

Home environment and its association with mental development of infants

■ Shipra Nagar

Received: 07.06.2018; Revised: 13.11.2018; Accepted: 26.11.2018

■ **ABSTRACT :** The present research aimed at investigating home environment of infants and its association with their mental development. The study was carried out in the villages of two districts of Meghalaya (West and South Garo Hills). A sample of 100 infants from birth to two years was selected randomly from four villages of the districts. Developmental Assessment Scale for Indian Infants (DASII) and a modified HOME inventory developed by Bradley and Caldwell were used for assessing mental development and home environment of infants, respectively. A pretested and modified self structured interview schedule was also used to elicit information regarding home environment and other aspects from the mothers of the infants. Results revealed that majority of the infants had average category of home environment but had low scores in the area of toys and play materials. They did not possess play materials like beads, blocks, puzzles, picture books, etc. in their homes. A strong association existed between home environment and their mental development. Infants performed poorly on the mental scale indicating low mental development.

■ **KEY WORDS:** Home environment, Infants, Mental developments

■ **HOW TO CITE THIS PAPER :** Nagar, Shipra (2018). Home environment and its association with mental development of infants. *Asian J. Home Sci.*, 13 (2) : 637-641, DOI: 10.15740/HAS/AJHS/13.2/637-641. Copyright@ 2018: Hind Agri-Horticultural Society.

Author for Correspondence :

Shipra Nagar

Department of Human
Development and Family Studies,
College of Home Science, Central
Agricultural University, Tura
(Meghalaya) India
Email : shipranagar@gmail.com

Among various settings, home occupies the first and the most important place for development of an individual. According to Bronfenbrenner's ecological theory, home is one of the important micro-system of a child which has a direct influence on development (Berk). The environment provided by the parents at homes, their behavior, interaction with child and other related factors tend to influence the cognitive development and socialization of children, though the degree of influence may vary. Mishra (1986) defined home environment as a measure of the quality and quantity of social, emotional and cognitive support that

has been available to the child within the home.

Early years are the most crucial period in life, because this is the time when foundations are laid for various developments such as motor, personality, sensory, cognitive, language, social development, etc. In the initial stages of rapid growth and development, the child learns to handle more complex level of moving, speaking, thinking and interacting with people and objects in the environment. It is during this period that the child learns to deal with the environment and satisfy his basic needs.

Proper stimulation provided during early childhood has more impact on the child's brain growth and

development than at any other time in life. The infant's brains are highly sensitive and conducive to learning. Any new learning by children begins with awareness which is generated from their experiences with objects, events or people. Researchers have established that home environment was found to be a major significant contributing variable in predicting mental health components of the children (Manjuvani, 2000). A study of effects of home environment by Bradley and Casey (2000) showed that interventions made a bigger difference on IQ for children from lower quality home environment than for children from higher quality home environment when children were three years old. Significant differences were seen in home environment of infants (19-24 months) where the mother's knowledge regarding upbringing of children was good (Zeenia, 1998).

Home environment also includes those aspects which foster growth and development, such as family trust and confidence, sharing of ideas, making discussions, parental approval, affection and peer activities (Devi, 1997). However, lack of care and attention from parents during early years leave children stunted growth, substantially lower IQs and more behavioral and psychological problems than children than children who had been better cared for. Studies by Carneiro and Heckman (2003) found that children's skills were influenced by family characteristics, such as parental education and income as well as other factors that are part of the family environment. Comparative studies on the home environment of children in deprived urban settings and high SES has shown that children in deprived settings had poor home environment and this was a factor that contributed to the difference in their developmental status. Studies on the home environment of preschool children in urban deprived settings using Home Observation for Measurement of Environment (HOME) has shown that warmth and affection was highest in those homes but acceptance was the domain that scored least (Sheeba *et al.*, 2003). Thus, it is imperative to maximize both the amount of stimulation and the kinds and quality of stimulation that child receives.

Rural tribal families tend to have limited skills required for creating conducive environment which may be due to the factors like poverty, low literacy level and ignorance among the parents. The present study was planned to investigate the home environment of tribal infants and its effect on their mental development.

■ RESEARCH METHODS

The study was carried out in villages of two districts of Meghalaya, *i.e.* West and South Garo Hills districts. A sample of 100 infants in the age group of birth to two years along with their mothers was selected randomly from four villages of the two districts. Different tools were used to collect information related to home environment and mental development. A modified HOME inventory by Bradley and Caldwell was used to assess the home environment of the subjects. The scale consisted of items to be observed under various categories like emotional and verbal responsiveness, acceptance of child's behavior, organization of environment, provision of play materials, parental involvement with child and father active involvement. The Development Assessment scale for Indian Infants (DASII) was used to assess the mental development of infants. The mean values of the mental age of the infants were calculated along with development quotients (mental) or DMeQ according to the formula:

$$\text{DMeQ} = \frac{\text{Mental age of child}}{\text{Chronological age}} \times 100$$

An interview schedule was also developed to elicit information regarding child care and home environment from the mothers for collection of data. The ICDS anganwadi centres in the selected villages were contacted to get a list of all children in the age group birth to two years. From that list, 25 infants from each village, in the above mentioned age category was randomly selected for the study. Individual visit were made to each infant's house and they were tested for mental development through the use of DASII.

Finally observations were done for the home environment and then information was taken from their mothers primary caregivers regarding socio-economic background etc. The data was analyzed through frequencies and percentages in addition to means and standard deviations. Chi-square test was applied to the data to see the effect of home environment on mental development of infants.

■ RESEARCH FINDINGS AND DISCUSSION

Environmental influences have the greatest effect on children during periods of infancy and beyond. The quality of the home environment is an important predictor of the cognitive and social development of infants. The

mean values of home environment of sample infants is presented in Table 1. The findings revealed that the average value of the home environment was found to be 62.05 and infants in all the age groups, *i.e.*, from birth to six, six to twelve, twelve to eighteen and eighteen to twenty four months had similar mean values of home environment. According to the observed scores of home environment, infants were classified in three categories of poor, average and good home environment. It was seen that majority (73%) of them had average environment in their homes (Table 2). The results of the present study are in line with the similar researches on home environment of children in deprived settings which showed that children in these settings have poor home environment which contributed to their low developmental status (Nair and Radhakrishnan, 2004).

The broad category of home environment was further analyzed to different areas *viz.*, emotional and verbal responsivity, acceptance of child's behaviour, organization of environment, provision of play material, parental involvement with child and father's active involvement in care giving. The mean scores were calculated for each area and it was observed that infants

had low score in the area of provision of play materials (Table 3). Certain intervention studies revealed significant differences in the mean scores of home environment and proved that the impact of intervention to mothers promoting conducive home environment was significant (Sharma and Nagar, 2009 and Khadi *et al.*, 2008). Researches by Miquelote *et al.* (2012) concluded a significant positive correlation between dimensions of home (in form of daily activities and play materials) and motor and cognitive performance of children.

Any learning by children begins with awareness which is generated from their experiences with people, events or objects. In this context, children's play and their play equipments are of prime importance. Children's spontaneous play provides opportunities for exploration, experimentation and manipulation that are essential for constructing knowledge. Toys and play materials are important for a child's development especially during infancy. An effort was made to investigate the type of different toys available in the houses of the sample group. Results obtained showed that most common toys present in their houses were ball (50%), car/jeep (38%) dolls (38%) rattle (25%) and bat (20%) (Table 4). Other

Table 1 : Mean values of home environment of infants

Age groups	Mean values
Birth to 6 months	60.42 (3.48)
6 to 12 months	62.23 (3.20)
12 to 24 months	62.69 (3.23)
Average value	62.05 (3.33)

Table 2 : Distribution of infants according to their levels of home environment scores

Age group	Levels of home environment			Total sample (Number/Percentage)
	Poor	Average	Good	
Birth to 6 months	7	14	0	21 (21%)
6 to 12 months	3	22	6	31 (31%)
12 to 18 months	2	15	5	22 (22%)
18 to 24 months	1	22	3	26 (26%)
Total	13 (13%)	73 (73%)	14 (14%)	100

Table 3 : Mean value of different aspects of home environment of infants

Aspect of home environment	Maximum score	Mean values of infants
Emotional and verbal responsivity	10	9.91 (0.20)
Acceptance of child behavior	10	9.93 (0.19)
Organization of environment	12	10.6 (1.19)
Provision of play material	36	20.5 (1.81)
Parental involvement with child	6	5.58 (0.96)
Father's active involvement in care giving	6	5.47 (1.05)

stimulatory play materials like blocks, musical toys, puzzles, picture books, kitchen sets, etc. were not present which might be due to the socio-economic conditions as parents might not have enough money to provide for better toys. It is a well established fact that infants exposed to good nutrition, toys and play materials have measurably better brain functioning than those raised in a less stimulating environment (Brazelton, 1994).

The mental development of infants was observed by using Developmental Assessment for Indian Infants (DASII) and it recorded the child’s cognizance of objects in the surroundings perceptual pursuit of moving objects, exploring items of meaningful manipulations, development of communication and language comprehension, spatial relationship and manual dexterity, imitative behavior and social interaction, etc. It can be observed from the Table 5, that all infants had lower levels of mental development as indicated by their scores of mental development quotients, particularly, infants below six months. The results are in concurrence with similar studies which found that development of gross motor and fine motor skills was delayed in infants of slum areas which might be due to less stimulation provided by parents and caregivers (Meenakshi *et al.*, 2007).

The association between home environment and mental development of infants was assessed through the chi square analysis. There existed a strong significant association between the two variables (Table 6) which indicates that better the home environment of infants, higher was their performance on the mental level. The table also shows that majority of the infants that delayed mental development quotients. This meant that children having a poor environment in their homes were also delayed in their mental capacities and children who have better opportunities in their homes for exploration, experimentation and play have better mental development levels. This is in concurrence researches revealing that deprived home environment influenced developmental levels of children which resulted in poor verbal, perception, memory, motor and general cognition (Kaushal *et al.*, 2013). Intervention studies focusing on impact of multisensory stimulation on motor and mental development of infants found significant differences in mental development of infants (Baruah and Baruah, 2014). Studies involving correlation between HOME scores and performance of children on the basic concepts found that richer the home environment higher will be the level of concept development (Rani, 1993).

Table 4 : Distribution of infants according to the type of play materials present at homes (n=100)

Different toys	Number of infants	Percentage
Bat	20	20.0
Ball	50	50.0
Car/jeep	38	38.0
Dolls	38	38.0
Rattles	25	25.0
Walker/ kiddy car / scooter	1	1.0

Table 5 : Mean values of mental development quotients (DMeQ) of infants

Age groups	Number of infants (n=100)	Mean age in months (in months)	Mean mental age (in months)	DMeQ (mean values)
Birth to 6 months	21	3.37	3.15	84.03
6 to 12 months	31	8.69	8.79	97.98
12 to 18 months	22	14.53	14.6	99.64
18 to 24 months	26	20.73	21.13	98.80

Table 6 : Association between home environment and mental development quotients of infants

Category of mental development quotients	Levels of home environment			Total	Chi square value
	Poor (less than 59)	Average (59-65)	Good (more than 65)		
Delayed (less than 100)	10	37	9	56	104.32**
Average /on par (100)	1	11	-	12	(Significant at
Advanced (more than 100)	2	24	6	32	0.01%)
Total	13	72	15	100	

Black *et al.* (2016) also suggested enhancement of home environment quality may protect infants in low –asset families from poor growth and promote their development.

Thus early years are important years for the development of child and each child needs an experientially rich environment for his/her optimum development. However this richness is not merely the richness reflected by costly clothes, good food, expensive toys or a concrete house but it is richness of experience in terms of parent child interaction and parental aspiration. Home in which a child gets an opportunity to listen to good stories, to play with varieties of objects is perhaps the richest home so far as the young child is concerned. The results of the present study stressed on the important role that home environment plays on developing mental capacities of children. It is thus indicated that the quality of home environment is an important predictor of the cognitive development of children. Therefore, interventions focusing on upgrading the environment of the child through positive parental interactions, effective stimulations and better cognitive experiences to the families in the tribal settings should be planned and implemented.

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