

Concept of *Ritus* and their effect on *Bala*

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ABSTRACT : A randomized Survey study was done on healthy volunteers to evaluate effect of *Ritu* on *Bala*, as mentioned in *Charaka-Sutrasthâna-6/8*. According to which, the beginning of the *Visarga kâla* i.e. *Varshâ* and the end of the *Âdâna Kâla* i.e. *Grîshma Ritu* mark the *Daurbalya* (Decreased *Bala*) of the Human being. While the end of *Visarga Kâla* i.e. *Hemanta* and the beginning of *Âdâna Kâla* i.e. *Shishira Ritu* signify maximum *Bala* and middle of the both *Kâlas* i.e. *Sharad & Vasanta Ritu* respectively medium *Bala* is observed. To prove the validity of the principle *Sûtra*, 95 healthy volunteers were registered, out of which 80 continued through out the study period for the *Bala* assessment. The *Bala* assessment was performed with the help of a specific scoring pattern based upon 12 parameters (from *Âyurveda* as well as Modern science), in three different *Ritus* viz. - *Hemanta*, *Vasanta* and *Varshâ*. The study illustrated significant to highly significant differences in the most of the parameters, which is supportive to the selected *Sûtra* that the maximum *Bala* is found in *Hemanta Ritu*, medium *Bala* in *Vasanta* while minimum in *Varshâ Ritu*.

Key words : *Âdâna, Visarga, Kâla, Ritu, Bala.*

INTRODUCTION

The unique concept of the *Kâla*, the invincible and unavoidable factor influences every aspect of our life right from the birth to death¹. In addition to this, *Kâla* is also accepted to be responsible for the *Bala* in its broad sense and affect the physiology and the pathology as well as the therapeutics². The *Âyurvediya Âchâryas* viz. *Charaka* and *Sushruta* have divided the whole *Samvatsara* (year) into two groups as per the position and strength of the Sun and Moon namely *Âdâna* and *Visarga Kâla*³. These two are again made up of the three *Ritus* of two-month duration⁴. They affect each and every aspect of the human physiology as the body has a Biological Clock and the Circadian Rhythm based on the *Kâla*⁵.

Charaka-Samhitâ, is the foremost text of *Âtreya-Sampradâya*, which is divided in 8 *Sthânas*⁶ and 120 *Adhyâyas*⁷. Amongst them, *Sûtra-Sthâna* has first place⁸ and 8th *Shloka* from its 6th *Adhyâya* i.e. - 'Tasyâshîtîyamadhyâyam' is taken for the study, which shows inter relationship between *Bala* and *Kâla*⁹. In this *Adhyâya*, *Âchârya Charaka* gives the method to live in accordance to environment¹⁰.

"*Âdâvante Cha Daurbalyam Visargâdânayornrnâm. Madhye Madhyabalam Tvante Shresttamagre Cha Nirdishet*".

The applied aspect of the *Sûtra* - has been studied clinically in the form of survey of healthy volunteers as *Bala* assessment.

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MATERIALS & METHODS

For this study, three types of materials were used:- The Literary Materials, which includes the references of *Kâla & Bala*, have been collected through the *Âyurvedika* texts, mainly the *Charaka-Samhitâ*, *Sushruta-Samhitâ* and available commentaries on it. Related portion of modern medical & basic sciences have also been compiled and considered. The sub-clinical materials, which included the *Bala* assessment profile and some investigational materials, including the laboratory records (Haematological, Biochemical and Urine & Stool examinations) of 80 healthy volunteers in three seasons viz. *Hemanta, Vasanta & Varshâ*.

All the literary, sub clinical & investigational materials have been critically analyzed, assessed and evaluated as per conceptual hypothesis¹¹. For the *Bala* assessment, a detailed research-proforma and specific scoring pattern¹² has been developed and used to assess the various aspects of *Bala* based on *Dashavidha Âtura-Parîkshâ*¹³ as well as modern clinical direction. Some modern parameters & procedures such as Body Mass Index (B.M.I.), Peak Expiratory Flow Rate (P.E.F.R.) have also been used for the assessment of the same.

Criteria for selection :

In this research work, healthy volunteer is selected who is -

- ◆ Fit on the basis of *Dashavidha-Âtura-Parîkshâ*, and not suffering from any major or minor ailment before or during the period of assessment.

- ♦ Able to perform selected procedures such as Breath holding, P.E.F.R. and Stepping exercise easily.
- ♦ One whose haematological as well as biochemical reports and General Observations viz. -Temperature, Pulse, Respiration Rate & Blood Pressure, Weight, & B.M.I. etc, were in normal range.
- ♦ Those healthy volunteers who become victim of any disease between this study periods and not assessed in all three *Ritus* were excluded from the study.

Scoring Pattern :

The scoring pattern (from Ph.D. thesis of Paparinath et.al., 2007) was used with some modification according to the hypothesis, to assess the status of the Bala, in healthy volunteers.

No.	Parameters	Score
01.	Prakrititah	06
02.	Sâratah	14
03.	Samhananatah	09
04.	Pramânatah	09
05.	Sâtmyatah	09
06.	Sattvatah	10
07.	Âhâra-Shaktitah	10
08.	Vyâyâma-Shaktitah	10
09.	Vayatah	04
10.	General Observation	07
11.	Haematological Parameters	06
12.	Biochemical Parameters	06
	Total	100

Assessment criteria :

Based on the score acquirement, healthy-volunteers were fall in following three groups viz.:-

Group	Pravara Bala	Madhya Bala	Avara Bala
Score	> 75%	50 -75 %	< 50%

Statistical Analysis :

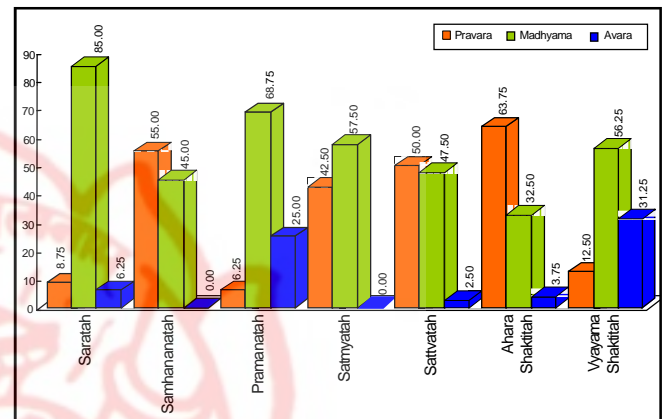
For the present study, the data collected & compiled from the multidimensional *Bala* assessment procedures, was sorted out and processed further by subjective with following two statistical methods viz. Paired 't' test and Anova (Analysis of Variances).

OBSERVATIONS AND RESULTS

In the present research work, total 95 volunteers were registered for the *Bala* assessment, during the *Hemanta-Ritu* 91 assessed for the status of *Bala*. Out of them 88 in *Vasanta* and 80 in *Varshâ-Ritu* were continued for the same. So here, an attempt is being made to present the data of 80 healthy volunteers.

The maximum healthy volunteers were male (52.50%), 65% were 21 - 30 years age group, 58.75% were research scholars, 61.25% were Post-Graduates. The maximum number of healthy volunteers were having *Nirâmisa-Âhâra* i.e. 60%, 51.25% were having *K. P.* aggravating *Rasa* dominance, 70% were *Guru* and 80% *Snigdha Guna*. 43.75% were of *Tikshnâgni*, 46.25% were of *Madhyama-Kostha*. The maximum healthy volunteers were doing moderate type of work i.e. 87.50% while 80% were doing mental work. 37.50% were having sound sleep and 57.50% were having Tension.

GRAPH NO.1: GENERAL OBSERVATION-DASHAVIDHA-PARIKSHA :



The maximum i.e. 27.50% healthy volunteers were having *Kapha-Paitika Prakriti*, 85.00% were of *Madhyama-Sâratah*, 55.00% were of *Pravara-Samhanana*, 68.75% were of *Madhyama-Pramâna*, 57.50% were of *Madhyama-Sâtmya*, 50.00% were of *Pravara-Sattva*, 72.50% were of *Madhyama Abhyavaharana Shakti*, 75.00% were of *Madhyama Jarana Shakti*, 56.25% were having *Madhyama Vyâyâma-Shakti*, 36.25% were having B.H. (Breath Holding) 30 - 45 Sec. and 46 - 60 Sec., 28.75% were performed P.E.F.R (Peak Expiratory Flow Rate- Liter/Minute) ranges 410 - 500 L./m. The maximum healthy volunteers i.e. 72.50% were in *Madhyama Bala* group followed by 27.50% in *Pravara Bala* group while no one was in *Avara Bala* group.

Paired 't' test : It suggests that *Dehabala* and *Agnibala* were found statistically highly significant decreased in comparison to *Hemanta - Vasanta*, *Vasanta - Varshâ* and *Hemanta - Varshâ Ritus*.

The data shows effect of *Ritus* on *Dehabala* status was statistically highly significant decreased in comparison to *He.-Vs.*, *Vs.-Vr.* and *He.-Vr. Ritus*. The data shows effect of *Ritus* on *Agnibala* level was statistically highly significant decreased in comparison to *He.-Vs.*, *Vs.-Vr.* and *He.-Vr. Ritus*.

TABLE NO. 1 : COMPARATIVE EFFECT OF RITUS ON DEHABALA STATUS :

Ritus	Mean \pm SE	SD	t'	p	%
Hemanta	71.52 \pm 0.85	7.64	37.73	<0.001	12.29 \downarrow (He.-Vs.)*
Vasanta	62.73 \pm 0.89	7.97	16.46	<0.001	07.75 \downarrow (Vs.-Vr.)
Varshâ	57.87 \pm 0.88	7.91	45.46	<0.001	19.09 \downarrow (He.-Vr.)

TABLE NO. 2 : COMPARATIVE EFFECT OF RITUS ON AGNIBALA LEVEL :

Ritus	Mean \pm SE	SD	t'	p	%
Hemanta	7.11 \pm 0.14	1.24	5.76	<0.001	5.20 \downarrow (He.-Vs.)
Vasanta	6.74 \pm 0.12	1.09	27.28	<0.001	16.77 \downarrow (Vs.-Vr.)
Varshâ	5.61 \pm 0.11	1.02	21.08	<0.001	21.10 \downarrow (He.-Vr.)

TABLE NO. 3 : COMPARATIVE EFFECT OF RITUS ON BALA OF 80 HEALTHY VOLUNTEERS :

Variables	Hemanta		Vasanta		Varshâ		Anova	p Value
	Mean	SD	Mean	SD	Mean	SD		
Dehabala	71.52	7.64	62.73	7.97	57.87	7.91	62.312	<0.01
Agnibala	7.11	1.24	6.74	1.09	5.61	1.02	3.202	<0.05

TABLE NO. 4 : OVERALL EFFECT OF RITUS ON BALA :

Bala / Ritus	Hemanta	Vasanta	Varshâ
Pravara Bala Group (P.B.G.)	22	03	01
Madhya Bala Group (M.B.G.)	58	71	63
Avara Bala Group (A.B.G.)	00	06	16

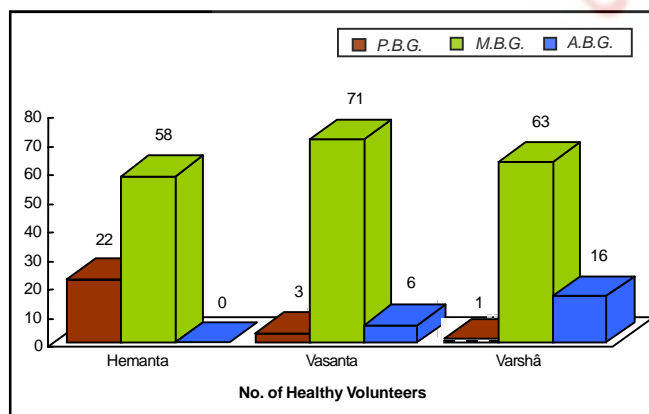
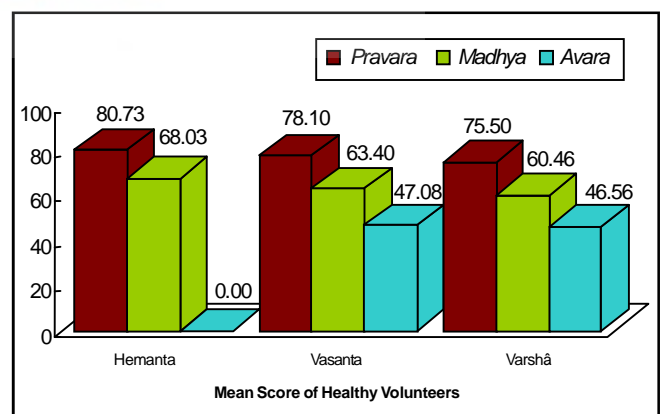
TABLE NO. 5 : OVERALL EFFECT OF RITUS ON BALA (ON MEAN SCORE LEVEL) :

Bala / Ritus	Hemanta	Vasanta	Varshâ
Pravara Bala	80.73	78.17	75.50
Madhya Bala	68.03	63.40	60.46
Avara Bala 00	00.00	47.08	46.56

TABLE NO. 6 : OVERALL EFFECT OF RITUS ON BALA (ON MEAN SCORE CHANGES) :

Bala / Ritus	Pravara Bala		Madhya Bala		Avara Bala	
	Score	%	Score	%	Score	%
Hemanta	80.73	-	68.03	-	-	-
Vasanta	78.17	3.17 \downarrow	63.40	6.81 \downarrow	47.08	-
Varsâ	75.50	3.42 \downarrow	60.46	4.64 \downarrow	46.56	1.10 \downarrow

*Abbreviation : He.=Hemanta Ritu, Vs.= Vasanta Ritu and Vr. = Varshâ Ritu.

GRAPH NO. 2 : OVERALL EFFECT OF RITUS ON BALA :**GRAPH NO. 3 : OVERALL EFFECT OF RITUS ON BALA :**

This test also suggests that statistical difference between three Bala assessment profiles was observed highly significant and significant respectively concerning Dehabala and Agnibala. The data shown in above mentioned tables tells effect of Ritus on Parameters for Bala assessment, was statistically highly significant for Deha & Agnibala parameters, in comparison He.-Vs.-Vr. Ritus.

DISCUSSION

Kâla affects every living as well as non-living thing of this universe¹⁴. All human beings in the form of working capacity¹⁵, digestive power¹⁶ etc. could experience its influence. It is observed that Bala of human beings varies according to the entire themes of day's schedule or the season - wise - schedule. Ritus are the Natural Global Earth Clock and the Rhythm of the earth. The temperature and wind make the Earth move around the Sun. Through the changes between Earth rotation & Sun, the temperature increases or decreases, producing the Ritus.

The term 'Bala' is indicative of energy, strength, mighty, vigour, force, vitality of an individual. The concept of Bala is not only related with the whole body but also to the every tissue, even to the every cell of the body as we know Mitochondria, power house of the cell, lies in the cells¹⁸.

The Sûtra, selected for the current study is from Charaka-Samhitâ Sûtrasthâna-6th Adhyâya, 'Tasyâshîfîyamadhyâyam' and Shloka number 8th. The main theme of this chapter is to make people aware concerning the methods to live accordance to environment. This Sûtra is the best example of the "Loka-Purusha-Sâmya-Siddhânta"¹⁹ according to which the changes occurring in the Loka affects the Purusha and vice versa. Here Loka is the external environment in which a person is living. It is the source of food, medicine, air, water, heat, cold, humidity and all other means of sustenance of life. It is also the source of etiological factor. Therefore, it is important in the maintenance of health and in production of ill health²⁰.

Overall effect of Ritus on Bala : In toto, when healthy volunteer's Bala have been assessed and evaluated - particularly Deha & Agnibala were found in decreasing pattern. Above mentioned data is suggestive of that in Hemanta Ritu, there were 22 healthy volunteers in P.B. group, 58 in M.B. group while not even one was found in A.B. group. During the Vasanta Ritu, only 3 healthy volunteers were reported in P.B. group, 71 found in M.B. group and 6 were reached in A.B. group. In Varshâ Ritu,

the number of healthy volunteers increased in A.B. group, in comparison to other Ritus, which is found supportive to the hypothesis.

The data shown in above-mentioned table exposes Group wise Mean Score of Bala of healthy volunteers in Hemanta, Vasanta & Varshâ Ritus which is going towards decreasing pattern accordingly principle Sûtra. It is supportive to the hypothesis.

The data shown in above-mentioned table reveals Group wise Mean Score changes (%) of healthy volunteer in Hemanta, Vasanta & Varshâ Ritus. It discloses that M.B. is found more affected in comparison to other Bala. Here some healthy volunteers fall in the A.B. group during Vasanta and Varshâ Ritus. It also supports the hypothesis.

CONCLUSION

Nothing can be accepted as it is in toto, though it might have been in the text. Even the common person knows the importance, utility and value of time, therefore wants to use and apply it properly. Hence, it is needed to know about the relationship between Kâla and Bala so that one can plan the activities viz. Trayopastambha, Vyâyâma etc. according to Kâla.

The Ritus are annual cycles caused by the angle of tilt of the Earth's rotational axis. If there were no tilt, the sun would always be directly above the equator and there would be no Ritus as everybody knows them. The term Bala could not be compared only to strength or force etc. As the concept of Bala described in Âyurveda, has a much broader dimension. Though no clear, perfect and proper definitions of Bala have been given in the classics, but Âchâryas have described Bala in multiple aspects.

The Dhâtusâratâ is the base of physical strength whereas Sattvasâratâ is the base of mental strength. Therefore, Ashta - Sâras become the total strength of the human body, at physical as well as psychological level. While at the physiological level, Agnibala and Doshabala become the state of Bala.

Observations and Survey study of the three Ritus viz. - Hemanta, Vasanta & Varshâ suggest that during the Hemanta Ritu (which is the Kâla of Pravarabala) values of scoring were found higher; during the Vasanta Ritu (which is the Ritu of Madhyamabala) values of scoring were found decreased in comparison to Hemanta Ritu. While during the Varshâ Ritu (which is the Kâla of Avarabala), scoring was found minimum.

