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Comparative Study of Cognitive Abilities of Preschool Children as per age

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ABSTRACT
Children are the first agenda of human resource development not only because young children are the most vulnerable, but also because the foundation for lifelong learning and human development is laid in these crucial early years. It is now globally acknowledged that investment inhuman resources development is a pre-requisite for economic development of any nation. Cognitive functioning or the process of knowing includes development of awareness and judgement. The main purpose of the study was to investigate cognitive abilities of preschool children across age. The study was conducted in Hisar district of Haryana state. For selection of rural data four schools having preschool unit were selected and to draw urban sample five preschools were selected at random. From selected schools 240 pre-school children from the age group of four to five years were selected randomly. The sample consisted of equal number of preschool boys and preschool girls. Cognitive abilities of pre-school children were assessed by using Pandey's Cognitive Development Test for Pre-schoolers by Hema Pandey (1992). The collected data was classified and tabulated as per the objectives. For analysis of data frequency, percentages, mean, standard deviation and independent sample 'z' test were used. Results indicated that in elder as well as in younger children majority had average level of cognitive abilities and elder preschool children had better cognitive abilities as compared to younger preschool children.
Keywords: *Cognitive abilities, cognitive development, preschool children.*

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INTRODUCTION

Preschool period represents one of the most crucial periods of development. Not only the rapid brain development takes place during these early years, but also foundations for sound physical-motor, socio-emotional, cognitive and language development can be laid if due care is given during this period. Then emphasis should start at an early stage, as these are critical years in a child's span since the rate of development is more rapid than at any other stage. Available research evidence indicates that much of child's mental development takes place before the age of 6 years [1].

Cognitive functioning or the process of knowing includes development of awareness and judgement. The essential condition for healthy development of brain is proper and adequate nutrition, disease-free wellbeing of mother and child and no drug addiction on the part of the mother. As the child matures, his learning starts with sensory stimulation and interaction with the environment. Relationship with parents, siblings, adults and teacher influence the child's concept of self. The brain of child is intricately involved in both motor and cognitive development. Environment is one of the major factors contributing to cognitive development. A young child spends maximum time with his family and much of the learning in the early childhood takes place through the child's day-to-day interactions within the family. Home should therefore, provide opportunities to observe and learn through watching, participating and imitating [2].Piaget believed that cognitive processes develop in an orderly sequence and depend on maturation of brain and interaction with their environment. Further its outcome depends on the quality of children's experiences both inside and outside of the formal classroom because young children go through a series of psychosocial and neurological changes. Children's ability to acquire knowledge and then use it effectively to plan, monitor, and evaluate their own capabilities is better ensured during early years of life.

This domain includes the physical knowledge, perception, logical, mathematical knowledge, scientific understanding and critical thinking skills. Environment during the two to five years of life is very significant for cognitive development. Therefore, all kinds of facilities should be provided to the child to explore, to inquire, to play and to interact with his peers for optimum education [3].

Objectives

- To assess the level of cognitive abilities of preschool children
- To compare the cognitive abilities of preschool children across age

REVIEWS

Singh and Dhanda [7] conducted a study that was done with aim to develop five important basic skills namely; gross motor skills, fine motor skills, language, cognitive and socio-emotional skills in children. A sample of 100 children in the age group of 2 to 5 years old was enlisted from Village Gawar from block-I and equal sample from village Rawal was from block-II. Data were collected twice before and after intervention with the help of Developmental Checklist to find out impact of intervention on the basic skills of children from both of the villages. Results indicated that an appropriate multidimensional intervention can improve the basic skills of children as statistically significant difference in scores of children with regards to all the domain of skills except socio-emotional was found between pre and post testing of children in both the villages.

Shishodia and Kumari [6] the study was undertaken to find out the quality of pre-schools and its impact on cognitive development of children. The data was collected from four pre-schools. From those four pre-schools, 80 children in the age group of 3-5 years were included in the sample. The findings of the study show a positive correlation between quality of pre-school and cognitive development of children. The children of private pre-school were found to lead ahead in cognitive development than children of pre-schools run by NGOs.

Poonam *et al.* (2012)[5] conducted a study in rural and urban areas of Hisar district. A total number of 120 children of age group of 2-3 years were selected, out of which 60 children were selected from urban and 60 from rural areas. The study revealed that home environment such as learning stimulation, language and physical stimulation and acceptance were significantly associated with intellectual abilities of urban children. The total home environment was also found significant as a variable for intellectual abilities of rural children.

METHOD AND MATERIALS

Sample size

Separate list of boys and girls were prepared in the age of 4 to 5 years from all nine schools. 60 boys and 60 girls were selected from each location randomly. Total sample consisting of 240 pre-schoolers out of which 120 pre-schoolers from rural area and 120 pre-schoolers from urban area.

Selection of area

From Haryana state district Hisar was selected at random. From Hisar district, block-II was selected randomly. For selection of rural sample two villages namely Chaudhri was and Gorchi were selected at random from the selected block. From each village two schools were selected randomly i.e. Asha primary school and Play school from village Gorchi, Adarsh senior secondary school and Asha middle school from village Chaudhri was. Total four schools were selected at random. For selection of urban sample list of schools were prepared from Hisar city, from this list five schools were selected at random i.e. Little Wings school, Small Wonder school, Guru Jambeshwar school, Kids Heaven school and New Paramount High school. Total nine schools having preschool wings were selected at random from both locations i.e. urban and rural.

Tools used in study

Cognitive abilities of Pre-schoolers were assessed by using Pandey's Cognitive Development Test for Pre-schoolers by Hema Pandey [4].

Statistical analysis of data

Calculate statistical inference Frequency, percentages, mean, standard deviation and 'Z' test were computed.

RESULTS AND DISCUSSION

Assessment of cognitive abilities of pre-school children as per age

Table 1, presents data on distribution of respondents for their cognitive abilities sub aspects as per age.

i) Conceptual skills - As the table demonstrated that majority of 4.0 to 4.5 years aged children, 62.65 per cent had average level of scores in conceptual skills while 20.09 per cent were above average

achievers and only 13.26 per cent had below average level of conceptual skills. Further in 4.5^{+} to 5.0 years aged children showed majority (57.97%) in average level of conceptual skills followed by 29.93 per cent had above average and 12.10 per cent had below average level of conceptual skills.

ii) **Information** – Regarding this aspect, table depicts that in the age group of 4.0 to 4.5 years 10.84 per cent had below average level of information while majority (75.90 %) of the children had average level followed by 13.26 per cent had above average level of information. Whereas in the age group of 4.5^{+} to 5.0 years results indicate that majority (63.70 %) of children had average level of information followed by 21.66 per cent children had above average level and 14.64 per cent had below average level of information.

iii) **Comprehension** –Further table reveals that in the 4.0 to 4.5 years aged preschool children,55.42 per cent of children had average level of comprehension followed by the above average level (27.71%) and a very few (16.87%) had below average level of comprehension. While in the age group of 4.5^{+} to 5.0 years majority (46.50%) of children had average level followed by above average level (17.20%) and below average level of comprehension (36.30%).

Table 1: Assessment of cognitive abilities of pre-school children as per age

Age / Cognitive abilities	4.0 – 4.5 years (n=83) f (%)	4.5^{+}–5.0 years (n=157) f (%)	Total (N=240) f (%)
Conceptual skills			
Below average (7 – 14)	11(13.26)	19(12.10)	30(12.50)
Average (14.5 – 21)	52(62.65)	91(57.97)	143(59.58)
Above average(21.5 – 28)	20(20.09)	47(29.93)	67(27.92)
Information			
Below average (0 – 3)	9(10.84)	23(14.64)	32(16.00)
Average (4 – 6)	63(75.90)	100(63.70)	163(67.91)
Above average (7 – 9)	11(13.26)	34(21.66)	45(18.75)
Comprehension			
Below average (1 – 2)	14(16.87)	27(17.20)	41(17.09)
Average (3 – 5)	46(55.42)	73(46.50)	119(49.58)
Above average(6 – 7)	23(27.71)	57(36.30)	80(33.33)
Visual perception			
Below average(1 – 2)	14(16.87)	22(14.01)	36(15.00)
Average (3 – 5)	59(71.09)	106(67.51)	165(68.75)
Above average(6 – 7)	10(12.04)	29(18.48)	39(16.25)
Memory			
Below average (1 – 3)	17(20.49)	20(12.74)	37(15.41)
Average (4 – 7)	43(51.80)	79(50.32)	122(50.83)
Above average (8 – 10)	23(27.71)	58(36.94)	81(33.76)
Object vocabulary			
Below average (1 – 2)	19(22.89)	27(17.20)	46(19.17)
Average (3 – 5)	54(65.07)	119(75.80)	173(72.08)
Above average(6 – 7)	10(12.04)	11(7.00)	21(8.75)
Composite cognitive abilities			
Below average (22 – 35)	18(21.69)	19(12.10)	37(15.42)
Average (35.5 – 48)	43(51.80)	79(50.32)	122(50.83)
Above average(48.5 – 61)	22(26.51)	59(37.58)	81(33.75)

Figures in parentheses denote percentages

iv) **Visual perception** - Regarding visual perception table discompose that in 4.0 to 4.5 years age group majority (71.09%) of children had average level followed by below average level (16.87%) and above average level (12.04%). Further in the age group of 4.5^{+} to 5.0 majorities (67.51%) of children had average category followed by above average level (18.48%) and below average level (14.01%) of visual perception.

v) **Memory** – With regard to memory in age group of 4.0 to 4.5majorities (51.80%) of children had average level while 27.71 per cent children had above average level followed by below average level (20.71%).Further in the $4.5^{+}$to 5.0 age group majority (50.32%) of children had average level whereas (36.94%) children fall in the above average category followed by a very few 12.74 per cent children fall in the below average category.

vi) Object vocabulary – In the age group of 4.0 to 4.5 years, table indicated that majority (65.07%) of children had average category while 22.89 per cent children had low category followed by children with above average category (12.04%) of object vocabulary. Further table discloses that in the age group of 4.5^{+} to 5.0 majority (75.80%) of children had average category while 17.20 per cent children had below average category followed by a very few (7.00%) children in above average category of object vocabulary.

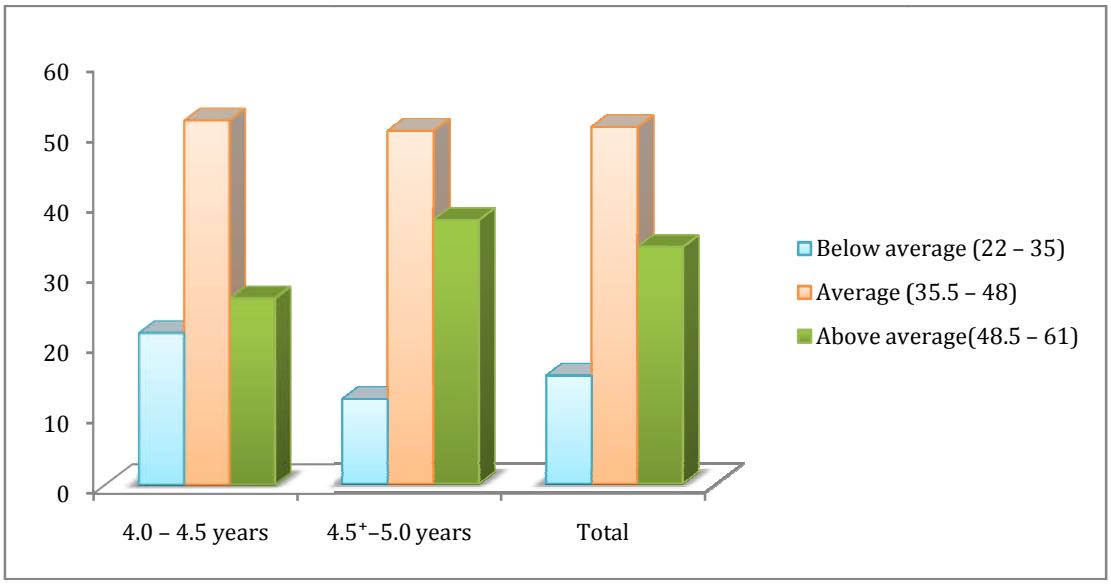

Fig.1: Cognitive abilities of pre-school children as per age

Age wise comparison of children's cognitive abilities

Statistically significant difference was observed in memory (z=1.97*) at 0.05 level of significance. Mean score reveals that elder age group (M=2.24) had better memory than younger age group (M=2.07).

Statistically no significant differences were observed with rest of cognitive abilities aspects which includes conceptual skills, information, comprehension, visual perception, object vocabulary and composite cognitive abilities against age of pre-schoolers.

Table 2: Comparison of cognitive abilities across age (N=240)

Age / Cognitive abilities	4.0-4.5 years (n=83) Mean±SD	4.5^{+}-5.0years (n=157) Mean±SD	Z- values
Conceptual skills	2.11±0.60	2.18±0.62	0.89
Information	2.02±0.49	2.07±0.60	0.71
Comprehension	2.11±0.66	2.19±0.71	0.90
Visual perception	1.95±0.54	2.04±5.70	0.17
Memory	2.07±0.69	2.24±0.66	1.97*
Object vocabulary	1.89±0.58	1.90±0.48	0.15
Composite cognitive abilities	2.12±0.69	2.25±0.66	1.49

*Significant at 0.05 level

CONCLUSION

At the end of the research it can be concluded that majority of the preschool children had average level of cognitive abilities followed by above average and below average. The significant differences in mean values of cognitive abilities of 4.0 – 4.5 year age group pre-schoolers and 4.5^{+} – 5.0 year age group pre-schoolers, elder children had better cognitive abilities than younger children.

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