

Assessment of Mental and Motor Development of Infants in Hamirpur District of Himachal Pradesh

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INTRODUCTION

Infancy is one of the most remarkable and busiest times of development. The newborn, or neonates enters the world with surprisingly sophisticated, perceptual and motor abilities, a set of skills for interacting with people and a capacity to learn that is put to use immediately after birth. By the end of infancy, the small child is sociable, self-assertive purposeful being who walks his/her own and has developed refined manual skills. Nevertheless, development during infancy proceeds at an astonishing pace especially physical, mental and motor aspect.

The term motor when used by itself refers to the underlying biological and mechanical factors that influence movement. During first few months of life, the infants movements are random and meaningless. Gradually, as he/she develops control over his/her muscular mechanism, specific response pattern replaces the earlier type of random movements. Their response are of two types, 1) Fine response 2) Gross response. The fine response are their of the fingers, hands or forearm, or forearm, or those involved in hand co-ordination depends on small muscles. On the other hand, gross responses, especially those of the trunk, the legs and the shoulders are dependent on large muscular activity. Experimental studies of motor development have given the ages at which average child is able to control different parts of the body. According to the law of development can be divided into 4 major areas; the head region, the trunk region, arms and hands, legs and feet. The infants acquire information through senses and abilities, through language and creativity.

Motor development is influenced by a number of factors: genetic, status at birth, size, built, composition, nutrition, rearing and birth order, ethnicity and culture. Meeta and Jayaswal (1993). The result of twin studies indicates that there is a strong genetic influence on motor development but that the attainment of genetic capacity is strongly influenced by environment. The effects of nutrition on the mental and motor performance

have gained attention in recent years.

Proper nutrition and appropriate stimulation during the first few years of life have greater practical implication for the brain growth spurt which in turn is essential for proper mental and motor development as found by Smart and Smart (1970).

Mental development includes such phenomenon as sensation, perception, retention, recall, problem solving, reasoning and thinking during this period, the child assimilates information from the world through his /her senses and acquire abilities through creativity and language. In a study of babies during the age of one to two years. Bradley et al. (1984) revealed that there was significant improvement of MDI score of babies after the interval of three months during the age to 23 months with regard to gender differences for cognitive development upto the age of two and half years, Bradley et al. (1984) found significant sex differences for cognitive development of babies. Many workers described infancy as a transition in social interaction that is evident in the period of 9 to 12 months and called as a sense of subjectivity as reported by Stern (1985).

All the efforts regarding growth and development should focus on the first few years of life in order to develop sound mind in healthy body of infants. Thus, the present investigation was undertaken with the objective to areas the mental and motor development of and female infants.

MATERIAL AND METHOD

Sampling Procedure Hamirpur block was selected randomly from the total number of blocks in Hamirpur district. From this selected block a list the villages was obtained from the revenue department in which population of mothers having infants (less than one year) was concentrated. From this list of villages, eight villages were selected randomly and adjoining villages were also covered wherever needed. Thus a total sample of 105 males and 105 females

infants of 2 months, 4 months and 6 months were taken. From each village 13 males and 13 females infants were taken.

Data Collection To assess the mental and motor development of infants from birth till two and half years of age Bayley Scale of infant Development (BSID) were used. BSID is a development test and is used to test the child's natural behavior and responses in specific situation and with specific material.

The Bayley Scale of infant development is designed to provide a tripartite basis for the evaluation of a child's development status in the first two year of life. Considered complementary, each making a distinctive contribution to clinical evaluation Bayley (1969). The three parts are a mental scale, motor scale and the infant behavior record.

The items in the motor and mental scales are arranged in an increasing chronological age. The material which were used to stimulate the motor and mental performance of the child comprised of things such as bell, ring, cubes, rattle, ball string, paper, pencil, torch, dolls, other toys and books.

1. Motor Scale: The motor development scale consists of 67 items. These items covers manifestations of neuromuscular maturity in the form of body control and co-ordination in the movement for pre walking and post walking stages including the intermediary periods when the child is learning to walk. Item for the earlier periods refers to simple body movements, grasping and manipulating objects while the items for the lates periods refers to skills of locomotion and handling of objects.

2. Mental Scale: The mental Scale consists of 163 items, covering different expressions of mental development. It is designed to assess the sensory perceptual activities, discrimination and ability to respond to these. It measures the early

acquisition of object constancy and memory, learning, problem solving, age placement for a span of one month. The items of the Bayley Scale of infant development were further grouped in eleven clusters of items on the basis of skills to simplify the observation.

RESULT AND DISCUSSION

Table 1 represents the motor and mental growth of infants from two months to ten months of age, the correlations between Psychomotor Development Indices and Mental Development Indices and with age. It was revealed from the table that the mean indices of psychomotor increased as the age increased upto 6 months and later it decreased with age.

Lack of knowledge regarding feeding practices, late introduction of weaning / supplementary food may be the factors, which led to decrease in mean motor indices with increase in age after 6 months. Waber et al. (1981) also reported that children who were given supplement perform the motor tests better than those who were not given. While Upadhyay et al. (1992) concluded that malnourished children scored poorly on motor and mental development. Positive correlation was found between psychomotor development index and mental developmental index. Positive correlation was found between age and PDI upto 6 months and after 6 months negative correlation was found. Rose (1994) at reported that underweight infants performed relatively poor on cognitive measures weight and length were correlated with the measures of infant cognition. The relations between infants growth and cognitive remained significant even after these variables statistically controlled.

Table 2 depicts the psychomotor ability and mental ability of infants by gender. It was revealed

Table 1: Motor and mental growth of infant from 2 months to 10 months

S.No	Age	Development indices		'r'	'r'	'r'
		PDI	MDI		Age and PDI	Age and MDI
1.	2 months	125.37 ± 15.6	100.10 ± 10.2	+0.35**	0.09	-0.03
2.	4 months	128.98 ± 20.56	107.09 ± 13.1	+0.30**	0.07	-0.09
3.	6 months	133.82 ± 14.55	108.56 ± 19.5	+0.23**	-0.04	-0.05
4.	8 months	110.51 ± 12.75	121.28 ± 12.5	+0.30**	-0.14	-0.03
5.	10 months	102.51 ± 14.80	112.77 ± 12.1	0.25**	-0.24 *	0.018

** Significant of five percent level of probability.

* Significant of one percent level of probability.

'r' correlation coefficient.

Table 2: Psychomotor and mental development of infants by gender

S. No.	Age	Motor age		PDI		‘t’
		Male	Female	Male	Female	
(i) <i>Psychomotor Development Indices</i>						
1.	2 months	1.9	2.0	122.69 ±15.2	126.89 ± 15.6	1.1
2.	4 months	3.8	3.9	133.09 ±12.1	126.47 ± 24.0	1.4
3.	6 months	5.9	6.0	113.15 ±15.6	114.32 ± 13.6	0.3
4.	8 months	8.0	7.8	108.48 ±10.8	111.85 ± 13.7	1.1
5.	10 months	9.8	9.9	100.52 ±15.7	103.76 ± 14.0	0.8
(ii) <i>Mental Development Indices</i>						
1.	2 months	1.9	2.0	96.59 ± 8.01	102.25 ± 10.7	2.5*
2.	4 months	3.9	4.1	109.95 ± 9.7	105.33 ± 14.5	1.5
3.	6 months	6.0	5.8	110.38 ±21.09	107.18 ± 17.9	0.6
4.	8 months	7.8	7.8	121.52 ±10.82	121.12 ± 13.6	0.1
5.	10 months	9.9	10.0	113.61 ±10.77	112.24 ± 12.9	0.4

* Significant at one percent level of probability.

from the table that the differences in motor ability of male and female infants when tested at different ages, the females had slightly higher PDI than male infants. However, the differences were non significant. Whereas incase of differences in mental development indices between male and female infants when tested at different ages, table showed that at age 4 months, 6 months and 10 months male infants had higher indices than female infants. But at the age group of 2 months, female had higher mental indices whereas at 8 months, the mental indices of both the groups were almost equal. However, significant differences were observed only at 2 months whereas female had higher mental indices than male.

Saini (1991) also reported that majority of rural female infants were cognitively slow growing. Maximum variability was good found in the slow mental quotient category. Education, father occupation, land holding, income, play material, parent-child relationship were significantly influencing the cognitive development of female infants, where as birth order, type and size of family, casts, education and mother occupation had no significant effect. Majority was moderately undernourished and also had mild retardation in height. The nutritional status had significant effect on the cognitive development of the rural female infants.

KEYWORDS Motor Development, Mental Development, Psychomotor Development

ABSTRACT The present investigation was undertaken with the objectives to assess the mental and motor development of

infants; to ascertain, the difference between male and female infants. The study was conducted in Hamirpur block of Hamirpur district of Himachal Pradesh. A total of 210 infants (105 males and 105 females) from eight villages were randomly selected for this study. Bayley's scale was used to assess the motor and mental development. The finding indicated that the rate of increase in growth was rapid during first 6 months. In all the age groups, males were found to be better in growth as compared to females. PDI (Psychomotor Development Indices) of females was high in all the age group except at 4 months in contrast to males. MDI (Mental Development Indices) of males was high except at 2 months in contrast to females. Positive correlation was found between psychomotor development indices and mental development indices. Negative correlation was found between age and PDI from 6 months to 10 months, whereas negative correlation was found between age and MDI from 2 months to 10 months.

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