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## Early Stimulation in Children Aged 3 to 5 Years: A Correlational Study on Knowledge and Practices in Caregivers

*Estimulación temprana en niños de 3 a 5 años: un estudio correlacional sobre conocimientos y prácticas en cuidadores*

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## ABSTRACT

**Aim:** To identify the knowledge and practices of caregivers regarding early stimulation in children aged 3 to 5 years in three neighborhoods of Cartagena (Bolívar).

**Methodology:** Quantitative, correlational study. The reference population was 3,344 children aged 3 to 5 years living in three neighborhoods of the city of Cartagena. An instrument consisting of 3 sections was used for data collection: 1. Sociodemographic aspects, 2. Knowledge of early stimulation, 3. Practices on early stimulation. The forms were typed into a database according to the study variables. The chi-square analysis was 5%, and p values <0.05 were considered significant.

**Results:** A sample size of 359 caregivers and parents of children was estimated, taking three first-level care centers in the city of Cartagena as reference. The caregivers were mothers (61.8%), aged 30 – 39 years (42.6%), living in a free union (42.6%), having technical/technological studies (44.8%), belonging to social-economical level (stratum) 1 (38.4%). Knowledge was regular (82.5%) and practices were good (82.5%). The practices were correlated with the age of the child (p: 0.012), age of the caregiver (p: 0.000) marital status (p: 0.000) (in Health Center 1), gender of the child (p: 0.049) (in Health Center 2), and origin of the child (p: 0.002) (in Health Center 3).

**Conclusions:** caregivers of children from 3 to 5 years old from 3 neighborhoods of Cartagena have regular knowledge and good practices regarding early stimulation.

**Keywords:** knowledge, caregivers, child development, early stimulation.

## RESUMEN

**Objetivo:** identificar los conocimientos y prácticas de los cuidadores sobre estimulación temprana en niños de 3 a 5 años de tres barrios ubicados en Cartagena (Bolívar).

**Metodología:** Estudio cuantitativo, correlacional. La población de referencia fue 3.344 niños de 3 a 5 años residentes en tres barrios de la ciudad de Cartagena. Para la recolección de información, un instrumento consta de 3 apartados: 1. Aspectos sociodemográficos, 2. Conocimientos sobre estimulación temprana, 3. Prácticas sobre estimulación temprana.

Los formularios fueron digitados en una base de datos según las variables del estudio. El análisis de chi-cuadrado fue del 5% y se consideraron significativos valores de  $p < 0,05$ .

**Resultados:** Se estimó un tamaño de muestra de 359 cuidadores y padres de niños, tomando como referencia tres centros de atención de primer nivel de la ciudad de Cartagena. Los cuidadores fueron madres (61,8%), edades entre 30 y 39 años (42,6%), viven en unión libre (42,6%), tienen estudios técnico-tecnológicos (44,8%), son del estrato 1 (38,4%). Los conocimientos fueron regulares (82,5%) y las prácticas buenas (82,5%). Las prácticas se correlacionaron con la edad del niño ( $p: 0,012$ ), la edad del cuidador ( $p: 0,000$ ) y con su estado civil ( $p: 0,000$ ) (en el Centro de Salud 1), con el sexo del niño ( $p: 0,049$ ) (en el Centro de Salud 2), y con el origen del niño ( $p: 0,002$ ) (en el Centro de Salud 3).

**Conclusiones:** los cuidadores de niños de 3 a 5 años de 3 barrios de Cartagena tienen conocimientos regulares y buenas prácticas de estimulación temprana.

**Palabras clave:** conocimiento, cuidadores, desarrollo infantil, estimulación temprana.

## INTRODUCTION

Early childhood is a life stage of great importance, as part of the processes of human development, since, during it, children exhibit high sensitivity to the surrounding social and physical world, which, together with the characteristic neuroplasticity of their brain, defines the biological and psychological structures and functions that will operate throughout their life (1). Therefore, exposure to both, harmful and protective factors, will condition the deployments of health and well-being in present and future stages of their existence (2). In this sense, during early childhood, child development is crucial because it constitutes a progression where the child improves perceptual, motor, cognitive, linguistic, socio-emotional, and self-regulatory skills (3,4).

This is how child development is influenced by family, community, and environmental interactions, thus, the environment surrounding the infant greatly affects their well-being, so the activities in which caregivers talk and respond to the child allow emotional support and promote their development. This is considered necessary at this age stage, because such actions have been shown to provide protection against the detrimental effects of low socioeconomic status in which one can live (4), for example. In addition, psychosocial stimulation, dialogic reading, and attachment-based actions have consistently revealed positive effects on children's cognitive, language,

motor, and behavioral outcomes (5). Likewise, the opportunities of play, as mediated by caregivers, are another prominent component within the environments of early and healthy learning, the knowledge that the child acquires through the game will translate into the basis for a more advanced cognitive development in later ages, because playful activities encourage them to try new tasks, solve problems, cooperate, and develop social, sensory, and motor skills (6).

Existing empirical evidence around the world suggests the positive results of early stimulation. In the international context, it has been revealed that many parents do not perform stimulation activities (47.8%), others do so moderately (45.8%), and few do it intensively (6.4%). When assessing child developmental outcomes, children of high-involvement parents score higher on the Early Childhood Development Index (7) than those who have not received stimulation. In the case of Peru, the realization of early stimulation activities translates into better performance in terms of fine motor skills, compared to children who are not stimulated (62% vs. 39%) (8). Thanks to another contribution, it was known that an early intervention administered weekly for 3 months by a community health worker significantly improved aspects such as communication, motor development, and personal-social development of children (9).

Regarding Colombia, it was observed that the effects of an early stimulation intervention of a psychosocial nature may be affected by the commitment that caregivers can maintain in terms of continuity in the stimulation of their children (10). Whereas, when exploring the situation of early stimulation in Cartagena, no information was available, suggesting the existence of a research gap. In this order of ideas, it is worth carrying out some research that allows shining a light on this subject, so it was considered pertinent to complete a study that would make it possible to identify the knowledge and practices of caregivers regarding early stimulation in children from 3 to 5 years in three neighborhoods located in Cartagena (Bolívar) in 2021.

## MATERIALS AND METHODS

Analytical study. The population corresponded to 3,344 children, aged 3 to 5 years, living in three neighborhoods of Cartagena according to information from National Statistic Department (11)- and the Planning Department of the District of Cartagena (12), of which a sample size of 359 parents and caregivers of these children was estimated, assuming an expected prevalence of 50%, An absolute error of 4.9% (relative error of 9.8%), and a confidence level of 95%. A random sam-

pling was used based on the criteria of accessibility and availability of the potential participants at the time of developing the collection of information (13).

For data collection, an instrument adapted from the work of Garza (14) and Gómez (15) was used. This consists of 3 sections: 1. Sociodemographic aspects, designed by the research team, with questions relating to children and caregiver; 2. Knowledge about early stimulation that includes and questions both in a dichotomous “yes” and “no” scale (items 1 to 6, and 9), and multiple choice with single answer (items 7-9); and component 3. Practices on early stimulation, in which multiple choice questions with a single answer (items 1 to 4) and dichotomous (item 5) are presented. The level of knowledge was categorized as follows: Bad knowledge: less than 4 correct answers; regular knowledge: between 4 and 6 correct answers; good knowledge: 7 or 8 correct answers. As for the practices, they were classified as follows: Bad practices: up to 2 correct practices; regular practices: 3 to 4 correct practices; Good practices: 5 or 6 good practices. A pilot test was carried out to validate the instrument with 25% of the total sample, a Cronbach’s Alpha of 0.65 was obtained.

After obtaining the information from the surveys, the forms were typed into a database according to the study variables. The chi-square analysis was 5%, and p values <0.05 were considered significant. The ethics of the research are based on Resolution 8430 of 1993, with the study classified as risk-free research, since there is no intervention or intentional modification of the biological, physiological, psychological or social variables of the individuals who participated in the study. Informed consent was used. The study was approved in committee registration N0 001-21 (16).

## RESULTS

### Sociodemographic Aspects

It was attended by 359 parents and caregivers of children from 3 to 5 years old. The children receiving care were mostly male (53.2%). The age of the participating children was slightly equal of 3 years (37%), 4 years (31.5%) and 5 years (31.5%).

It was observed that 34.3% of children are not yet studying, 30.4% are in pre-kindergarten, 30.6% in kindergarten, and only 4.7% in first grade. Regarding social security, those affiliated to the subsidized regime stood out with 56.8%, followed by contributors with 29.8%, those of the special regime with 8.6%, and those who do not have affiliation or linked, with 4.7%(table 1).

**Table 1. Sociodemographic aspects of minors**

Variable	Distribution	Health Center Locality 2		Health Center Locality 1		Health Center Locality 3	
		N	%	N	%	N	%
		107	29,8	146	40,7	106	29,5
<b>Sex</b>	Male	58	54,2	68	46,6	65	61,3
	Female	49	45,8	78	53,4	41	38,7
<b>Age</b>	3	33	30,8	58	39,7	42	39,6
	4	41	38,3	44	30,1	28	26,4
	5	33	30,8	44	30,1	36	34,0
<b>Schooling</b>	None	33	30,8	50	34,2	40	37,7
	Pre-K	40	37,4	46	31,5	23	21,7
	Kinder	31	29,0	40	27,4	39	36,8
	First grade	3	2,8	10	6,8	4	3,8
<b>Origin</b>	Urban	101	94,4	107	73,3	98	92,5
	Rural	6	5,6	39	26,7	8	7,5

Source: Compiled by authors

### Description of the Knowledge of Caregivers on Early Stimulation

Regarding the concept of early stimulation, 51.3% of parents knew that early stimulation refers to actions to maximize the physical, mental, and psychosocial abilities of children. Also, if it was put to the consideration of caregivers whether early stimulation can be negative, for example, leading the baby to a state of anxiety, when more is demanded than he can give, 49.3% chose the correct option “true”.

One aspect in which most of the caregivers (75.5%) erred was to think that the games played by children do not necessarily have to be pleasant for them, as long as they stimulate their cognitive capacity. Finally, as for the recognition of early stimulation activities, caregivers assimilate them correctly, especially teaching them to identify primary colors (95%), telling children’s stories and asking them to remember data from this (91.6%), playing with blocks or colorful toys requesting that they match or group similar colors (89.7%) and distinguish when it is hot or when it is cold



(76.3%) (table 2). All caregivers showed adequate practices at the beginning of early stimulation and its environment. However, it is not entirely appropriate people who are usually responsible for showing new things to the child.

**Table 2. Caregivers' knowledge and practices on early stimulation**

	KNOWLEDGE			
	Correct	%	Wrong	%
Knows which activities are part of early stimulation	184	51,3	175	48,7
Considers early stimulation to be beneficial for your child	177	49,3	182	50,7
Teaches them to identify primary colors	341	95,0	18	5,0
Teaches them to distinguish when it is hot or when it is cold	274	76,3	85	23,7
The child can be stimulated through the senses of sight, smell, hearing, touch, and taste	195	54,3	164	45,7
The mother and father should play with blocks or colorful toys asking the child to match or group similar colors	322	89,7	37	10,3
Tells children's stories and asks them to remember facts about it	329	91,6	30	8,4
Stimulation through play	88	24,5	271	75,5
	PRACTICES			
	Adequate	%	Inadequate	%
How you start early child stimulation	359	100,0	0	0,0
What the early stimulation environment should be like	359	100,0	0	0,0
What parents should do to stimulate their child	323	90,0	36	10,0
What practices you do to stimulate the child	277	77,2	82	22,8
At home who is responsible for teaching new things to the child	135	37,6	224	62,4

Source: Compiled by authors

The vast majority (82.5%) of surveyed caregivers have regular knowledge on early stimulation, and only 12.5% have good knowledge. The bed health center in Locality 1 reported the highest proportion of caregivers with poor knowledge. Table 3.

The information showed that the practices of the caregivers, in their great majority (82.5%) were good, and, to a lesser extent, regular (17.5%). The bed health center in locality 2 reported a higher level of good practices. Table 3.

**Table 3. Caregivers' knowledge and practices of early stimulation**

	Health Center Locality 2		Health Center Locality 1		Health Center Locality 3	
Knowledge	N	%	N	%	N	%
Bad	3	2,8	15	10,3	0	0,0
Regular	97	90,7	115	90,7	84	79,2
Good	7	6,5	16	6,5	22	20,8
	Health Center Locality 2		Health Center Locality 1		Health Center Locality 3	
Practices	N	%	N	%	N	%
Regular	32	21,9	10	9,3	21	19,8
Good	114	78,1	97	90,7	85	80,2

Source: Compiled by authors

### Association between Knowledge, Practices and Sociodemographic Characteristics

The practices on early stimulation in the resident caregivers were associated with the sex of the child they care for having the children greater occurrence of appropriate practices. The age of the child was associated with the level of knowledge being mostly good in children under 5 years. The marital status of the caregiver was associated with early stimulation practices being mostly adequate in those caregivers who do not have a partner. In turn, the statistical significance was presented between the practices and the origin of the child ( $p: 0.009$ ), with the rural area positively standing out.



Caregivers in socioeconomic strata 1 and 2 reported better results in early stimulation practices. Likewise, in children with less schooling, caregivers reported better levels of knowledge. Table 4.

**Table 4. Association between knowledge, practices and sociodemographic characteristics**

	KNOWLEDGE				p value	PRACTICE				p value
	Well		Bad or fair			Adequate		Inadequate		
<b>Sex</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>		<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	
Female	19	11,3	149	88,7	0,511	131	78,0	37	22,0	0,037
Male	26	13,6	165	86,4		165	86,4	26	13,6	
<b>Age of the child</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>p value</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>p value</b>
<5 años	223	90,7	23	9,3	0,007	45	18,3	201	81,7	0,585
5 años	91	80,5	22	19,5		18	15,9	95	84,1	
<b>Schooling of the minor</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>p value</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>p value</b>
Up to pre-kindergarten	212	91,4	20	8,6	0,002	42	18,1	190	81,9	0,709
Kindergarten or 1st grade	102	80,3	25	19,7		21	16,5	106	83,5	
<b>Origin</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>p value</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>p value</b>
Rural	47	88,7	6	11,3	0,772	16	30,2	37	69,8	0,009
Urban	267	87,3	39	12,7		47	15,4	259	84,6	
<b>Marital status</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>p value</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>p value</b>
Without a partner	111	91,7	10	8,3	0,081	38	31,4	83	68,6	0,000
With partner	203	85,3	35	14,7		38	31,4	213	89,5	
<b>Socioeconomic stratum</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>p value</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>p value</b>
1 or 2	210	86,4	33	13,6	0,387	50	20,6	193	79,4	0,029
3	104	89,7	12	10,3		13	11,2	103	88,8	

Source: Compiled by authors

## DISCUSSION

With the development of this research, it was possible to show that the knowledge of caregivers early stimulation was, above all, regular (82.5%), a situation that generates concern, since ignorance about the correct way to stimulate children can cause caregivers to carry out bad practices and that children do not have optimal physical, social, and affective development from early childhood. This result agreed with Soldevilla (17), who reported that 88.7% of its respondents presented medium or regular knowledge, along with only 2.08% who had high knowledge. Likewise, Briones (18) finds a medium level of knowledge on early stimulation (61%), while Aguado (19) found similar shares of regular (47.5%) and low knowledge (45%). On the other hand, there were differences with respect to the findings of Camden et al. (20), who find good knowledge (46.2%) and Veloís (21), who, from the other extreme, reports wrong or bad knowledge (56%).

As for early stimulation practices, the study suggested that caregivers carry them out well, contrasting with their knowledge (82.5%); this was like Soldevilla's study (17), in which participants presented adequate early stimulation practices (73.2%). In addition, in the results of Aparicio et al. (22), it is necessary that a high proportion of caregivers (87.84%) "recognizes that stimulating the child early is done through activities such as hugging, congratulating and joining the child's game as a vehicle for learning socializing activities, self-care for independence, as well as teaching values", suggesting the existence of good practices.

It was appreciated that the preferred practice of caregivers is to teach the child to identify the primary colors (22.6%), while telling children's stories occupied a place that qualifies it as rare (5.8%). When compared with the study by Pratte et al. (23), it was observed that reading, either at home (32.4%) or in libraries (56.5%), was the most common. In addition, Lavoie et al. (24) reported in their research that reading is the preferred stimulation activity (41%). Among the family members who are responsible for teaching new things to the child were, in first place, mothers (97.5%), followed by fathers (77.2%), grandmothers (60.7%), and aunts (47.9%). This result was relatively different from that of Hartinger et al. (8), in which parents have a less pronounced participation (52.2%).

The surveyed caregivers tend to spend each week, mainly 2 (36.8%) or 3 hours (25.1%), playing exclusively with the child. This was different from what Pratte et al. (23), to the extent that the

caregivers they surveyed recognized that children performed motor, physical and reading activities at least once a week, with some caregivers even saying that stimulation activities were performed either a few times a month (14.9%) or less (17%).

Finally, the statistical correlation exercises showed that only some variables were statistically significant and varied depending on the neighborhood in question. Thus, the practices were correlated with the age of the minor ( $p: 0.012$ ), the age of the caregiver ( $p: 0.000$ ) and with their marital status ( $p: 0.000$ ) in Las Gaviotas; with the gender of the minor ( $p: 0.049$ ) in San Fernando; and with the origin of the minor ( $p: 0.002$ ) in San José de los Campanos. When consulting the literature, no research was found that would have found the variables to be significant. Only a few hypotheses could be formulated that further studies could investigate.

What evidence was found in the literature was about some variables that were not statistically significant in this research and should be. Here is the variable knowledge since authors such as Soldevilla (17) mention that these should have a statistically significant relationship with practices since they would be the basis for acting in a certain way. With respect to the kinship of the caregiver with the child, no correlation was found with the practices. On this, Bago (25) report that the role of subjects such as the mother and father should condition ( $p < 0.05$ ) the practices, since it is these subjects that make up the family nucleus. Likewise, schooling should be statistically relevant since more schooling would mean greater knowledge on the benefits of early stimulation in the well-being of the child.

Regarding the socioeconomic level (stratum), it was not significant either. Although in the work of Worku et al. (26) it was observed that, when the child lives in socioeconomic contexts where good living conditions are experienced, the propensity to be stimulated early increases ( $p < 0.05$ ). However, and in the opposite direction, Pratte et al. (23) observe that families with lower strata have more concerns about the development of their children than those with the higher strata, which contrasts with the widely accepted view that disadvantaged families are less aware of their children's difficulties and the need for early stimulation.

## CONCLUSION

In sociodemographic terms, it was concluded that the participants came in similar proportions from each of the three selected neighborhoods. Mostly male children participated in the study,

the average age was three years, infants who do not study predominated, whose origin was urban, and their social security health system was subsidized.

Through the component of knowledge of the caregivers on early stimulation, it was possible to determine that they are, to a greater extent, regular. It was striking that although the concept of early stimulation held by most caregivers was correct, there were some (in a not insignificant quantity) who did not know what it consisted of.

Finally, in the section on early stimulation practices developed by caregivers, it was established that they were mostly good, in slight contrast to knowledge. Indeed, they carry out an important variety of activities to stimulate the minor, especially, they teach them to identify the primary colors, carry out playful activities that reinforce their motor skills, and teach them to dress themselves. He also highlighted the fact that caregivers prefer a calm and serene environment for stimulation activities. In addition to the fact that they tend to dedicate about 2-3 hours a day to stimulate the child. Finally, it was determined that the preference for stimulating the minor in schools instead of doing it at home was predominant.

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