: Routledge; 2001. p. 188–220.
27. Daudt HM, van Mossel C, Scott SJ. Enhancing the scoping study methodology: a large, inter-professional team's experience with Arksey and O'Malley's framework. *BMC Med Res Methodol.* 2013;13:48. <https://doi.org/10.1186/1471-2288-13-48>.
28. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, Moher D, Peters MD, Horsley T, Weeks L, Hempel S. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med.* 2018;169(7):467–73.
29. Carrey NJ, Curran JA, Greene R, Nolan A, McLuckie A. Embedding mental health interventions in early childhood education systems for at-risk preschoolers: an evidence to policy realist review. *Syst Rev.* 2014;3(1):84.
30. Johnson VM, O'Fallon OK. Summary of the 1974 evaluation of the Clinch-Powell Educational Cooperative Early Childhood Education Program: an early childhood education program in rural Appalachia: Bureau of Educational Research and Service: College of Education, University of Tennessee; 1974. p. 1–59.
31. Kennedy SJ, Rapee RM, Edwards SL. A selective intervention program for inhibited preschool-aged children of parents with an anxiety disorder: effects on current anxiety disorders and temperament. *J Am Acad Child Adolesc Psychiatry.* 2009;48(6):602–9. <https://doi.org/10.1097/CHI.0b013e318196fa9>.
32. Bor W, Sanders MR, Markie-Dadds C. The effects of the Triple P-Positive Parenting Program on preschool children with co-occurring disruptive behavior and attentional/hyperactive difficulties. *J Abnorm Child Psychol.* 2002;30(6):571–87. <https://doi.org/10.1023/A:1020807613155>.
33. Eyberg S, Pincus D. Eyberg Child Behavior Inventory & Sutter-Eyberg Student Behavior Inventory-Revised: professional manual. Odessa: Psychological Assessment Resources; 1999.
34. Bywater T, Hutchings J, Daley D, Whitaker C, Yeo ST, Jones K, et al. Long-term effectiveness of a parenting intervention for children at risk of developing conduct disorder. *Br J Psychol.* 2009;195(4):318–24. <https://doi.org/10.1192/bjp.bp.108.056531>.
35. Dishion TJ, Shaw DS, Connell AR, Gardner F, Weaver C, Wilson M. The family check-up with high-risk indigent families: outcomes of positive parenting and problem behavior from ages 2 through 4 years. *Child Dev.* 2008;79(5):1395–414. <https://doi.org/10.1111/j.1467-8624.2008.01195.x>.
36. Edwards RT, C elleachair A, Bywater T, Hughes DA, Hutchings J. Parenting programme for parents of children at risk of developing conduct disorder: cost effectiveness analysis. *BMJ.* 2007;334:682. <https://doi.org/10.1136/bmj.39126.699421.55>.
37. Gardner F, Connell A, Trentacosta CJ, Shaw DS, Dishion TJ, Wilson MN. Moderators of outcome in a brief family-centered intervention for preventing early problem behavior. *J Consult Clin Psychol.* 2009;77(3):543–53. <https://doi.org/10.1037/a0015622>.
38. Gardner F, Hutchings J, Bywater T, Whitaker C. Who benefits and how does it work? Moderators and mediators of outcome in an effectiveness trial of a parenting intervention. *J Clin Child Adolesc Psychol.* 2010;39(4):568–80. <https://doi.org/10.1080/15374416.2010.486315>.
39. Hutchings J, Bywater T, Daley D, Gardner F, Whitaker C, Jones K, et al. Parenting intervention in Sure Start services for children at risk of developing conduct disorder: pragmatic randomised controlled trial. *BMJ.* 2007;334:678. <https://doi.org/10.1136/bmj.39126.620799.55>.
40. Jones K, Daley D, Hutchings J, Bywater T, Eames C. Efficacy of the incredible years basic parent training programme as an early intervention for children with conduct problems and ADHD. *Child Care Health Dev.* 2007;33(6):749–56. <https://doi.org/10.1111/j.1365-2214.2007.00747.x>.
41. Landy S, Menna R, Sockett-Dimarcio N. A pilot study to evaluate a treatment model for parents of preschoolers with behavioral problems. *Early Child Dev Care.* 1997;131(1):45–64. <https://doi.org/10.1080/0300443971310104>.
42. Lowell DI, Carter AS, Godoy L, Paulicic B, Briggs-Gowan MJ. A randomized controlled trial of Child FIRST: a comprehensive home-based intervention translating research into early childhood practice. *Child Dev.* 2011;82(1):193–208. <https://doi.org/10.1111/j.1467-8624.2010.01550.x>.
43. Morrison MO, Bratton SC. Preliminary investigation of an early mental health intervention for Head Start programs: effects of child teacher relationship training on children's behavior problems. *Psychol Sch.* 2010;47(10):1003–17. <https://doi.org/10.1002/pits.20520>.
44. Nye CL, Zucker RA, Fitzgerald HE. Early family-based intervention in the path to alcohol problems: rationale and relationship between treatment process characteristics and child and parenting outcomes. *J Stud Alcohol Suppl.* 1999;(s13):10–21. <https://doi.org/10.15288/jsas.1999.s13.10>.
45. Parent J, Forehand RL, Merchant MJ, Long N, Jones DJ. Predictors of outcome of a parenting group curriculum: a pilot study. *Behav Modif.* 2011;35(4):370–88. <https://doi.org/10.1177/0145445511405185>.
46. Connell A, Bullock BM, Dishion TJ, Shaw D, Wilson M, Gardner F. Family intervention effects on co-occurring early childhood behavioral and emotional problems: a latent transition analysis approach. *J Abnorm Child Psychol.* 2008;36(8):1211–25. <https://doi.org/10.1007/s10802-008-9244-6>.
47. Abrahams ME, Junger M, Chavannes EL, Coelman FJ, Boer F, Lindauer RJ. Parent-child interaction therapy for preschool children with disruptive behaviour problems in the Netherlands. *Child Adolesc Psychiatry Ment Health.* 2012;6:24. <https://doi.org/10.1186/1753-2000-6-24>.
48. Levac AM, McCay E, Merka P, Reddon-D'Arcy ML. Exploring parent participation in a parent training program for children's aggression: understanding and illuminating mechanisms of change. *J Child Adolesc Psychiatr Nurs.* 2008;21(2):78–88. <https://doi.org/10.1111/j.1744-6171.2008.00135.x>.
49. Hutchings J. Evaluating a behaviourally based parent training group: outcomes for parents, children and health visitors. *Behav Cogn Psychother.* 1996;24(2):149–70. <https://doi.org/10.1017/S1532465800017410>.
50. McCabe K, Yeh M. Parent-child interaction therapy for Mexican Americans: a randomized clinical trial. *J Clin Child Adolesc Psychol.* 2009;38(5):753–9. <https://doi.org/10.1080/15374410903103544>.
51. McGilloway S, Mhaille GN, Bywater T, Furlong M, Leckey Y, Kelly P, et al. A parenting intervention for childhood behavioral problems: a randomized controlled trial in disadvantaged community-based settings. *J Consult Clin Psychol.* 2012;80(1):116–27. <https://doi.org/10.1037/a0026304>.
52. Beeber L, Holditch-Davis D, Belyea M, Funk S, Canuso R. In-home intervention for depressive symptoms with low-income mothers of infants and toddlers in the United States. *Health Care Women Int.* 2004;25(6):561–80. <https://doi.org/10.1080/07399330490444830>.
53. B uhler A, K otter C, Jaurisch S, L osel F. Prevention of familial transmission of depression: EFFEKT-E, a selective program for emotionally burdened families. *J Public Health.* 2011;19(4):321–7. <https://doi.org/10.1007/s10389-011-0423-5>.
54. Duggan AK, Berlin LJ, Cassidy J, Burrell L, Tandon SD. Examining maternal depression and attachment insecurity as moderators of the impacts of home visiting for at-risk mothers and infants. *J Consult Clin Psychol.* 2009;77(4):788–99. <https://doi.org/10.1037/a0015709>.
55. Stevens-Simon C, Nelligan D, Kelly L. Adolescents at risk for mistreating their children: part II: a home-and clinic-based prevention program. *Child Abuse Negl.* 2001;25(6):753–69. [https://doi.org/10.1016/S0145-2134\(01\)00237-X](https://doi.org/10.1016/S0145-2134(01)00237-X).

56. Armstrong KL, Fraser JA, Dadds MR, Morris J. A randomized, controlled trial of nurse home visiting to vulnerable families with newborns. *J Paediatr Child Health*. 1999;35(3):237–44. <https://doi.org/10.1046/j.1440-1754.1999.00348.x>.
57. Barnett B, Joffe A, Duggan AK, Wilson MD, Repke JT. Depressive symptoms, stress, and social support in pregnant and postpartum adolescents. *Arch Pediatr Adolesc Med*. 1996;150(1):64–9. <https://doi.org/10.1001/archpedi.1996.02170260068011>.
58. Mayers HA, Hager-Budny M, Buckner EB. The chances for children teen parent–infant project: results of a pilot intervention for teen mothers and their infants in inner city high schools. *Infant Ment Health J*. 2008;29(4):320–42. <https://doi.org/10.1002/imhj.20182>.
59. Klein Velderman M, Bakermans-Kranenburg MJ, Juffer F, Van Ijzendoorn MH, Mangelsdorf SC, Zevalkin J. Preventing preschool externalizing behavior problems through video-feedback intervention in infancy. *Infant Ment Health J*. 2006;27(5):466–93. <https://doi.org/10.1002/imhj.20104>.
60. Leifer M, Wax LC, Leventhal-Belfer L, Fouchia A, Morrison M. The use of multitreatment modalities in early intervention: a quantitative case study. *Infant Ment Health J*. 1989;10(2):100–16.
61. Osofsky JD, Kronenberg M, Hammer JH, Lederman JC, Katz L, Adams S, et al. The development and evaluation of the intervention model for the Florida Infant Mental Health Pilot Program. *Infant Ment Health J*. 2007;28(3):259–80. <https://doi.org/10.1002/imhj.20135>.
62. Baydar N, Reid MJ, Webster-Stratton C. The role of mental health factors and program engagement in the effectiveness of a preventive parenting program for Head Start mothers. *Child Dev*. 2003;74(5):1433–53. <https://doi.org/10.1111/1467-8624.00616>.
63. Beeber LS, Perreira KM, Schwartz T. Supporting the mental health of mothers raising children in poverty. *Ann N Y Acad Sci*. 2008;1136(1):86–100. <https://doi.org/10.1196/annals.1425.008>.
64. Butz AM, Pulsifer M, Marano N, Belcher H, Lears MK, Royall R. Effectiveness of a home intervention for perceived child behavioral problems and parenting stress in children with in utero drug exposure. *Arch Pediatr Adolesc Med*. 2001;155(9):1029–37. <https://doi.org/10.1001/archpedi.155.9.1029>.
65. Fletcher R. Promoting infant well-being in the context of maternal depression by supporting the father. *Infant Ment Health J*. 2009;30(1):95–102. <https://doi.org/10.1002/imhj.20205>.
66. Franz M, Wehrauch L, Schäfer R. PALME: a preventive parental training program for single mothers with preschool aged children. *J Public Health*. 2011;19(4):305–19. <https://doi.org/10.1007/s10389-011-0396-4>.
67. Lieberman AF, Weston DR, Pawl JH. Preventive intervention and outcome with anxiously attached dyads. *Child Dev*. 1991;62(1):199–209. <https://doi.org/10.1111/j.1467-8624.1991.tb01525.x>.
68. Maguin E, Zucker RA, Fitzgerald HE. The path to alcohol problems through conduct problems: a family-based approach to very early intervention with risk. *J Res Adolesc*. 1994;4(2):249–69. https://doi.org/10.1207/s15327795jra0402_5.
69. Nye CL, Zucker RA, Fitzgerald HE. Early intervention in the path to alcohol problems through conduct problems: treatment involvement and child behavior change. *J Consult Clin Psychol*. 1995;63(5):831–40. <https://doi.org/10.1037/0022-006X.63.5.831>.
70. Suchman NE, DeCoste C, Castiglioni N, McMahon TJ, Rounsaville B, Mayes L. The Mothers and Toddlers Program, an attachment-based parenting intervention for substance using women: post-treatment results from a randomized clinical pilot. *Attach Hum Dev*. 2010;12(5):483–504. <https://doi.org/10.1080/14616734.2010.501983>.
71. Caramlau I, Barlow J, Sembi S, McKenzie-McHarg K, McCabe C. Mums 4 Mums: structured telephone peer-support for women experiencing postnatal depression. Pilot and exploratory RCT of its clinical and cost effectiveness. *Trials*. 2011;12:88. <https://doi.org/10.1186/1745-6215-12-88>.
72. Clark R, Tluczek A, Brown R. A mother–infant therapy group model for postpartum depression. *Infant Ment Health J*. 2008;29(5):514–36. <https://doi.org/10.1002/imhj.20189>.
73. Gjerdingen D, Crow S, McGovern P, Miner M, Center B. Stepped care treatment of postpartum depression: impact on treatment, health, and work outcomes. *J Am Board Fam Med*. 2009;22(5):473–82. <https://doi.org/10.3122/jabfm.2009.05.080192>.
74. Leve LD, Harold GT, Ge X, Neiderhiser JM, Shaw D, Scaramella LV, et al. Structured parenting of toddlers at high versus low genetic risk: two pathways to child problems. *J Am Acad Child Adolesc Psychiatry*. 2009;48(11):1102–9. <https://doi.org/10.1097/CHI.0b013e3181b8bfc0>.
75. Milgrom J, Erickson J, McCarthy R, Gemmill AW. Stressful impact of depression on early mother–infant relations. *Stress Health*. 2006;22(4):229–38. <https://doi.org/10.1002/smi.1101>.
76. Milgrom J, Schembri C, Erickson J, Ross J, Gemmill AW. Towards parenthood: an antenatal intervention to reduce depression, anxiety and parenting difficulties. *J Affect Disord*. 2011;130(3):385–94. <https://doi.org/10.1016/j.jad.2010.10.045>.
77. Nanzer N, Rossignol AS, Righetti-Veltima M, Knauer D, Manzano J, Espasa FP. Effects of a brief psychoanalytic intervention for perinatal depression. *Arch Womens Ment Health*. 2012;15(4):259–68. <https://doi.org/10.1007/s00737-012-0285-z>.
78. Newman L, Stevenson C. Issues in infant—parent psychotherapy for mothers with Borderline Personality Disorder. *Clin Child Psychol Psychiatry*. 2008;13(4):505–14. <https://doi.org/10.1177/1359104508096766>.
79. Price AM, Wake M, Ukoumunne OC, Hiscock H. Five-year follow-up of harms and benefits of behavioral infant sleep intervention: randomized trial. *Pediatrics*. 2012;130(4):643–51. <https://doi.org/10.1542/peds.2011-3467>.
80. Rahman A, Malik A, Sikander S, Roberts C, Creed F. Cognitive behaviour therapy-based intervention by community health workers for mothers with depression and their infants in rural Pakistan: a cluster-randomised controlled trial. *Lancet*. 2008;372(9642):902–9. [https://doi.org/10.1016/S0140-6736\(08\)61400-2](https://doi.org/10.1016/S0140-6736(08)61400-2).
81. Reynolds AJ, Ou SR. Paths of effects from preschool to adult well-being: a confirmatory analysis of the Child-Parent Center Program. *Child Dev*. 2011;82(2):555–82. <https://doi.org/10.1111/j.1467-8624.2010.01562.x>.
82. Beardslee WR, Ayoub C, Avery MW, Watts CL, O’Carroll KL. Family Connections: an approach for strengthening early care systems in facing depression and adversity. *Am J Orthopsychiatry*. 2010;80(4):482–95. <https://doi.org/10.1111/j.1939-0025.2010.01051.x>.
83. Bosquet M, Egeland B. Associations among maternal depressive symptomatology, state of mind and parent and child behaviors: implications for attachment-based interventions. *Attach Hum Dev*. 2001;3(2):173–99. <https://doi.org/10.1080/14616730010058007>.
84. Brotman LM, Klein RG, Kamboukos D, Brown EJ, Coard SI, Sosinsky LS. Preventive intervention for urban, low-income preschoolers at familial risk for conduct problems: a randomized pilot study. *J Clin Child Adolesc Psychol*. 2003;32(2):246–57. https://doi.org/10.1207/S15374424JCCP3202_10.
85. Cappelman MW, Thompson RJ, DeRemer-Sullivan PA, King AA, Sturm JM. Effectiveness of a home based early intervention program with infants of adolescent mothers. *Child Psychiatry Hum Dev*. 1982;13(1):55–65. <https://doi.org/10.1007/BF00709982>.
86. Eckenrode J, Ganzel B, Henderson CR Jr, Smith E, Olds DL, Powers J, et al. Preventing child abuse and neglect with a program of nurse home visitation: the limiting violence. *JAMA*. 2000;284(11):1385–91. <https://doi.org/10.1001/jama.284.11.1385>.
87. Eckenrode J, Zielinski D, Smith E, Marcynyszyn LA, Henderson CR Jr, Kitzman H, et al. Child maltreatment and the early onset of problem behaviors: can a program of nurse home visitation break the link? *Dev Psychopathol*. 2001;13(4):873–90.
88. Havighurst SS, Wilson KR, Harley AE, Prior MR, Kehoe C. Tuning in to Kids: improving emotion socialization practices in parents of preschool children—findings from a community trial. *J Child Psychol Psychiatry*. 2010;51(12):1342–50. <https://doi.org/10.1111/j.1469-7610.2010.02303.x>.
89. Lally RJ. Long range impact of an early intervention with low-income children & their families. The Syracuse University Family Development Research Program. New York: Grant Foundation; 1987.
90. Olds DL, Eckenrode J, Henderson CR, Kitzman H, Powers J, Cole R, et al. Long-term effects of home visitation on maternal life course and child abuse and neglect: fifteen-year follow-up of a randomized trial. *JAMA*. 1997;278(8):637–43. <https://doi.org/10.1001/jama.1997.03550080047038>.
91. Reynolds AJ, Temple JA, White BA, Ou SR, Robertson DL. Age 26 cost–benefit analysis of the child–parent center early education program. *Child Dev*. 2011;82(1):379–404. <https://doi.org/10.1111/j.1467-8624.2010.01563.x>.
92. Reynolds AJ, Temple JA, Ou SR, Robertson DL, Mersky JP, Topitzes JW, et al. Effects of a school-based, early childhood intervention on adult health and well-being: a 19-year follow-up of low-income families. *Arch Pediatr Adolesc Med*. 2007;161(8):730–9. <https://doi.org/10.1001/archpedi.161.8.730>.

93. Cooper PJ, Landman M, Tomlinson M, Molteno C, Swartz L, Murray L. Impact of a mother—infant intervention in an indigent peri-urban South African context. *Br J Psychiatry*. 2002;180(1):76–81. <https://doi.org/10.1192/bjp.180.1.76>.
94. Cooper PJ, Tomlinson M, Swartz L, Landman M, Molteno C, Stein A, et al. Improving quality of mother-infant relationship and infant attachment in socioeconomically deprived community in South Africa: randomised controlled trial. *BMJ*. 2009;338:b974. <https://doi.org/10.1136/bmj.b974>.
95. Melhuish E, Belsky J, Leyland AH, Barnes J. The National Evaluation of Sure Start Research Team. Effects of fully-established Sure Start Local Programmes on 3-year-old children and their families living in England: a quasi-experimental observational study. *Lancet*. 2008;372(9650):1641–7. [https://doi.org/10.1016/S0140-6736\(08\)61687-6](https://doi.org/10.1016/S0140-6736(08)61687-6).
96. Schwarz DF, O'Sullivan AL, Guinn J, Mautone JA, Carlson EC, Zhao H, et al. Promoting early intervention referral through a randomized controlled home-visiting program. *J Early Interv*. 2012;34(1):20–39. <https://doi.org/10.1177/1053815112451849>.
97. Asscher JJ, Hermans J, Deković M. Effectiveness of the home-start parenting support program: behavioral outcomes for parents and children. *Infant Ment Health J*. 2008;29(2):95–113. <https://doi.org/10.1002/imhj.20171>.
98. Bierman KL, Domitrovich CE, Nix RL, Gest SD, Welsh JA, Greenberg MT, et al. Promoting academic and social-emotional school readiness: The Head Start REDI program. *Child Dev*. 2008;79(6):1802–17. <https://doi.org/10.1111/j.1467-8624.2008.01227.x>.
99. Bradley RH, McKelvey LM, Whiteside-Mansell L. Does the quality of stimulation and support in the home environment moderate the effect of early education programs? *Child Dev*. 2011;82(6):2110–22. <https://doi.org/10.1111/j.1467-8624.2011.01659.x>.
100. Duggan A, Fuddy L, Burrell L, Higman SM, McFarlane E, Windham A, et al. Randomized trial of a statewide home visiting program to prevent child abuse: impact in reducing parental risk factors. *Child Abuse Negl*. 2004;28(6):623–43. <https://doi.org/10.1016/j.chiabu.2003.08.008>.
101. Fergusson DM, Grant H, Horwood LJ, Ridder EM. Randomized trial of the Early Start program of home visitation. *Pediatrics*. 2005;116(6):e803–9. <https://doi.org/10.1542/peds.2005-0948>.
102. Fleming D, McDonald L, Drummond J, Kysela GM, Watson SL. Parent training: can intervention improve parent-child interactions? *Except Educ Can*. 2005;15(2):77–100.
103. Ford RM, McDougall SJ, Evans D. Parent-delivered compensatory education for children at risk of educational failure: improving the academic and self-regulatory skills of a Sure Start preschool sample. *Br J Psychol*. 2009;100(4):773–97. <https://doi.org/10.1348/000712609X406762>.
104. Gardner F, Shaw DS, Dishion TJ, Burton J, Supplee L. Randomized prevention trial for early conduct problems: effects on proactive parenting and links to toddler disruptive behavior. *J Fam Psychol*. 2007;21(3):398–406. <https://doi.org/10.1037/0893-3200.21.3.398>.
105. Gessner BD. The effect of Alaska's home visitation program for high-risk families on trends in abuse and neglect. *Child Abuse Negl*. 2008;32(3):317–33. <https://doi.org/10.1016/j.chiabu.2007.08.004>.
106. Gill AM, Hyde LW, Shaw DS, Dishion TJ, Wilson MN. The family check-up in early childhood: a case study of intervention process and change. *J Clin Child Adolesc Psychol*. 2008;37(4):893–904. <https://doi.org/10.1080/15374410802359858>.
107. Gormley WT Jr, Phillips DA, Newmark K, Welts K, Adelstein S. Social-emotional effects of early childhood education programs in Tulsa. *Child Dev*. 2011;82(6):2095–109. <https://doi.org/10.1111/j.1467-8624.2011.01648.x>.
108. Hoffman KT, Marvin RS, Cooper G, Powell B. Changing toddlers' and preschoolers' attachment classifications: the circle of security intervention. *J Consult Clin Psychol*. 2006;74(6):1017–26. <https://doi.org/10.1037/0022-006X.74.6.1017>.
109. Kaminski RA, Stormshak EA, Good RH III, Goodman MR. Prevention of substance abuse with rural head start children and families: results of project STAR. *Psychol Addict Behav*. 2002;16(4S):S11–26. <https://doi.org/10.1037/0893-164X.16.4S.11>.
110. Love JM. Effects of early head start prior to kindergarten entry: the importance of early experience. In: *Society for Research on Educational Effectiveness*; 2010.
111. Roggman LA, Boyce LK, Cook GA. Keeping kids on track: impacts of a parenting-focused Early Head Start program on attachment security and cognitive development. *Early Educ Dev*. 2009;20(6):920–41. <https://doi.org/10.1080/10409280903118416>.
112. Sheridan SM, Knoche LL, Edwards CP, Bovaird JA, Kupzyk KA. Parent engagement and school readiness: effects of the Getting Ready intervention on preschool children's social-emotional competencies. *Early Educ Dev*. 2010;21(1):125–56. <https://doi.org/10.1080/10409280902783517>.
113. Caldera D, Burrell L, Rodriguez K, Crowne SS, Rohde C, Duggan A. Impact of a state-wide home visiting program on parenting and on child health and development. *Child Abuse Negl*. 2007;31(8):829–52. <https://doi.org/10.1016/j.chiabu.2007.02.008>.
114. Bernard K, Dozier M, Bick J, Lewis-Morrarty E, Lindhiem O, Carlson E. Enhancing attachment organization among maltreated children: results of a randomized clinical trial. *Child Dev*. 2012;83(2):623–36. <https://doi.org/10.1111/j.1467-8624.2011.01712.x>.
115. Harnett PH, Dawe S. Reducing child abuse potential in families identified by social services: implications for assessment and treatment. *Brief Treat Crisis Interv*. 2008;8(3):226–35. <https://doi.org/10.1093/brief-treatment/mhn010>.
116. Irueste-Montes AM, Montes F. Court-ordered vs. voluntary treatment of abusive and neglectful parents. *Child Abuse Negl*. 1988;12(1):33–9. [https://doi.org/10.1016/0145-2134\(88\)90005-1](https://doi.org/10.1016/0145-2134(88)90005-1).
117. Moss E, Dubois-Comtois K, Cyr C, Tarabulsy GM, St-Laurent D, Bernier A. Efficacy of a home-visiting intervention aimed at improving maternal sensitivity, child attachment, and behavioral outcomes for maltreated children: a randomized control trial. *Dev Psychopathol*. 2011;23(1):195–210. <https://doi.org/10.1017/S0954579410000738>.
118. Sanders MR, Pidgeon AM, Gravestock F, Connors MD, Brown S, Young RW. Does parental attributional retraining and anger management enhance the effects of the Triple P-Positive Parenting Program with parents at risk of child maltreatment? *Behav Ther*. 2004;35(3):513–35. [https://doi.org/10.1016/S0005-7894\(04\)80030-3](https://doi.org/10.1016/S0005-7894(04)80030-3).
119. Matthey S, Kavanagh DJ, Howie P, Barnett B, Charles M. Prevention of postnatal distress or depression: an evaluation of an intervention at preparation for parenthood classes. *J Affect Disord*. 2004;79(1–3):13–26. [https://doi.org/10.1016/S0165-0327\(02\)00362-2](https://doi.org/10.1016/S0165-0327(02)00362-2).
120. Morrell CJ, Warner R, Slade P, Dixon S, Walters S, Paley G, et al. Psychological interventions for postnatal depression: cluster randomised trial and economic evaluation. The PoNDER trial. *Health Technol Assess*. 2009;13(30):1–53. <https://doi.org/10.3310/hta13300>.
121. Fisher J, Rowe H, Feekery C. Temperament and behaviour of infants aged 4–12 months on admission to a private mother–baby unit and at 1- and 6-month follow-up. *Clin Psychol*. 2004;8(1):15–21. <https://doi.org/10.1080/13284200410001672928>.
122. Nicholson JM, Berthelsen D, Williams KE, Abad V. National study of an early parenting intervention: implementation differences on parent and child outcomes. *Prev Sci*. 2010;11(4):360–70. <https://doi.org/10.1007/s11211-010-0181-6>.
123. Tachibana Y, Fukushima A, Saito H, Yoneyama S, Ushida K, Yoneyama S, et al. A new mother-child play activity program to decrease parenting stress and improve child cognitive abilities: a cluster randomized controlled trial. *PLoS One*. 2012;7:e38238. <https://doi.org/10.1371/journal.pone.0038238>.
124. Bagner DM, Rodríguez GM, Blake CA, Rosa-Olivares J. Home-based preventive parenting intervention for at-risk infants and their families: an open trial. *Cogn Behav Pract*. 2013;20(3):334–48. <https://doi.org/10.1016/j.cbpra.2012.08.001>.
125. Hahlweg K, Heinrichs N, Kuschel A, Bertram H, Naumann S. Long-term outcome of a randomized universal prevention trial through a positive parenting program: is it worth the effort? *Child Adolesc Psychiatry Ment Health*. 2010;4:14. <https://doi.org/10.1186/1753-2000-4-14>.
126. Somech LY, Elizur Y. Promoting self-regulation and cooperation in pre-kindergarten children with conduct problems: a randomized controlled trial. *J Am Acad Child Adolesc Psychiatry*. 2012;51(4):412–22. <https://doi.org/10.1016/j.jaac.2012.01.019>.
127. Barkley RA, Shelton TL, Crosswait C, Moorehouse M, Fletcher K, Barrett S, et al. Multi-method psycho-educational intervention for preschool children with disruptive behavior: preliminary results at post-treatment. *J Child Psychol Psychiatry*. 2000;41(3):319–32. <https://doi.org/10.1111/1469-7610.00616>.
128. Feinberg ME, Kan ML. Establishing family foundations: intervention effects on coparenting, parent/infant well-being, and parent-child relations. *J Fam Psychol*. 2008;22(2):253. <https://doi.org/10.1037/0893-3200.22.2.253>.
129. Gross D, Fogg L, Tucker S. The efficacy of parent training for promoting positive parent—toddler relationships. *Res Nurs Health*. 1995;18(6):489–99. <https://doi.org/10.1002/nur.4770180605>.

130. Matos M, Bauermeister JJ, Bernal G. Parent-child interaction therapy for Puerto Rican preschool children with ADHD and behavior problems: a pilot efficacy study. *Fam Process*. 2009;48(2):232–52. <https://doi.org/10.1111/j.1545-5300.2009.01279.x>.
131. Morawska A, Sanders MR. Self-administered behavioural family intervention for parents of toddlers: effectiveness and dissemination. *Behav Res Ther*. 2006;44(12):1839–48. <https://doi.org/10.1016/j.brat.2005.11.015>.
132. Posthumus JA, Raaijmakers MA, Maassen GH, Van Engeland H, Matthys W. Sustained effects of incredible years as a preventive intervention in preschool children with conduct problems. *J Abnorm Child Psychol*. 2012; 40(4):487–500. <https://doi.org/10.1007/s10802-011-9580-9>.
133. Rapee RM, Kennedy S, Ingram M, Edwards S, Sweeney L. Prevention and early intervention of anxiety disorders in inhibited preschool children. *J Consult Clin Psychol*. 2005;73(3):488–97. <https://doi.org/10.1037/0022-006X.73.3.488>.
134. Cunningham CE, Bremner R, Boyle M. Large group community-based parenting programs for families of preschoolers at risk for disruptive behaviour disorders: utilization, cost effectiveness, and outcome. *J Child Psychol Psychiatry*. 1995;36(7):1141–59. <https://doi.org/10.1111/j.1469-7610.1995.tb01362.x>.
135. Elliot J, Prior M, Merrigan C, Ballinger K. Evaluation of a community intervention programme for preschool behaviour problems. *J Paediatr Child Health*. 2002;38(1):41–50. <https://doi.org/10.1046/j.1440-1754.2002.00713.x>.
136. Kotler JS, McMahon RJ. Compliance and noncompliance in anxious, aggressive, and socially competent children: the impact of the child's game on child and maternal behavior. *Behav Ther*. 2004;35(3):495–512. [https://doi.org/10.1016/S0005-7894\(04\)80029-7](https://doi.org/10.1016/S0005-7894(04)80029-7).
137. Lavigne JV, LeBailly SA, Gouze KR, Cicchetti C, Pochyly J, Arend R, et al. Treating oppositional defiant disorder in primary care: a comparison of three models. *J Pediatr Psychol*. 2008;33(5):449–61. <https://doi.org/10.1093/jpepsy/jsm074>.
138. Lavigne JV, LeBailly SA, Gouze KR, Binns HJ, Keller J, Pate L. Predictors and correlates of completing behavioral parent training for the treatment of oppositional defiant disorder in pediatric primary care. *Behav Ther*. 2010; 41(2):198–211. <https://doi.org/10.1016/j.beth.2009.02.006>.
139. Bradley SJ, Jadaa DA, Brody J, Landy S, Tallett SE, Watson W, et al. Brief psychoeducational parenting program: an evaluation and 1-year follow-up. *J Am Acad Child Adolesc Psychiatry*. 2003;42(10):1171–8. <https://doi.org/10.1097/00004583-200310000-00007>.
140. Brotman LM, Gouley KK, Chesir-Teran D, Dennis T, Klein RG, Shrout P. Prevention for preschoolers at high risk for conduct problems: immediate outcomes on parenting practices and child social competence. *J Clin Child Adolesc Psychol*. 2005;34(4):724–34. https://doi.org/10.1207/s15374424jccp3404_14.
141. Brotman LM, Gouley KK, Huang KY, Rosenfelt A, O'Neal C, Klein RG, et al. Preventive intervention for preschoolers at high risk for antisocial behavior: long-term effects on child physical aggression and parenting practices. *J Clin Child Adolesc Psychol*. 2008;37(2):386–96. <https://doi.org/10.1080/15374410801955813>.
142. Havighurst SS, Harley A, Prior M. Building preschool children's emotional competence: a parenting program. *Early Educ Dev*. 2004;15(4):423–48. https://doi.org/10.1207/s15566935eed1504_5.
143. Havighurst SS, Wilson KR, Harley AE, Prior MR. Tuning in to kids: an emotion-focused parenting program—initial findings from a community trial. *J Community Psychol*. 2009;37(8):1008–23. <https://doi.org/10.1002/jcop.20345>.
144. Huang HL, Chao CC, Tu CC, Yang PC. Behavioral parent training for Taiwanese parents of children with attention-deficit/hyperactivity disorder. *Psychiatry Clin Neurosci*. 2003;57(3):275–81. <https://doi.org/10.1046/j.1440-1819.2003.01117.x>.
145. Joachim S, Sanders MR, Turner KM. Reducing preschoolers' disruptive behavior in public with a brief parent discussion group. *Child Psychiatry Hum Dev*. 2010;41(1):47. <https://doi.org/10.1007/s10578-009-0151-z>.
146. Lenze SN, Pautsch J, Luby J. Parent-child interaction therapy emotion development: a novel treatment for depression in preschool children. *Depress Anxiety*. 2011;28(2):153–9. <https://doi.org/10.1002/da.20770>.
147. Altmeyer E, Maloney R. An initial evaluation of a mindful parenting program. *J Clin Psychol*. 2007;63(12):1231–8. <https://doi.org/10.1002/jclp.20395>.
148. Gwynne K, Blick BA, Duffy GM. Pilot evaluation of an early intervention programme for children at risk. *J Paediatr Child Health*. 2009;45(3):118–24. <https://doi.org/10.1111/j.1440-1754.2008.01439.x>.
149. Hourihan F, Hoban D. Learning, enjoying, growing, support model: an innovative collaborative approach to the prevention of conduct disorder in preschoolers in hard to reach rural families. *Aust J Rural Health*. 2004;12(6): 269–76. <https://doi.org/10.1111/j.1440-1854.2004.00622.x>.
150. Leung C, Tsang S, Dean S. Outcome evaluation of the hands-on parent empowerment (HOPE) program. *Res Soc Work Pract*. 2011;21(5):549–61. <https://doi.org/10.1177/1049731511404904>.
151. Milford R, Kleve L, Lea J, Greenwood R. A pilot evaluation study of the Solihull approach. *Community Pract*. 2006;79(11):358–62.
152. Bagner DM, Eyberg SM. Father involvement in parent training: when does it matter? *J Clin Child Adolesc Psychol*. 2003;32(4):599–605. https://doi.org/10.1207/S15374424JCCP3204_13.
153. Fernandez MA, Butler AM, Eyberg SM. Treatment outcome for low socioeconomic status African American families in parent-child interaction therapy: a pilot study. *Child Family Behav Ther*. 2011;33(1):32–48. <https://doi.org/10.1080/07317107.2011.545011>.
154. Funderburk BW, Eyberg SM, Newcomb K, McNeil CB, Hembree-Kigin T, Capage L. Parent-child interaction therapy with behavior problem children: maintenance of treatment effects in the school setting. *Child Family Behav Ther*. 1998;20(2):17–38. https://doi.org/10.1300/J019v20n02_02.
155. Nixon RD, Sweeney L, Erickson DB, Touyz SW. Parent-child interaction therapy: one-and two-year follow-up of standard and abbreviated treatments for oppositional preschoolers. *J Abnorm Child Psychol*. 2004; 32(3):263–71. <https://doi.org/10.1023/B:JACP.0000026140.60558.05>.
156. Phillips J, Morgan S, Cawthorne K, Barnett B. Pilot evaluation of parent-child interaction therapy delivered in an Australian community early childhood clinic setting. *Aust N Z J Psychiatry*. 2008;42(8):712–9. <https://doi.org/10.1080/0004867080206320>.
157. Wadsby M. Can early intervention have an impact on future life? A study of life events, social interaction, and child behavior among mothers at psychosocial risk and their children eight years after interaction treatment. *J Fam Soc Work*. 2012;15(1):78–95. <https://doi.org/10.1080/10522158.2012.640910>.
158. Luby J, Lenze S, Tillman R. A novel early intervention for preschool depression: findings from a pilot randomized controlled trial. *J Child Psychol Psychiatry*. 2012;53(3):313–22. <https://doi.org/10.1111/j.1469-7610.2011.02483.x>.
159. Zimerman AL. Evidence-based medicine: a short history of a modern medical movement. *Virtual Mentor*. 2013;15(1):71–6. <https://doi.org/10.1001/virtualmentor.2013.15.1.mhst1-1301>.
160. Nakamura BJ, Chorpita BF, Hirsch M, Daleiden E, Slavin L, Amundson MJ, et al. Large-scale implementation of evidence-based treatments for children 10 years later: Hawaii's evidence-based services initiative in children's mental health. *Clin Psychol Sci Pract*. 2011;18(1):24–35. <https://doi.org/10.1111/j.1468-2850.2010.01231.x>.
161. Roffwarg EN, Sander LW. In: Shapiro T, editor. *Infant psychiatry: a new synthesis*. Yale University Press; 1976.
162. Ghera MM, Marshall PJ, Fox NA, Zeanah CH, Nelson CA, Smyke AT, et al. The effects of foster care intervention on socially deprived institutionalized children's attention and positive affect: results from the BEIP study. *J Child Psychol Psychiatry*. 2009;50(3):246–53. <https://doi.org/10.1111/j.1469-7610.2008.01954.x>.
163. Smyke AT, Zeanah CH, Fox NA, Nelson CA, Guthrie D. Placement in foster care enhances quality of attachment among young institutionalized children. *Child Dev*. 2010;81(1):212–23. <https://doi.org/10.1111/j.1467-8624.2009.01390.x>.
164. Smyke AT, Zeanah CH, Gleason MM, Drury SS, Fox NA, Nelson CA, et al. A randomized controlled trial comparing foster care and institutional care for children with signs of reactive attachment disorder. *Am J Psychiatr*. 2012; 169(5):508–14. <https://doi.org/10.1176/appi.ajp.2011.11050748>.
165. Nikapota A, Rutter M. Sociocultural/ethnic groups and psychopathology. In: Rutter M, Bishop D, Pine D, Scott S, Stevenson J, Taylor E, Thapar A, editors. *Rutter's Child and Adolescent Psychiatry*. 5th ed. New York: Wiley Publications; 2008. p. 199–211.
166. Iverson C. US medical journal editors' attitudes toward submissions from other countries. *Sci Ed*. 2002;25(3):75–8.
167. Maj M. Promoting research in developing countries: the role of the World Psychiatric Association. *South Afr Psychiatry Rev*. 2005;8:117–8.
168. Singh D. Publication bias—a reason for the decreased research output in developing countries. *South Afr Psychiatry Rev*. 2006;9(3):153–5. <https://doi.org/10.4314/ajpsy.v9i3.30216>.

169. Kersten-Alvarez LE, Hosman CM, Riksen-Walraven JM, Van Doesum K, Hoefnagels C. Long-term effects of a home-visiting intervention for depressed mothers and their infants. *J Child Psychol Psychiatry*. 2010;51(10):1160–70. <https://doi.org/10.1111/j.1469-7610.2010.02268.x>.
170. Salomonsson B, Sandell R. A randomized controlled trial of mother–infant psychoanalytic treatment: II. Predictive and moderating influences of qualitative patient factors. *Infant Ment Health J*. 2011;32(3):377–404. <https://doi.org/10.1002/imhj.20302>.
171. Salomonsson B, Sandell R. A randomized controlled trial of mother–infant psychoanalytic treatment: I. Outcomes on self-report questionnaires and external ratings. *Infant Ment Health J*. 2011;32(2):207–31. <https://doi.org/10.1002/imhj.20291>.
172. Grossman J, Mackenzie FJ. The randomized controlled trial: gold standard, or merely standard? *Perspect Biol Med*. 2005;48(4):516–34. <https://doi.org/10.1353/pbm.2005.0092>.
173. Gorman DM, Conde E. The making of evidence-based practice: the case of Project ALERT. *Child Youth Serv Rev*. 2010;32(2):214–22. <https://doi.org/10.1016/j.chilgyouth.2009.08.018>.
174. Wright BJ, Zhang SX, Farabee D. A squandered opportunity? A review of SAMHSA's national registry of evidence-based programs and practices for offenders. *Crime Delinq*. 2012;58(6):954–72. <https://doi.org/10.1177/0011128710376302>.
175. Black MM, Dubowitz H, Krishnakumar A, Starr RH. Early intervention and recovery among children with failure to thrive: follow-up at age 8. *Pediatrics*. 2007;120(1):59–69. <https://doi.org/10.1542/peds.2006-1657>.
176. Long P, Forehand R, Wierson M, Morgan A. Does parent training with young noncompliant children have long-term effects? *Behav Res Ther*. 1994;32(1):101–7. [https://doi.org/10.1016/0005-7967\(94\)90088-4](https://doi.org/10.1016/0005-7967(94)90088-4).
177. Pawson R, Greenhalgh T, Harvey G, Walshe K. Realist review—a new method of systematic review designed for complex policy interventions. *J Health Serv Res Policy*. 2005;10(suppl 1):21–34. <https://doi.org/10.1258/1355819054308530>.
178. Zechmeister I, Kilian R, McDaid D. Is it worth investing in mental health promotion and prevention of mental illness? A systematic review of the evidence from economic evaluations. *BMC Public Health*. 2008;8:20. <https://doi.org/10.1186/1471-2458-8-20>.
179. Tremblay RE. Prevention of youth violence: Why not start at the beginning? *J Abnorm Child Psychol*. 2006;34(4):480–6. <https://doi.org/10.1007/s10802-006-9038-7>.
180. Bayer JK, Hiscock H, Morton-Allen E, Ukoumunne OC, Wake M. Prevention of mental health problems: rationale for a universal approach. *Arch Dis Child*. 2007;92(1):34–8. <https://doi.org/10.1136/adc.2006.100776>.
181. Dadds MR, Roth JH. Prevention of anxiety disorders: results of a universal trial with young children. *J Child Fam Stud*. 2008;17(3):320–35. <https://doi.org/10.1007/s10826-007-9144-3>.
182. Zero to Three. Diagnostic classification of mental health and developmental disorders of infancy and early childhood (rev). Washington: Zero to Three; 2005.
183. Zeanah CH, Carter A, Cohen J, Egger H, Keren M, Gleason MM, et al. [DC:0-3R Revision Task Force]. “DC:0–3” to “DC:0-3R” to “DC:0–5”: a new edition. *Zero Three J*. 2015;35(3):63–6.
184. Fitzgerald HE, Bocknek EL, Hossain Z, Roggman L. Reflections on fathers and infant mental health. *Infant Ment Health J*. 2015;36(1):75–7. <https://doi.org/10.1002/imhj.21494>.
185. Abikoff HB, Thompson M, Laver-Bradbury C, Long N, Forehand RL, Brotman LM, et al. Parent training for preschool ADHD: a randomized controlled trial of specialized and generic programs. *J Child Psychol Psychiatry*. 2015;56(6):618–31. <https://doi.org/10.1111/jcpp.12346>.
186. Ansari A, Lopez M, Manfra L, Bleiker C, Dinehart LHB, Hartman SC, et al. Differential third-grade outcomes associated with attending publicly funded preschool programs for low-income Latino children. *Child Dev*. 2017;88(5):1743–56. <https://doi.org/10.1111/cdev.12663>.
187. Bain K. “New Beginnings” in South African shelters for the homeless: Piloting of a group psychotherapy intervention for high-risk mother–infant dyads. *Infant Ment Health J*. 2014;35(6):591–603. <https://doi.org/10.1002/imhj.21457>.
188. Baker CE. Maternal depression and the development of executive function and behavior problems in Head Start: Indirect effects through parenting. *Infant Ment Health J*. 2018;39(2):134–44. <https://doi.org/10.1002/imhj.21698>.
189. Baker M, Biringen Z, Meyer-Parsons B, Schneider A. Emotional attachment and emotional availability tele-intervention for adoptive families. *Infant Ment Health J*. 2015;36(2):179–92. <https://doi.org/10.1002/imhj.21498>.
190. Bernard K, Simons R, Dozier M. Effects of an attachment-based intervention on child protective services-referred mothers event-related potentials to children's emotions. *Child Dev*. 2015;86(6):1673–84. <https://doi.org/10.1111/cdev.12418>.
191. Bierman KL, Nix RL, Heinrichs BS, Domitrovich CE, Gest SD, Welsh JA, et al. Effects of Head Start REDI on children's outcomes 1 year later in different kindergarten contexts. *Child Dev*. 2014;85(1):140–59. <https://doi.org/10.1111/cdev.12117>.
192. Bierman KL, Welsh JA, Heinrichs BS, Nix RL, Mathis ET. Helping Head Start parents promote their children's kindergarten adjustment: The research-based developmentally informed parent program. *Child Dev*. 2015;86(6):1877–91. <https://doi.org/10.1111/cdev.12448>.
193. Cassibba R, Castoro G, Costantino E, Sette G, Van Ijzendoorn MH. Enhancing maternal sensitivity and infant attachment security with video feedback: an exploratory study in Italy. *Infant Ment Health J*. 2015;36(1):53–61. <https://doi.org/10.1002/imhj.21486>.
194. Cho Y, Hirose T, Tomita N, Shirakawa S, Murase K, Komoto K, et al. Infant mental health intervention for preterm infants in Japan: promotions of maternal mental health, mother–infant interactions, and social support by providing continuous home visits until the corrected infant age of 12 Months. *Infant Ment Health J*. 2013;34(1):47–59. <https://doi.org/10.1002/imhj.21352>.
195. Cooper BR, Lanza ST. Who benefits most from Head Start? Using latent class moderation to examine differential treatment effects. *Child Dev*. 2014;85(6):2317–38. <https://doi.org/10.1111/cdev.12278>.
196. Ericksen J, Loughlin E, Holt C, Rose N, Hartley E, Buultjens M, et al. A therapeutic playgroup for depressed mothers and their infants: feasibility study and pilot randomized trial of community hugs. *Infant Ment Health J*. 2018;39(4):396–409. <https://doi.org/10.1002/imhj.21723>.
197. Fonagy P, Sled M, Bardon T. Randomized controlled trial of parent–infant psychotherapy for parents with mental health problems and young infants. *Infant Ment Health J*. 2016;37(2):97–114. <https://doi.org/10.1002/imhj.21553>.
198. Guedeney A, Wendland J, Dugravier R, Saïas T, Tubach F, Welniarz B, et al. Impact of a randomized home-visiting trial on infant social withdrawal in the CAPEDP prevention study. *Infant Ment Health J*. 2013;34(6):594–601. <https://doi.org/10.1002/imhj.21413>.
199. Harden BJ, Denmark N, Holmes A, Duchene M. Detached parenting and toddler problem behavior in Early Head Start families. *Infant Ment Health J*. 2014;35(6):529–43. <https://doi.org/10.1002/imhj.21476>.
200. Horwitz SM, Leibovitz A, Lilo E, Jo B, Debattista A, St. John N, Shaw RJ. Does an intervention to reduce maternal anxiety, depression and trauma also improve mothers' perceptions of their preterm infants' vulnerability? *Infant Ment Health J*. 2015 Jan;36(1):42–52. <https://doi.org/10.1002/imhj.21484>.
201. Huber A, McMahon CA, Sweller N. Efficacy of the 20-week circle of security intervention: changes in caregiver reflective functioning, representations, and child attachment in an Australian clinical sample. *Infant Ment Health J*. 2015;36(6):556–74.
202. Husted JT, Vu JA, Bargreen KN, Hallam RA, Han M. Early head start families' experiences with stress: understanding variations within a high-risk, low-income sample. *Infant Ment Health J*. 2017;38(5):602–16.
203. Keys TD, Farkas G, Burchinal MR, Duncan GJ, Vandell DL, Li W, Ruzek EA, Howes C. Preschool center quality and school readiness: quality effects and variation by demographic and child characteristics. *Child Dev*. 2013 Jul;84(4):1171–90.
204. Landsem IP, Handegård BH, Ulvund SE, Tunby J, Kaaresen PI, Rønning JA. Does an early intervention influence behavioral development until age 9 in children born prematurely? *Child Dev*. 2015 Jul;86(4):1063–79.
205. Lange AM, Daley D, Frydenberg M, Houmann T, Kristensen LJ, Rask C, Sonuga-Barke E, Søndergaard-Baden S, Udupi A, Thomsen PH. Parent training for preschool ADHD in routine, specialist care: a randomized controlled trial. *J Am Acad Child Adolesc Psychiatry*. 2018;57(8):593–602.
206. Lecannelier F, Silva JR, Hoffmann M, Melo R, Morales R. Effects of an intervention to promote socioemotional development in terms of attachment security: a study in early institutionalization in Chile. *Infant Ment Health J*. 2014;35(2):151–9.
207. Lester P, Liang LJ, Milburn N, Mogil C, Woodward K, Nash W, Aralis H, Sinclair M, Semaan A, Klosinski L, Beardslee W. Evaluation of a family-centered preventive intervention for military families: parent and child longitudinal outcomes. *J Am Acad Child Adolesc Psychiatry*. 2016;55(1):14–24.

208. Mihelic M, Morawska A, Filus A. Does a perinatal parenting intervention work for fathers? A randomized controlled trial. *Infant Ment Health J.* 2018;39(6):687–98.
209. Miller EB, Farkas G, Vandell DL, Duncan GJ. Do the effects of head start vary by parental preacademic stimulation? *Child Dev.* 2014;85(4):1385–400.
210. Morgan AJ, Rapee RM, Salim A, Goharpey N, Tamir E, McLellan LF, Bayer JK. Internet-delivered parenting program for prevention and early intervention of anxiety problems in young children: randomized controlled trial. *J Am Acad Child Adolesc Psychiatry.* 2017;56(5):417–25.
211. Julian MM, Muzik M, Kees M, Valenstein M, Rosenblum KL. Strong military families intervention enhances parenting reflectivity and representations in families with young children. *Infant Ment Health J.* 2018;39(1):106–18.
212. Novins DK, Ferron C, Abramson L, Barlow A. Addressing substance-use problems in tribal home visiting. *Infant Ment Health J.* 2018;39(3):287–94.
213. Ogg J, Shaffer-Hudkins E, Childres J, Feldman M, Agazzi H, Armstrong K. Attendance and implementation of strategies in a behavioral parent-training program: comparisons between English and Español programs. *Infant Ment Health J.* 2014;35(6):555–64.
214. Ordway M, McMahon TJ, De Las Heras Kuhn L, Suchman NE. Implementation of an evidence-based parenting program in a community mental health setting. *Infant Ment Health J.* 2018;39(1):92–105.
215. Paschall KW, Mastergeorge AM. A longitudinal, person-centered analysis of Early Head Start mothers' parenting. *Infant Ment Health J.* 2018;39(1):70–84.
216. Pereira M, Negrão M, Soares I, Mesman J. Decreasing harsh discipline in mothers at risk for maltreatment: a randomized control trial. *Infant Ment Health J.* 2014;35(6):604–13.
217. Presnall N, Webster-Stratton CH, Constantino JN. Parent training: equivalent improvement in externalizing behavior for children with and without familial risk. *J Am Acad Child Adolesc Psychiatry.* 2014;53(8):879–87.
218. Rapee RM. The preventative effects of a brief, early intervention for preschool-aged children at risk for internalising: follow-up into middle adolescence. *J Child Psychol Psychiatry.* 2013;54(7):780–8.
219. Sadler LS, Slade A, Close N, Webb DL, Simpson T, Fennie K, Mayes LC. Minding the baby: Enhancing reflectiveness to improve early health and relationship outcomes in an interdisciplinary home-visiting program. *Infant Ment Health J.* 2013;34(5):391–405.
220. Salomonsson MW, Sorjonen K, Salomonsson B. A long-term follow-up of a randomized controlled trial of mother–infant psychoanalytic treatment: outcomes on the children. *Infant Ment Health J.* 2015;36(1):12–29.
221. Salomonsson MW, Sorjonen K, Salomonsson B. A long-term follow-up study of a randomized controlled trial of mother–infant psychoanalytic treatment: outcomes on mothers and interactions. *Infant Ment Health J.* 2015;36(6):542–55.
222. Sidor A, Kunz E, Eickhorst A, Cierpka M. Effects of the early prevention program “Keiner faellt durchs Netz” (“Nobody slips through the net”) on child, mother, and their relationship: a controlled study. *Infant Ment Health J.* 2013;34(1):11–24.
223. Sourander A, McGrath PJ, Ristkari T, Cunningham C, Huttunen J, Hinkka-Yli-Salomäki S, Kurki M, Lingley-Pottie P. Two-year follow-up of internet and telephone assisted parent training for disruptive behavior at age 4. *J Am Acad Child Adolesc Psychiatry.* 2018;57(9):658–68.
224. Moher D, Liberati A, Tetzlaff J, Altman DG, Prisma Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med.* 2009;6(7):1–6. <https://doi.org/10.1371/journal.pmed.1000097>.

Ready to submit your research? Choose BMC and benefit from:

- fast, convenient online submission
- thorough peer review by experienced researchers in your field
- rapid publication on acceptance
- support for research data, including large and complex data types
- gold Open Access which fosters wider collaboration and increased citations
- maximum visibility for your research: over 100M website views per year

At BMC, research is always in progress.

Learn more biomedcentral.com/submissions

