



**Research Article**

**COLOURED PROGRESSIVE MATRICES AS A TOOL TO MEASURE NON-VERBAL INTELLIGENCE OF RURAL KONKAN REGION STUDENTS : AN EXPLORATORY STUDY**

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**ARTICLE INFO**

**Article History:**

Received 4<sup>th</sup> March, 2020

Received in revised form 25<sup>th</sup>

April, 2020

Accepted 18<sup>th</sup> May, 2020

Published online 28<sup>th</sup> June, 2020

**Key words:**

*Students, Konkan Region, Coloured Progressive Matrices*

**ABSTRACT**

The aim of the present research was to study the non-verbal intelligence of the students of rural konkan region. Two schools were chosen as referred cases belonged to these schools. The sample size was 56 (Males – 24 & Females – 32). The age group was 7 to 11 years. Exploratory research design was used and sample was collected through focus group sampling technique. After obtaining the informed consent, the Coloured Progressive Matrices test was administered to the students. Scoring was done manually and descriptive statistics showed that data was not distributed normally hence further inferential statistics was carried out accordingly. The Mann Whitney Test showed no significant gender difference. Findings of the study revealed that majority of the cases lied on the lower limit of the frequency distribution. Recommendations & implications for further research were discussed.

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**INTRODUCTION**

The konkan region is located in the western part of the country's coastline and covers the coastal districts of the western Indian state of Maharashtra. It is a narrow strip of land with the Sahyadri Mountains on the east and the Arabian sea on the west. Although rich in biodiversity with a range of flora and fauna, this land has a shortage of fertile ground and majority of the area is still developing in terms of technology and education. The rural population has a majority over the urban counterparts and thus they face a variety of difficulties on a day to day to basis. Financial burden, educational ignorance and social taboos are a few of the problems which have clutched these people, and pave a way to other hassles concerning mental and physical health.

Lack of awareness of many important issues, makes it difficult for the rural region people to sometimes get an appropriate insight into the arising troubles. Physical health awareness has recently gained importance in this area but mental health awareness still remains deserted. Thus children and adults are constantly on the verge of getting misdiagnosed. When it comes to educational perception, there is a lack of understanding of a variety of concerns like learning disabilities, slow learning etc. If a child is not performing up to the mark, it is believed that he/she is intellectually deficit and not fit for regular schooling or has an influence of super natural powers. Such opinions make the child disheartened and he/she loses self-confidence.

Further it affects the overall mental health of such children negatively as they are stigmatized. They are looked down upon and they themselves feel that they have to live a life judged and opinionated by others. This weighs down their overall achievement motivation and their mental as well as physical health starts cascading.

The sample of the present research were such children from two rural schools of the konkan region. They were perceived as being intellectually deficit as they were not performing academically and also their overall awareness about the environment was low according to their respective ages. Thus the authorities of the respective schools had already put them in the category of being intellectually deficit. Also it was observed from the personal data sheet that majority of the parents of the children were unskilled or semi-skilled workers having very less or no educational background. Thus their awareness about health or education was affected. They were also of the opinion that their children were intellectually lacking. The possibilities of a learning disability or having a different level of ability to learn were far from them. Thus their judgement about their own children was clouded by the lack of knowledge.

The Raven's Coloured Progressive Matrices was used as a tool to measure non-verbal intelligence. After communicating with the children the researchers came to know that the children could not communicate effectively even in their local language. They could not give basic answers related to their demographic details also. Thus a non-verbal test of intelligence was decided.

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The Raven's coloured Progressive Matrices (CPM) as stated above, was designed for use with young children and old people for anthropological studies and clinical work. It is internationally recognised as a culture-fair test of nonverbal intelligence, designed for use with children between the ages of 5½ and 11½. It can be used satisfactorily with people-young and old-suffering from physical disabilities, aphasia, cerebral palsy or deafness as well as with people who are intellectually subnormal. It was designed to assess mental development up to intellectual maturity.

Although developed and normed on British and American populations, the Raven's Coloured Progressive Matrices test (CPM) is internationally recognised as a culture fair test of non-verbal intelligence for young children (Raven, Court and Raven, 1990). It is important to note however, that the test cannot be employed to assess general intelligence, unless used in conjunction with an equally reliable and valid test of verbal intelligence (Raven *et al.*, 1990).

It is arranged to "assessmental development up to a stage when a person is sufficiently able to reason by analogy to adopt this way of thinking as a consistent method of inference" (Raven *et al.*, 1990, p. CPM2). The test minimises some major cultural and educational obstacles like language, test content, reading and speed. The test is based on Spearman's 'g' factor theory of intelligence and Spearman argued that the 'g' factor itself was further comprised of two distinct components, namely *eductive* and *reproductive* ability. These were defined as follows:

"Eductive ability refers to the mental activity involved in making meaning of confusion; developing new insights; going beyond the given to perceive that which is not immediately obvious; forming (largely nonverbal) constructs which facilitate the handling of complex problems involving many mutually dependent variables". Reproductive ability refers to behaviour involving the "mastering, recalling, and reproducing the (largely verbal) material which forms a cultural store of explicit, verbalised knowledge" (Raven *et al.*, 1993)

In 1938, Raven utilised Spearman's theory as a rationale for test construction in the development of his Progressive Matrices test, which was designed in order to assess as accurately as possible the eductive ability component of 'g' in individuals (Raven *et al.*, 1993). It is also important to note that Raven refers to the work of Wiedl and Carlson (1976) wherein the CPM has been related to Piagetian conservation concepts, "noting a development in the reasoning processes required for CPM solutions from perceptual to conceptual" (CPM Manual).

## METHODOLOGY

For the present study 56 school going children were selected from the rural Konkani region, Taluka Chiplun, Ratnagiri. Age group of the study was between 7-11 years and the number of females in the study was 32 and males was 24. Exploratory research design was used and focus group sampling technique was used as a method to collect the sample as all the students taken for the study were referred by the teachers of the schools.

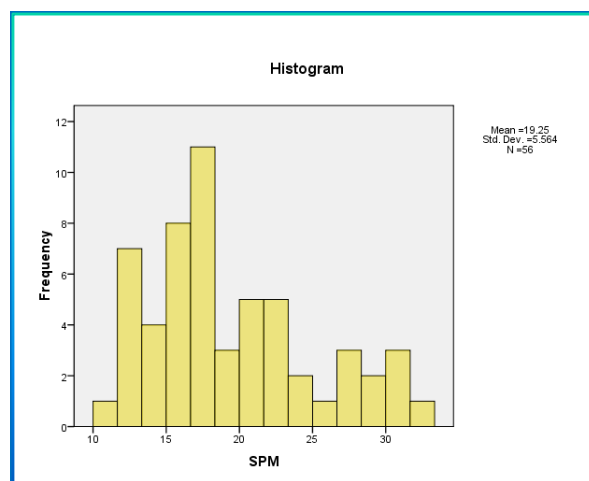
### Tool used – Raven's Coloured Progressive Matrices

This test was developed and normed on British and American population. The Raven's Coloured Progressive Matrices test

(CMP) is internationally recognized as a cultural fair test of non-verbal intelligence on young children. This test consists of 36 items which are divided into three sets A, B and AB. Each set has 12 items. The items have the form of incomplete patterns which are printed on coloured background and participants have to find the missing part from the alternatives. This test is also called paper-pencil test.

## RESULTS

Table 1 Histogram & Descriptive Statistics



### Sample description

Age: 10 was mean for males (SD = 1.285) and 9.88 for females (SD = 1.408)

Table 2 Means and SDS of Males (n = 24) and Females (n = 32)

Gender	Mean	Std. Deviation
Males	18.83	4.669
Females	19.56	6.206

Table 3 Mann Whitney Test

Gender	Mean Rank	Sum of Ranks	Z (Sig.)
Males	28.19	676.50	0.124 (0.901)
Females	28.73	919.50	

## DISCUSSION

The area where the present research was conducted was a rural part of the Konkani region of Maharashtra, where lack of educational awareness, day to day facilities and all other problems persisted. The adult population mostly has farming as the occupation and poverty prevails.

The children of this region face multiple difficulties such as commuting to school, malnutrition etc. Also due to lack of mental and physical health awareness they are prone to misdiagnosis. Due to poverty many of the children have to drop out of school, especially girls as gender inequality still prevails here. Girls are deprived of education and made to do only home chores whereas boys drop out from school around 8<sup>th</sup> or 9<sup>th</sup> grade. As parents themselves are not aware of the importance of education, they guide the children to leave school and join them in their work. Alcohol abuse, economical backwardness and superstition are just some of the many issues that have clutched this region. There is a spectrum of concerns which are taking the region more and more away from development.

According to Table no. 1 in descriptive statistics it was observed that the data was not distributed normally. Majority of the cases lied on the lower limit of the frequency distribution. The mean for males was 10 while for females it was 9.88. However it is important to note that small group size precludes any categorical statement or claim to this effect. The children selected for this study were all referred by the teachers. They were already categorised as intellectually deficit. Due to lack of awareness, the only basis to make such a judgement about the children was academics. As they were not able to cope up with academics according to their age group they were considered as non-educable and their parents also had readily agreed on removing them from the school. As seen from the histogram, it cannot be said that all of the children were in the extreme lower limit. Thus with some extra efforts or a different teaching style, they could be taught and the claim about them being non educable was completely false. Also the attribute of self-confidence cannot be neglected here. These children faced negative comments on a daily basis about their grasping power or intelligence and thus a lack of confidence was seen in many of them which could have affected the results. Also the researchers could see an overall lack of interest in education in these children due to the behaviour of the school authorities.

According to Table no.3 it can be seen that there was no significant difference found in males and females. Thus it can be said that both the groups faced somewhat same difficulties and could be educable with the help of Remedial Instruction. This would play a very important role in aiding these children as it helps to improve a learning skill or rectify a particular problem area in a student. Remedial Teaching needs to be implemented in the rural region schools as it can help such children to learn in a more individually focused method as each pupil is different in terms of learning abilities, academic standards and performance. With Remedial Teaching, individualised education programmes can be made which will benefit such children to understand concepts of different subjects and will increase the effectiveness of learning for them. Overall it will help them holistically as their confidence levels also will increase over a period of time. Once the understanding of concepts comes, their self- confidence will escalate automatically which will help them on all fronts. As it has been observed in the present research that there was no significant difference between males and females, it can be said that a similar Remedial Coaching plan could be constructed for both the male and female students for academics.

Thus with the help of Remedial Coaching, the children won't be deprived of basic education.

#### **Recommendations for Further Studies**

1. As this was an exploratory study, it was done, just to get a line of action in the concerned area. A more in depth study could be conducted with a large sample size which will help to generalise the results obtained.
2. This study was limited only to Marathi medium schools as it was a rural region of Maharashtra. Similar studies can be conducted in other rural regions of India to see the prevalence of the problem.
3. Awareness sessions on Learning Disabilities and Difference in Ability Levels of Children should be

taken in rural schools so children won't be misdiagnosed.

4. Sessions on importance of Remedial Coaching should be taken for school authorities.
5. An Experimental Research where pre and post effects of remedial coaching for such children should be carried out which will help to determine the efficiency of the same in rural schools.
6. Assessment of intelligence along with learning disabilities should be carried out for the children in rural region schools.

#### **Acknowledgment**

We would like to express our deepest gratitude to Mrs Vaishali Merdhekar for her constant guidance and support in this study. Her insights helped us on every step and gave a fulfilling result of the research. It would have not found its goal without her.

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