

Influence of Home Environment on Psychomotor Development of Infants in Kangra District of Himachal Pradesh

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KEYWORDS Home Environment. Motor Development. Infants. Intervention

ABSTRACT The study focuses on the influence of home environment on psychomotor development of infants through stimulatory intervention on a sample of 145 male and female infants of age birth to 18 months from two villages, one of which served as experimental group and the other control group. A modified version of Home inventory by Bradley and Caldwell was used to know the home environment in addition to the Bayley's Scale of Infant Development (BSID) which was used to assess motor development of infants. Intervention focusing on aspects of home environment and developmental milestones of infants was provided to mothers of infants along with necessary stimulation to infants was provided to the experimental group while no such experience was given to the control group. All the infants were pre and post tested after the intervention period. The results revealed significant differences in home environment, motor age and psychomotor developmental indices between the experimental and control group infants. A significant association was also found between home environment and psychomotor developmental indices of infants.

INTRODUCTION

Early years are the crucial years for the development of the child and each child needs an experientially rich environment for his/her optimum development. The nurturing experiences the infant receives in the early years of his life, serve as the foundation for his subsequent learning. Therefore, enrichment / deprivation during the early years of life would be particularly vital so far as later development is concerned. Available research evidence indicates that about 50 percent of intellectual development takes place between conception and four years (Muralidharan 1992).

Each child is born with certain characteristics and abilities that she inherits from her parents. Though each child is unique, children's development follows a universal pattern. The child's development is also influenced by the experiences she has in the family and neighbourhood. The ecological systems theory also views the child as developing within a complex system of relationships affected by multiple levels of surrounding environment, the innermost being the micro system involving the family and parents. Adults affect children's behaviour and also the children's characteristics, their personality styles and ways of thinking in turn influences the behaviour of adults (Berk 2003).

During infancy, two major kinds of development that takes place are the mental development and motor development. Motor development means the development of control over body movements which results in increasing coordination between various parts of body. Through the sensory and motor experiences of the first few months, the child develops perceptual abilities and motor skills. Delay in achievement of various motor and mental abilities affects the child in many ways. Research by Swaminathan (1989) has shown that sensory stimulation from the environment affects the functioning of neural pathways and the better these are developed the better the child is able to respond to stimuli.

Each child needs an experientially rich environment for his / her development. However, this richness is not merely the richness reflected by costly clothes, good food or expensive toys but it is the richness of experience in terms of parent child interaction and parental aspirations. A home in which the child gets and opportunity to listen to good stories, to play with varieties of objects and adults, is perhaps the richest home so far as the young child is concerned.

As mentioned earlier that development is highly influenced by a good home environment which involves parental participation in child's activities. Deprivation in such experiences in the

early years could lead to delay in attainment of developmental tasks and would eventually lead to delayed learning. It is the immediate environment of the infants that has an effect on his development, both physical and psychological. Proper opportunities are not available to the children living in rural areas for developing their potentials to the maximum. These potentials can be enhanced by providing them activities through a comprehensive intervention programmes. The present study investigates the association between motor development and home environment of infants by providing scientific and need based intervention to infants and their mothers in rural areas of Himachal Pradesh through an experimental pre and post research design.

MATERIALS AND METHODS

For the present study, a sample of 145 male and female infants in the age group of birth to eighteen months were selected from two villages in Kangra district of Himachal Pradesh. One of the villages, Bundla, served as an experimental group and the other village, Kandi, served as control group. The experimental group consisted of 69 infants and were brought to a Farm Crèche, established in the village as a part of the study and were provided necessary intervention. The control group consisted of 76 infants and were devoid of any such experience. The study adopted a semi-longitudinal approach of assessing development of infants upto 36 months with final testing at 36 months of age.

The home environment of the infants in both groups were measured through a modified version of Home Inventory by Bradley and Caldwell. Bayley's Scale of Infant Development (BSID) was used to assess the motor development of infants. The scale consisted of 79 items to measure motor development of infants from birth to 36 months. Only such items which were appropriate for the age were administered to the infants. The summated raw scores were converted to standard scores or psychomotor developmental indices and were categorized as follows:

<i>Category</i>	<i>Scores</i>
Low	< 90
Medium	91 to 110
High	> 110

Similarly home environment scores were categorized into three divisions:

<i>Category</i>	<i>Scores</i>
Low	59 to 64
Average	65 to 70
High	> 70

The intervention programme consisted of giving age appropriate toys and play materials and different activities for enhancing language, social and emotional development. The mothers of these infants were also provided with information regarding aspects of promoting good home environment, like giving variety to children, importance of parental involvement, stimulatory toys and play materials, safety at home and understanding children's developmental milestones. The intervention was provided to mothers of experimental group infants through lectures and discussions for a period of eighteen months and the infants in both groups were post tested after providing intervention.

Infants were tested twice, i.e. prior to the intervention and after intervention. Data was tabulated and statistical analysis was conducted to know the significant differences between the two groups. The data was analysed by applying chi-square test to know the association between Psychomotor Development Index and home environment of infants.

RESULTS AND DISCUSSION

The results of the impact of intervention on home environment and psychomotor development of infants are presented in the tables 1 to 3.

Table 1 reveals the mean scores of infants regarding motor age, psychomotor development indices and home environment with respect to pre and post testing of experimental and control groups. It can be observed that infants in both group had similar levels of mean scores with regard to the variables during pretest. An increase in their scores was observed in the category of motor age during post testing of infants. The Psychomotor Developmental Index (PDI) is the index of rate of motor development of infants and it can be seen that although there was an increase in the motor age but the PDI levels showed a decrease in the control group, thus depicting that infants were not able to perform activities appropriate of their age. This was not the case in experimental group where infants showed increase in motor age as well as their indices and were far above their counterparts in the control

group. These results are in agreement with the studies conducted by Bharadwaj (2000), Chopra (2000) and Sharma et al. (2002). The differences in the variables of motor development and home environment are due to the fact that infants in experimental group were provided with necessary stimulation and their mothers were given appropriate education about importance of a conducive home environment, toys and play materials and knowledge about different developmental milestones of infants which can be best achieved by giving proper stimulation. Intervention studies by Mishra and Mohanty (1991) found significant improvements in the cognitive skills of the children of experimental group.

Table 2 shows the significance of intervention on motor age, PDI and home environment scores of infants. Gains in these variables were seen more in case of experimental group. It can be observed that although infants in both groups had similar scores during pretest, significant differences existed during post testing which shows a

positive impact of intervention. Infants in both groups differed significantly in their motor abilities and home environment as shown in Figure 1. A similar study by Jaya and Ratna (1992) observed that due to exposure to stimulation programme, experimental children's rate of improvement in mental abilities was higher than the other group. Rayar et al. (1992) in their study found that urban infants easily attained motor and mental tasks as compared to rural infants.

The wealth of research on infancy (Dunn 1979) has amply confirmed what parents and those who care for babies know so well – that young babies differ markedly from one another. The infant's reaction to familiarity, novelty and his displays of interest, surprises or declining interest have been seen as particularly sensitive indicators of the child's cognitive development. Likewise, infants exposed to good nutrition, toys and playmates have measurably better brain functioning than those raised in a less stimulating environment as found by Brazelton (1994). Table 3 reveals the

Table 1: Mean scores of infants in both groups during pretest and post test

Age cohorts (in months)	Experimental Group (N = 69)		Control Group (N = 76)	
	Pre-testing	Post-testing	Pre-testing	Post-testing
<i>Motor Age</i>				
Birth to 6	2.61 (0.74)	25.6 (3.29)	2.92 (0.85)	17.05 (4.24)
6 to 12	8.08 (1.14)	29.6 (2.69)	8.24 (1.02)	24.39 (3.46)
12 to 18	13.03 (1.69)	28.5 (2.71)	10.94 (4.06)	23.17 (3.31)
<i>Home Environment</i>				
Birth to 6	58.65 (10.4)	70.3 (5.8)	61.5 (3.2)	60.9 (2.3)
6 to 12	65.7 (5.5)	73.8 (3.9)	61.6 (5)	61.3 (2.3)
12 to 18	63.6 (2.6)	69.1 (1.5)	59 (0)	56 (0)
<i>Psychomotor Development Index</i>				
Birth to 6	91.8 (16.5)	95.5 (20.4)	114.3 (5.54)	88.9 (7.2)
6 to 12	99.7 (6.41)	99.0 (9.0)	107.2 (8.1)	77.1 (4.9)
12 to 18	95.5 (7.79)	96.15 (3.93)	101.7 (15.3)	80.7 (6.2)

Note: Figures in parenthesis denote standard deviation

Table 2: Effect of intervention on motor development and home environment of infants

Variables	Pre-test		Post-test	
	Mean	t value	Mean	t value
Motor Age				
Experimental Group (n=69)	5.9 (4.2)	0.815 NS	27.5 (4.0)	7.08 **
Control Group (n=76)	5.39 (3.2)		20.3 (6.3)	
Psychomotor Development Index				
Experimental Group (n=69)	95.7 (10.2)	0.519 NS	104.7 (9.6)	8.97 **
Control Group (n=76)	97.1 (11.1)		91.1 (6.1)	
Home Environment				
Experimental Group (n=69)	62.2 (9.5)	0.24 NS	72.0 (3.5)	19.13 **
Control Group (n=76)	62.0 (4.6)		61.0 (2.8)	

Note: Figures in parenthesis denote standard deviation

** Significant at 1 percent level of significance

Table 3: Association of home environment with motor development of infants

Levels of Home Environment	Levels of Psychomotor development Index			Total	Chi square value
	Low (Less than 90)	Average (91-110)	High (Above 110)		
Low (59-64)	29 (27.1)	74 (69.1)	4 (3.73)	107 (73.8)	14.71 **
Average (65-70)	4 (16)	16 (64)	5 (20)	25 (17.2)	
Good (Above 70)	1 (7.6)	9 (69.2)	3 (23)	13 (8.9)	
Total	34 (23.4)	99 (68.2)	12 (8.2)	145 (100)	

Note: Figures in parenthesis denote percentage

** Significant at 1 percent level of significance

association of home environment and psychomotor development indices of infants. More percentage of infants were in the category of sub average home environment (73.7%) and average psychomotor development index (68.2%). Further a significant association was found between home environment and motor development where it was observed that infants with high home environment scores had average psychomotor development index as compared to infants having sub average home environment scores who had both low and average indices. This might be because home having low scores lacked effective stimulation and had children who were not performing upto their maximum levels which directly influenced their developmental indices. Vondra and Belsky (1993) in their study found that psychological integration and mental capacities were associated with sensitivity of mothers and authoritative pattern of disciplining their infants. Barrera et al. (1986) hypothesized that early intervention with parents improve

parental responsiveness, sensitivity to the child's needs, effective in modifying some aspects of home environment, parent – infant interaction and results in developmental gains.

Periods of infancy and early childhood have been acknowledged as the most significant. Since development proceeds at a faster rate, unfavorable experiences such as lack of adequate food, nurturance and care, unhealthy living conditions, lack of interaction with adults hinders development to a great extent. It is important that the child has a minimum of harmful experiences. Developmental intervention in the form of stimulation must be introduced very early and effective intervention depends on parental involvement was suggested by Pandit (1992).

CONCLUSION

Early intervention always has positive effects especially when it comes to the area of motor development. This was revealed through the

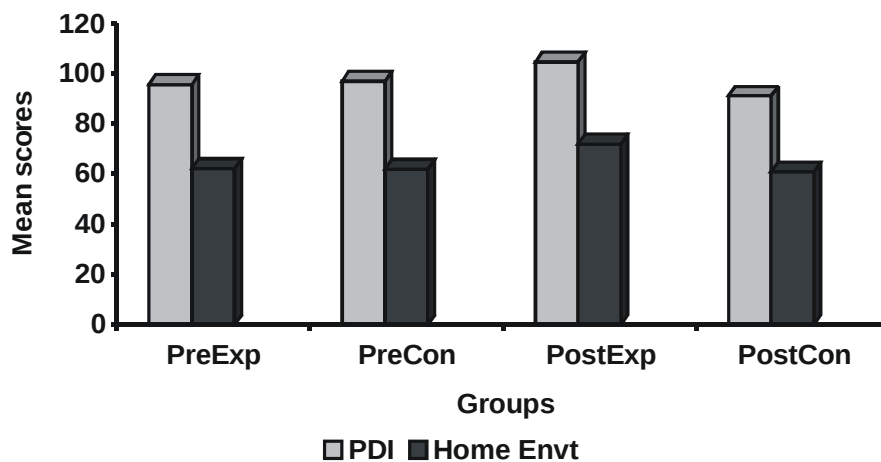


Fig. 1. Increase in scores of infants regarding motor index and home environment

present study where it was shown that infants in experimental group inspite of similar kinds of home environment and developmental indices during pretesting with control group infants, due to the intervention developed higher abilities and motor capacities than the other group. It was thus established that the need for love, nurturance and secure relationships continues throughout life but it is of utmost importance in the early years because this is the time when the child develops self-esteem. Also home environment influences the motor capacities and abilities of infants. Thus there is a need to provide proper knowledge regarding the influence of home environment on the psychomotor development of infants so that mothers are careful enough to provide the right kind of experiences to them so as to unfold the best from their children.

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