



Estimating I.Q level of the Students of Rural and Urban Areas, in Jammu Division

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Abstract:

Background: The present investigation was an attempt to study the levels of intelligence among children from urban and rural areas, in Jammu Division.

Method: A cross sectional study in which we explored the IQ of school going children in the age group (11-17) with sample size 880 consisting 400 from rural and 480 from urban. Intelligence Quotient Score by Dr. P. Shrinivasan verbal intelligence test collected in pre-designed questionnaire in the class room without the presence of school administration so that student feel free in the class room to fill the information given in the questionnaire explained by the researcher.

Result: Out of 880 children screened, nearly (43) 4.9 % students were superior, (282) 32% students were average student, and (376) 42.7% were borderline and (179) 20.3% were feeble minded. In Rural and Urban area we found (10)2.5% and (33)6.9% were superior children. Also we found (80)20% and (99) 20.6% were Feeble minded children in Rural and Urban area. After applying chi-square test we found the value of $p > 0.05$ then we reject the null hypothesis and conclude that there is association between children IQ according to area wise this means area play important role for good IQ of children.

Conclusion: Bearing in mind the status of IQ among the school going children in Rural and Urban Area. We found students belong to Urban areas have better IQ than Rural.

Keywords: IQ, Rural, Urban, school children.

I. INTRODUCTION

Intelligence is defined as general cognitive problem-solving skills. The intelligence quotient (IQ) represents a composite score on a variety of tests designed to measure a hypothesised general ability or intelligence (1). It is expected that examining the available literature in this area would be helpful in providing information about intellectual functioning, investigating how comparable neuropsychological studies from different academic groups are in the context of IQ estimation, helping to clarify what the most appropriate IQ measure would be for future studies. We conducted a survey on school going children of Urban and Rural area of Jammu division to estimate the IQ of children. The growth and development of the children progress simultaneously and are influenced by different factors (2). Growth and development starts before infancy and continues up to the adolescent period (3). Physical growth is the geometric growth of cells and can be directly observed. The growth of height, weight, and head and chest circumference are part of physical growth and increase vital signs as well as physiological ones (4). Regarding the IQ of children, it is very difficult to predict and it can vary according to geographical location, age, gender, socio-economic factors (5), poor diet with high fat (6), and school environment (7). Despite controversies about the meaning and nature of general intelligence, few would dispute the claim that scores on standardized intelligence quotient (IQ) tests are strong predictors of important outcomes for members of both majority and minority groups. Variations in IQ scores are based on an individual's specific knowledge, vocabulary, expressive language and memory skills, visual special abilities, fine motor coordination and perceptual skills. IQ scores are scientifically approved that it is influenced by many aspects, such as age,

gender, socio economic factor, nutritional status, parental education etc. Parent's presence at home, especially during early years of life, is essential in order to establish "attachment" between parent and child. Children who do not have adequate time with their parents are at risk of living a life feeling a drift, not connected in a positive relationship in a manner that lends itself to productive behaviour (8). These children are at risk of unproductive behaviour that could eventually be counter to their well being and development leading, at worst, to self-destructive behaviours including social withdrawal, poor cognitive development, lower intelligence, truancy and delinquency (9).

II.METHODOLOGY

The study is school-based cross-sectional descriptive study. This study represent the middle school students of class (8th) from urban and rural areas, belonging to both sexes studying in the Govt and the Non-Govt schools of Jammu division from the Jammu and Samba district . In our study we apply multistage sampling technique and cluster sampling technique to select required number of sample. The schools with at least 10 students in class 8th will be eligible for the study. Eligible schools will be stratified into govt. and non govt categories from rural and urban areas of Jammu district and Samba district of Jammu division. Then, required number of schools will be selected on the basis of probability proportional to sample size (pps) i.e the schools with high number of students are more likely to be selected than school with low number of students. The study was carried out in the randomly selected 11 blocks from rural area and urban local bodies of two districts (Jammu and Samba) of Jammu division. To represent the rural sample we was randomly selected 22 villages from 11 blocks of two

districts and make list of schools. Then from the list of school we was randomly selected 4 schools including Govt. School and Non-Govt. School equal in numbers affiliated to Jammu Kashmir Board of Secondary Education (JKBOSE) from each Block of two district. Then from the each school 20 student including boys and girls will be selected from class 8th. The same procedure will be followed for the selection of urban student from the Govt. schools and private schools by keeping the complete representation of whole area of selected 2 districts. This type of technique is very useful when the population compose of strata of different sizes so that representative sample must contain individual from each category stratum in accordance with size of sub group. The background information of student will be collected by personal interview and referring to the school registers. It includes name, age, gender, class, caste, occupation of parents, education of parents and family composition, type of house and socio-economic, personnel habits during gestation period, health complaints, low birth weight, blood pressure. Intelligence Quotient Score by Dr. P. Shrinivasan verbal intelligence test collected in pre-designed questionnaire in the class room without the presence of school administration so that student feel free in the class room to fill the information given in the questionnaire explained by the researcher. To estimate and analyse the factors due to which there is variations in IQ level of students in urban and rural areas a lot of methods and tests were used. In our study we use the most appropriate and broadly used method to measure the IQ of children which is Dr. P. Shrinivasan verbal intelligence test it's an Indian adaptation for scoring IQ of children in the age-group (11 to 17 yrs). Test results include a Full Scale IQ score as well as age-equivalent rankings and scores for Classification, Analogy, Assigning artificial values to arithmetical signs, reasoning. To measure Intelligence Quotient (I.Q) our society has developed various means for the formal evaluation of intelligence. The term intelligence quotient generally describes score or grading on a test that rates the subject cognitive ability as compare to the general population.

Intelligence Quotient (IQ): Measure of intelligence that takes into account a child's mental and chronological age

$$IQ\ Score = MA / CA \times 100$$

Mental age (MA): the typical intelligence level found for people at a given chronological age

Chronological age (CA): the actual age of the child taking the intelligence test. Intelligence quotient (IQ) is an age-related measure of intelligence level and is described as 100 times the mental age. The word 'quotient' means the result of dividing one quantity by another, and a definition of intelligence is mental ability or quickness of mind. Intelligence quotient (IQ) is a standardized measure of human intellectual capacity that takes into account a wide range of cognitive skills. IQ is generally considered to be stable across the lifespan, with scores at one time point used to predict educational achievement and employment prospects in later years. According to Dr. P. Shrinivasan verbal intelligence tests there are four sub-test are

1).Classification 2).Analogy 3).Assigning artificial values to arithmetical signs 4).Reasoning

1).Classification: This sub-test has a numbers of pairs of words belong to the same class or species or have similar meaning, except one pair which belongs to a different class or have different meaning. This like a stranger in a homogenous group. The candidate is required to pick out the dissimilar or

stranger pair of words from the rest of the group. Comparative judgement of the candidate is put to test in this exercise.

2).Analogy: In this sub-test an attempt is made to bring mathematical relationship into our life .There is a certain relationship between the first two words, objects or ideas, and the same relationship exists between the third and fourth word. The candidate is required to find out what relationship exists between the first two words and by establishing the same kind of relationship between the third and the fourth word or object, the missing word or object or idea is to be found out from the given choices.

3).Assigning artificial values to arithmetical signs: In this sub-test, the arithmetical signs are misleading. They carry values other than what they normally represent. For e.g. a multiplication signs (x) may represent a plus sign (+) and a division signs (÷) may represent a minus sign (-) and so on. A careful observation of the first three equations will show that in each case arithmetical sign has different value then its real value or the first three questions have been solved with some different common method. The candidate has to find out the changed value of arithmetical sign by observation or the method of the first three equations and the treatment of the figures to get the answer for the fourth equation.

4).Reasoning: In this sub-test a few statements are given, the candidate has to find out the answer from the given choices by putting his reasoning ability. Sometimes the instructions are confusing or misleading. The candidate is required to study the statements carefully and infer or calculate the correct answer and then choose from the given alternatives answers. "Intelligence means an innate ability to solve problems." Innate ability is that which is present in a person from birth and not learnt through self-study or as a result of class room instruction". The general classification of Intelligence score according to Dr P. Shrinivasan verbal intelligence test are represented in below mentioned table.

Classification	Range
Genius/Gifted	140 and above
Very Superior	125-139
Superior	110-124
Average	90-109
Borderline	75-89
Feebleminded	50-74
Imbecile	25-49
Idiot	0-24

We apply Chi-square test to check the association between the children IQ and urban, rural area. The Chi-square test is used to determine whether there is significant difference between the expected frequencies and the observed frequencies in one or more categories. (10)

$$\chi^2 = \frac{(O - E)^2}{E} \sim (n - 1)$$

Where O is the observed Frequency in each category. E is the Expected Frequency in the corresponding category (n-1) is the degree of freedom.

III. RESULT

In this table we found that the Intelligence quotient of school going children according to Rural and Urban Area. Out of 880 children screened, nearly (43) 4.9 % students were superior, (282) 32% students were average student, and (376) 42.7% were borderline and (179) 20.3% were feeble minded. In Rural and Urban area there was 400 and 480 student sample selected

from two District of Jammu Division viz. Jammu and Samba. We found (10)2.5% and (33)6.9% were superior children in Rural and Urban area Also we found (80)20% and (99) 20.6% were Feeble minded children in Rural and Urban area. There were 122(30.5%) student belonging to Normal category in Rural and 160(33.3%) student belong to Normal category in urban area. In the category of Borderline we found 188(47%) student in rural area and 188(39.2%) student in urban area.

	Children IQ				Total
	Superior	Normal	Borderline	Feebleminded	
Rural Area	10(2.5%)	122(30.5%)	188(47%)	80(20%)	400
Urban Area	33(6.9%)	160(33.3%)	188(39.2%)	99(20.6%)	480

In the below tables there is some graphical representation of children IQ according to area-wise. In this table we represent the data by using bar chart.

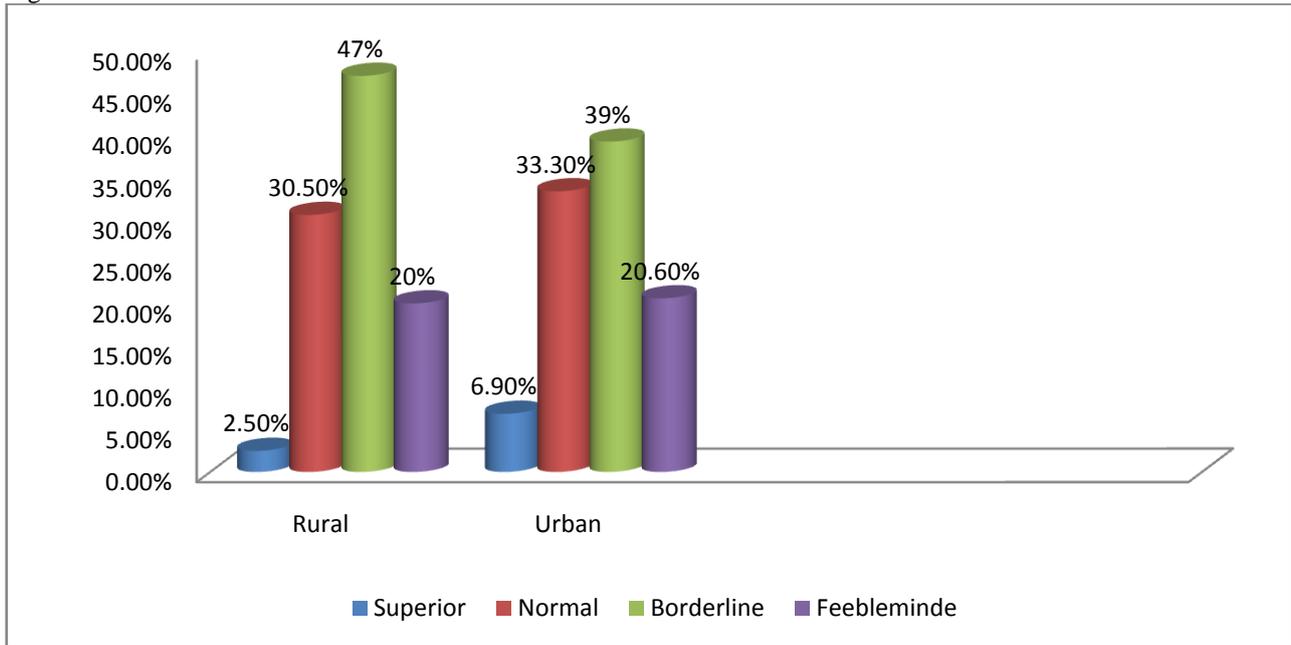


Figure.1. Represent the Percentage of rural, urban children IQ.

	Value	df	Asymp.Sig(2-sided)
Pearson Chi-Square	12.268	3	0.07
No Valid Cases	880		

In this table we use chi-square test to check the association between IQ of urban and rural area children. First we set null hypothesis H_0 : There is no significant difference association between IQ of urban and rural area children v/s H_1 : There is significant difference association between IQ of urban and rural area children. Here we found that the value of $p > 0.05$ then we reject the null hypothesis and conclude that there is association between children IQ according to area wise and this means area play important role for good IQ of children.

IV. DISCUSSION AND CONCLUSION

After applying chi-square test we conclude that there is association between IQ of urban and rural area children. Clearly this indicates that children IQ differ area wise and children from urban area were more Superior then rural area. We estimate the I.Q level of the students of rural and urban areas in Jammu Division from the above result we conclude that children from urban area have more Superior children then rural area as we know that the children from urban area have all the basic facilities, good academic environment, their

parents were also well qualified. So this all factor mostly influence the IQ of children very well. Whereas, children from rural area have less Superior then urban because children do not have proper awareness of education, they don't have good school where they get good education. Minimum number of school have established in rural area, student from rural area have least resources to get proper education and it make difficult from them to decide which field is suitable for them or whether they go for higher studies or not as we know parents play most important role in the upbringing of children but in rural area most of the parents were illiterate or middle pass. This entire factor may influence the IQ of urban and rural area children. Study by Hanscombe K. B et.al (2012)(10) define the socio-economic status (SES) and children intelligence (IQ) found that the greater variance in intelligence in low-SES, but minimal evidence of GxE (Gene-environment) interaction across the eight ages, also indicate 5000 twin pairs require to detect moderation of the genetic component of intelligence as small as 0.25, with about 80% power – a difference of 11% and 53% in heritability. In this study no moderation of the genetic effect on intelligence, the greater variance in low-SES

families is due to moderation of the environment effect. One more study by Katoch O. R et.al (2016)(11) define a Preliminary study of socioeconomic factor, living conditions and child under nutrition among school children in Rural Areas of J&K found that 36% were stunted 9% underweight and 2% were observed as wasted, also observed that female children were at higher risk of under nutrition in term of stunting(42.86%) and 2.56% were prevalent only in male children. There are other socio-economic factors-mother education, birth order in the family, joint family system, social and economic categories and living conditions.

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