Research Article

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STATUS OF DRISHTA SMRITI (VISUAL MEMORY) AND SHRUTA SMRITI (AUDITORY MEMORY) IN DIFFERENT PRAKRUTI: A QUESTIONNAIRE BASED SURVEY STUDY

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ABSTRACT

Objectives of the study was to assess the status of Drishta Smriti (visual memory) and Shruta Smriti (auditory memory) in different Prakruti (phenotype). The survey was conducted on the students from SDM College of Ayurveda and Hospital, Hassan, Karnataka, India within the age group of 18-20 yrs. 100 students each of Vata, Pitta and Kapha Pradhana Prakruti were selected randomly based on the standard questionnaire which was prepared for the Prakruti analysis. Thereafter memory rating of Drishta and Shruta Smriti was done according to the PGI memory scale and Cambridge Brain Sciences online Memory tests. The results show significant relation between Prakruti and Smriti. As memory test is done under different domains like - remote memory, recent memory, attention and concentration, immediate recall, verbal retention for similar pairs, verbal retention of dissimilar pairs, visual retention, visual recognition, spatial span, monkey ladder, digit span, paired associates and delayed visual reproduction, all were found to be statistically significant with Prakruti. The study establishes a significant relation of Smriti with Prakruti. Kapha Pradhana Prakruti scored more in majority of the tests compared to Vata Pradhana and Pitta Pradhana Prakruti. Also establishes that Drishta Smriti and Shruta Smriti is best for Kapha Pradhana Prakruti, better for Vata Pradhana Prakruti and good for Pitta Pradhana Prakruti and it is found that in all Prakrutis, Drishta Smriti is more and long standing when compared to Shruta Smriti.

Key words: Smriti, Drushta Smriti, Shruta Smriti, Prakruti, PGI memory scale, Cambridge Brain Sciences online Memory tests.

INTRODUCTION

The non-pathological status which is there in the individual in the inherent nature from the birth till the death is Prakruti.¹⁻² Ayurveda explains the characteristics of each Prakruti (phenotype)³ predominant individuals.⁴ There are variations in both the physical and mental characters of an individual based on the Prakruti i.e. the individual constitution.⁵ Different types of variations are seen in relation with height, weight, body built, intelligence etc. Smriti has been graded considering the Prakruti by the Acharyas.⁶ Vata Prakruti individuals are Alpa Smriti and Shruta Grahi, Pitta Prakruti individuals are Medhavi, Nipunamathi and Panditha, Kapha Prakruti individuals are Smritiman and Chira Grahi. So there is a need to analyze the concepts of Smriti which is explained in the ancient classics with the help of modern parameters. The present survey study was conducted to analyze the Prakruti and its relation with Drushta and Shruta Smriti with the help of the PGI Memory scale⁷ and Cambridge Brain sciences online memory tests.⁸

MATERIALS AND METHODS

Objectives

- To assess Smriti in different Prakruti.
- To assess the status of Drishta and Shruta Smriti in different Prakruti.

- To assess which Smriti is long standing, is Drishta or Shruta Smriti.

Research design

The present work has been planned in the following steps:-

1. Selection and categorization of subjects based on the specific age group.
2. Prakruti was assessed with the help of standard questionnaire.
3. Different memory tests were categorized under Visual and Auditory Memory.
4. Comparing the Visual and Auditory Memory with the help of standard questionnaire.

Survey study: Survey study was conducted using validated self-administered questionnaire, which was prepared by including the different types of memory tests explained in the PGI memory scale and also with the Cambridge Brain sciences online memory tests. The same were distributed and given to the students of SDMCA, Hassan, Karnataka state, India and at the same time, Prakruti was also assessed with the help of standard questionnaire. The responses were collected and then outcomes were properly analyzed on the basis of Visual and Auditory memory scores in the Memory scale.

Survey study design: Survey study was conducted in two phases:

- a. Preparation of the Survey Questionnaire for reliability and consistency.
- b. Collection of Data from subjects using Survey Questionnaire

a. Preparation of Survey Questionnaire

i. Questionnaire for assessing Visual and Auditory Memory

Questionnaire was prepared for analyzing the Drishta and Shruta Smriti by using the memory tests which were explained in the PGI Memory scale and in the Cambridge Brain Sciences online Memory tests. First the Memory tests were categorized under Visual and Auditory Memory and scores for each test were also mentioned.

ii. Questionnaire for assessing Prakruti

The standard questionnaire was prepared with the help of references from Charaka Samhita. This helps the individual to assess their own Prakruti easily. Also it helps the individual to assess the dominant Dosha in terms of percentage and thus helping to minimize the need for expressing the Prakruti in terms of Ekadoshaja or Dvandvaja.

b. Collection of Data from Subjects using Survey Questionnaire

Methodology of survey study:

Study Design: Descriptive Cross-sectional survey study was conducted from February 2014 to November 2014. Written informed consent was obtained from all study participants. Ethics clearance was obtained from Institutional Ethics Committee of SDM College of Ayurveda and Hospital, Hassan. Ethics clearance was obtained from Institutional Ethic committee of SDM College of Ayurveda and Hospital, Hassan (IEC No. SDMCAH/IEC/03/13-14).

Survey Method: Self-administered questionnaire.

Sampling Frame: The students were selected from the SDM College of Ayurveda and hospital, Hassan. **Sample Size:** The sample size was taken as 300.

Sampling Technique: Convenient sampling technique was used to select representative subjects.

Inclusive Criteria: - 300 volunteers, irrespective of sex, between the age groups of 18-20 years of the same educational status and the volunteers who were willing to participate in study were taken.

Exclusive Criteria: - Persons, having age group below 18 and above 20 years, and who are mentally disoriented.

ASSESSMENT OF MEMORY

Assessment has been done with the PGI Memory scale and Cambridge Brain sciences online memory tests.

1. PGI memory scale: It provides a simple way for measuring very short term memory, short term memory and long term memory which is based on the experimental evidences on Remote, Recent and Immediate memory which is acquired from the clinical practices of the evaluation of memory. In this memory scale, includes different subtypes of memory namely: Remote Memory, Recent Memory, Mental Balance, Attention and

Concentration, Delayed Recall, Immediate Recall, Verbal Retention for similar pairs, Verbal Retention for dissimilar pairs, Visual Recognition, Delayed Visual Recognition and Visual Retention. It contains a set of 5 cards for the subtest XI i.e. Visual Retention Also contains a set of 2 cards for the subtest IX and X i.e. Visual Recognition and Delayed Visual Recognition. In one set of card, contains pictures of 10 common objects and the second set of card contains pictures of 20 common objects. Normally it takes 15-20 minutes for its administration. We should take special care in the case of time gap between administering each test and also should do the scoring properly.

2. Cambridge brain sciences online memory tests: It comprises of 4 memory tests like: Spatial Span, Digit Span, Paired Associates and Monkey Ladder.

These Memory tests were categorized into Shruta Smriti (auditory memory) and Drushta Smriti (visual memory). Shruta Smriti includes Delayed Recall, Immediate Recall, Verbal Retention for similar pairs, Verbal Retention for dissimilar pairs and Attention and Concentration. While Drushta Smriti includes Visual Recognition, Visual Retention, Delayed Visual Recognition, Spatial Span, Digit Span, Paired Associates and Monkey Ladder.

Range for auditory memory: Shruta Smriti total was assessed by using the compute variable and adding all the domains for auditory memory, then the total score were calculated and then considering the minimum and maximum score, range is detailed in table 1.

Range of Visual Memory: Drushta Smriti total was assessed by using the compute variables and adding all the domains for the Visual memory, then the total score were calculated and then considering the minimum and the maximum score, range is detailed in table 2.

Collection, Tabulation of Data and Statistical Tests: Subjects were given sufficient time for completing the questionnaire. The completed questionnaires were collected and the data entry was carried out using the SPSS version 20. Data were entered in the 'string' format and the responses to the questionnaire were entered in the 'numerical' format. Upon data entry, data cleaning was performed. The response were summarised and outcome were assessed with relevant statistical tests like Chi square and compute variable and the values were properly assessed.

OBSERVATIONS

73.7% of volunteers were females. 40.3% were of age 20 years. Prakruti-wise distribution shows that maximum of subjects were constituted with Kaphavata (21%) followed by Pittakapha (20%), Vatakapha and Vatapitta (16.7%), Pittavata (13.3%) and Kaphapitta (12.3%). 69.3% were of mixed diet by food habit and remaining were Vegetarians. Maximum subjects belonged to 94.3% had normal sleep pattern while remaining were having disturbed sleep. 96.3% were having regular bowel habit. The Prakruti in relation with overall auditory memory which includes

Delayed Recall, Immediate Recall, Verbal Retention for similar pairs, Verbal Retention for dissimilar pairs and Attention and Concentration is detailed in Tables 3.A to 3.D. Prakruti with range of overall Auditory memory is detailed in Table 4. The Prakruti in relation with overall Visual Memory which includes Visual Recognition, Visual Retention, Delayed Visual Recognition, Spatial Span, Digit Span, Paired Associates and Monkey Ladder is detailed in tables 5.A to 5.C. The Prakruti with range of overall Visual memory is detailed in Table 6.

RESULTS AND DISCUSSION

The Chi-Square results of frequency and significant level of range of overall auditory memory and Prakruti is detailed in Table 7. Chi-Square value of range of overall auditory memory is detailed in Table 8. The Chi-Square results of frequency and significant level of Range of Overall Visual Memory and Prakruti is detailed in Table 9. Chi-Square value of Range of Overall Visual Memory is detailed in Table 10. Drushta and Shruta Smriti are the two important ways by which we perceive knowledge and also recollecting those experienced things later. The

observations of each domain of memory tests which were categorized for Auditory and Visual memory with that of each Prakruti were tabulated for finding the relation between these. Vata predominant individuals got the maximum score when compared to others in 2 domains such as Recent Memory and Monkey Ladder. Pitta predominant individuals got the maximum score when compared to others in 2 domains such as Remote Memory and Mental Balance. Kapha predominant individuals got the maximum score when compared to others in 11 domains such as Immediate Recall, Verbal Retention for similar pairs, Verbal Retention for dissimilar pairs, Delayed Recall, Attention and Concentration, Visual Reproduction, Visual Retention, Spatial Span, Digit Span, Paired Associates and Ranges of overall Auditory Memory. By considering the ranges of overall auditory and overall visual memory, maximum range was obtained for the visual memory than the auditory memory. By comparing the ranges of Visual and Auditory memory, as maximum range is obtained more for Visual memory than the auditory memory. Therefore Visual memory is long standing when compared to the auditory memory.

Table 1: Range for Auditory memory

Range	Interpretation
13- 28	Low
29-44	Moderate
45-60	Maximum

Table 2: Range of Visual memory

Range	Interpretation
11-31	Low
32-52	Moderate
53-73	Maximum

Table 3.A: Prakruti in relation with overall Auditory memory

Prakruti	Score							Total
	27	28	29	30	31	32	33	
VPP	0	1	0	1	0	2	2	6
PPP	1	0	2	11	5	4	12	35
KPP	0	0	0	0	1	1	2	4

VPP- Vata Pradhana Prakruti; PPP- Pitta Pradhana Prakruti; KPP- Kapha Pradhana Prakruti

Table 3.B: Prakruti in relation with overall Auditory memory

Prakruti	Score							Total
	34	35	36	37	38	39	40	
VPP	5	12	8	8	7	6	6	52
PPP	4	9	8	8	6	3	6	44
KPP	6	3	4	5	3	2	3	26

VPP- Vata Pradhana Prakruti; PPP- Pitta Pradhana Prakruti; KPP- Kapha Pradhana Prakruti

Table 3.C: Prakruti in relation with overall Auditory memory

Prakruti	Score							Total
	41	42	43	44	45	46	47	
VPP	4	4	8	10	4	2	1	33
PPP	3	4	5	3	3	0	1	19
KPP	4	1	10	7	6	6	7	41

VPP- Vata Pradhana Prakruti; PPP- Pitta Pradhana Prakruti; KPP- Kapha Pradhana Prakruti

Table 3.D: Prakruti in relation with overall Auditory memory

Prakruti	Score							Total
	48	49	50	51	52	53	54	
VPP	5	1	1	0	1	1	0	9
PPP	0	0	2	0	0	0	0	2
KPP	5	5	6	4	5	2	2	29

VPP- Vata Pradhana Prakruti; PPP- Pitta Pradhana Prakruti; KPP- Kapha Pradhana Prakruti

Table 4: Prakruti with range of overall Auditory memory

Prakruti	Range			Total
	Low	Moderate	Maximum	
VPP	1	83	16	100
PPP	1	93	6	100
KPP	0	52	48	100

VPP- Vata Pradhana Prakruti; PPP- Pitta Pradhana Prakruti; KPP- Kapha Pradhana Prakruti

Table 5.A: Prakruti in relation with overall Visual memory

Prakruti	Score								Total
	48	49	50	51	52	53	54	55	
VPP	0	0	0	0	1	0	0	0	1
PPP	6	5	0	0	6	3	0	2	22
KPP	0	0	0	0	0	0	0	0	0

VPP- Vata Pradhana Prakruti; PPP- Pitta Pradhana Prakruti; KPP- Kapha Pradhana Prakruti

Table 5.B: Prakruti in relation with overall Visual memory

Prakruti	Score								Total
	56	57	58	59	60	61	62	63	
VPP	1	13	3	3	2	5	9	6	42
PPP	0	7	5	14	2	8	11	8	55
KPP	0	0	3	3	6	2	11	5	30

VPP- Vata Pradhana Prakruti; PPP- Pitta Pradhana Prakruti; KPP- Kapha Pradhana Prakruti

Table 5.C: Prakruti in relation with overall Visual memory

Prakruti	Score								Total
	64	65	66	67	68	69	70	71	
VPP	5	13	10	16	6	0	7	0	57
PPP	3	5	3	3	2	1	6	0	23
KPP	5	4	4	8	11	9	21	8	70

VPP- Vata Pradhana Prakruti; PPP- Pitta Pradhana Prakruti; KPP- Kapha Pradhana Prakruti

Table 6: Prakruti with range of overall Visual memory

Prakruti	Range			Total
	Low	Moderate	Maximum	
VPP	0	1	99	100
PPP	0	17	83	100
KPP	0	0	100	100

VPP- Vata Pradhana Prakruti; PPP- Pitta Pradhana Prakruti; KPP- Kapha Pradhana Prakruti

Table 7: Chi-Square results of frequency and significant level of range of overall Auditory memory and Prakruti

Range of Overall Auditory Memory				
Prakruti		Observed N	Expected N	Residual
Vata	Low	1	33.3	-32.3
	Moderate	83	33.3	49.7
	Maximum	16	33.3	-17.3
	Total	100		
Pitta	Low	1	33.3	-32.3
	Moderate	93	33.3	59.7
	Maximum	6	33.3	-27.3
	Total	100		
Kapha	Moderate	52	50.0	2.0
	Maximum	48	50.0	-2.0
	Total	100		

Table 8: Chi-Square value of range of overall Auditory memory

Prakruti	Df	P Value	Interpretation
VPP	2	0.000	Significant
PPP	2	0.000	Significant
KPP	1	0.019	Significant

VPP- Vata Pradhana Prakruti; PPP- Pitta Pradhana Prakruti; KPP- Kapha Pradhana Prakruti

Table 9: Chi-Square results of frequency and significant level of Range of Overall Visual memory and Prakruti

Range of Overall Visual Memory				
Prakruti		Observed N	Expected N	Residual
Vata	Moderate	1	50.0	-49.0
	Maximum	99	50.0	49.0
	Total	100		
Pitta	Moderate	17	50.0	-33.0
	Maximum	83	50.0	33.0
	Total	100		
Kapha	Maximum	100	100.0	.0
	Total	100 ^a		

Table 10: Chi-Square value of Range of Overall Visual memory

Prakruti	Df	P Value	Interpretation
VPP	1	0.000	Significant
PPP	1	0.000	Significant
KPP	1	0.000	Significant

VPP- Vata Pradhana Prakruti; PPP- Pitta Pradhana Prakruti; KPP- Kapha Pradhana Prakruti; Df- degree of freedom

CONCLUSION

Study re-establishes an appropriate relation of Smriti with different Prakruti. Among all the domains, Recent memory and Monkey Ladder is more in Vata Pradhana Prakruti which may be due to the Chala Guna of Vata, which is responsible for the Alpa Smritaya and Sheegra Grahana Guna of Vata. Remote Memory and Mental Balance is more in Pitta Pradhana Prakruti may be due to Teekshna Guna of Pitta, which is responsible for the Nipunamathi and Medhavi Guna of Pitta. Other domains like Immediate Recall, Verbal Similar, Verbal Dissimilar, Delayed Recall, Attention and Concentration, Visual Reproduction, Visual Retention, Spatial Span, Paired Associates, Digit Span and Delayed Visual Reproduction is more in Kapha Pradhana Prakruti may be due to the Sthira Guna of Kapha, which is responsible for the Smrithiman and Chiragrahi Guna of Kapha. Both Drishta and Shruta Smriti are best in Kapha Pradhana Prakruti, better in Vata Pradhana Prakruti and good in Pitta Pradhana Prakruti. Drishta Smriti is better and long standing than Shruta Smriti in all the Prakruth is may be due to the factors which are responsible for it like Nimitta Grahana, Roopa Grahana, Sadrushya and Viparyaya.

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