

Mental Health Status and Its Improvement in Babies of Urban and Rural Hisar

Bimla Dhanda and Sudha Chhikara

INTRODUCTION

By the end of the first year, infants deliberately look to others for emotional cues and evaluate uncertain events, such as, the approach of a stranger. Since, infants cannot describe their feelings, researchers face challenging tasks determining exactly which emotions they are experiencing. Although vocalizations and body movements provide some information, yet facial expressions seem to offer the most reliable clues during the age of 18-24 months (Mc Donald, 1997). Infants are born with a remarkable array of perceptual sensitivities that allow them to detect the basic properties that are common to the words (Berk, 1996). By 10-12 months of age, infants selectively listen to only that phonetic variation in the native language that conveys meaningful distinctions.

A simpler explanation and the one we prefer is that by 10-12 months of age infants are sensitive not only to the phonetic characteristics of the native language, but also to the syllabic context in which that phonetic variation occurs (Werker and Tees, 1999). During their first 14-15 months, infants learn to extract words from the speech stream to recognise words forms they have previously heard, to associate words with objects, to understand the meaning of some words and even to produce some words (Werker and Stager, 1998). During 12 months of age babies expect a person to reach for an object that the person is looking at with positive affect rather than for another object to which the person is not attending (Spelke et al., 1995). During the age of 18 to 24 months infants even seem to understand that people's actions are intentional and goal directed (Meltzoff, 1995), but in contrast 14 months old do not show this understanding (Repacholi and Gopnik, 1997). Therefore, it appears to provide an evidence that infants during this age have at least some limited ability to reason non egocentrically about people's desires (Flavell, 1999). Infants tried facial expressions, vocalizations and

body movements to get their mothers to respond again. When these efforts failed they reacted to their mothers' sad, vacant gaze by turning away, frowning and crying (Ellsworth et al., 1993; Gusella et al., 1988; Mayes and Carter, 1990).

Social and environmental factors have become so intricately related to health and diseases that often care must go beyond medical intervention. Child developmentalists have partially succeeded in designing and implementing early childhood intervention programmes to ameliorate social aspects of childhood morbidity. The present study was undertaken with the objectives to assess the level of cognitive development of urban and rural babies and its improvement through and intervention program designed for this purpose.

METHOD

Sample: The sample of present study consisted of 200 boys and 200 girls (N=400) selected from urban and rural areas of Hisar district. The babies were divided in four age groups, namely, 12-15, 15-18, 18-21 and 21-24 months. There were 25 boys and 25 girls in each age group from both urban and rural areas. Thus making total sample equal to 400. Data on urban babies were collected from Hisar city and for rural babies from Rawalwas and Siswala villages which are situated about 20 kms away from Hisar city.

Procedures: Bayley's scale of infant development (Bayley, 1969) was used to assess the mental development of babies. Data were further subjected to statistical analysis, namely, calculation of mean pooled mean, Z and tests, and analyses of variances.

Intervention Programme: The deficient group of babies for cognitive development was identified on the basis of the mean performance of the babies. A total of 40 babies from low performing group were identified and out of this, half were taken as control and half as experimental group. An intervention programme on

home based techniques was developed for each age group for all the variables under study. Before administering the intervention, the programme was assessed by the team of learned scientists of College of Home Science, CCS HAU, Hisar as well as from other institutions. All the necessary suggestions were incorporated. The intervention programme was first applied on a part of sample and its effects were assessed. Then all the items were scrutinised carefully and some of unimportant items were dropped. Intervention was finally applied for a period of one month. The finally prepared intervention programme was Administered only on the experimental group and data were obtained as described above.

RESULTS

Analysis of variance for mental development index (MDI) due to age was significant in both urban ($F=11.09^{**}$) and rural ($F=4.21^{**}$) areas (Table 1), however, due to gender it was significant only in rural area ($F=19.82^{**}$). Nonsignificant interaction of age with gender indicated that there was no differential score of MDI in boys and girls in different age groups. Mean values for MDI at different age groups ranged from 123.38 ± 4.52 to 144.55 ± 4.85 in urban area, while 124.43 ± 5.12 to 138.33 ± 5.21 in rural area (Table 2). In urban area, MDI of male babies was at par with that of female babies ($F=0.03$), but in

Table 1: Analysis of variance for mental development index (MDI) of children during the age of one to two years

Source of Variation	df.	SS	MS	F
<i>Urban</i>				
Age	3	13052.25	4350.75	11.09**
Gender	1	11.05	11.05	0.03
Age X Gender	3	622.04	207.35	0.53
Error	192	75317.76	392.8	
Total	199	89103.10		
<i>Rural</i>				
Age	3	5317.03	1772.40	4.21**
Gender	1	8346.32	8346.32	19.82**
Age X Gender	3	391.36	130.45	0.31
Error	192	80816.64	420.92	
Total	199	94871.35		

*, ** : Significant at 5% and 1% level of significance, respectively.

Table 2: Means and standard deviations for mental development index (MDI) of the children during the age one to two years

Gender	Age in months				Pooled Mean
	12-15	15-18	18-21	21-24	
Urban					
Boys	125.50 (6.28)	135.55 (6.23)	140.50 (5.35)	142.25 (5.95)	135.95 (6.17)
Girls	121.25 (5.71)	132.35 (6.52)	141.45 (6.73)	146.05 (4.68)	135.28 (5.92)
Pooled Mean	123.38 (4.52)	133.95 (6.21)	140.98 (5.81)	144.55 (4.85)	135.61 (6.13)
Rural					
Boys	128.45 (6.13)	136.50 (6.87)	140.25 (4.92)	145.50 (6.21)	137.68 (5.72)
Girls	120.40 (4.82)	121.25 (4.92)	126.25 (3.92)	131.16 (5.18)	124.77 (4.76)
Pooled Mean	124.43 (5.12)	128.88 (5.28)	133.25 (4.23)	138.33 (5.21)	131.22 (5.19)
Z test for Urban vs Rural					
	1.08	4.40**	7.48**	6.14**	1.58

Figures in parantheses denote standard deviations,
* : Significant at 5% level of significance.

rural area male babies (137.68 ± 5.72) had higher MDI than female babies (124.77 ± 4.76). Comparison between the mean values of urban babies (135.61 ± 6.13) with rural babies (131.22 ± 5.19) indicated that urban babies had similar MDI to that of rural babies for all the age groups. But age wise comparison indicated superiority of urban babies except for 12 to 15 month age group ($Z=1.08$).

For mental development index 11.50% of the total babies were below mean in urban area and 13.75% in rural area in various age groups (Table 3). Post intervention data revealed that the mental development index was raised from mean score of 105.85 ± 9.25 to 134.17 ± 12.70 in urban area and 99.09 ± 12.62 to 118.92 ± 9.26 in rural area. Percentage of increase for mental development index was the highest in 15 to 18 month (24.57%) followed by 21 to 24 month of age (21.53%) in urban area, while in rural area the highest increase (24.27%) was for 12 to 15 months followed by 15 to 18 months (17.26%) age groups. Results showed that intervention programme had significant impact on majority of age groups and overall means except for 21-24 month of age in rural area and also on overall mean of rural sample.

Table 3: Effect of intervention programme on the development of babies during the age of one to two years

<i>Variable/ age babies</i>	<i>No. of babies below mean</i>	<i>Mean of babies before intervention</i>	<i>Mean of babies after intervention</i>	<i>Mean of babies in control</i>	<i>% of increase over control</i>	<i>Test for control vs intervention</i>
<i>Urban</i>						
12-15	11(2.75)	95.25 $\pm$ 4.76	116.15 $\pm$ 5.12	101.35 $\pm$ 4.50	14.60	4.85**
15-18	13(3.25)	101.30 $\pm$ 5.15	135.10 $\pm$ 4.92	108.45 $\pm$ 5.25	24.57	8.28**
18-21	12(3.00)	111.35 $\pm$ 5.60	140.25 $\pm$ 7.10	121.52 $\pm$ 5.65	15.41	4.62**
21-24	10(2.50)	115.50 $\pm$ 5.35	145.17 $\pm$ 6.21	119.45 $\pm$ 4.95	21.53	7.25**
Total/ Pooled mean	46(11.50)	105.85 $\pm$ 9.25	134.17 $\pm$ 12.70	112.69 $\pm$ 9.49	19.06	3.03*
<i>Rural</i>						
12-15	15(3.75)	85.10 $\pm$ 5.10	108.76 $\pm$ 4.55	87.52 $\pm$ 6.65	24.27	5.89**
15-18	15(3.75)	96.25 $\pm$ 6.13	117.55 $\pm$ 6.13	100.25 $\pm$ 5.15	17.26	4.83**
18-21	12(3.00)	99.37 $\pm$ 5.25	120.60 $\pm$ 5.75	105.18 $\pm$ 6.10	14.66	4.11**
21-24	13(3.25)	115.65 $\pm$ 6.17	128.75 $\pm$ 6.10	118.55 $\pm$ 8.92	8.60	2.11
Total/ Pooled mean	55(13.75)	99.09 $\pm$ 12.62	118.92 $\pm$ 9.26	102.88 $\pm$ 12.83	15.59	2.27

Figures in parentheses denote percentages; $\pm$ values indicate standard deviations.

*,** : Significant at 5% and 1 % level of significance, respectively

DISCUSSION

It is clear that infants are born with or acquire easily a number of abilities and dispositions that will help them to learn about people. They find human faces, voices and movements particularly interesting stimuli to attend and respond to. In case of faces, infant develop considerable skill in discriminating different facial expressions over the first 2 years of life (Nelson, 1987).

It appeared that there were clear differences in the mental development indices of children over the different age groups studied in both urban and rural area. Leslie and Roth (1993) and Leslie (1994) believe that acquisition of maturation is a fast succession of domain specific and modular mechanisms for dealing with agents and non agent objects. As in case of physical development, males and females had same MDI in urban, but different in rural area. This may be attributed to differences in culture and child care practices in different area. In order to establish gender differences in both areas, factorial analysis was performed and found that there was no sex difference in acquiring the traits under study in both areas. A close examination of individual cell means and sub group means gave the impression that with regard to gender, males were better in MDI score than females in rural area,

while having same level in urban area.

When performance of MDI score of urban children was compared with rural children in majority of the age groups urban children surpassed the rural children however, overall differences was nonsignificant. Morisset et. al. (1995) observed sex differences favouring girls with regard to better cognitive abilities during the age of one to two and half years. They further showed that joint visual attention and understanding of painting which are main components of Bayley's scales of infant development were developed in infants during the age of 15 months to 18 months. In addition, memory in infants started to develop during the age of 8 to 12 months. Thus, working memory appear at an early stage, but these are expressed in a better way when motor activities are developed (Nelson, 1995). Recent studies suggested that from 12 months to 20 months infants were capable of understanding that the adult's behaviour is about the object (Baldwin and Moses, 1994). By the end of infancy if not earlier, babies have some understanding that people see things. The babies also start using vision related words like 'see' as correctly as 1.5 to 2 years of age (Flavell and Miller, 1998). During this period they understand that person will see the object if and only if their eyes are open and aimed at object (Flavell, 1992).

Close examination of individual cell means and sub group means gave the impression that with regard to gender, males were better in MDI score than females in rural area, while having same level in urban area.

There is evidence that infants respond different to people than to the objects at an early age and upto one year they have at least some limited ability to understand about people's desires (Repacholi and Gopnik, 1997). Infants do a variety of things that reflect awareness of aboutness. Meltzoff (1995) observed that 18 months olds can infer that what action other person is trying to perform. During the age of 19-20 months infants also learn the names of things by noting what object the adult appears to be attending to when the adult says the label of toy etc. (Woodward and Markman, 1998). Thus, infants during one to two years of age seem to recognise that it is the adult attentional focus rather than their own that gives clues as to the adult's referential intent (Flavell, 1999).

Impact of intervention programme towards cognitive development of babies was clearly evident in various age groups as well as overall age groups in urban area. But in rural area cognitive development improved during all the age except 21 to 24 months of age and overall age groups. The poor impact of intervention programme on overall basis in rural area may be due to less attention paid by mothers to this aspect. Better results for intervention in urban area may be due to the fact that parents in urban areas are comparatively more educated and aware about various aspects in helping children. In addition, occupational status and better exposure help them to understand the importance of cognitive development of their babies which resulted in effective implementation of intervention programme.

In an experiment of intervention programme, Eving-Cobbs et al. (1997) were able to improve the cognitive development of babies during the age of 1 to 2 years who were suffering from brain injury. Similarly, Bjorklund and Brown (1998) improved intellectual performance of babies through play and other activities. Anderson et al. (1997) also emphasised that cognitive activities of babies could be improved through making change in environment. Gottfried and Gottfried

(1984) emphasised that cognitive development in the babies could be improved by providing programmes, such as, home based intervention. Resnik (1984) advocated that intervention could be a powerful tool to improve the capacities of children especially those who are below the average performance. Carrow-Woodfolk (1998) and Nelson (1993) have argued that intervention planning supported the premise that various learning programmes when taken together provide a integral view of cognitive development. Klein and Moses (1994) also suggested that intervention could be a very effective methods for improving various deficiencies regarding cognitive development. Thus, in present study intervention programme had significant impact on cognitive development of babies in all age groups in urban area, but in same age groups in rural area.

CONCLUSIONS AND IMPLICATIONS

It may be concluded that there were significant differences in MDI of both boys and girls at each interval under study. Mean MDI score of babies was higher in urban area than in rural area. This may be due to either better facilities available or more involvement of parents with babies in urban area. Therefore, there is need to concentrate our efforts to improve the mental status of babies espically in rural areas. Absence of interaction between age x gender indicated similar trend of gain in MDI over the age in both male and female babies. However this study conducted in the age group of the babies from one to two years, but keeping in view of other factors as constant these finding may be generalised over a wider range of age groups.

KEY WORDS Cognitive Development. Urban Area. Rural Area. North India.

ABSTRACT The present investigation was carried out with the objectives to study the mental health status of babies, and the impact of intervention programme developed for low performing babies. Cognitive development index of 400 babies was assessed to find out differences for age groups, gender and locality. The sample comprised boys and girls distributed in 4 age groups during the age of one to two years in urban and rural areas. Considerable differences in mental level were observed for all the age groups studied for both boys and girls in both areas. With regard to gender, rural boys were better than rural girls, but in urban area boys were at par with girls for all the age groups. Interaction of age and gender

revealed that there was no differential increase in boys and girls over the age groups studied. Urban babies were superior to the rural babies at same age groups but at par for pooled mean of all age groups. The babies having significantly poor mental status in both areas were administered a intervention programmes for a period of three months through their care givers. The impact of intervention programme for cognitive development was significant in urban area for all the age groups, but in rural area out of four age groups only two age groups could show improvement. In order to make the intervention programme more effective it was realised that the programme should be given to wider range of age groups and for some more extended time especially in rural areas.

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Authors' Address: **Bimla Dhanda and Sudha Chhikara**, Department of H.D.F.S. CCS. H.A.U. Hisar 125 004, Haryana, India