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### A study to assess the effectiveness of memory package to improve long term memory and problems related to memory among children of age group 6-8 years at selected schools of Belagavi

**Mallappa Arabhavi and Ravi Ajur**

#### Abstract

Learning is not limited to schools, books or boring activities. In fact- this is the best phase of your child's education where both of them can have fun. The best way to stimulate your child are some simple and fun activities that can help accelerate the verbal and motor skills really fast.

The present study aimed to assess the effectiveness of Memory package to improve long term memory and problems related to memory among Children of age group 6-8 years at selected schools of Belagavi. A evaluative approach with pre experimental one group pre test post test design was adopted for the study. The samples from the selected schools were selected using purposive sampling technique. The sample consist sixty rural high school students from selected schools. The tools used for data collection was structured memory assessment scale. Development of tool involved the steps of preparing first draft, content validity and reliability. Tool was found valid and reliable. Pilot study was conducted to find out feasibility of conducting study.

**Data collection procedure:** Data was collected after obtaining administrative permission from selected rural high schools, Belagavi. The investigator personally explained the participants the need and assured them of the confidentiality of their responses. The data analysis was done by using both descriptive and inferential statistics.

**Keywords:** Memory package, conducting study, pre experimental

#### Introduction

Children are considered as the special population in psychiatric nursing curriculum. The definition of children is attached with age that is from birth to 13 years, consider as child. Though it is divided in infant, toddler, teenage, adolescents etc. these specific group of individual considered as different form adult in case of boys or girls, their psychology is different form adult psychology and their brain is not matured like an adult brain. As emotion and stress of children are different than adult. As most of the time adult learning is manifested by memory. Learning takes place after birth of the child continue to progress till the end of a life. Can you imagine life without memory? Even non-human animals must have some system for reacting what they did just did so that their behaviour will flow in proper sequence. For human, memory is more crucial. Think yourself simple conversation with your friends. The very act of speaking means that you are remembering and recalling the words of yours language in grammatical wards, and you must keep track of what you have just said or your conversation will be sentence less. All this memory functions even if your friend does not asked you to recall something you did last week. So memory of some short fundamental to our understanding of behaviour and mind <sup>[1]</sup>.

The term memory comes from a Latin word 'memoric', meaning "to be mined full of" or "to serve as a reminder" "the term memory refers to what is retained-the total body of remembered experience, as well as a specific experience, that is being recalled. So memory is either retaining experiences or identifying, recalling them successfully at the right moment <sup>[2]</sup>.

Three distinct process of memory have been identified these are encoding storage and retrieval process. Encoding is mostly process of receiving sensory input and it transforming into a code which can be stored and retrieval is the process of gaining access to stored coded information, when it is needed. But memory is seldom an accurate record of what was experienced <sup>[1]</sup>. All memories are independent such as sensory register, short term memory, long term memory, visual memory, auditory memory, and sequential memory.

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Some children's have default in the storage and retrieval in long term memories [3].

Different strategies can enhance memory. The problem most people face in long-term memory but not in short term memory. Multisensory cognitive treating can improve fundamental learning skills including long term memory. Different program enable learners to overcome reading difficulties and other learning obstacles become lifelong learners and empowering them to realise this highest goal. The need for the study is to improving the memorising power of a child who is going to be the young nation in future [1].

Memory is not a videotape record of events. At encoding stage, only certain events are selected for storage; at the storage stage numerous distortions can occur; some of what is stored cannot be retrieved or is distorted at the time of retrieval [1].

The difference made between short-term and long-term memory by the information processing theorizes seems to have a brain basis. Information can be held for a very brief time in the sensory channels themselves. This storage function of the memory channels is called the sensory register. Most of the information briefly held in the sensory register is lost; what has been briefly stored simply decays from the register. "It was of interest to ascertain whether children who do not reach adult-like performance following a single training session simply require additional training, or whether different mechanisms underlying skill learning need to reach maturity in order to become adult-like performers" [4].

Worldwide the average of attention span for people dropped from 12 seconds between the years 2000 and 2015. It has been estimated that more than 5% of children/ adolescents and 3% of adults worldwide have ADHD and memory related problem. 1 out of 4 teens forgets major details about close friend and relatives, and 7% of people forget their own birthday [5] a linear relationship between speech rate and memory span in children has been obtained in several studies. This evidence is used to support an explanation of the development of memory span based on the working memory model [6].

Learning is not limited to schools, books or boring activities. In fact-this is the best phase of your child's education where both of them can have fun. The best way to stimulate your child are some simple and fun activities that can help accelerate the verbal and motor skills really fast [7].

Children's understanding of scientific and mathematical concepts grows during EC as the majority of this special problem brain development takes place during these years, and most rapidly (Berk 2002). Children are curious and can be encouraged to develop scientific thinking and learn about emerging mathematical and scientific concepts. Children's curiosity, motivation and sense of mastery are the key to success in the early years. During the early phase, they actively explore their environments, indulge in process of inquiry, discover certain concepts, get stimulation to form ideas, develop thinking, classify information, reason out actions, solve problems and make decisions and construct their own knowledge. An early enthusiasm in mathematics and science during this impressionable age can build-up the

foundations for later competencies so that they can use informal mathematical and scientific knowledge developed before they entered school to organise their formal school environment (Essa 2011). In order to do that, teaching/learning of mathematics and science concepts should form an integral part of daily life activities in EC, and the preschool curriculum should include activities, while being careful about the similarities and distinctiveness between different geographic and cultural groups, such as counting, measuring, locating, designing, playing, exploring, problem-solving, observing and classifying for higher gains in various domains [8].

Dyspraxia children are clumsy and awkward and have particular problems with new motor skills and activities. Some behaviours observed are very poor fine motor skills as handwriting, very poor gross motor skills as, kicking, catching, throwing balls, trouble with balance of movement and bilateral co-ordination [6].

Various study founded that most important functions of sleep was described that is role in promoting cognitive processes in children as well as adolescents. Particularly, studies of older children and adolescents revealed that sleep interacts in a complex manner with cognitive performance. Sensory hyposensitive children have nervous systems that do not always process that sensory input is coming in to the brain. They are under responsive to sensation. As a result they seek out more intense and longer duration sensory experiences. Some behaviours that can be observed-hypo-activity as they seek more and more movement input, unawareness of touch, pain, touching others too often or too hard, (may seem aggressive, engaging in unsafe behaviours such as climbing too high),enjoying sounds that are too loud, such as TV or Radio volume [9].

The teachers' role is undoubtedly very important in planning, supporting and guiding children in learning about maths and science concepts. They can use various teaching strategies and techniques such as modelling and providing feedback and cognitive structuring in an environment that encourages learning through social relationships. An effective teacher should be one who can facilitate and extend children's learning within the holistic nature of the EC curriculum without being overcome by the traditional teacher-centred method that inhibits children's active participation. Children enter preschool with a range of concepts gathered from informal experiences and early educators need to use them in teaching/learning process and create a learning environment that gives children opportunities to develop fundamental participants with children who are active and inventive rather than simply transmitting knowledge to passive children is necessary to make the learning better. Employment of an innovative, ground-breaking strategy that not only warrants novelty but also facilitates early understanding and interest and mastery of concepts thus would make science and mathematics teaching interesting, easy and enjoyable both for the young ones and the teachers [7].

Bundesen's Theory of Visual Attention (TVA). TVA is a prominent visual attention model that has been widely used

as foundation in studies targeting older children, adolescents or adults. In this paper we explore the utility of adopting TVA to explore the visual attention of 4- to 5- year olds and present the development of a simplified adapted version of a TVA-based assessment designed for this age group<sup>[10]</sup>.

In psychology and neuroscience, memory span is the longest list of items that a person can repeat back in correct order immediately after presentation on 50% of all trials. Items may include words, numbers, or letters. The task is known as digit span when numbers are used. Memory span is a common measure of short-term memory. It is also a component of cognitive ability tests such as the WAIS. Backward memory span is a more challenging variation which involves recalling items in reverse order<sup>[11]</sup>.

**Objectives of the study**

1. To assess the pre and post interventional level of long term memory among students at schools.
2. To determine the effectiveness of Memory package to improve long term memory and problems related to memory on the level of long term memory among students at schools.
3. To determine the association between the pre-test level of long term memory among students with their selected socio demographic variables

**Hypothesis**

**H1:** There will be a significant difference between the pre test and post test level of long term memory among school students

**H2:** There will be a significant association between the pre-test levels of long term memory with their selected socio

demographic variables.

**Methodology**

This chapter deals with the methodology adopted for the study. The methodology of research indicates the general pattern for organizing the procedure and for gathering valid and reliable data for investigation<sup>[15]</sup>.

It includes the research approach, research design, the setting, the population, sample and technique, development and description of tools, pilot study, and procedure for data collection and plan for data analysis.

The present study aimed to “assess the effectiveness of memory package to improve long term memory and problems related to memory among children of age group 6-8 years at selected schools of BELAGAVI”

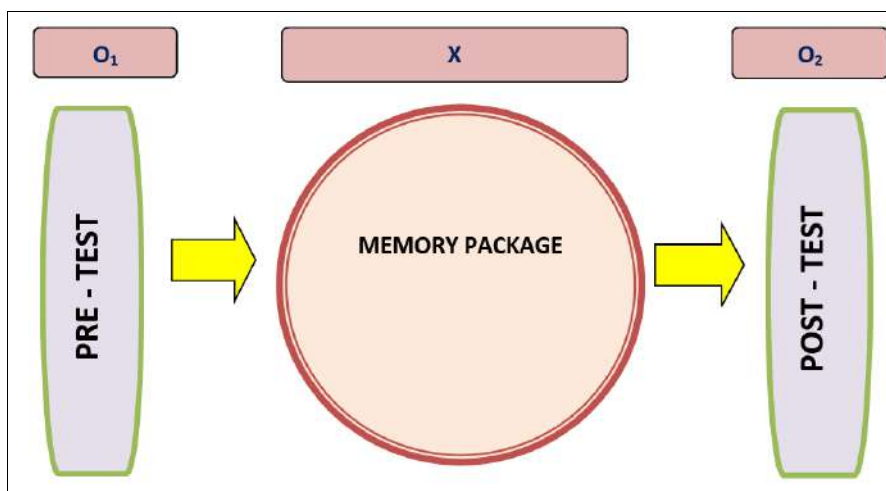
**Research Approach**

The research approach indicates the basic procedure for conducting research<sup>[15]</sup>. Based on the nature of the problem and the objectives of the study the research approach chosen for the study is evaluative approach. This approach was considered as appropriate to assess the effectiveness of memory package to improve long term memory and problems related to memory among children of age group 6-8 years at selected schools of BELAGAVI.

**Research Design**

The research design refers to the researcher’s overall plan for obtaining answers for research questions, and it spells out the strategies adopted to develop information that is accurate, objective and interpretative<sup>[15]</sup>.

The research design selected for the study is Pre-Experimental, One Group Pre-test and Post-Test Design.



**Fig 2:** Schematic Representation of Research Design

**O1:** Pre-Test assessment of long term memory

**O2:** Post-Test assessment of long term memory

**X:** Memory package

**Variables of The Study**

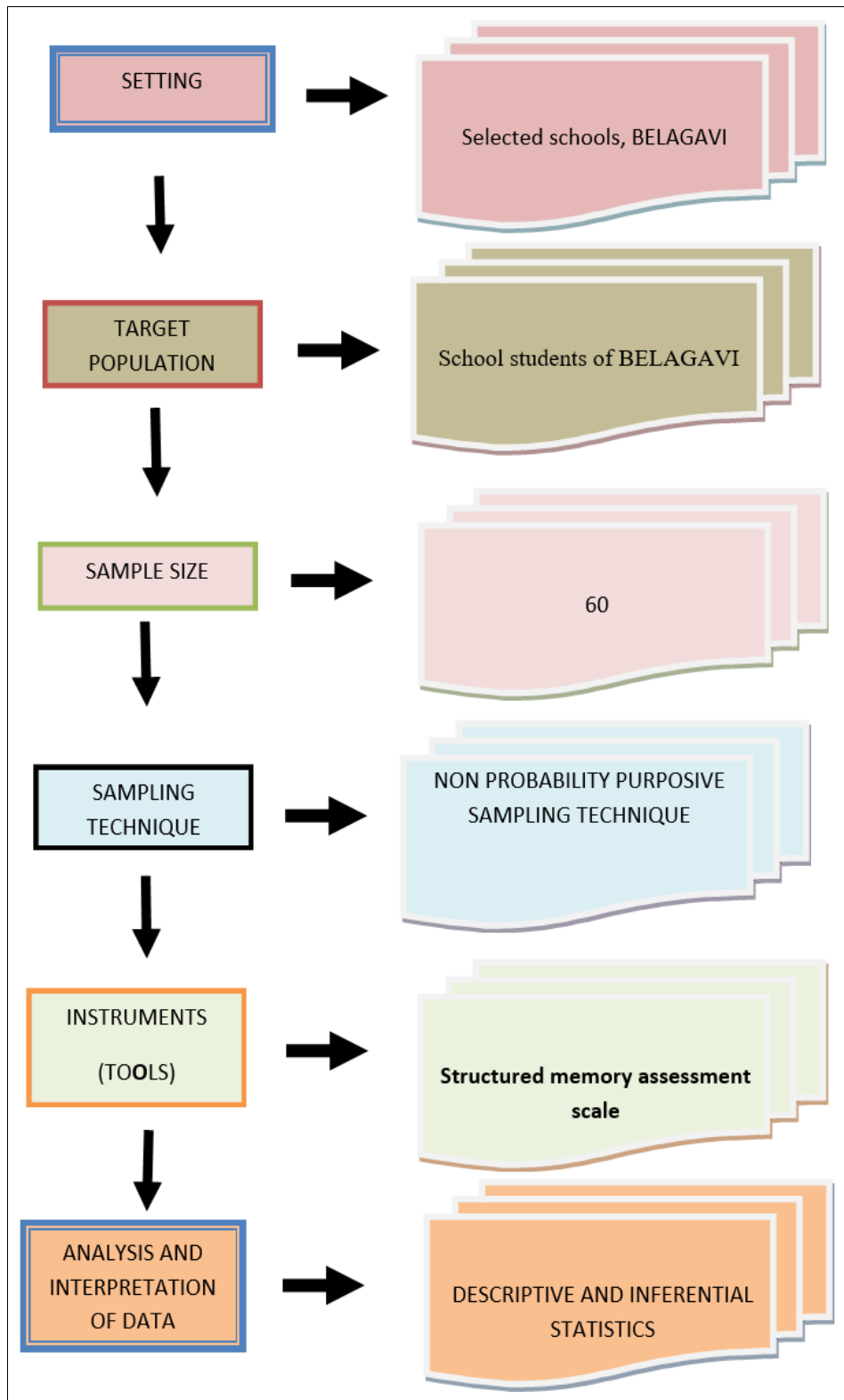
The variables of the study were

**Independent variable:** Memory package among students of schools

**Dependent variable:** Long term memory among students of schools.

**Extraneous variables**

- Age, gender, year of study, type of family, birth order, education of father, education of mother and family income.



**Fig 3:** Schematic Representation of Research Process

**Selected schools of BELAGAVI**

The rationale for selecting this setting was as follows:

- Familiarity with this setting
- Availability of study samples
- Expected co-operation from the students of schools

**Population**

A population is the entire aggregation of cases in which a researcher is interested.<sup>[15]</sup> In the present study population comprises students of selected schools.

**Sample and sampling**

A sample is a subset of population, selected to participate in a study <sup>[15]</sup>. The sample of present study comprises of the students of selected schools of BELAGAVI. Sixty (60) students of selected schools were selected for study.

**Sampling technique**

Sampling is the process of selecting a portion of the population to represent the entire population <sup>[15]</sup>. The non-probability purposive sampling technique was used in the



present study.

Purposive sampling refers to recruitment of the samples based on the purpose of the study

### Criteria for sampling

The study samples were selected keeping in view the following predetermined criteria.

- **Inclusion criteria**
  - School students who can understand, comprehend, and respond in English/Kannada.
  - School students who are studying at selected schools BELAGAVI
  - School students are who are willing to take part in the study.
- **Exclusion criteria**
  - School students who are having behavioural problems as reported by their school authority

### Data collection techniques and instrument

#### Selection and development of data collection tool

Instrument in a research study is the device used to collect data.<sup>15</sup> Based on the review of literature the following tool was decided to be used-

### Structured memory assessment scale

#### Development of Structured memory assessment scale

The Structured memory assessment scale was developed after taking following steps.

- Review of research and non research literature related to long term memory
- Expert's opinion and suggestions to decide on the areas

to be included

### Description of the Self-administered knowledge questionnaire

It consisted of two parts

- **Section I:** It included the personal and socio-demographic data which contains Age, gender, year of study, type of family, birth order, education of father, education of mother and family income.
- **Section II: Structured memory assessment scale**  
Through the thorough review of literature structured memory assessment scale was prepared for the present study which consists of 25 questions with **yes** and **No** options for each statement. Blue print was prepared (Annexure-A) and items were prepared related to pre conceptional care. There were two alternative answers (Annexure-C), from which the participants have to choose one best option by encircling it. The total memory scores ranged from 0 – 25. The score is further divided arbitrarily as follows;
  - Inadequate Level of memory: 0-8
  - Moderate level Memory : 9-16
  - Adequate Level of memory : 17-25

### Memory package:

The main aim of memory package is to improve the long-term memory and understanding of the processes and skills those are involved in memory package for children.

### Program Blue Print

Memory package is divided into the following Session

No. of Days	Sections	Memory packages	Intervention	Duration
1	Session I	Mental sum	Development of progressive and retrograde number sense	1 hour
2	Session II	Problem solving puzzles	Improves concentration and problem-solving skills	1 hour
3	Session III	One minute attention span test	Improve attention and concentration	1 hour
4	Session IV	Visual memory test	Improve visual disciplined memory through visual memory test	1hour
5	Session V	Recognized the object (smell test)	Improve olfactory sensory receptors for environmental consciousness.	1hour
6	Session VI	Identify the sound test	Improve the sound recognition in the environment	1hour

### Content validity and reliability

Content validity is the degree to which the items in the instrument adequately represent the universe of content for the concept being measured <sup>[15]</sup>. It is relevant for both affective measures and cognitive measures.

The structured memory assessment scale and memory package were content validated by giving to five experts from nursing field. There was 100% agreement by all experts on all the items. However there were few suggestions to modify some of the content in long term memory improvement program and those were incorporated in final tool.

As the tool used in the study is checked its reliability by test retest method and the reliability of the tool was  $r = 0.81$ . This indicates that tool was reliable.

### Data collection procedure

Study was approved by the institute ethical committee. Formal administrative permission was obtained (Annexure-H). Data were collected from 01-03-2022 to 30-03-2022. Sample was selected as per the sampling criteria. The purpose of the study was explained and co-operation required from the respondents was explained to them. Confidentiality was assured. Consent to participate in the

study was obtained from each subject. On day 1 pretest was conducted and memory package was administered to participants according to schedule. The post test was administered to participants on next day of completion of memory package.

### Result

Organization of findings

The analysis of the data is organized and presented under following sections;

**Section I:** Demographic profile.

**Section II:**

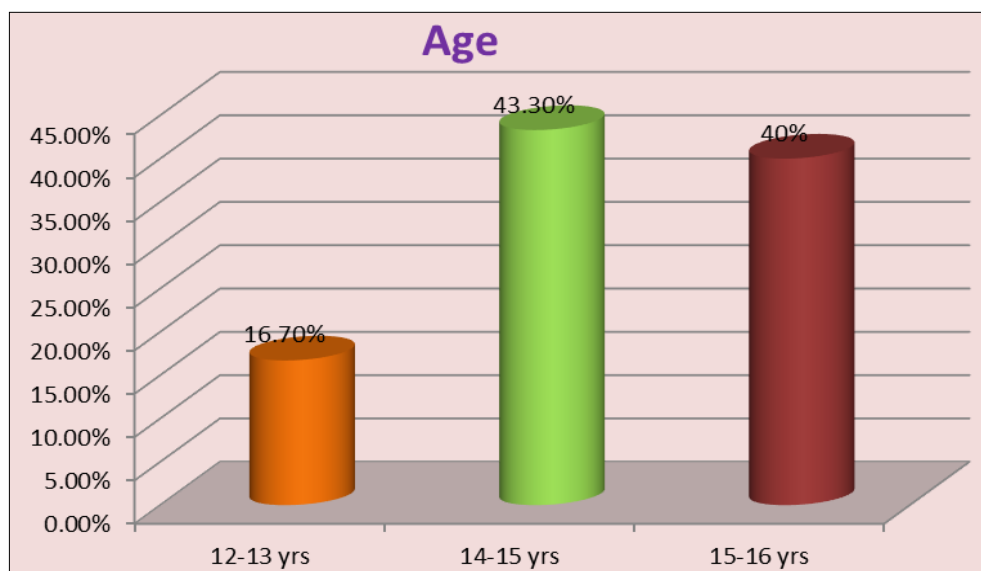
- A. Distribution of pre test and post test long term memory scores of respondents.
- B. Distribution Respondent's Scores According To Their Levels of long term memory during pretest and post test
- C. Effectiveness of Memory package to improve long term memory and problems related to memory
- D. Association between long term memory scores with selected demographic variables.

**Section I: Demographic profile**

**Table 1:** Frequency & Percentage Distribution of Respondents by socio demographic variables n=60

Sl No	Demographic variables	Frequency (f)	Percentage (%)
1.	<b>Age in years</b>		
	a. 12-13 years	10	16.7
	b. 14-15 years	26	43.3
	c. 15-16 years	24	40
2.	<b>Gender</b>		
	a. Male	35	58.3
	b. Female	25	41.7
3.	<b>Year of study</b>		
	a. 1 <sup>st</sup> std	13	21.7
	b. 2 <sup>nd</sup> std	27	45
	c. 3 <sup>rd</sup> std	20	33.3
4.	<b>Type of family</b>		
	a. Nuclear family	33	55
	b. Joint family	19	31.7
	c. Extended family	08	13.3
5.	<b>Birth order</b>		
	a. First	26	43.3
	b. Middle	22	36.7
	c. Last	12	20
6.	<b>Education of father</b>		
	a. ≤ Lower primary school	17	28.3
	a. High school	19	31.7
	b. PUC	14	23.3
	c. ≥ Diploma and Degree	10	16.7
7.	<b>Education of mother</b>		
	a. ≤ Lower primary school	12	20
	b. High school	29	48.3
	c. PUC	15	25
	d. ≥ Diploma and Degree	04	6.7
8.	<b>Parents income/Month</b>		
	a. Below 5000/-	05	8.3
	b. 5001- 10000/-	27	45
	c. 10001- 15000/-	21	35
	d. 15001 & above	07	11.7

**Age:** The data presented in Table 1 and Figure 4 shows that, majority 26 (43.3%) of the respondents belong to the age group of 14-15 years, 24(40%) of respondents belonged to 15-16 years and 10(16.7%) of respondents belonged to 12-13 years of age.



**Fig 4:** Frequency and percentage distribution of respondents according to their age

**Gender:** It was observed that the majority 35(58.3%) of respondents were males and remaining 25(41.7%) of respondents were females. (Table 1 & Fig 5)

**Year of study:** It is evident from Table 1 and Figure 6 that, majority 27(45%) respondents were studying in 2<sup>nd</sup> standard, 20(33.3%) of respondents were studying in 3<sup>rd</sup> standard and remaining 13(21.7%) of respondents were studying in 1<sup>st</sup> standard.

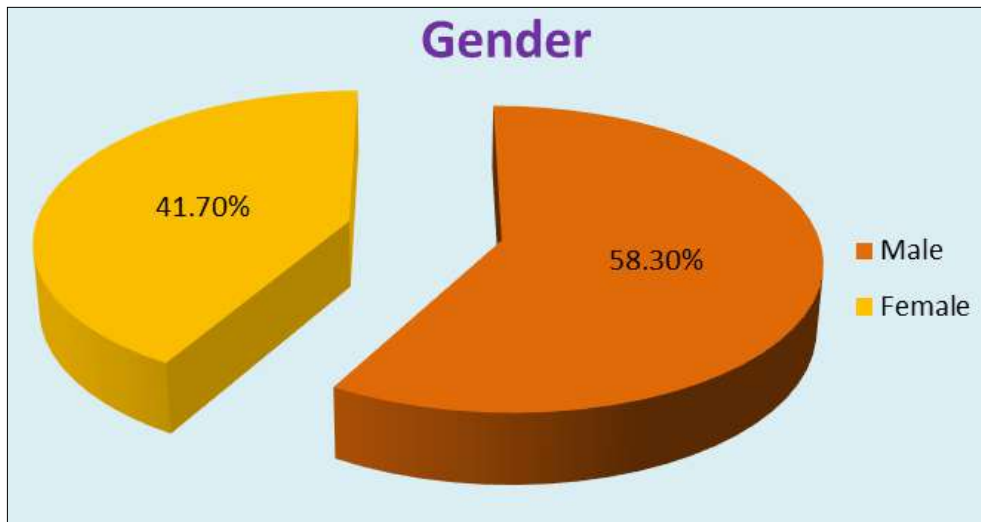
**Type of family:** The data presented in Table 1 and Figure 7 shows that, majority 33 (55%) of the respondents were belonged to nuclear family, 19(31.7%) of respondents were belonged to joint family and remaining 8(13.3%) of respondents were belonged to extended family.

**Birth order:** The data presented in Table 1 and Figure 8 shows that, majority 26(43.3%) of the respondents were first child, 22(36.7%) of respondents were middle child and remaining 12(20%) of respondents were last child.

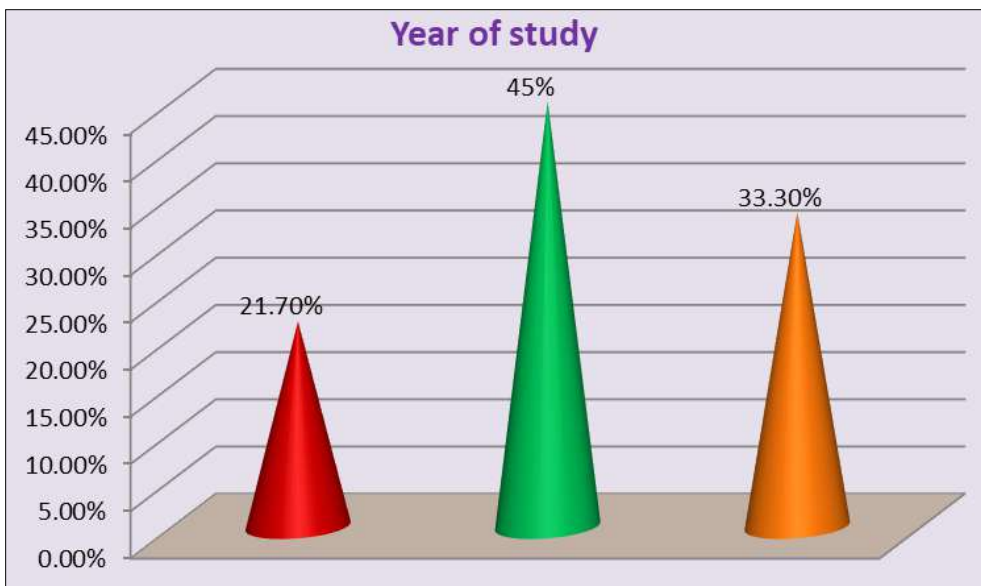
**Education of father:** The data presented in Table 1 and Figure 9 shows that, majority 19 (31.7%) of the respondents fathers were had high school education, 17(28.3%) of respondents fathers were had lower primary school education, 14(23.3%) of respondents fathers were had PUC education and remaining 10(16.7%) of respondents fathers were had diploma and degree education.

**Education of mother:** The data presented in Table 1 and Figure 10 shows that, majority 29 (48.3%) of the respondents mothers were had high school education, 15(25%) of respondents fathers were had PUC education, 12(20%) of respondents fathers were had lower primary school education and remaining 4(6.7%) of respondents fathers were had diploma and degree education.

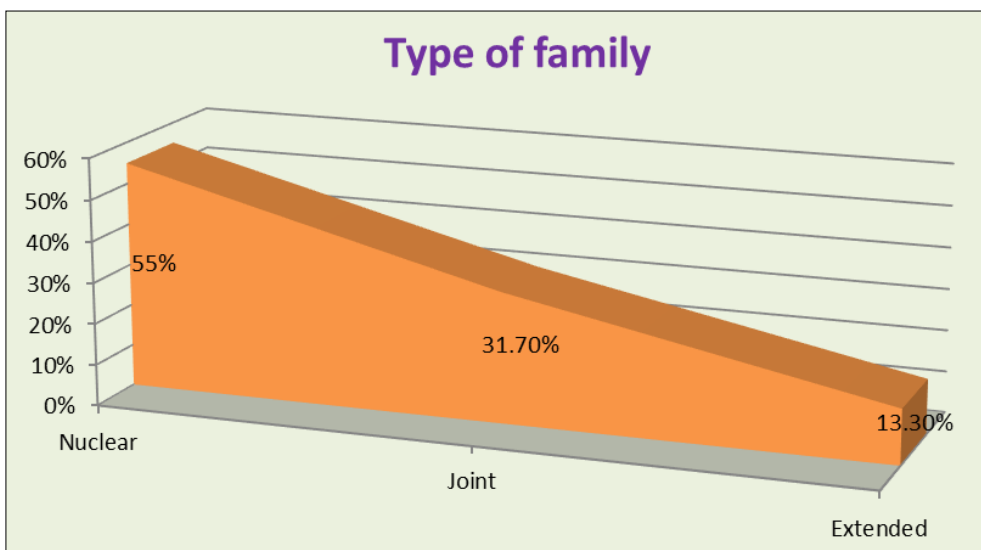
**Parents Income:** The data presented in Table 1 and Figure 11 shows that, majority 27(45%) of respondents were had 5001-10,000 income, 21(35%) of were had up to 10001-15000 income, 7(11.7%) of respondents were had 15001 and above income and remaining 5(8.3%) of respondents were had below 5000 income.



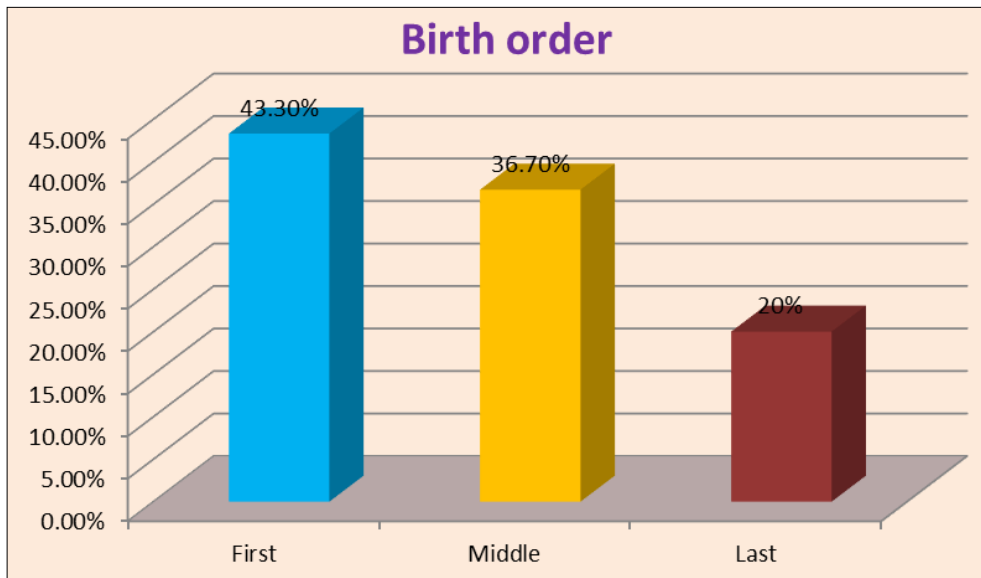
**Fig 5:** Frequency and percentage distribution of respondents according to their gender



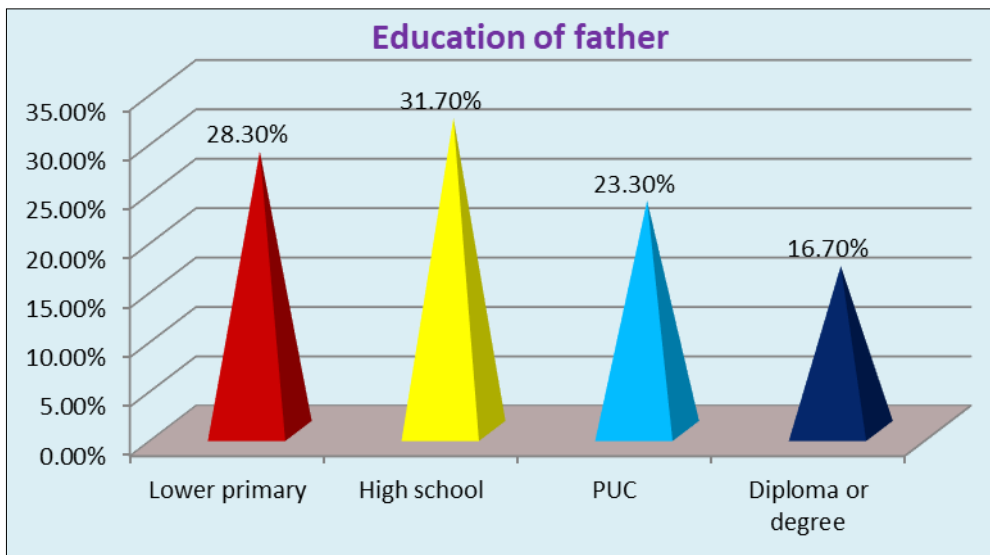
**Fig 6:** Frequency and percentage distribution of respondents according to their year of study



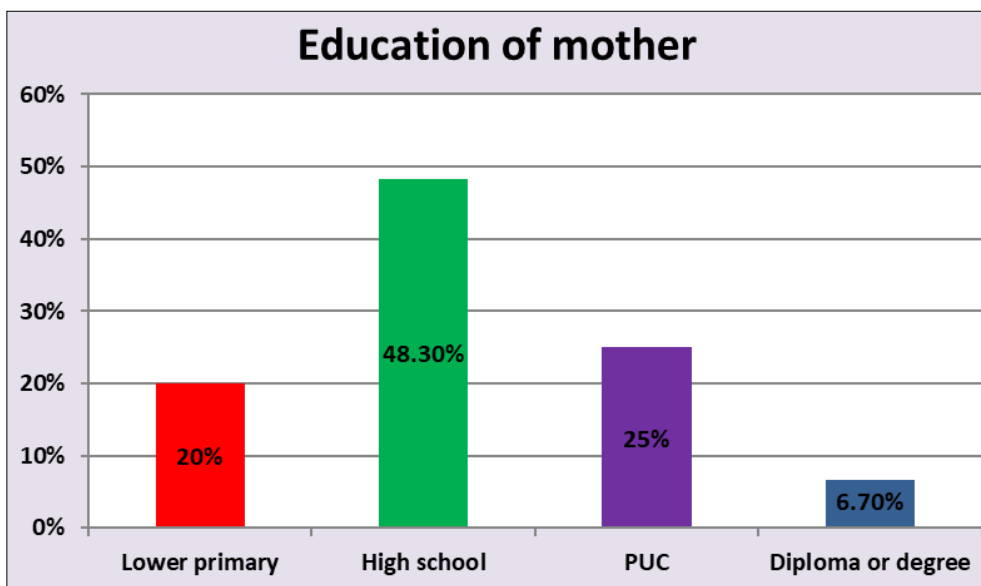
**Fig 7:** Frequency and percentage distribution of respondents according to their type of family



**Fig 8:** Frequency and percentage distribution of respondents according to their birth order

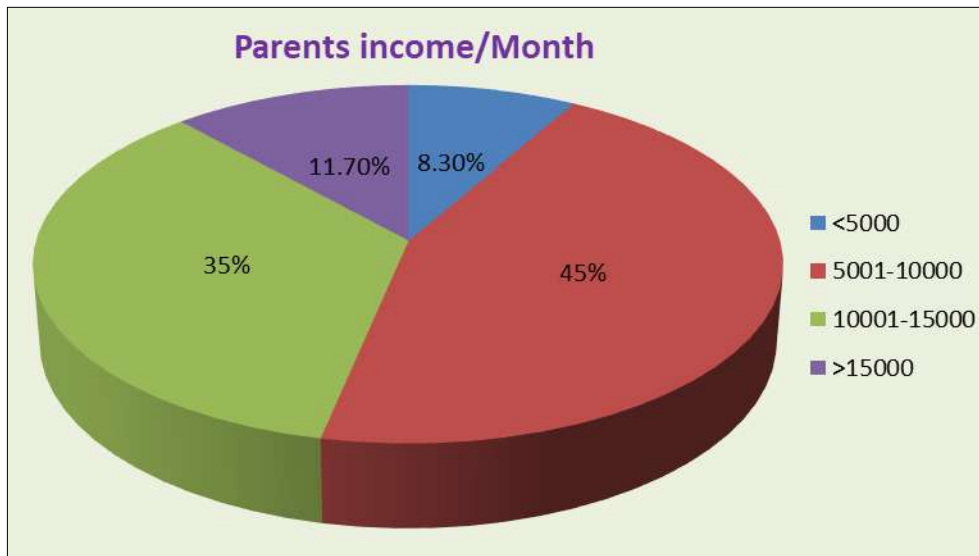


**Fig 9:** Frequency and percentage distribution of respondents according to their Education of father



**Fig 10:** Frequency and percentage distribution of respondents according to their education of mother





**Fig 11:** Frequency and percentage distribution of respondents according to their parents income per month

**Section II**

**Distribution respondent’s scores according to their level long term memory during pretest and post test**

**A. Area wise and total distribution of pre-test and post test long term memory scores of respondents.**

**Table 2:** Mean, median, mode, standard deviation and range of pre test and post test long term memory scores of Respondents n = 60

Area of Long-term memory	Mean	Median	Mode	Standard deviation	Range
Pre test	6.85	6	5	3.01	4-16
Post test	13.03	12	12	3.99	7-29

Table 2 reveals pre-test long term memory score of respondents, it shows that;

The pretest long term memory scores respondents mean was 6.85, median was 6, mode was 5 with standard deviation 3.01 and score range was 4-16.

The post test long term memory scores respondents mean was 13.03, median was 12, mode was 12 with standard deviation 3.99 and score range was 7-29.

**B. Distribution respondent’s pretest and post test scores according to their level of long term memory**

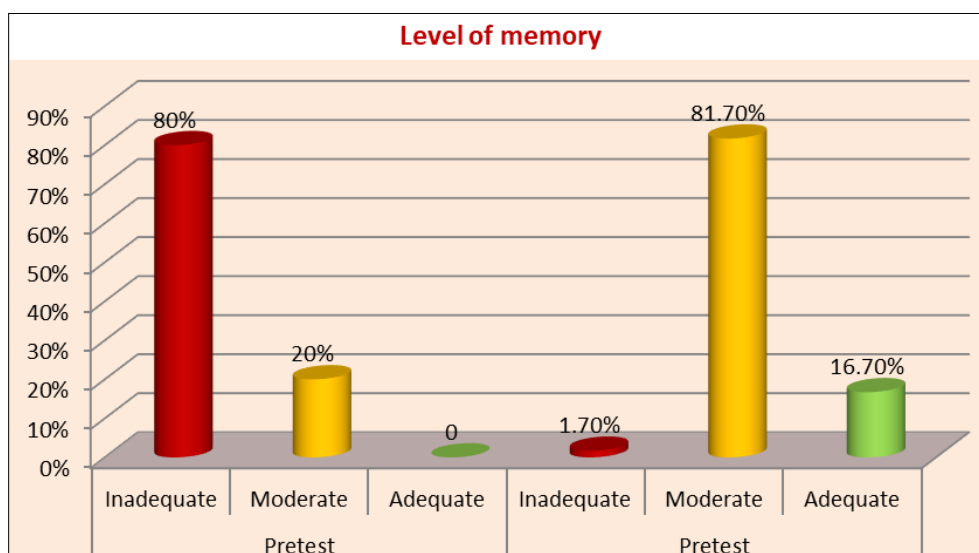
**Table 3:** Frequency and Percentage distribution of respondents according to level of Long term memory in pretest and post test n=60

Level of Long-term memory					
Pre test			Post test		
Inadequate level f (%)	Moderate level f (%)	Adequate level f (%)	Inadequate level f (%)	Moderate level f (%)	Adequate level f (%)
48(80%)	12 (20%)	00	1 (1.7%)	49 (81.7%)	10 (16.7%)

The data presented in the Table 3 depicts the respondent’s level of long-term memory during pretest and post test;

With regard to pre-test level of long-term memory it shows that, majority 48(80%) respondents were had inadequate level long term memory and 12(20%) of respondents were had moderate level of Long term memory.

During post-test maximum 49(81.7%) of respondents were had moderate level Long term memory, 10(16.7%) of respondents were had adequate level long term memory and 1(1.7%) of respondents were had low level of Long term memory.



**Fig 13:** Pre-test and post-test level of Long term memory

**Effectiveness of memory package to improve long term memory and problems related to memory**

Paired ‘t’ value was computed to find out the significance of difference between means of pre-test and post test long term memory scores of respondents. The data is presented in Table 4. To test statistical significance following research hypothesis were stated-

**H1:** – There will be a significant difference between the pre test and post test level of long term memory among school students

**Table 4:** Mean, standard deviation, standard error of difference and ‘t’ value of pre-test and post-test long term memory scores N=60

Area	Aspects	Mean	Sd	SEMD	Paired t Test
Long term memory	Pre-test	6.85	3.01	0.36	16.88*
	Post-test	13.03	3.99		

\* Significant at 5 % level

Table 4 indicates the overall mean long term memory scores of pre-test and post-test –

With respect to long term memory scores of participants, the findings reveal that the post-test mean long term memory scores was found higher [mean=13.03, SD of 3.99] when

compared with pre-test mean long term memory score value which was 6.85 with SD of 3.01.

The statistical paired ‘t’ implies that the difference in the pretest and post-test value was found statistically significant at 5% level (P<0.05) with a paired ‘t’ value of 16.88. There exists a statistical significance in the difference of long term memory score indicating the positive impact of Memory package to improve long term memory and problems related to memory.

Hence, the research hypothesis H<sub>1</sub> is supported. This indicates that the enhancement in long term memory is not by chance and the participants who exposed to Memory package to improve long term memory and problems related to memory, significantly improved in their Long term memory.

**Association between level of long term memory and selected socio demographic variables**

To find out the association between the levels of long term memory and selected personal variables, Chi square was computed and the following hypothesis are stated-

**H<sub>2</sub>** – There will be a significant association between the pre-test level of long term memory with their selected socio demographic variables

**Table 5:** Chi-square values between levels of long term memory of respondents and their selected demographic variables. n = 60

Sl No	Demographic variables	Long term memory score		d(f)	Chi square value	Level of significance
		Inadequate level	Moderate level			
1	<b>Age in years</b>					
	a. 12-13 years	6	4	2	3.35	NS
	b. 14-15 years	21	5			
	c. 15-16 years	21	3			
2.	<b>Gender</b>					
	a. Male	26	9	1	1.71	NS
	b. Female	22	3			
3.	<b>Year of study</b>					
	a. 1 <sup>st</sup> std	9	4	2	2.27	NS
	b. 2 <sup>nd</sup> std	21	6			
	c. 3 <sup>rd</sup> std	18	2			
4.	<b>Type of family</b>					
	a. Nuclear family	28	5	2	1.08	NS
	b. Joint family	14	5			
	c. Extended family	6	2			
5.	<b>Birth order</b>					
	a. First	22	4	2	0.63	NS
	b. Middle	17	5			
	c. Last	9	3			
6.	<b>Education of father</b>					
	a. ≤ Lower primary school	14	3	3	0.91	S
	b. High school	16	3			
	c. PUC	10	4			
	d. ≥ Diploma and Degree	8	2			
7.	<b>Education of mother</b>					
	a. ≤ Lower primary school	10	2	3	2.47	NS
	b. High school	24	5			
	c. PUC	12	3			
	d. ≥ Diploma and Degree	2	2			
8.	<b>Parents income/Month</b>					
	a. Below 5000/-	5	0	3	1.79	NS
	b. 5001- 10000/-	22	5			
	c. 10001- 15000/-	16	5			
	d. 15001 & above	5	2			

$\chi^2_{(1)}=3.84,_{(2)}=5.99,_{(6)}=12.59$  (p>0.05) NS – Not Significant

The data presented in the Table 5 shows that the computed Chi-square value for association between pre test level of long term memory of high school students of rural area and their selected demographic variables is not found to be statistically significant at 0.05 levels for any of the selected socio demographic variables. Therefore, the findings do not support the hypothesis H<sub>2</sub>, inferring that high school students of rural areas level of long term memory is not significantly associated with their selected socio demographic variables.

## References

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