

## **A comparative study of intelligence in urban and rural children with mild mental retardation and dyslexia**

**Shivalingaiah M\*, Rangaswamy KB\*, Sreenivas M\*\***

\*Department of Pediatrics, Sri Siddhartha Medical College, Tumkur-572107, Karnataka, India \*\*Department of Psychology, Bangalore University, Bangalore, India

### **Abstract**

**Objectives: To assess and compare the level of intelligence in rural and urban male children with mild mental retardation and dyslexia. 120 rural and urban male children in the age group of 10 to 12 years with MMR and dyslexia were assessed and compared by using standard Binet-Kamat intelligence test. The difference in intelligence between urban and rural male MMR and dyslexic children showed a 't' value of 4.33. There was a significant difference in intelligence among urban and rural MMR, urban and rural dyslexic children with a 'p' value of < 0.01.**

**Keywords:** Binet-Kamat test, Intelligence, Dyslexia, Mild mental retardation

*Accepted March 07 2013*

### **Introduction**

Intelligence is the ability to learn about, learn from, understand and interact with one's environment. This general ability consists of a number of specific abilities like adaptability to a new environment or to changes in the current environment, capacity for knowledge and the ability to acquire, capacity for reasoning and abstract thought, ability to comprehend relationships, ability to evaluate and judge, capacity for original and productive thought. Environment in this definition has a wider meaning which includes persons in the immediate surroundings, family, the workplace or a class room [1].

Mental retardation is a term used when a person has certain limitations in mental functioning and in skills such as communicating, taking care of him or herself and social skills. These limitations will cause a child to learn and develop more slowly than a typical child. They have difficulties in speaking, walking, taking care of personal needs such as dressing, eating and also learning in school. Dyslexia is a learning difficulty that primarily affects the skills involved in accurate and fluent word reading and spelling. Characteristic features of dyslexia are difficulties in phonological awareness, verbal memory and verbal processing speed [1, 2].

There may also be difficulties in language, motor coordination, mental calculation, concentration and personal organization. But these are not by themselves the markers of dyslexia [3].

Intelligence is impaired in both mentally retarded and dyslexic children. Hence the study was conducted to compare the intelligence in these children [4].

### **Material and Methods**

This study was conducted between December 2008 to December 2009. 120 male children between 10 and 12 years attending the outpatient department of pediatrics and psychiatry, Sri Siddhartha Medical College hospital, Tumkur, department of psychiatry, K.C General hospital Bangalore and Malleshwaram dyslexia association, Bangalore were included in the study. Among these, 60 children were dyslexic and 60 were with mild mental retardation. 50% in each group were from rural background.

The Stanford-Binet test (SBT), which is also known as BKT intelligence test (Indian adaptation), commonly used verbal and nonverbal test for assessing intelligence by analyzing seven primary abilities i.e., language, memory, conceptual thinking, reasoning, numerical reasoning, visio-motor co-ordination and social intelligence was used for the study. Most of the items in this test are either oral or simple manipulative tasks like drawing, writing and following simple instructions.

A semi-structured demographic questionnaire, specially designed by the researchers for this study was adapted. The measures of intelligence on verbal and nonverbal

tests are expressed in terms of IQ. The non-verbal or performance tests are expressed as PQ. These require the subjects to express their answers in the form of drawing, gestures and activities such as arranging blocks, puzzles, matching designs and playing pictures in the order by recall. The mental age was assessed by using PQ.

The data obtained from the scales and questionnaires from children with MMR and dyslexia were analyzed separately using 't' test.

## Results

Mean age of MMR children was 11.6 years and dyslexic children were 11.7 years (Table-1). There was a difference between urban and rural MMR children with a mean of 63.20 (SD 4.51) and 61 (SD 9.12) which gives a 't' value of 4.33 which is significant with a  $p < 0.01$ . There was also a difference between urban and rural dyslexic children with a mean of 78.70 (SD 4.34) and 74.63 (SD 2.54) which gives a 't' value of 4.33 which is also significant at  $p < 0.01$  (Table 4)

**Table 1.** Age distribution of the subjects

Age range	Mean age in MMR children	Mean age in dyslexic children
10- 12 Years	11.6 years	11.7years
Total no of subjects	60	60

**Table 2.** Educational status of the subjects

Educational level	MMR children	Dyslexic children	TOTAL
Primary school	37	32	69
Middle school	23	28	51
Total	60	60	120

**Table 3.** Religion of the subjects

Religion	MMR children	%	Dyslexic children	%
Hindu	59	98.33%	55	91.66%
Muslim	01	1.66%	03	5%
Jain	—	—	02	3.33%
Total	60	100%	60	100%

**Table 4.** Comparison between urban and rural MMR and Dyslexic male children using Binet Kamat intelligence test

Scale	Urban MMR-Children (N=30)		Rural MMR-Children (N=30)		't'
	Mean	SD	Mean	SD	
BKT	63.20	4.51	61.00	9.12	4.33

  

	Urban dyslexic - Children (N=30)		Rural dyslexic-Children (N=30)		't'
	Mean	SD	Mean	SD	
BKT	78.70	4.34	74.63	2.54	4.33

The obtained scores show that the difference in intelligence among urban & rural children with MMR and Dyslexia is significant at  $P$  value  $< 0.01$ .

## Discussion

Mental retardation begins during childhood before the age of 18 years and persists throughout life. Intellectual level is assessed by standardized tests that measure the ability to reason in terms of IQ (mental age/chronological age

100). An IQ of 51 to 69 is regarded as mild mental retardation. Children with MMR lack the adaptive skills such as ability to produce and understand language, use of community sources like health, safety, self care, self direction and functional academic skills like attention and memory. Dyslexic children lack the ability of reading,

writing, calculating and comprehensive spellings. Among these two categorized groups MMR children are able to achieve up to 7<sup>th</sup> grade level in academics and can live independently with community support where as dyslexic children are able to achieve up to 10<sup>th</sup> grade level on the basis of certain facilities from the PWD-act 1995. Intelligence can give some idea about the grade up to which MMR and dyslexic children can achieve [5, 6].

The level of intelligence differs in male urban and rural MMR and also dyslexic children. By promptly identifying the level of difference in the intelligence among these groups, we can intervene and advise properly regarding the life skills. Hence we conducted this study by assessing male children with MMR and dyslexia for the level of intellectual ability by utilizing the standard B.K intelligence test. According to this study there was a significant difference between urban and rural MMR and dyslexic children with a p value of <0.01. [7, 8, 9]

## Conclusion

This study gives an insight on special education for the teachers and psychologists working in the schools and rehabilitation centers. Efforts are needed to create public awareness and to involve family members in psychological intervention. Organizations like social welfare, education department, NGO's and counseling centers could expand their programs to promote alternative living pattern for MMR and dyslexic children.

## Acknowledgement

We acknowledge Dr G Shivaprasad , Director and Dr A G Sreenivasa Murthy, Principal of Sri Siddhartha Medical College, Tumkur for permitting to conduct this study. We also thank Dr H M Viswanatha kumar, professor and HOD of pediatrics and Dr M T Sathyanaryana Professor and HOD of Psychiatry SSMC, Tumkur , Medical Superintendent, KCG hospital Bangalore, President, Malleshwaram dyslexia association Bangalore, Chairman and Secretary of SKIRDS, Tumkur for their support and guidance in this study.

## References

1. Kliegman RM, Behrman RE, Jenson HB, Staton BF et al. Mental retardation (intellectual disability). In: Shapiro BK, Batshaw ML, Nelson text book of pediatrics, 18<sup>th</sup> edition. Philidelphia, PA: WB Saunders; 2007: 8: 145-149
2. First LR, Palfrey JS. The infant or young child with developmental delay. N Engl J Med 1994; 330: 478-483

3. Salveen KA, Undhein JO. Learning disabilities with teacher rating scales. Journal of Learning Disabilities. 1994; 1: 60-66
4. Peterson L. Prevalence of learning disabilities among primary school children; effect on emotional problems and achievement. Journal of Psychology, LPCS University, Bourgogne, Dijon 2007; 3: 167-180
5. Micheal J et al. economic advantage and the cognitive ability of the rural children in Zair. Journal of Psychology 1997; 130(1): 95-107
6. Alevriadou A et al. Field of dependence - independence of normally developing and mentally retarded boys of low, middle and upper socio-economic status. Journal of perceptual and motor skills. 2004; 99: 913-920.
7. Curry CJ, Stevenson R E, Aughton D et al. Evaluation of mental retardation; recommendation of a consensus conference. Am J Med Genetics 1997; 72: 468-477
8. Tankerslay M et al. Social interventions for children with behavioural risks; implementation and outcome. Journal of emotional and behavioural disorders. 1996; (3): 171-181
9. Francis A, Craig T. Cognitive and school outcomes for high risk African-American students at mid adolescence; positive effects of early intervention. American Educational Research Journal 1995; 32(4): 743-772

## Correspondence to:

K.B..Rangaswamy  
Nemmadi, 7<sup>th</sup> main, Jayanagara East  
Tumkur 572102  
Karnataka, India