

Early Childhood Stimulation Through Traditional Infant Care Practices in India: A Systematic Review

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Abstract

Infancy is a critical period for physical growth, brain development, and overall neurodevelopment. Adequate stimulation during the first two years of life plays a vital role in enhancing sensory, motor, cognitive, and socio-emotional development. In the Indian context, several traditional caregiving practices such as infant massage, lullabies, storytelling, floor play, and caregiver infant interaction have been followed for generations. Although these practices are not formally structured as developmental interventions, they inherently provide multisensory stimulation that supports early development. The present review examines traditional Indian infant care practices and evaluates their potential as effective early stimulation strategies. Evidence from community-based studies, Anganwadi programmes, and recent Indian research is synthesised to understand their developmental significance. The review also explores the integration of these culturally rooted practices into low-cost stimulation kits and structured early childhood programmes to improve accessibility and adoption. The findings suggest that combining indigenous caregiving knowledge with scientific approaches can enhance infant development outcomes. Promoting culturally appropriate, affordable, and sustainable stimulation practices within families and public health systems can significantly strengthen early childhood care in India.

Keywords: Early Childhood Stimulation, Indigenous Childcare Practices, Infant Neurodevelopment

Introduction

Infancy represents a foundational stage of human development during which the brain undergoes rapid growth and forms neural connections that influence cognitive, motor, sensory, and socio-emotional functioning. Research indicates that experiences during the first 1000 days of life play a decisive role in shaping a child's developmental trajectory. In this context, caregiver-led stimulation is essential for promoting optimal developmental outcomes. Traditional caregiving practices in Indian families, developed over generations, include activities such as oil massage, singing lullabies, storytelling, floor play, and responsive interaction. These practices naturally provide multisensory stimulation and encourage early learning through active engagement [7].

In India, infant oil massage is widely practised and culturally valued, with many caregivers associating it with improved growth, sleep, and well-being. Such practices reflect intuitive caregiving behaviours that align with modern principles of early stimulation, including sensory, motor, emotional, and communicative development [9]. Studies also indicate that everyday caregiving activities such as talking, playing, and nurturing closely correspond to evidence-based developmental strategies [3]. Community level programmes, particularly those implemented through Anganwadi centres, further highlight the potential of integrating traditional practices into structured early childhood interventions. Research suggests that combining culturally familiar caregiving methods with organised stimulation activities improves caregiver participation and programme effectiveness [8].

Despite growing evidence, traditional Indian infant care practices remain underrepresented in formal developmental frameworks. This review aims to synthesise available literature and examine how these indigenous practices can be integrated into structured early stimulation programmes to enhance developmental outcomes.

Review of Literature

Early Stimulation and Infant Neurodevelopment

Early stimulation plays a vital role in shaping brain development and neural plasticity. During infancy, the brain is highly responsive to environmental inputs, and experiences during this period significantly influence cognitive, emotional, and social outcomes. Studies have shown that responsive caregiving and stimulation are associated with improved language development, motor skills, and socio-emotional competence [6].

The nurturing care framework proposed by global health organizations emphasizes the importance of responsive caregiving, early learning opportunities, and a safe environment in promoting child development [1]. Lack of stimulation during early years can lead to developmental delays and long-term deficits in learning and behaviour.

Traditional Indian Infant Care Practices

Traditional Indian caregiving practices are characterized by close physical and emotional bonding between caregivers and infants. These practices are often transmitted across generations and are deeply rooted in cultural beliefs and values. Infant massage is one of the most common traditional practices in India. It involves systematic tactile stimulation using oils, which promotes physical growth, improves circulation, and enhances neuromuscular development. Research indicates that infant massage can improve weight gain, sleep patterns, and emotional bonding [4]. Lullabies and verbal communication provide auditory stimulation and

facilitate language development. Singing and talking to infants help in developing phonetic awareness, emotional bonding, and cognitive skills. Studies suggest that early exposure to language-rich environments enhances vocabulary and communication abilities [11]. Storytelling introduces infants to cultural values, language patterns, and social norms. Although traditionally used for older children, early exposure through caregiver narration can support cognitive and emotional development. Floor play allows infants to explore their environment freely, promoting gross and fine motor development. It encourages crawling, reaching, and coordination, which are essential for physical and cognitive growth. Responsive interaction between caregivers and infants is central to traditional caregiving. Eye contact, touch, and verbal communication help in building secure attachment and emotional security. Such interactions are critical for socio-emotional development and stress regulation [2].

In India, early childhood development initiatives such as the Integrated Child Development Services (ICDS) and Anganwadi programmes aim to promote child health, nutrition, and development. Anganwadi workers play a key role in delivering early stimulation activities and educating caregivers. Community-based studies in India have demonstrated that caregiver education and stimulation interventions can significantly improve developmental outcomes in infants and young children. For instance, interventions focusing on play-based learning and responsive caregiving have shown positive effects on cognitive and socio-emotional development [5].

Recent research highlights the importance of integrating traditional practices into structured programmes. Studies indicate that culturally familiar practices are more acceptable to families and have higher adoption rates compared to externally introduced interventions [9].

Integration into Low-Cost Stimulation Programmes

One of the key challenges in early childhood development is ensuring accessibility and sustainability of interventions. Low-cost stimulation kits that incorporate traditional practices can be an effective solution. These kits may include simple toys, picture cards, storytelling materials, and guidelines for caregivers. Integrating indigenous practices into structured programmes can enhance their effectiveness by aligning them with cultural values. For example, combining infant massage with caregiver education on responsive interaction can provide both physical and emotional benefits. Evidence suggests that community-based interventions that utilize locally available resources and culturally relevant practices are more sustainable and scalable [2]. Such approaches can strengthen public health systems and improve early childhood outcomes.

Programmes in Tamil Nadu

Tamil Nadu has been one of the leading states in India in implementing early childhood care and development (ECCD) initiatives through government and community-based platforms. The integration of low-cost stimulation strategies into existing systems such as the Integrated Child Development Services (ICDS) and Anganwadi centres provides a promising approach to enhancing infant development outcomes. The ICDS programme, widely implemented across Tamil Nadu, aims to promote the physical, cognitive, and socio-emotional development of children below six years of age through a combination of nutrition, health services, and preschool education. Anganwadi centres serve as the primary delivery points for these services and play a crucial role in reaching infants and young children at the grassroots level. The programme explicitly emphasizes early childhood care, including psychosocial and cognitive development, alongside nutritional support.

Role of Anganwadi Centres in Early Stimulation

Anganwadi centres in Tamil Nadu provide an ideal platform for integrating low-cost stimulation activities. These centres already

conduct preschool education activities that support motor, language, and social development. However, their potential can be further enhanced by incorporating structured stimulation techniques such as:

- Guided caregiver–infant interaction sessions
- Demonstration of infant massage techniques
- Use of locally available play materials
- Promotion of storytelling and lullabies

Given their widespread presence even in rural and underserved areas Anganwadi centres can function as hubs for disseminating culturally appropriate stimulation practices.

Locally Available and Low Cost Materials

Low-cost stimulation programmes in Tamil Nadu can effectively utilize locally available materials such as:

- Cloth balls, rattles made from household items
- Picture cards and storybooks in regional languages
- Natural objects (leaves, seeds, wooden toys) for sensory play
- Mats for safe floor play

These materials are affordable, easily accessible, and culturally familiar, increasing their acceptability among families. The focus on indigenous resources ensures sustainability and scalability of interventions.

Community based Interventions and Outreach

Community-based programmes in Tamil Nadu emphasize caregiver education and participation. Anganwadi workers, Accredited Social Health Activists (ASHAs), and community volunteers play a key role in:

- Educating mothers on responsive caregiving

- Demonstrating stimulation activities during home visits
- Encouraging family involvement in child development

For example, early intervention initiatives in Tamil Nadu include training Anganwadi workers to identify developmental delays and promote early stimulation activities among children below six years. Such programmes highlight the importance of early detection and timely intervention.

Integration with Early Intervention Services

Tamil Nadu has established **Early Intervention Centres** across multiple districts to support children with developmental delays. These centres focus on improving:

- Language development
- Social interaction skills
- Play and imitation abilities

These services complement low-cost stimulation approaches by providing structured support where needed, especially for high-risk infants. Additionally, initiatives like mobile early intervention programmes aim to reach marginalized populations, addressing barriers such as lack of awareness and access to services.

Scope for Strengthening Integration

Despite the strong infrastructure, there is scope for improving the integration of stimulation practices into routine services:

- Limited focus on children below 3 years in structured programmes
- Need for training Anganwadi workers in stimulation techniques
- Lack of standardized stimulation kits across centres
- Time constraints and workload of frontline workers

Strengthening these areas can significantly enhance programme effectiveness.

Future Directions

To improve integration of low-cost stimulation programmes in Tamil Nadu, the following strategies are recommended:

- Development of **standardized low-cost stimulation kits** based on local practices
- Training modules for Anganwadi workers on early stimulation
- Inclusion of **0–3 years age group** in structured ECCD interventions
- Use of digital tools and mobile applications for caregiver education
- Collaboration between health, nutrition, and education sectors

Tamil Nadu provides a strong foundation for integrating low-cost infant stimulation strategies through its well-established ICDS and Anganwadi systems. By combining traditional caregiving practices with structured, evidence-based approaches, the state can enhance early childhood development outcomes in a culturally relevant, affordable, and scalable manner.

Research Gap

Despite the growing recognition of the importance of early stimulation, several gaps remain in the literature. First, there is limited systematic research on traditional Indian caregiving practices and their direct impact on infant development. Most existing studies focus on Western models of early stimulation, with inadequate representation of culturally diverse practices. Second, there is a lack of standardized tools to assess the effectiveness of indigenous stimulation practices. Developing culturally appropriate assessment frameworks is essential for evaluating outcomes. Third, there is insufficient integration of traditional practices into formal early childhood programmes. While Anganwadi centres provide basic services, structured incorporation of culturally rooted stimulation strategies remains limited. Fourth, longitudinal studies examining the long-term impact of traditional practices on developmental outcomes are scarce. Such studies are necessary to establish evidence-based guidelines. At last,

there is a need for interdisciplinary research combining nutrition, psychology, public health, and cultural studies to provide a holistic understanding of infant development in the Indian context.

Conclusion

Infancy is a critical period for neurodevelopment, and adequate stimulation during the early years is essential for optimal growth and development. Traditional Indian caregiving practices, such as infant massage, lullabies, storytelling, floor play, and caregiver–infant interaction, inherently provide rich multisensory stimulation that supports developmental outcomes. Overall the review highlights that these indigenous practices, although informal, align closely with modern scientific principles of early stimulation. Integrating traditional knowledge with evidence-based approaches can enhance the effectiveness, accessibility, and cultural acceptability of early childhood interventions. Promoting culturally appropriate, low-cost, and sustainable stimulation practices within families and public health systems can significantly strengthen early childhood care in India. Future research should focus on developing culturally sensitive frameworks, conducting longitudinal studies, and integrating traditional practices into structured programmes to improve infant development outcomes.

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