



## **Analysis of neuropsychomotor development in infants from indigenous culture: An integrative review**

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### **ABSTRACT**

**Objective:** To analyze the pattern of infant development in the indigenous culture according to previous studies. **Methods:** A total of 42 articles were found and 12 were included in the present study. **Results:** It can be concluded that developmental delay is more related to the difficulty of access to basic health services. **Discussion:** Language is present around 9-10 months, with sounds, at 11-12 months of age, they began to understand words, and at 16 months, they began to produce words. In tribes of Peru and India, crawling was frequent at 12 months and communicative exchange at 8 to 13 months. In teaching and learning, children aged 9 to 10 months from different cultural backgrounds have been shown to learn by imitation, with housework actions being more frequent. **Conclusion:** In order to have a cohesive identification with developmental delay, it is necessary, in addition to prenatal care and childcare, to educate parents about developmental milestones and associate them with Traditional Medicine.

**Keywords:** Traditional Medicine, Infant Health, Neuropsychomotor Development.



## 1 INTRODUCTION

Infants are considered to be children between one month and 23 months of age, It is understood as the one who receives milk, which includes the newborn. We have as milestones of development in the infant period: ability to learn and remember in the first weeks, comprehension and use of language, formation of affective bonds, self-awareness, passage from dependence to autonomy, development of motor skills. (Feliciano and Delou, 2019) (EMÍDIO, DIAS, et al., 2020)

At 2 months, the child lifts his head on his stomach for a few seconds, reacts to sounds and changes voice actions; at 3 months, she tries to reach objects, manifests satisfaction with body movements, asking for a lap, for example, acquires vertical control, emits vowel, lip and guttural sounds; at 4 months, he begins to imitate sounds, distinguishes acquaintances from strangers and, when held by the hand, tries to stand up, on his stomach tries to support his forearms and raises his head for several seconds; At 5 months, she starts to roll over and sits up with support. (MIRANDA, PIZA, and al., 2016)

At six months, they hold and transfer objects from one hand to the other, emitting consonant sounds ("ma", "pa") and smiles intentionally; at 7 months, she crawls and cries in front of strangers; At 8 months, he sits without support, holds objects firmly, changing hands, lets out first words with meaning and starts imitations. At 9 months, he takes his first steps with support and begins to crawl, has a sense of the permanence of the object and likes to play "hide and seek"; At 10 months, he brings objects with good coordination to his mouth, has almost complete grasping and learns to point with his index finger, has a sense of cause and effect, responds to the name and relates the object to its function, in addition, he likes to interact with other babies. At 12 months, she takes her first steps without support, but still with an enlarged base. (MIRANDA, PIZA, and al., 2016)

At 13 months, he understands simple commands accompanied by gestures, and at 15 months, he does not Gestures are necessary for understanding. At 16 months, he can already walk with total balance and at 18, he acquires coordination and climbs stairs held by one hand, in addition, there is an improvement in praxis, his curiosity is sharper, he names animals with sounds and speaks simple sentences with 2 words. At 20 months, he passes objects from one hand to the other while walking and playing "make-believe". (MIRANDA, PIZA, and al., 2016)

All these milestones are of origin of scientific knowledge and should be highlighted as hegemonic today. However, its genesis distanced itself from the practice, which was created from



various traditional and popular healing systems, valuing the cultural, social and psychic context. As a result, there was a division between mind/soul and body, leaving the sacred as subjective in the approach to the patient. In the indigenous community, for example, shamans are the healing agents and the owners of chants are specialists who work with chants in healing rituals. (FUNASA, 2004)

In addition, in the Vygostkyan theory, for the development of aIn the context of conscious, determinant and intentional determinations, it is necessary to have a relationship between the individual and culture, through symbolic mediation, that is, by instruments and signs, used to design the relationship between the external and internal environment of the individual, who has language as a fundamental role. (Ribeiro, Silva, & Carneiro, 2016)

In this way, one can see the incompatibility between indigenous and Western medicine, but both work for the well-being of indigenous communities. And with that, there's the importance of analyzing the influences of Traditional Medicine on the development of the infant, in addition to analyzing the pattern of development of the infant in the indigenous culture according to information recorded in previous studies. (FUNASA, 2004)

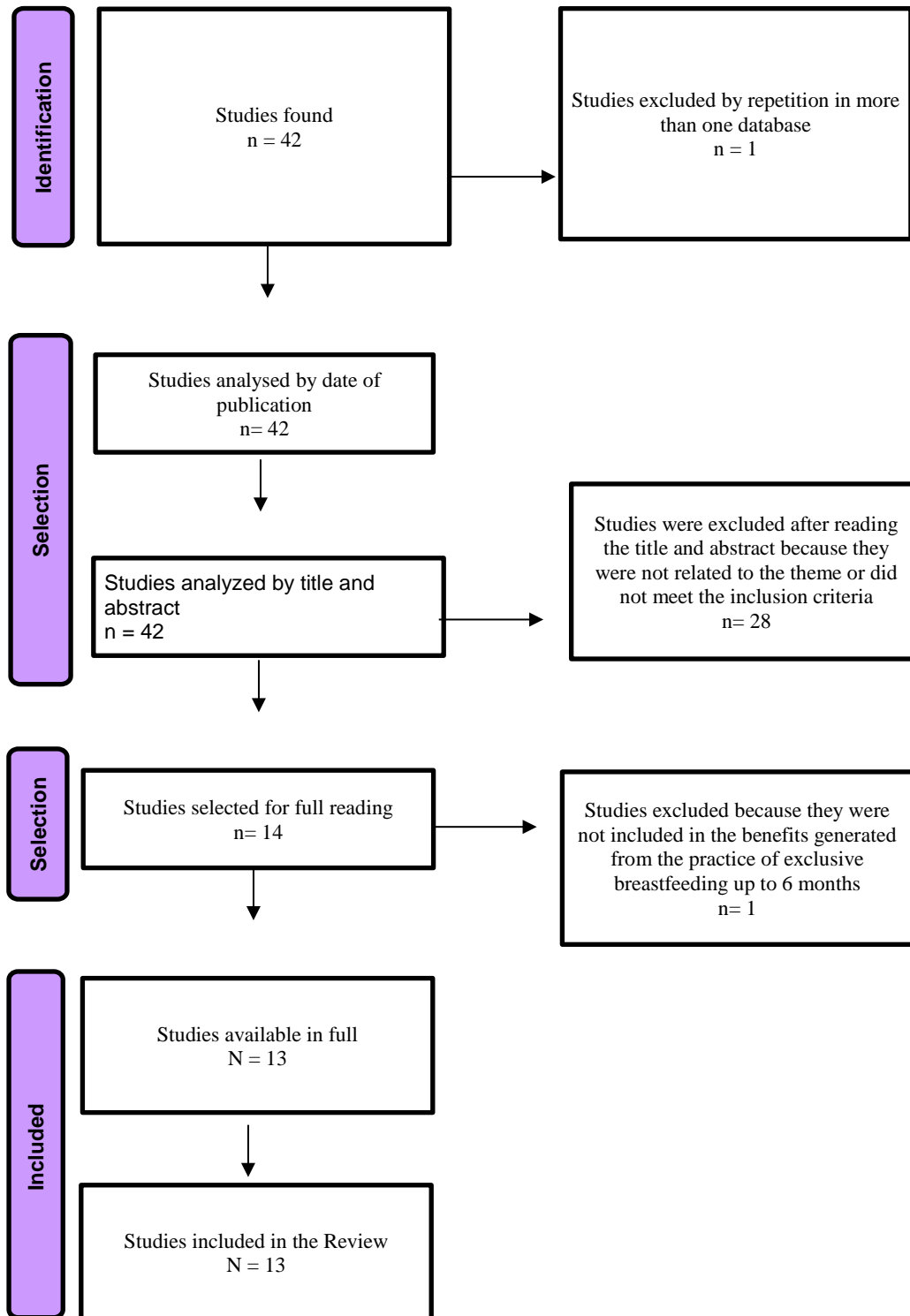
## 2 METHODS

The article in question is an Integrative Review (IR), which uses the synthesis of results to allow the identification of current knowledge and existing gaps on a given topic, through the collection of data and bibliographies based on the authors' experiences. The phases of IR are summarized as elaborating a guiding question, providing a search or sampling in the literature, collecting data, critically analyzing the included studies, discussing the results, and presenting the conclusion of the research. (SOUZA, SILVA and CARVALHO, 2010) (MENDES, SILVEIRA and GALVÃO, 2008)

In this way, the method enables the inclusion of quasi-experimental and experimental research, in order to combine data from theoretical and empirical literature, thus providing a more in-depth understanding of the topic of interest: neuropsychomotor development in infants in Traditional Medicine. (Alcoforado, et. al., 2014)

For the construction of the IR, the PRISMA flowchart was used, adapted for IR, representing the process of search and selection of articles and documents in the databases, as can be seen in Figure 1. (Key items to report Systematic Reviews and Meta-analyses: The PRISMA Recommendation, 2015)

Figure 1. PRISMA tool adapted for IR



Source: Developed by the authors

The research included a search through the Virtual Health Library (VHL) databases, which included: Latin American and Caribbean Health Sciences Literature (LILACS), US National Library of Medicine (MEDLINE), Nursing Database (BDENF), Spanish Health Sciences



Bibliographic Index (IBECS) and Caribbean Health Sciences Literature. Regarding the period of publication, articles published between 1988 and 2022 were included, which are available in full, in view of the updating of the theme and the scarcity of the results found.

The following descriptors were used for the selection of articles: "Infant Health", "Indigenous Culture" and "Child Development". In addition, the Rayyan platform, a free application developed by the Qatar Computing Research Institute (QCRI) was used to analyze the results found, without bias among the authors.

For analysis, the following guiding question was developed: "Are there influences of traditional infant medicine on child development?"

Articles that did not answer the guiding question mentioned above were deleted along with duplicate articles. 13 papers were considered eligible, which were read in full and with a careful and qualitative evaluation. Finally, to synthesize the data obtained, the findings were described, by means of a table, in the following variables: Title, Country, Place of publication, Year, Results and Contributions to the Study.

The studies were published from 1988 to 2022. The articles were authored by medical students and academics, physicians, masters, and doctors, as well as health institutions.

Thus, the risks of the present research are minimal, given the use of previously conducted research. However, such risks are permeated by the possibility of misinterpretation of the data obtained, which is minimized by the careful evaluation of the authors.

### **3 RESULTS**

From the analysis of the 13 studies, the following table could be constructed:

Table 1 - Results of the analysis of the studies included in the IR

N	Authors	Key findings
1	<p>ÁLVAREZ-IZAZAGA, Marsela A. <i>et al</i></p>	<p>Neurodevelopmental delay was greater in migrant mothers than in non-migrant mothers. Many migrant mothers said they had no childbirth assistance. Children of migrant mothers had fewer timely stimuli than ever before.</p> <p>The greatest predictor for neurodevelopmental delay was lack of care, difficult access, and fewer basic health services. In addition, migration can alter neurodevelopment. Therefore, the migration of the indigenous population is a social determinant of health.</p>
2	<p>ROSENSTOCK, Summer et. Al.</p>	<p>Use of home visiting in Native Americans to promote infant dietary health and growth in the first year of life has been shown to be effective for promoting child nutrition health and growth.</p>
3	<p>OLIVEIRA, Enilda F. D. <i>et al.</i></p>	<p>Attendance at appointments is influenced by factors intrinsic to the mothers and intrinsic factors related to the service (availability of appointments, waiting time for appointments and quality of appointments). However, the mothers associate the consultations with the presence of illness, making it difficult for them to attend the service.</p> <p>The decrease in the use of health systems leaves children more vulnerable, ranging from immunological aspects, such as immunological immaturity, to external events, such as restricted access to education, health and basic sanitation, which can have repercussions on child development.</p> <p>Childcare consultations provide supervision and guidance on vaccination, breastfeeding and hygiene, and early identification of developmental problems and diseases. These consultations decrease the risks of infant mortality.</p>
4	<p>ASTUDILLO, P <i>et al.</i></p>	<p>Spirituality and nature are at the center, with values specific to culture. Basing the assessment of psychomotor development is insufficient to assess the comprehensiveness and complexity of the progress, skills and competencies of indigenous children.</p> <p>The central themes that relate to intracultural patterns of the expected development in indigenous childhood are the physical, the language, the social-cognitive, the emotional, the learning and the psychosocial. Learning is achieved by observation and participation and development is understood as a whole, interweaving the social, cultural, natural and spiritual.</p>



5	KROENING, Abigail L. <i>et al.</i>	<p>Assessment of developmental/disability values/beliefs, practices around development/disability, the refugee experience, and specific feedback to the Parental Developmental Status Assessment screen. No concern was expressed for deficits in developmental milestones unless speech or behavioral problems were present.</p> <p>Refugees' perspectives on child development can influence parents' recognition and response to developmental concerns.</p> <p>Barriers to identifying delays can be seen due to limited education, poor health knowledge, language, and traditional healing practices.</p>
6	COELHO, Carla V. L.	<p>In indigenous populations, diarrheal disease contributes significantly to high rates of infant morbidity and mortality. In this way, it can affect the growth and development of children.</p>
7	BYERS, Lyn <i>et al.</i>	<p>Children are encouraged and praised for social and emotional maturity and physical development, regardless of the age at which milestones are reached. Thus, children's growth and development are not related to chronological time scales.</p>
8	PHUKA, John C. <i>and al.</i>	<p>Rural Malawian infants who received daily 12-month supplementation of their diet with the tested lipid-based nutritional supplements or fortified corn and soybean meal have comparable motor development outcomes up to 18 months of age. Maternal education and weight gain during development can positively affect it.</p> <p>Micronutrient supplementation or fortification promotes neurobehavioral development more than non-supplementation.</p> <p>Fatty acids are essential for brain development.</p>
9	BARRETO, Carla T. G.	<p>Malnutrition and anemia are among the main health problems of children under 5 years of age in developing countries and are usually part of a vicious circle of malnutrition-infection, in which acute respiratory infections and diarrhea have great epidemiological relevance.</p> <p>Short stature for age was the main anthropometric deficit found. The prevalence of malnutrition increases sharply after 12 months. The prevalence of anemia was 88.9% between 6 and 11 months.</p>

10	DINIZ, Regina L. P.	<p>The evolution of the children's growth and development were considered within the appropriate range, based on the WHO 2006 curves and the developmental milestones of the Children's Handbook.</p> <p>There was a low prevalence of birth weight, due to better quality of life and technological progress; The vast majority of patients were considered to be within the range considered adequate, regardless of gender. The development of brain circumference evolved within the range considered appropriate for age. In 17 of the 23 developmental milestones surveyed monthly, the children showed expected fulfillment for their age.</p> <p>Regarding the low incidence of low birth weight, 100% of the families were covered by indigenous health agents, with their leadership being related to the same ethnicity and the high percentage of prenatal care. In addition, there was a beneficial effect on children's development due to the lifestyle habits of indigenous families, such as houses without walls, frequent contact with neighboring families, and direct participation of children in family life. And, finally, they consider that everything that can be seen by the child is important for their learning.</p> <p>- Preterm birth and low birth weight are risk factors that can interfere with the rhythm and motor patterns of these acquisitions during the first year of life.</p>
11	AHOLI, P.	<p>Sharpen the baby as soon as he is washed to prevent neonatal hypoglycemia, breastfeeding, traditional massage; After birth, the newborn is given lemon juice or gin to prevent airway obstruction. Eggs are known as a cause of diarrhea in Africa and with that cause effects on physical development.</p> <p>Therefore, the use of traditional medicine and superstitions are in favor of the physical development of the infant.</p>
12	HOPKINS, B; WESTRA, T.	<p>Formal handling, used by mothers, serves to facilitate gross motor development during early childhood and for postural control along the vertical axis of the body. This management routine is part of folk medicine and aims not only to promote child health, but also as a kind of neurological examination of development.</p> <p>Therefore, the practice of Traditional Medicine aims to promote the gross motor development of the infant and also to analyze it.</p>

Source: table developed by the authors of this IR.

Thus, it can be concluded that developmental delay is more related to the difficulty of access to basic health services, leaving children more vulnerable. In this way, the intervention of Evidence-Based Medicine, through health promotion, infant nutrition and growth, contributes to the development of the infant.





Spirituality and nature also have an influence on development, however, It is considered a social, cultural, and spiritual intertwining. It should be noted that the use of Traditional Medicine and superstitions are in favor of the development of the infant. In addition, delays can also be correlated with limited education, poor health knowledge, language, and traditional healing practices, which can often affect children's growth and development.

In addition, for development, also An adequate diet is necessary, and the use of fatty acids as essential in neurological development is clarified. The presence of anemia in infants and short stature for age can be mentioned.

#### 4 DISCUSSION

During gestation traditional Medicine practices are used, such as the use of breast milk to treat the common cold, conjunctivitis. In addition, it also aims to alleviate infant death. However, some cultures believe that milk may be contaminated through the spirit world, and with that, they stop feeding. (GOMES, RODRIGUES and ESPERANDIM, 2023)

In the trad breastfeeding is a period of molding the infant nutritionally, medically, and morally. Thus, it is important to analyze the consequences of breastfeeding and its cultural influence on infant development. (GOMES, RODRIGUES and ESPERANDIM, 2023)

First ÁLVAREZ-IZAZAGA, et. Al. (2022) found a greater neurodevelopmental deficit in mothers with a lack of care and difficult access to basic health services. However, this assistance was absent from delivery and, therefore, from birth, infants received fewer timely stimuli for development. Therefore, to promote infant dietary health and growth in the first year of life, in the study by ROSENSTOCK et. Al. (2015) The use of home visits was proposed and efficacy was proven through a clinical trial in infants 3 to 12 months postpartum.

Another important factor regarding the use of health units was demonstrated by OLIVEIRA et. Al. (2019) that mothers associated childcare appointments with the presence of diseases and, therefore, vaccination Breastfeeding, hygiene, and early identification of health problems were incomplete.

Moreover, in the study by Kroening et. Al. (2016) an evaluates there was no concern about developmental milestones on the part of the parents unless the child had speech or behavioral problems. It can be concluded that barriers in identifying delays are related to education and knowledge of limited health and use of traditional healing practices.

Culture varies according to the population analysed. And, according to ASTUDILLO et. Al. (2018) it is possible to discuss the milestones of development. Walking is a mark of



independence, as the infant can transcend the limits of the home, in addition to favoring greater socialization with other people who do not belong to the family nucleus. Language is present at around 9-10 months, with sounds, at 11-12 months of age, they began to understand words, and at 16 months, they began to produce words.

In addition to the socio-cognitive environment, children could learn their future occupations through action, imitation, and play. However, in tribes such as the Yucatecans and Mayans, little attention was paid to this aspect of the child. In tribes of Peru and India, crawling was frequent at 12 months and communicative exchange at 8 to 13 months.

In teaching and learning, 9- to 10-month-olds from diverse cultural backgrounds have been shown to learn by imitating and the most frequent actions of domestic work. However, this learning only developed after the child began to crawl, by gaining greater independence.

There has been an omission of corporal or verbal punishment to teach cultural norms in the Mbya-Gurani and Tobas tribes, and in view of this, they use techniques based on avoidance and escape. Also, in the Moyu-yoreme tribe, for "Being intelligent" is used by anger, shame and fear, benefiting from socio-moral development.

COELHO (2013) elucidated the presence of high rates of diarrheal diseases and, thus, can affect the development and growth of children, due to low weight and early weaning. (PEREIRA and CABRAL, 2008)

In addition, in the study by BARRETO (2011), malnutrition anemia were present, and infections and diarrhea could develop, and as a result, short stature for age was found.

In addition, practices to avoid underweight have also been proposed by PHUKA et. AL. (2012). In the study, infants received supplemental daily treatment based on lipids or corn and soybean flour, showing good results in motor development up to 18 months of age, in view of the positivity of fatty acids for brain development.

It is important to highlight the improvement in the quality of life and technological progress in most of the tribes and, as demonstrated by DINIZ (2010), according to the parameters of the Children's Handbook, there has been an evolution of the growth and development within the appropriate range, as well as low birth weight. This was made possible by the coverage of 100% of the families by indigenous health agents, adequate prenatal care, and the lifestyle of indigenous families (houses without walls, frequent contact with neighboring families, among others).

During the first year of life, pre-birth-term and low birth weight are risk factors for interfering with development and motor patterns during the first year of life, which may conclude the need for adequate prenatal care for the indigenous population.



Finally, AHOLI (1990) points out that Traditional Medicine aims to promote the motor and physical development of the infant, through superstition it is important to note that there is

## **5 FINAL THOUGHTS**

Thus, it can be concluded that there are divergences between Evidence-Based Medicine and Traditional Medicine, together with the Indigenous Culture, during the development of the infant. The aim of this study is to develop neuropsychomotor medicine. Finally, in order for there to be a cohesive identification with developmental delay, in addition to prenatal care and childcare, parents should be educated about developmental milestones and associated with Traditional Medicine, so that there is more adherence to knowledge.

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