

Communication interventions for high-risk infants: professionals' perspectives on establishing services in Sri Lanka

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ABSTRACT

Background Early intervention is critical for optimising outcomes in children with neurodevelopmental disorders. The International Classification of Functioning, Disability and Health (ICF) identifies the role of family, interventions through early detection and intervention services within environmental and personal factors. This study explored the perspectives of professionals regarding the implementation and effectiveness of family-centred early intervention within the Sri Lankan context and evaluated the applicability of the ICF model in this setting.

Methods A qualitative, phenomenological study was conducted with 30 professionals from healthcare and education settings. Participants were selected through purposive sampling based on their experience in child development. Data was collected through semistructured interviews, transcribed and analysed thematically to identify key themes and subthemes. The validity of the data was ensured through thick descriptions and member checking.

Results Analysis revealed that Sri Lankan early intervention practices show a positive trajectory, more emphasis is placed on the medical model and curative care, with less focus on preventive care and child activity and participation. Participants identified family-centred early intervention as a necessary and potentially effective approach for the Sri Lankan context. Key promoters included professional knowledge, environmental modifications and access to information, while socioeconomic barriers, limited resources and difficulties in implementing the ICF model effectively were challenges.

Conclusion The findings highlighted resources available within the Sri Lankan health and education system to introduce family-centred early intervention and identified families as a key resource as framed within the ICF model. Therefore, it is essential to adopt culturally sensitive methods to implement and sustain such programmes.

INTRODUCTION

Communication is a fundamental process through which individuals interact and exchange thoughts, emotions and information. It encompasses various modalities, including written and spoken language, sign language, facial expressions, gestures and art. Language development occurs sequentially, with children acquiring increasingly complex skills as they age. Early language skills provide

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Early intervention for high-risk infants has demonstrated positive outcomes in high-income settings, with less evidence from low and low-middle income settings and little emphasis on early communication strategies.

WHAT THIS STUDY ADDS

⇒ Professionals from Sri Lanka identified families as a key resource to deliver early intervention.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ It is necessary to identify the existing challenges and resources to provide early communication intervention through family centred practices.

the foundation for later development, facilitated by the formation of neural synapses in the developing brain. This time-sensitive process occurs during a specific critical period due to neural plasticity in the developing brain.¹ The role of the environment in nurturing this process of development, in contrast to the contribution by the natural potential of an infant due to the genetic makeup, is now well identified. Therefore, in this critical window period, the developing brain has the potential to repair and rewire even if it was subjected to any insults during the early fetal or infant growth. Hence, it is vital to consider the best interventions that will promote neural plasticity in such infants.

In recent decades, advancements in healthcare have led to a reduction in infant mortality rates in Sri Lanka with an increase in the survival rates of infants at risk for neurodevelopmental disorders (NDDs).² A significant proportion of these infants are subjected to perinatal and early infant risk factors. The majority of such children are likely to exhibit language and communication impairments, manifesting as communication disorders.³ It is estimated that 250 million children (43%) aged 5 years and under in low- and middle-income countries (LMICs) are at risk of not



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achieving their developmental potential.⁴ NDDs place a considerable burden on families, particularly in LMIC settings.⁵

The theory of neuroplasticity⁶ and evidence-based practices advocate for intensive, task-specific early interventions in enriched environments, using a family-centred approach.⁷ These interventions aim to optimise developmental potential by repairing and rewiring brain circuits, enabling children with NDDs to thrive rather than merely survive. The WHO introduced the International Classification of Functioning, Disability and Health for Children and Youth (ICF-CY) to establish a comprehensive framework for assessing the impact of activity, participation and environmental and personal factors on child development.⁸

Early intervention is most effective when initiated at birth, with neonatal therapy in the neonatal intensive care unit focused on promoting long-term development, preventing adverse outcomes and supporting the infant–family dyad.⁹ Key components of early intervention programmes, as discussed by Hutchon *et al*, include environmental enrichment, responsive parenting, communication, sensory development and motor learning.¹⁰ Research indicates that family-centred services are highly valued by both service providers and parents.¹¹

Despite the importance of early interventions, there is limited evidence from LMICs regarding their implementation and effectiveness.¹² A recent narrative review reports emerging evidence of early intervention from LMIC,¹³ Uganda. However, this is still undergoing feasibility.¹⁴

Therefore, this qualitative study was undertaken as a preliminary step to explore the perspectives of professionals on family-centred early intervention within the Sri Lankan context with the aim of developing an early intervention programme to promote speech, language and social communication skills in infants at high risk of developmental delay.

METHODS

Design

This study employed a qualitative, phenomenological design. The study aimed to gather insights into current practices and professional views on best practices in this field. Given the anticipated variation in resources, socioeconomic backgrounds and cultural contexts, participants were selected from diverse regions of the country and from the public and the private sector to ensure a broad range of experiences, views and opinions.

Sample

Participants were recruited through purposive sampling, a non-probability sampling method commonly used in qualitative research.¹⁵ Inclusion criteria required participants to have a minimum of 2 years of experience in child development. A total of 30 professionals from health and education domains, either in private or public sectors,

were included, meeting the minimum sample size requirements for qualitative analysis and fair participation selection. The study sample comprised professionals from various disciplines, including speech and language therapists, paediatricians, paediatric neurologists, neonatologists, ENT surgeons, child psychiatrists, nutritionists, physiotherapists, occupational therapists and educational specialists, all of whom work with children with developmental or communication needs.

Data collection and analysis

Data was generated using a semistructured topic guide. Before the interviews, written informed consent was obtained from the prospective participants after explaining the nature, the overall purpose of the study, methods and intended possible uses of the study and voluntary participation. Detailed information sheets were provided to the participants. The interviews were conducted by the principal investigator (PI) who is a qualified speech and language therapist in their workplace or over the phone. Approximately 20–30 min allocated per interview. All interviews were audio-recorded, transcribed and translated. The researcher took notes to ensure that all additional information was noted. The data was collected until saturation occurred. The confidentiality of information given by the participants and anonymity of respondents were assured by storing de-identified data with access only to the PI and supervisor through password protected soft copies and hard copies stored under lock and key.

The data were analysed manually, categorising into themes and codes. To ensure reliability, the coding process was independently verified by both the researcher and supervisor on randomly selected transcripts. The validity of the data was reinforced through multiple strategies recommended for qualitative research. The primary methods employed included the use of thick descriptions and member checking. Thick descriptions were used to convey the findings at all possible times to enable the readers to get the best understanding about the perspectives and the shared experiences. Member checking was conducted by summarising the codes under the themes of each transcript and cross-checking with several participants for accuracy.

Patient and public involvement

No patients involved in the design, conduct, reporting or dissemination plans of the research. The results of the research will be disseminated with the professionals who were participants via research oral and poster presentations on research conferences and research articles.

RESULTS

The analysis revealed several key themes and subthemes. The key themes identified were perspectives on child development, practices of early intervention, family-centred approach and influencing factors (table 1).

Table 1 Summary of the findings of key informant interviews

Themes and Subthemes	Codes
Theme 01 – perspectives on child development	
Current situation	<ol style="list-style-type: none"> 1. The perspective on child development is limited in current practitioners in Sri Lanka. 2. Main focus is on medical model. 3. Availability of physical resources for the advancement of child development services is positive. 4. Experts' knowledge is limited.
Future consideration	<ol style="list-style-type: none"> 1. More focus is essential on psychological, social and spiritual well-being of children. 2. Enhancing the knowledge and skills of professionals. 3. Enriched environment.
Theme 02 – practices of early intervention	
Global situation	<ol style="list-style-type: none"> 1. Effectiveness of preventive care and ICF model. 2. Policy level support. 3. Needs to promote evidence-based practice.
Sri Lankan situation	<ol style="list-style-type: none"> 1. Positive trajectories on early detection, early intervention and service provision. 2. Systematically organised public health system as a LMIC. 3. Multidisciplinary teams (MDT). 4. Improving specific knowledge and skills. 5. Promote systematic research and evidence-based practice.
Characteristics of early interventionists	<ol style="list-style-type: none"> 1. Early interventionists should be knowledgeable, skilled and possess excellent communication skills. 2. The ability to empathise with parental concerns and creativity. 3. Positive attitudes, passion for helping the needy and ability to work as a team.
Attributes of an early intervention package	<ol style="list-style-type: none"> 1. High quality, clinically effective and cost-effective early intervention packages are a timely need. 2. Evidence-based treatments with culturally and linguistically appropriate strategies. 3. A simple way of measuring the performances and providing feedback. 4. Include video demonstrations. 5. Low-cost materials.
Theme 03 – family-centred approach	
Child-centred outcome	<ol style="list-style-type: none"> 1. Opportunities for early learning in enriched environment.
Family-centred outcome	<ol style="list-style-type: none"> 1. Increase knowledge, awareness and self-efficacy. 2. Healthy parent–child bond. 3. Better psychological well-being.
Service provider-centred outcome	<ol style="list-style-type: none"> 1. Satisfaction and motivation of service providers.
Theme 04 – influencing factors	
Positive factors	<ol style="list-style-type: none"> 1. Knowledge, awareness and attitudes are positive. 2. Advancement in healthcare facilities and easy access. 3. Social network support.
Negative factors	<ol style="list-style-type: none"> 1. Socioeconomic barriers and parental education. 2. Myths, beliefs and attitudes of family. 3. Family dynamics. 4. Individual biological factors. 5. Inequalities in resources and accessibility issues. 6. Less professional accountability.

ICF, International Classification of Functioning, Disability and Health; LMIC, low- and middle-income country.

THEME 1: PERSPECTIVES ON CHILD DEVELOPMENT

Under this key theme, two subthemes were identified by the participants.

Current practices in child development

Many participants identified gaps in the current practices in child development. These were identified through several codes. The primary focus of participants was on maximising physical and educational development.

I think child development is actually going to harness the maximum potential of individual's capabilities. When it comes to health it has five components. Physical, mental, psychological, social as well as spiritual... But psychological, spiritual and social wellbeing is debatable in the current situation. I don't think that we consider that. (D₁, 5–10)

Some participants highlighted over-reliance on curative care over preventive and functional approaches, limiting positive long-term developmental outcomes.

We are mainly concentrating on treatment of acute conditions and very little on long term chronic management. (D₇, 14)

In Sri Lanka currently medical model is the practicing method. There is the social model too... Family centered approach mainly comes with social model, and we are focusing less on functional participation. (T₁₈, 8–12)

Some others identified that resources such as advanced technology, infrastructure and medical facilities with access to child development services were available. The limited professional expertise on interdisciplinary collaboration and fewer opportunities for ongoing professional development restricted embracing simple but innovative intervention approaches.

Future considerations

A more integrated, holistic development approach, focusing on psychological, social and spiritual well-being, was identified as essential, alongside physical and educational development.

I think measures have to be taken to establish institutional body dedicated towards early child development, to identify issues, educating parents, teachers, professionals and public regarding mental, behavioral and social wellbeing of children. (T₁₆, 8–10).

Interdisciplinary professional training enhancement was discussed by the participants.

Knowledge and awareness and attitude are the three main influencing factors. We should work more on

improving the gap. More practical CPD's are needed. (D₇, 18)

Further, they emphasised enriched environment aligning with WHO guidelines on early childhood environment enrichment, including limiting screen time and promoting active engagement, is crucial for optimal development.

THEME 2: PRACTICES OF EARLY INTERVENTION

Most participants were aware of early intervention, with insights categorised into four subthemes: the global situation, the Sri Lankan context, characteristics of early interventionists and attributes of an early intervention package. All participants acknowledged that developed countries implement systematic early intervention models, backed by strong policies and evidence-based practices.

What's activity, what's participation and what's really meant by function, and they look at the bigger picture on ICF model, where family comes in as a huge role in the community. (D₇, 72)

However, they noted that other LMICs, including Sri Lanka, are still in the early stages of establishing these services. In Sri Lanka, positive trajectories were observed, supported by a well-structured public health system and multidisciplinary teams.

Being a low resource country, I think Sri Lanka does a fantastic job with the public health system where anybody has access to the services. No matter what their socio-economic background is. We have a huge advantage because of the hospitals, where we can detect children most of at birth and then intervene and that has a huge impact on the later outcomes. (T₂₅, 28–30).

I know there are multi-disciplinary clinics for neurological conditions and cerebral palsy, learning difficulties for early diagnosis and early intervention has started now, especially in the Western province. (T₂₀, 22)

Furthermore, challenges such as a lack of trained professionals, insufficient research and gaps in knowledge and skills persist.

Internationally I think, there are more improvements. Because they are doing research and evidence-based practices. They have standard outcome measurements for effective practices. (T₆, 42–44).

Effective early interventionists were identified as those with strong communication skills, empathy, teamwork abilities and a passion for helping others. They

emphasised the need for high-quality, cost-effective and culturally relevant intervention packages. They stressed the importance of structured, goal-oriented approaches with clear performance measurement tools and parental involvement to enhance early intervention outcomes.

Early intervention professionals should have the ability to transfer the skills, they should talk and explain clearly without professional jargon. (T₁₆, 93)

When working with parents, professionals should have listening skills... They have to understand the medical problems as well as psychological issues. (T₁₉, 62)

THEME 3: FAMILY-CENTRED APPROACH

The family-centred approach was widely recognised by participants as a cost-effective and evidence-based method for delivering early intervention. Three sub-themes emerged: child-centred outcomes, family-centred outcomes and service provider-centred outcomes.

Home based strategies are the most appropriate than practicing intervention in artificial setting. It should be in the natural setting. I believe there are more chances for the child to learn new skills in the natural context than practicing in artificial play-based environments. (T₁₂, 55)

The participants mentioned that this approach will increase knowledge, awareness and self-efficacy, enabling them to take an active role in interventions through strengthening the parent–child bond and promoting better psychological well-being by addressing individualised family needs, fostering trust and maintaining motivation.

The family centered approach is important to upgrade their quality of life with good parent–child bond. (D₁₀, 30)

We have to address the family needs, and we have to tell them how important they are in this process and how they could contribute to the change of their child or the sibling.... Then they will have the trust on the package to keep the motivation up to the last goal or target. (T₂₁, 130)

Service providers considered the family-centred approach to improve professional satisfaction. However, some clinicians expressed uncertainty about its effectiveness in early intervention.

So, from my experience I think the family centered approach really works. The majority, around 90-95% of my clients are using the family-centered approach.

The outcome was good and that's good to handle huge caseload rather than giving direct therapy. (T, 26–28)

THEME 4: INFLUENCING FACTORS

The thematic analysis also identified a range of individual and contextual factors that influence early intervention and the family-centred approach. These factors were categorised into two subthemes: positive (strengths) and negative (challenges) factors (figure 1).

Positive factors

Among the positive factors, participants highlighted the growing knowledge, awareness and positive attitudes of professionals and parents toward early intervention. This foundational understanding enhances the effectiveness of the approach.

Most stakeholders know the ICF classifications. If you know the community, the family and the other people who are coming in contact with the person and the health care team, this concept is built into that. It all depends on how everybody understands the concept. So, knowledge, awareness and attitudes are the three main influencing factors, which would influence the success of this activity. (D₇)

Additionally, participants acknowledged advancements in healthcare and facilities as a strength to promote early intervention.

With the improvement of technology, more new interventions are coming out. We can see better infrastructure and accessibility facilities in buildings, especially for people with disabilities. Those are positive factors for easy access. (T₅, 83)

Participants noted that the involvement of grandparents and other relatives plays a crucial role in child development, reinforcing the success of early interventions.

I think one of the reasons for the family system is the Sri Lankan culture. Not just the immediate family but also the extended family, grandmother, grandfather all of them play a huge role in that development of the child. (T₂₅, 49)

Negative factors

Participants identified several barriers to family-centred early intervention, categorised into socioeconomic, cultural, family-related, biological and systemic challenges. Socioeconomic barriers and parental education were seen as major obstacles, with financial struggles and working parents limiting engagement in early intervention.

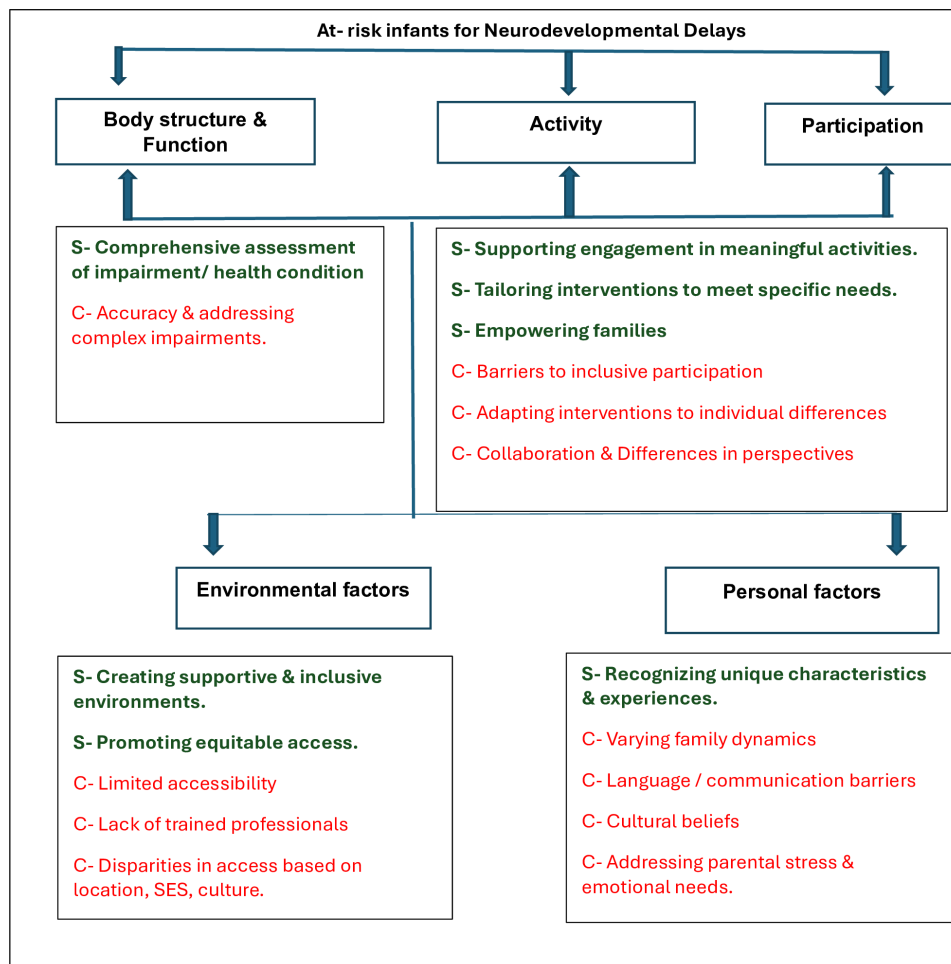


Figure 1 Strengths and challenges of family-centred early intervention with ICF-CY components. ICF-CY, International Classification of Functioning, Disability and Health for Children and Youth; C, Challenges; S, Strengths; SES, socioeconomic status.

I think one of the reasons for the family system is the Sri Lankan culture. Not just the immediate family but also the extended family, grandmother, grandfather all of them play a huge role in that development of the child. (T₂₅, 49)

Additionally, myths and cultural beliefs about child development hinder proper intervention.

I think if you can approach to discuss myths regarding speech development, it would be benefited. When treating families coming from different socio-cultural background they have myths and beliefs that affect the proper intervention, especially myths regarding speech development and nutrition. (D₁₀, 89)

Family dynamics, including parental roles, financial stability and acceptance of a child's condition, also impact outcomes.

Family dynamic includes support that they get from the other partner and all. Stability of the family, financial and psychosocial both will matter. Most of

the time children who need early intervention may be having some disabilities or something, so whether the partner is accepting that or rejecting will also influence the outcomes. (D₃₀, 63–65)

On an individual level, biological factors such as age, severity of NDDs and coexisting conditions affect intervention success.

Specially the level of disability, when we consider the children with cerebral palsy their mobility level and all. Also, seizures. Then if children are having dystonic reaction and all those will affect the outcome. (D₁₀, 80)

Systemic barriers include resource inequalities, limited accessibility and an insufficient number of trained professionals.

We are not able to provide that expected level of intensive services here. It is not feasible and not practical, because of the limited number of professionals, limited resources, and the limited time. (T₂₅, 51).

Furthermore, a lack of professional accountability and ineffective referral systems contribute to delays in diagnosis and intervention, negatively affecting children and families.

There is no accountability, at any level. Not just at therapist's level. There is no accountability on diagnosis, the importance of diagnosis and interventions to be carried about. Only the parents and the child are lost in the processes. (T₁₁)

DISCUSSION

This is a preliminary study that explored the professionals' perspectives on family centred early interventions to support communication, speech and language skills in high-risk infant populations. The participants identified four key themes around child development, practices of early intervention, family-centred approach and influencing factors and multiple subthemes around these.

The findings of the study were categorised according to the ICF model.¹⁶ Within the data generated through this qualitative analysis, it was possible to identify factors that positively and negatively impacted a child's functional skills due to the impairment or the contextual factors that influenced activity and participation in children. It was noted that the contextual factors played the most significant role within the recommendations of the professionals.

Participants highlighted that while the Sri Lankan system shows progress in early detection and intervention, it remains largely focused on the medical model and curative care rather than preventive strategies and comprehensive frameworks like the ICF model. This is possibly also due to the scarcity of community-based services in providing interventions for the children with developmental needs in Sri Lanka, keeping with similar settings in other LMICs.¹² However, during the recent years, Sri Lanka has strengthened early detection and referral systems through the public health system pathways which might lead to better recognition of high-risk infants.¹⁷ Yet the community-based intervention options remain less in a system that highlights hospital-based or centre-based services. Literature from high-income countries (HICs) discusses the pros and cons of community-based versus hospital-based interventions in such settings.¹⁸

The social network support through the extended family system in the Sri Lankan context is a positive socio-cultural construct identified. However, in the Indian system, such multigenerational households posed a barrier to access early intervention decisions due to excessive control by the older members within their socio-cultural context, though they were supportive in providing additional childcare for the families.¹⁹

These positive influencing factors support professionals and families in recognising and harnessing their

strengths and capacities to promote the child's development. It provides opportunities for families to share their expertise and preferences, aligning with their cultural, linguistic and personal values.

Despite recognition of the systematic and structured nature of early intervention practices in HICs, with an emphasis on the functional skills based on the ICF model, there are many ongoing challenges topical to each setting.

The fact that activity and participation were recognised as significant by only a few participants possibly predicts the challenge that the Sri Lankan health system may encounter when implementing early intervention programmes. The overemphasis on cure and fixing developmental disorders, possibly triggered by the stigma associated with these conditions and the lack of supportive services to uplift functional skills in these children, may explain why the professionals placed less emphasis on the functional skills of these children.

The Sri Lankan professionals did not mention physical environment as an important element in early intervention, though they identified the multidisciplinary approach as a significant strategy. This possibly highlights the lack of exposure to community-based services by the professionals and the strong emphasis placed on hospital-based multidisciplinary services in Sri Lanka. Yet a review article from South Asia, including authors from Sri Lanka, discusses the significance of integrating environmental changes, which is essential to enhance activity and participation outcomes for children.²⁰ This highlights that there is possibly a gap from knowledge to implementation in this part of the world, reiterating the need for further exploration. Melo *et al.*²¹ and Washington²² have both advocated for a multidimensional approach to enhance early intervention programmes. This approach could support overall development and address communication disorders effectively in addition to other functional skills.

However, implementing the ICF framework remains a challenge. Studies from HICs, such as those by Castro *et al.*²³ and Sanches-Ferreira *et al.*²⁴ define difficulties in applying the ICF model due to issues in training, environmental assessments and collaborative efforts. These challenges are magnified in LMICs like Sri Lanka, where additional barriers include limited high-quality research, inadequate training and restricted funding.²⁵ The current study reflects similar concerns, emphasising the urgent need for practical exploration of identifying the contextual aspects and the impacts on activity and participation based on the ICF framework within Sri Lanka's multicultural context.

The barriers identified by the participants aligned well with the previously published evidence from LMICs. Socio-economic challenges precipitated by low parental education and financial constraints were noted as significant obstacles impacting all phases of early intervention access that were also previously identified by other authors.²⁶ In Sri Lanka, as in other LMICs, geographical and resource

disparities exacerbate these issues, hindering equitable access to services. Additionally, limited-service capacity and inefficient referral systems were highlighted by the participants as barriers that restrict the implementation of family-centred early intervention in Sri Lanka, and some of these factors were previously described by the research.²⁷

Personal factors, such as family dynamics and parental attitudes and beliefs, were also identified by the participants as playing a crucial role in the success of early intervention. Challenges related to communication barriers, societal norms and parental beliefs can hinder effective intervention.²⁸ Cultural beliefs and preferences for alternative forms of support, such as religious healers, further complicate early intervention efforts.²⁹ Enhancing communication skills among professionals and addressing cultural sensitivities are vital for improving intervention outcomes in Sri Lanka.

While the study did not find significant gender-based barriers in Sri Lanka, previous research in other LMICs has identified gender biases that affect early intervention access.^{26 30} Future research should continue to explore these dynamics and their impact on service provision in different contexts.

In summary, while there are notable strengths in the current early intervention practices in Sri Lanka, including increased professional awareness and collaborative efforts, significant challenges remain. Addressing socioeconomic barriers, improving service accessibility and enhancing cultural competence are essential steps toward implementing effective, family-centred early intervention practices within the Sri Lankan context.

Limitations

This study is subject to selection bias, as the majority of participants were speech and language therapists recruited from across the country. Participants were purposively selected due to the study's focus on establishing communication interventions for high-risk infants, which may limit the generalisability of findings. Additionally, geographical representation was restricted because eligible professionals meeting the inclusion criteria were not available in certain regions.

Recommendations

This study has contributed to the existing body of knowledge within the field, particularly in the Sri Lankan context. We attempted to address the evidence gap in Sri Lanka, and this information may reflect some similar experiences shared in this region. Therefore, the findings of this study suggest practical implications for policy-makers, healthcare practitioners and researchers involved in early intervention programmes in Sri Lanka and other LMICs. As we collectively strive to improve the well-being of vulnerable populations, this research contributes a valuable piece to the puzzle, through insights of professionals on evidence-based early intervention approaches

in speech, language and communication for at-risk infants through family centred care.

CONCLUSION

The identified positive influencing factors underscore the importance of leveraging professionals' and families' strengths to enhance child development. These factors enable families to contribute their expertise and preferences, ensuring that interventions are aligned with their cultural, linguistic and personal values.

The strengths observed in current practices of family-centred early intervention, as framed by the ICF-CY model, reflect a comprehensive approach. This approach effectively addresses all aspects of a child's functioning by involving families as active partners and considering both environmental and personal factors, thereby fostering optimal child outcomes and enhancing family well-being.

Conversely, the challenges highlighted within the ICF-CY model illustrate the complexities of implementing family-centred early intervention. The study participants and existing evidence point to the need for continuous efforts to overcome barriers related to accurate assessment, inclusive participation, environmental modifications and the diverse personal factors that influence intervention. Addressing these challenges is crucial for advancing the effectiveness of early intervention strategies and achieving better outcomes for children and families.

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Patient consent for publication Not applicable.

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