



Research article

The role of women in the field of early intervention

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ARTICLE INFO

Keywords:

Early intervention
Gender perspective
Role women
Early childhood intervention

ABSTRACT

This study examines the intersection of early intervention and the role of women as primary caregivers for children with disabilities. Studies for this analysis were collected through a meticulous search in the Web of Science (WoS) and Scopus databases. This process ensured the inclusion of a wide range of relevant literature from the field of study. A rigorous procedure of identification, selection, eligibility assessment, and inclusion of potentially relevant studies in this research area was conducted. We analyzed 130 articles, identifying 8 key research areas. Significant factors include the impact on parental interactions, communication skills, the role of women in developmental disabilities, mothers' understanding of their children's disabilities, emotional overload, parental stress, and psychological aspects. These factors significantly affect the well-being and development of mothers and children with disabilities. The study also considers the impact on women's careers. While research on psychological aspects and maternal overload is well-developed, establishing early intervention systems to optimize resources for proper child development is a challenge. The findings have high social value, paving the way for improving the quality of early childhood services.

1. Introduction

Studies on early intervention from theoretical and empirical viewpoints have identified the significant role played by women as primary caregivers and continual supporters of the child throughout their life cycle. However, research into this topic is variable and all aspects related to gender are significantly scarce. The fact that gender-related research is scarce is indicative of a low level of scientific production, particularly given the importance of women's role in this developmental stage [1]. The purpose of this bibliometric study is to objectify this reality and propose a starting point for future research by identifying the primary dimensions investigated thus far. Thus, this study examines the influence of select research pathways on the perception of women's role in the field of early intervention. The emerging, consolidated and influential themes are delineated.

Research in recent years has substantiated the efficacy of family-centered theoretical models in early intervention [2,3], highlighting the vital role families play in promoting their children's development, education, and social involvement. In recent decades, professionals working within early intervention have prioritized involving families or primary caregivers in learning opportunities during daily activities and natural environments, and in their interactions with support networks [4]. Theoretical models propose that children learn through interactions with the environment, not solely through professional actions [5]. Recent research has revealed a

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paradigm shift in which the family becomes the most influential factor in a child's learning and development, thus affecting quality of life and family well-being positively [6]. This paradigm shift, based on sufficient scientific evidence [7,8], advocates for family-centered early childhood intervention (ECI) practices developed within natural contexts. It promotes a suitable alignment between the requirements of family routines and the skills possessed by the family [4]. Currently, interventions aim to enhance the skills and abilities of parents or primary caregivers through the engagement and support of ECI professionals during their daily interactions with the child. Women play a crucial role in child-rearing [9]. Moreover, they predominantly participate in ECI research as respondents in questionnaires and interviews conducted in various studies [10].

Despite the proposed change in early childhood intervention (ECI) to shift the focus onto parents, research in this field indicates that the main caregiver, typically the mother, remains the primary participant and protagonist in most of the studies conducted [11]. However, most of the analyzed publications refer to parents in a generic sense. Several studies have examined the contrasting demands and stressors, anxiety levels, and coping strategies between parents with disabled children and parents with typically developing children [9,12–15]. The majority of research participants are mothers, as shown by multiple studies focused on this topic, such as the research by Ref. [16], which analyzed a sample of which 84 % were mothers. Other studies confirming this observation include [17–20].

The availability of social support to families represents a crucial determining factor in ECI and the management of parenting a child with disabilities. Numerous studies indicate that this factor is positively related to the quality of life of parents [4,21]. Specifically, the benefits provided by the different types of support received by the main caregiver, who is typically the mother in most of the cases investigated [22], have been analyzed.

Effective collaboration between parents and professionals, along with satisfaction with early care services, are key factors in children's development [23]. Thus, parenting support programs that reinforce emotional availability, parents' sense of competence, social connectedness, and empowerment can strengthen relationships with children, which in turn supports development [24]. In addition, parents' functional performance may decrease the frequency of contact with early care services for their children. This is because, as parents develop and gain more experience with child disability, it becomes easier for them to function in the childcare setting [25]. This is why parental empowerment and development can have a significant impact on both the relationship with their children and the effectiveness of the use of early care services [26,27].

Numerous studies have investigated mother–child interactions [28] and emphasized the significance of maternal presence in establishing a conducive environment for communicating with children who have not yet developed symbolic language. Additionally, studies have analyzed the importance of mothers in the early detection of children with Autism Spectrum Disorder [29].

The prevalence of maternal figures in ECI studies can be attributed to the cultural expectations placed upon women in Western societies, as they are typically assigned the role of primary caregivers [30]. Women are socialized to develop their parenting skills, often resulting in them taking on the primary role in child-rearing [31]. The maternal role is influenced by the mother's socio-demographic variables, including age, education, employment, and caregiving time for her child [32]. As a result, it may be argued that mothers still devote the most time to their children's care [10].

Conversely, certain studies state that time spent on mother–child interactions may not guarantee quality time, as these interactions may be perceived as obligatory due to surrounding parenting circumstances, leading to heightened levels of stress in mothers or an unsatisfactory parenting style [33]. In many households, women are burdened with both childcare and household care while working outside the home. This situation is prevalent across most of the countries examined [34], and co-responsibility for household tasks is not a common practice.

Several bibliometric analyses have recently examined early intervention [1,35], but considering the aforementioned context, it is essential to investigate articles published in Web of Science and Scopus that explore the role of women in early care. The primary objective of this research is 1) to identify the most impactful research areas that have shaped the scientific understanding of the role of women in the field of early intervention. These factors play a pivotal role in child development, care, and stimulation activities. Therefore, examining the significant factors and areas that influence women's participation in the field of early intervention for children with disabilities is crucial for developing appropriate actions within the field of early intervention. Furthermore, this study aims 2) to examine the current state of research on gender perspectives in early intervention, with a particular emphasis on the role of women. To accomplish this, we will conduct a comprehensive analysis of scientific publications from the last decades, identifying authors who have made substantial contributions to the understanding of the role of women in early care and the impact of their work. Another specific objective is 3) to identify the journals that have published the most research on this topic and their respective impact factors. Additionally, we will examine the primary research areas related to the role of women in early intervention and the predominant research trends. The goal is to gain a comprehensive understanding of existing research related to women's involvement in early intervention, thus contributing to the advancement of knowledge in this area. Finally, another specific objective of this research is 4) to strategically analyze the areas of research related to early intervention and the role of the mother in this sector. The findings of this study have significant social value, as they have the potential to improve the quality of early childhood services.

2. Method

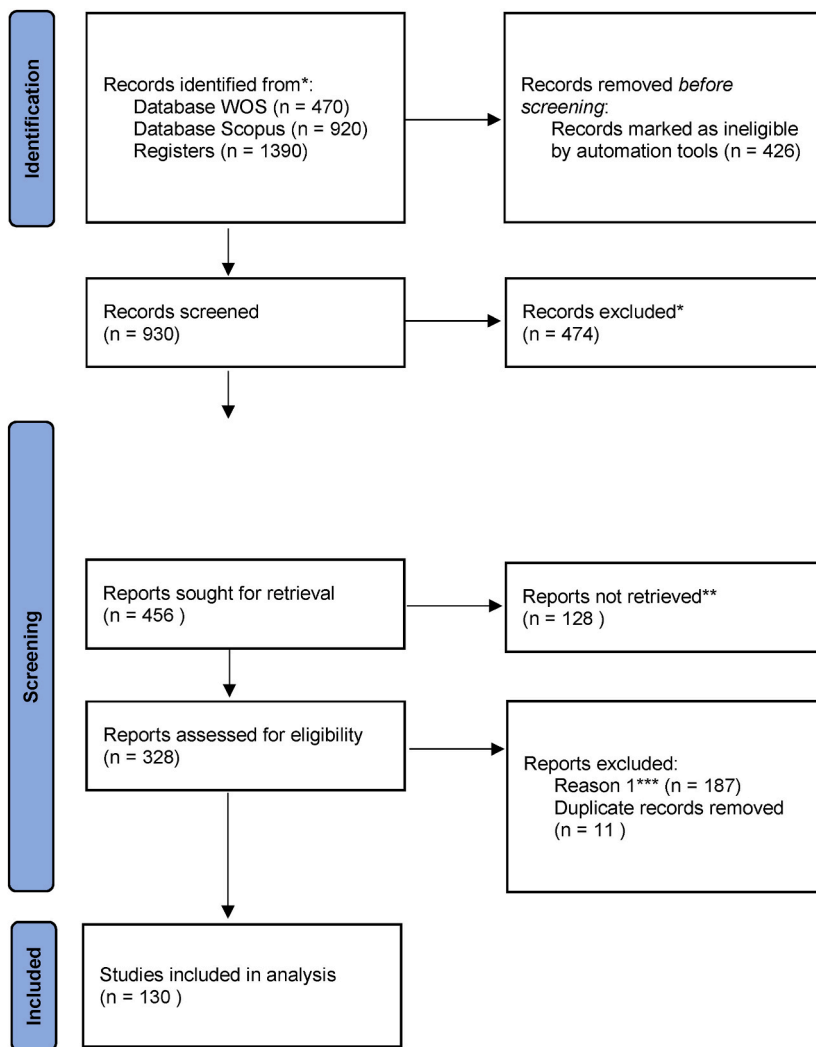
All peer-reviewed articles indexed in the Web of Science Core Collection™ (SSCI, SCI-Expanded) and Scopus that pertain to the contribution of women in early care were investigated. Within the framework of the WOS search, the subsequent string of keywords, related to this subject matter, was employed: ((disab*) AND ("early + intervention*" OR "early + childhood + intervention*") AND (mother* OR matern*OR woman*OR mom*OR mom* OR gender*)). The chosen terms indicate the relationship between women's role in parenting and other pertinent factors that impact their early intervention. The literature searched is in English, composed of reviews

and scientific articles. Results do not include book chapters, editorials, or edited volumes. The search was initially set with a publication limit of October 2023, and it yielded a total of 470 articles.

The search was conducted in the Scopus database, using the appropriate format— (TITLE-ABS-KEY (disability) AND TITLE-ABS-KEY ("early intervention" OR "early childhood intervention") AND TITLE TITLE TITLE-ABS-KEY (mother OR maternal OR woman OR mom OR gender)). The search parameters excluded book chapters, editorials, and edited volumes. The search was conducted with a publication limit of October 2023, resulting in a total of 920 articles.

2.1. Inclusion and exclusion criteria

The authors adhered to a process of excluding any articles that were deemed irrelevant to the topic reviewed (eligibility). To ensure methodological rigor and transparency throughout the review process [36,37], they employed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework. To ensure a correct evaluation of the quality of the collected studies, we chose to evaluate the topic of early intervention, and also focused on those studies that referred to the role of women in this field. During the screening process (n = 1260), any inappropriate articles relating to early care, not related to disability or not discussing women’s roles within the field, were omitted. A total of 130 articles were identified as relevant after evaluating the titles, keywords, and abstracts of the remaining articles in the third step. These articles met the inclusion criteria for the final database analysis. Fig. 1 illustrates the



*Records excluded: do not refer to the issue of early intervention.

** Reports not retrieved: access not available.

***Reason 1: no specific reference to women's issues.

Fig. 1. Flow diagram.

process, in accordance with the considerations of [38].

2.2. Data analysis

After retrieving the data from WOS in plain text and in Bibtext format in Scopus, we identified and normalized the duplicate and unknown data. This crucial step ensured the accuracy and consistency of the data used for subsequent analysis. The study employed a variety of techniques, including bibliographic relevance, discourse analysis, and historical analysis. The technique based on bibliographic relevance was utilized in the establishment of relationships from the reference analysis of the selected articles in accordance with the informed search criteria. The second technique, discourse analysis, is summarized in the interpretation of the results of the bibliographic coupling analysis, which uses citation analysis to establish similarity relationships between searched documents. Thirdly, the historical analysis technique is evidenced by the annual evolution of publications, in addition to the analysis of average citations per article. In the general information section, the annual growth rate of publications is also shown. The objective was to identify interrelated themes and emphasize emerging areas of research within the dataset. The deployment of these strategies allowed academics to comprehend the interrelatedness between various research sectors, consequently pinpointing viable prospects for prospective investigations. To facilitate this exploration, standard keywords were employed to scrutinize themes that merited further development in the field of study.

Researchers were able to prioritize specific areas and allocate resources accordingly, focusing on common themes. The data collected were analyzed using R Studio v.3.4.1 software and the Bibliometrix package [39]. R Studio facilitated the import and organization of data into bibliometric tables, providing researchers with essential tools to analyze search terms, along with various analytical techniques [1,35].

One advantage of implementing this software is the utilization of bibliographic coupling analysis, offering a dependable and consistent method of detecting significant research articles. Unlike trend analysis, which may be affected by implementation timing, bibliographic coupling analysis remains constant over time. This tool possesses great capabilities in identifying pertinent interconnections between research fields. By contrast, trend analysis enables the identification of research themes and methodologies employed in the arena of early healthcare. The objective was to gauge the similarity among articles through the scrutiny of the number of repeated references cited.

3. Results

The investigation for the study in the WoS and Scopus database garnered 130 articles, published in 88 journals by 377 researchers hailing from 25 countries. Each document was cited 24.1 times on average. In total, 686 keywords and 305 author keywords were detected. The average number of authors per document was 0.26 and the average collaboration rate was 3.28. The annual growth rate for this subject stood at 4.06 %. Further comprehensive findings of the study can be found in Table 1.

3.1. Basic indicators

This initial segment outlines fundamental indicators. The evolution of papers and quotes by year will be presented, followed by the number of works and quotations categorized according to author, institution, and country, as well as the journals used. Lastly, we will examine how authors' keywords have evolved over time.

3.1.1. Years

The quantity of publications on this topic has escalated with time, despite there being only a sum of 31 documents prior to the year 2004. However, the last two decades have witnessed a significant surge in the number of published works. Based on quotation

Table 1
Main information searched in the WoS and Scopus databases.

Basic information	
Journals	88
Articles	130
Average citations per document	24.1
References	3086
Simplified keywords (ID)	686
Author's keywords (DE)	305
Authors	377
Single-authored document authors	22
Multi-authored document authors	108
Countries	25
Documents per author	0.26
Co-authors per document	3.28
Annual growth rate	4.06 %

frequency, articles published in 2006 and 2012 (eight each), 2014 (seven), and 2007, 2013, and 2023 (six each) have the highest publication rates. The average number of citations per article was highest in the years 2006 (47.38), 2008 (45.25), and 2007 (44.67). The evolution of this trend can be observed in Fig. 2.

3.1.2. Authors

A total of 377 academics have published at least one article about the role of women in early care. However, the researcher with the greatest number of publications is Hauser-Cram (5). Following this, Krauss (72), Baker (61.34) and Blacher (61.34) have the highest LCS/Nb index values. The results are displayed in Table 2.

On the other hand, Baker (GCS = 4652) and Krauss (GCS = 2190) are the first and second most widely cited authors. It is worth noting that Krauss (LCS = 139), Baker (LCS = 119), Blacher (LCS = 119) and Hauser-Cram (LCS = 114) have over 100 citations in their publications relating to this topic. In terms of the authors' h-index values, Baker has a standout h-index of 33, with publications dating back to 1997.

3.1.3. Journals

In total, 88 journals have published at least one article on this topic, with 4 of them publishing more than four articles. Topics in Early Childhood Special Education has the highest number of published articles, with a total of nine. Additionally, it has received relatively few local citations (LCS = 140). Next, two journals, Journal of Early Intervention (LCS = 104) and Research in Developmental Disabilities (LCS = 125), have each published five articles.

However, based on the list of journals that have published a minimum of three articles and their respective impact factors in 2022, the Child Development journal holds the highest impact factor (JCR = 4.6; SJR = 2.13). Following in second place is Research in Developmental Disabilities (JCR = 3.1; SJR = 0.77) and in third place is Topics in Early Childhood Special Education (JCR = 2.1; SJR = 0.62).

3.2. Thematic analysis

This second section presents the outcomes of the thematic analysis. Initially, the bibliographic coupling analysis is presented, followed by a strategic diagram illustrating the various topics obtained in the search.

3.2.1. Bibliographic coupling

A bibliographic linkage analysis was conducted, specifying a minimum threshold of at least five citations. The Louvain clustering algorithm was employed resulting in the selection of 200 documents categorized into eight distinct clusters (one color per cluster). Then, for the purpose of content analysis, we selected only the most pertinent articles from each cluster based on the highest normalized local citation score. The resulting set is depicted in Fig. 3.

Red cluster (105 citations, 12 articles): Importance of parent-child interactions.

This cluster comprises 12 articles and 105 locally sourced dates. Its focus is on the objective study of how parent-child interactions in the context of disabilities can affect a child's development. One noteworthy work is that by Ref. [10], which provides a meticulous analysis of interactions between parents and their children with intellectual disabilities. This study specifically focuses on parental behaviors that have previously been identified as promoting child development. Additionally, the study explores the relationships between upbringing and sociodemographic variables, providing a comprehensive overview of how these factors interact and influence child development. Other works, such as [40], evaluate the effectiveness of responsive education for children with disabilities and their

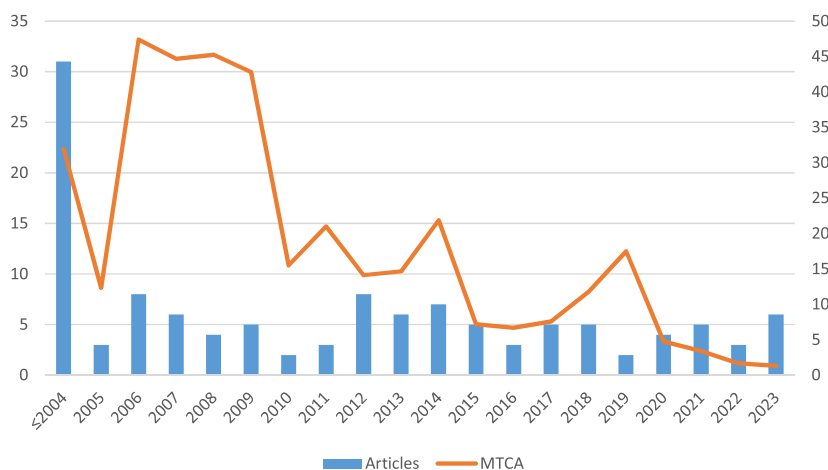


Fig. 2. Evolution of the number of articles and reviews published over the years and of the number of global citations (1978–2023). MTCA = Mean annual citations per article.

Table 2
Authors with the highest numbers of publications.

Author	Nb	h-index	PY	Institution	Lcs	Gcs	LCS/Nb
HAUSER-CRAM P	5	20	1999	Boston College	114	1608	22.8
BAKER B L	3	33	1997	University of California	184	4652	61.34
BLACHER J	3	14	2007	University of California	184	581	61.34
BRINKER R	3	8	1994	University of Illinois	92	260	30.67
KRAUSS M	3	22	1993	Brandeis University	216	2190	72
MAHONEY G	3	27	1992	Case Western Reserve University	57	1923	19
MARGALIT M	3	17	2006	Tel Aviv University	54	799	18
MITCHELL DB	3	16	2008	Boston College	46	665	15.34
377 authors	—	—	—	—	—	—	—

Note: Nb—articles numbers; PY—year of first publication; LCS—local citations; GCS—global citations.

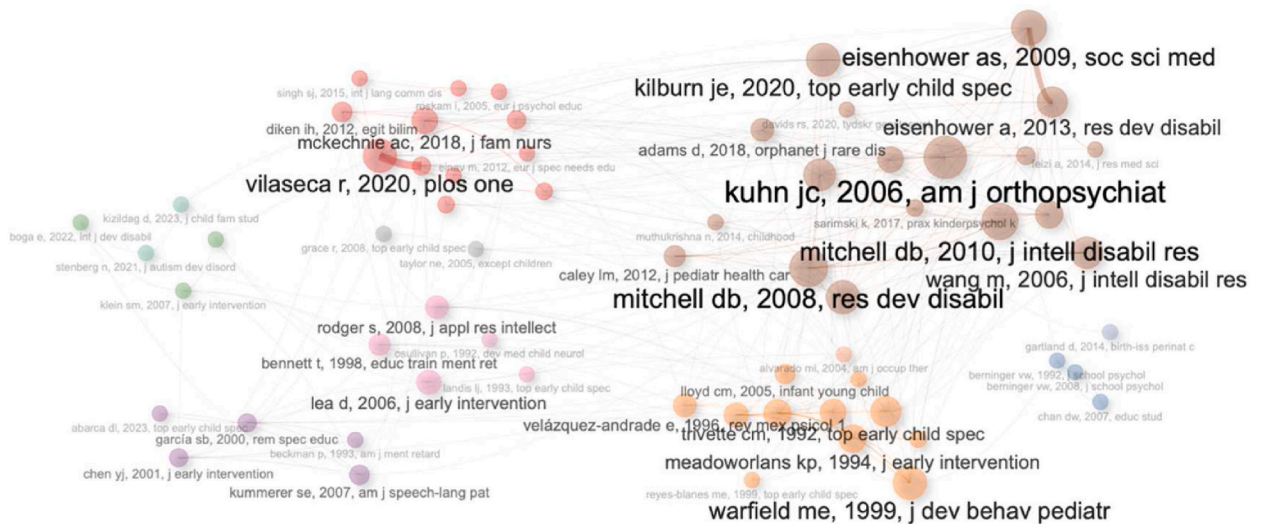


Fig. 3. Analysis of bibliographic coupling.

mothers. Responsive education is an aim of early childhood care that seeks to enhance children's development by urging parents to engage with them in a highly responsive manner. This method emphasizes the significance of parental interactions in aiding child development. The significance of parental interactions for the development of children with disabilities highlights their vital role in promoting optimal child development. This sheds valuable light on how these interactions can be supported and improved.

Green cluster (eight citations, three articles): Parenting role in the development of children with disabilities.

This cluster comprises three articles and encompasses eight dates globally. It examines the pivotal role that mothers play in caring for and advancing their children with developmental disabilities and complex communication requirements. Studies such as [41] outline the diverse parental responsibilities and roles that mothers undertake when caring for and supporting their children with developmental disabilities and complicated communication needs. These roles encompass guardianship, case management, discipline, nursing, and advocacy for home-based training. Despite the considerable commitment, this process meets several barriers. The mothers studied experienced conflicts of roles, tensions, and overload when trying to raise and provide intervention for their children with developmental disabilities. Additional studies, like [42], investigated the perspectives of employed mothers regarding their work in the early care field, their roles with other families, and the significance of such employment in their lives. Four key themes emerged from the analysis of the papers: the advantages of active listening and collaboration, the influence of personal experiences on career development and building trust with clients, the impact of the profession on personal and professional growth, and the acknowledgment of maternal perspectives by practitioners. Accordingly, this collection of papers underscores the vital role played by mothers in nurturing and supporting the development of their children with disabilities.

Purple cluster (103 citations, 5 articles): Understanding mothers' perceptions of causes and early intervention needs.

This cluster comprises five articles with a total of 103 dates globally. It investigates the perception and comprehension of mothers regarding their children's disabilities and the significance of tailored early intervention. Studies such as [43] delve into mothers' perceptions of their children's disabilities, the growth of emerging literacy, and therapy programs. Mothers perceived that the causes of their children's disabilities were multifaceted and often related to clinical or environmental factors. This study provides important insights into maternal perceptions and understandings of disabilities. Other studies, such as that of [44], have emphasized the importance of culturally sensitive, family-centered approaches to early intervention. A child's development is typically impacted by their environment, and thus parental views and expectations may diverge from those of professionals charged with their welfare. This

article aims to investigate mothers' views on disability from a sociocultural perspective and provide insights into the cultural norms that shape these perceptions. Consequently, this collection of studies highlights the importance of implementing sensitive interventions in early childhood environments while also acknowledging the impact of mothers' perceptions and understanding on this issue.

Orange cluster (411 citations, 11 articles): Stress and Early Intervention: Implications for Supporting mothers of Children with Disabilities.

This cluster comprises 11 articles and a total of 411 local dates, which analyze the stress related to the intervention and upbringing of children with disabilities. Initial insight into the subject is gained through works such as [45], which conducts a comprehensive investigation of the similarities and differences in the stress and parenting experiences of mothers and parents of children with disabilities. It was found that parents experienced more stress associated with their child's attitudes, whereas mothers reported more stress stemming from the personal implications of child-rearing. Moreover, notable distinctions were uncovered between mothers and fathers in terms of the most influential factors predicting stress related to childcare and child-rearing. Another study [46] examined the variation in child-related stress and upbringing among mothers of children with disabilities during the early childhood period. It also explored the degree to which specific aspects of the family environment can predict levels of stress. This field of research is vast and essential given the prevalence and significance of studies on parental stress in raising children with disabilities. Furthermore, there are ramifications for the creation of policies and methodologies in the domain of early intervention.

Brown cluster (599 citations, 22 articles): Psychological factors influencing mothers of children with disabilities.

This cluster comprises 22 articles with a global local dating of 599 dates. It is the largest cluster in the analysis and concentrates on the psychological factors linked to raising disabled children. Studies such as [47] examine psychological constructs, including the connection between maternal self-efficacy and parenting cognitions in mothers of autistic children. This study's findings indicate a linkage between self-efficacy, maternal well-being, and guilt. The study also emphasizes the significance of family-oriented healthcare aimed at facilitating parental well-being and parenting cognition to enhance self-efficacy perception. Previous research [48] highlights family life quality as an essential gauge for assessing the family outcomes of early intervention services. Finally, this study highlights that mothers' responses to the implicit constructs of family quality of life are similar, emphasizing the importance of evaluating multiple family members. As a result, mothers' psychological aspects greatly influence the development and intervention of children with disabilities.

Grey cluster (39 citations, 2 articles): Personal experiences for mothers in support for disabilities.

This cluster comprises two articles with a local and global citation count of 39. The cluster explores the personal experiences of mothers in raising children with disabilities and how their environment and circumstances affect these experiences [49]. presents experiences related to balancing work performance with the role of motherhood. This measure could be excessive, considering the employee's work responsibilities and the child's specific requirements [50]. conducted similar research, observing disabled children's mothers and caregivers. The findings reveal significant shortcomings in government policies and arrangements to promote the integration of disabled children into community services. This discovery emphasizes the necessity for more comprehensive policies and more successful support schemes. Thus, maternal experiences during the upbringing of children with disabilities empower them to evaluate the significance of the setting, coupled with their personal and occupational circumstances. Both investigations emphasize how these conditions may impact their capacity to offer interventions and support to their offspring.

Pink cluster (65 citations, 5 articles): Mothers' experiences for tailoring the well-being of children with disabilities.

This cluster comprises five articles and a total of 65 local citations. It highlights the influence of past experiences on the well-being and growth of mothers and children with disabilities. Certain studies, such as [51], emphasize the significance of taking into account the mother's life circumstances when assessing the child's well-being, and highlight the role that external factors play in the child's development. Other studies, like [52], examine how the perceptions of mothers toward the utility of early intervention professionals can impact their capacity to provide care and assistance to their children with disabilities. This study emphasizes the significance of professional support in raising children with disabilities. Furthermore, mothers' experiences and perceptions can be influenced by concerns about their child's development, which may consequently impact the child's performance. Therefore, it is vital to take into consideration the experiences and life circumstances of mothers when evaluating and supporting the development of children with disabilities. These factors can significantly affect the child's well-being and development, as well as the mother's capacity to provide care and support.

Blue cluster (306 citations, 3 articles): Impact of mothers on the development of written and verbal fluency skills in children with disabilities.

This cluster comprises three articles with a total of 306 dates worldwide. The focus is on the impact of maternal influence on children's written and verbal fluency, and how it affects the acquisition of relevant skills like vocabulary, narrative and confidence. [53], for example, analyzes oral fluency, written spelling fluency, and written composition in children with disabilities. This study indicates a significant correlation between spelling fluency, both oral and written, and the number of words and clauses used in compositions. Consequently, the importance of the role played by the family in this process, particularly the mother, is emphasized. Additional research assesses lecto-writing attainment in dyslexic children through various tests, highlighting potential adverse effects on parental communication due to reduced verbal fluency inhibition [54]. These cluster investigate the impacts of verbal and written abilities on communication skills for children with disabilities. The studies emphasize the significance of these abilities and offer useful perspectives on how they can be enhanced and supported to encourage the proper growth of the child. The different studies analyzed in this study show that the mother, through constant interactions with the baby in daily life activities, is the main stimulating agent (or the main support for stimulation) for the child's language development. This is probably due to her continuous interaction and care, her ability to understand the child's emotional states, and her development of strategies that respond to these states, i.e., giving

communicative (linguistic) support.

3.2.2. Strategic diagram

This analysis investigates the correlation between early intervention and the gender perspective. The analysis is of strategic value. The diagram below displays certain keywords with dot sizes proportional to their frequency of occurrence. The algorithm utilized for the clusters is Louvain's. A total of 150 words appeared at least three times within the clusters used to prepare the diagram. The upper left quadrant exhibits an abundance of specialized and specific fields, including autism spectrum disorders, developmental disabilities, and aspects pertaining to early childhood hearing impairment. In contrast, the upper right quadrant focuses on motor problems, showing well-established internal relationships but limited significant external relationships. Therefore, these topics warrant significant intervention, such as pertains to the stress faced by parents. It is assumed that the issue of intellectual disability plays a central role in the research and is one of the focal points around which it revolves. The lower left quadrant highlights emerging, declining, and interconnected questions that require further exploration. Among these, studies on childhood dyslexia seem to tend toward the top of this quadrant, thus broaching more specific areas of interest. The topics in the lower right quadrant are critical to the field of study, and they are advancing. This framework encompasses significant interdisciplinary and general topics, including early intervention, research into aspects related to child development, and, in a denser section, the study of the maternal perspective within the field of early intervention. It also highlights the role of mothers as the central axis of research within the same quadrant. Fig. 4 illustrates the findings mentioned above.

4. Discussion

This study revealed that the role of women in the early intervention setting has a significant impact on parent-child interactions and communication. It also identified specific challenges faced by mothers of children with disabilities and mothers' understanding of their child's condition. In addition, emotional strain, stress and psychological factors were identified as significant contributors. Collectively, these factors exert a profound influence on the well-being and developmental trajectories of both mothers and children with disabilities. Consequently, these factors can manifest themselves in various forms of physical and psychological health problems, as well as in the deterioration of family relationships and a reduction in the quality of life. This negative impact extends to children, who may experience delays in their overall development. It is therefore imperative to address these challenges in a comprehensive manner, implementing emotional support programs, child support groups and services, as well as specialized training. It is thus evident that early intervention is a fundamental component of any strategy designed to prevent or mitigate the adverse effects of stress, emotional distress, and their psychological correlates. Such an approach is crucial to ensuring well-being and facilitating optimal developmental trajectories within families. In addition, the review explores possible career implications for mothers.

Early intervention can enhance the abilities of children with disabilities to optimize their developmental potential, as well as their standard of living and social involvement. Access to top-quality early intervention services empowers all children to achieve their full potential [55]. Early intervention for children with disabilities is critically important and can exert a significant influence on various facets of child development [56,57]. Our study indicates that research related to child development is conducted on a global scale, with researchers from a variety of national and cultural backgrounds participating. Moreover, early intervention is one of the key thematic concerns, and it relates to the aim not only of enhancing the child's overall performance, but also of ensuring optimal outcomes for mothers and their environment. This reinforces the need for an appropriate process, which ultimately contributes to an improved

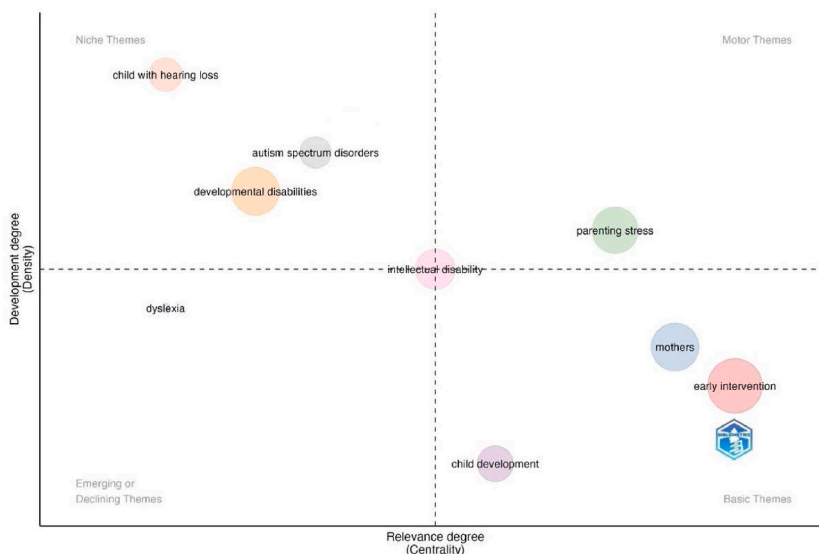


Fig. 4. Strategic diagram of issues related to early intervention and mothers' roles.

quality of life [58].

Several studies suggest that mothers take on the main caregiver role for children with disabilities [59–61]. From a multidimensional viewpoint, mothers offer necessary services and support by providing direct, immediate aid and assuming various responsibilities. This is emphasized by Ref. [62]. The involvement of the mother, as noted in our study, is supported by various factors, including verbal and written skills, as well as their perceptions and understandings of disability. As such, assimilating the knowledge of disability and its impact on development allows them to integrate strategies that foster support for their child's growth and learning. However, caregivers of children with disabilities often face numerous challenges that can lead to additional stress due to the care demands of the child's condition [33]. Thus, implementing early intervention systems enables mothers as primary caregivers, supporting them in their roles. Several studies highlight the need to review government policies and ensure adequate resources are available to safeguard caregivers in the field of early intervention [63].

In recent years, efforts have been made to streamline early intervention services. Tele-practice has emerged as a helpful tool for providing individualized intervention to families with children with disabilities [4]. However, further research is necessary in order to develop and optimize evidence-based practices in this field. Only 130 studies have analyzed the viewpoints of women in the early intervention field, indicating a shortage in evidence-based practices. Nevertheless, these practices have resulted in efficient systems for caring for children with disabilities and have promoted the engagement of families in the process [64].

Multiple studies suggest that mothers of children with disabilities may have lower levels of psychological well-being compared to other mothers due to different factors leading to moderate depressive symptoms [65]. This makes the mothers, who are primary caregivers of children with disabilities, a group that is vulnerable to psychological issues [66]. Our research emphasizes the prevalence of psychological aspects related to maternal care in the field of early childhood development. Recognizing the psychological factors involved in caring for disabled children can lead to an improved quality of family life. Early intervention strategies can therefore serve as a practical means of optimizing resources in addressing this psychological burden [48,67]. However, numerous studies have suggested that intensive home visits and intervention do not enhance maternal competence in relation to early intervention [68]. Additionally, outcomes that can be assessed from a gender perspective include the mother's sense of guilt or social isolation [69].

5. Conclusions

The study presented here delves into the different areas of the research field that have focused on the role of women in ECI. This analysis has numerous implications for early intervention services. Firstly, it reinforces approaches that give women a central role in the development of ECI programs, thus influencing the design, implementation, and evaluation of intervention strategies. The research findings concur in emphasizing the pivotal role of women in early intervention. This is evidenced in four key areas: 1) Active participation: women tend to be the most involved in seeking and utilizing early care services. 2) Greater dedication: mothers, on average, devote more hours to childcare and early intervention-related activities. 3) Monitoring and evaluation: women show greater participation in the monitoring and evaluation processes of interventions, ensuring their effectiveness. 4) Professional impact: In certain instances, early care may necessitate resignations or reductions in women's working hours, which can impede their professional development. Consequently, it can be posited that women are, in the majority of cases, the primary figure in the provision of early intervention services, particularly during the early stages of child development. Secondly, it highlights the need to reinforce the active role of women by influencing variables such as empowerment, support networks, activities of daily living, mother–child interaction, and family trust. Thirdly, the research results show that any ECI intervention must consider the potential risk of emotional overload, parental stress, or the strong limitations preventing the achievement of adequate family reconciliation or to preventing women from developing a full professional career.

This study underscores the relevance of early intervention to the dispositions of children with disabilities. The outcomes suggest that timely support not only enhances the prospects of such children in achieving their developmental potential, but also augments their quality of life and societal involvement. Furthermore, early intervention has been noted to markedly influence multiple components of child development, accentuating the necessity for top-notch early intervention services. In this context, mothers are crucial as primary caregivers, and their direct and immediate support is essential to ensure that their children receive the necessary services and support [70]. Nevertheless, this role may lead to psychological challenges due to the demands of the child's disability.

Setting up early intervention systems can provide valuable resources for mothers in their caregiving role. In recent years, we have seen the development of resources such as tele-practice that maximize the time invested in early intervention services. While these advancements provide promise, further evidence-based studies are necessary to advance and optimize this field [35]. This research emphasizes the significance of early intervention in the development of children who have disabilities, and the crucial role played by mothers in their primary attention. It is evident that promoting effective government policies and providing sufficient resources to support mothers in their caregiving role is crucial for ensuring the well-being and optimal development of their children.

This study provides an avenue for future research to concentrate on crafting early intervention systems that effectively involve families. Additionally, appraising the efficacy of current early intervention services is pertinent. This entails scrutinizing the quality of these services and their impact on both women and children with disabilities. Considering the pivotal role that mothers play as primary providers, it is imperative to explore the required support services in greater depth. This may entail an investigation into the government resources and policy implementations necessary to offer this assistance. Ultimately, the further examination of the causes of decreased psychological well-being and potential intervention strategies that can enhance this aspect is crucial.

This study has certain limitations that need to be acknowledged. Firstly, the reports of search items are scarce, indicating a need for more research on the subject in question. A deeper analysis of the institutions and co-authorship networks would also be beneficial. Furthermore, it should be noted that bibliometric analyses have inherent limitations, such as those concerning database coverage,

language bias, discipline bias, gender bias, methodology and metadata. Specifically, WoS and Scopus do not cover all existing publications, which may result in the omission of some relevant studies. These databases also show a bias toward English publications, potentially excluding relevant studies published in other languages. Certain disciplines may be over- or underrepresented in WoS and Scopus, affecting the results of the analysis. There may also be a gender bias in the publication and citation of articles. Bibliometrics, being a quantitative technique, cannot capture all the nuances and complexities of qualitative research. Lastly, the metadata provided by WoS and Scopus may contain errors or inconsistencies, which can affect the results of the analysis. Despite these limitations, this study demonstrates that the work carried out by different researchers can provide relevant information for the development of this field of research. This highlights the importance and value of such studies in contributing to our understanding and knowledge in this area.

Funding

This research was funded by the Regional Ministry of Innovation, Universities, Science, and Digital Society, the AICO 2022 Program, the I+D+i Project for Consolidated Research Groups, and the Capacitas Group (File CIAICO/2021/114).

Data availability

Data are not deposited in a publicly accessible repository. Data will be made available on request.

CRediT authorship contribution statement

Gabriel Martínez-Rico: Writing – original draft, Investigation, Funding acquisition, Conceptualization. **Joana Calero-Plaza:** Resources, Investigation, Data curation. **Julia Argente-Tormo:** Writing – original draft, Visualization, Validation. **Rómulo J. González-García:** Writing – review & editing, Validation, Software, Methodology.

Declaration of competing interest

The authors declare the following economic interests/personal relationships that can be considered as possible competing interests: Gabriel Martínez-Rico, principal investigator reports that the research group received economic support from the Generalitat Valenciana through the program I+D+i Project for Consolidated Research Groups (File CIAICO/2021/114).

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