



Research Article

**THE BRUHANIYA EFFECT OF ASHWAGANDHA RASAYAN IN MANAGEMENT OF APATARPANJANYA KARSHYA WITH SPECIAL REFERENCE TO UNDERNUTRITION**

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**ABSTRACT**

*Karshya* (undernutrition) is an *Apatarpanjanya* and *Rasa-pradoshaja vyadhi*. It is the most large spreading health and nutritional disorder in developing countries. *Karshya* means person having lean and thin body character without having any more complaints. *Karshya* is the disease comparable with undernutrition which can be *Swatantra Vyadhi* (independent disease) a normal phenomenon or it can also manifest along with other diseases as a prestige symptom of complication. It is an *Apatarpana Janya Vyadhi* (disease caused due to under nourishment) where *Vata Dosha* plays a very important role in the pathogenesis along with that vitiated *Pitta*. Vitiated *Pachaka Pitta* (sub type of *Pitta*- digestive enzymes) leads to *Agni Dushti* (impaired digestion) as a result of which the *Dhatu*s are not nourished properly leading to *Anuloma Karshaya* (depletion of body tissues).

Acharya Charaka has well explained clinical symptoms of *Karshya*. He has explained causative factors in detail which are *Aharaja* (dietary), *Viharaja* (behavioural), and *Manasika* (psychological). "*Rasayana therapy*" is one of the eight clinical specialties of classical Ayurveda. The nutritional and nourishment deriving function of particular drugs or therapy are known as '*Rasayana*' in Ayurveda. *Ashwagandha* (*Withania somnifera*, fam. *Solanaceae*) is commonly known as 'Indian Ginseng'. '*Ashwagandha Rasayana*' is described as a herbal preparation that promotes a youthful state of physical and mental health. It is known as "*Sattvic Kapha Rasayana*" Herb (Changhadi, 1938). The various measures of *Karshya* and *Rasayan chikitsa* described in the dispersed manner in Ayurveda are collected, compiled and discussed in this research paper.

**INTRODUCTION**

The word *Krishna* is derived from root "कृश तनुकरणे" with 'अच्छ प्रत्यय'<sup>[1]</sup>. Its unembroidered meaning is to be short of food, to turn into emaciated, to develop into lean and thin body structure. It means a condition or disorder in which the body of a person becomes emaciated, having a lesser amount of *Rasa Dhatu* additional causing a status of '*Mamsa-hinata*' or '*Mamsa-kshaya*'.

It means person having lean and thin body character but doesn't have any erstwhile complaints is *Karshya*. Ultimately the patients of *Karshya* subjected to *Sharirik Bala Hani* (loss of immunity) and proceed towards death. Since pre-historic era the stalwarts of medicine were in search of the medicaments which prevent the disease affecting the general health of the community. As per UNICEF under nutrition is defined as the outcome of insufficient or inadequate food intake and repeated infectious diseases. It includes being under weight and height from one's age (stunted growth) with associated vitamin and mineral deficiency. Undernutrition may develop because people cannot obtain or prepare food, have a disorder that makes eating or absorbing food difficult, or have a greatly increased need for calories. Undernutrition is

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often obvious people are underweight, bones often protrude, their skin is dry and inelastic, their hairs are also dry and falls out easily.

A new study published in LANCET Journal in 2016 has found that 'India has most underweight people' with 102 million men and 101 million women and leads the world being home to over 40% of global underweight population<sup>[2]</sup>. The prevalence of underweight was higher among men and women between the 15-30 age group. There are several scientific evidences which highlight the problem of under and over-nutrition in adult population both in urban and rural settings<sup>[3]</sup>. Overall nutritional status of adult population as per the NFHS-3 and 4 clearly reflects decline in the extent of chronic energy deficiency (CED) (BMI <18.5kg/m<sup>2</sup>) in males (34.2%–20.2%) and females (35.5%–22.9%). On the contrary, there has been increase in the proportion of overweight or obese (BMI>25.0kg/m<sup>2</sup>) in men (9.3%–18.6%) and women (12.6%–20.7%). Linkages of negative energy balance with under nutrition and CED in rural reproductive age group females has been established by taking caste as a proxy indicator of socioeconomic status.

Rejuvenation (*Rasayana*) therapies contribute to the benefit of both physical and psychological entities of a person thus bestowing him with good health and strength both physically and mentally.

“लाभोपायो हि शस्तानाम रसाहिनाम रसायनम”<sup>[4]</sup>  
(च.च.1/8)

*Rasayana* replenish the vital fluids and energy of our body, thus keeping us away from diseases. The *Rasayana* therapy enhance the qualities of *Rasa Dhatu*, enriches it with nutrients so one can attain longevity, memory, intelligence, freedom from diseases, youthfulness, excellence of luster, complexion and voice, optimum development of physique and sense organs, mastery over phonetics and brilliance. *Rasayan* has an effect of immunomodulator, adoptogenic, anabolic, anti-oxidant, nootropic and anti-aging etc. on body and psyche. Thus the *Rasayana* remedies can be concluded as nutritional dynamic and rejuvenation therapy for body and mind.

*Ashwagandha* (*Withania somnifera*, fam. Solanaceae) is commonly known as 'Indian Ginseng'. It is one of the most important herbs of Ayurveda used for millennia as a *Rasayana* for its wide ranging health benefits. '*Ashwagandha Rasayana*' is described as a herbal preparation that promotes a youthful state of physical and mental health. These types of remedies are taken by the middle-aged and elderly to increase longevity of lives. Among the Ayurvedic *Rasayana* herbs, *Ashwagandha* holds the most prominent place. It is known as "*Sattvic Kapha Rasayana*" Herb (Changhadi, 1938). Most of the *Rasayana* herbs are adaptogen/ anti-stress agents. *Ashwagandha* is

commonly available as a *Churna* form, a fine sieved powder that can be mixed with water, ghee (clarified butter) or honey. It enhances the function of the brain and nervous system and improves the memory. Being a powerful adaptogen, it enhances the body's resilience to stress. *Ashwagandha* improves the body's defense against disease by improving the cell-mediated immunity. It also possesses potent antioxidant properties that help protect against cellular damage caused by free radicals.

## AIM AND OBJECTIVES

### AIM

To assess the "*Bruhan*" effect of "*Ashwagandha rasayan*" in comparison with "protein health supplements" in *Apatarpanjanya karshya* with special reference to undernutrition.

### OBJECTIVES

#### Primary Objectives

- Assessment of classical signs of "*Apatarpanjanya Karshya*", i.e.; *Bhram* (dizziness), *Kshudha mandya* (loss of appetite), *Nidranaash* (insomnia), *Daurbalya* (lack of physical strength), according to Ayurveda.
- Anthropometric measurements, laboratory parameters and to be assessed in subjects of "*Apatarpanjanya Karshya*" and its interpretation.

#### Secondary Objectives

- To find out the effect of "*Ashwagandha rasayan*" on Serum total proteins.
- To study the probable mode of action of "*Ashwagandha rasayan*" in the management of undernutrition.

## Review of Literature

### References in Samhita

#### A. Brihatrayi

#### Charaka Samhita

Charak samhita is one of the ancient texts considered to be most authentic works on Ayurveda has sufficient details with regards to *Nidana*, *Samprapti*, *Lakshanas* & *Chikitsa of Karshya vyadhi*.

1. Reference for *Karshya* is found in an indirect way in Charaka sutrasthana 13/38<sup>th</sup> shloka <sup>[5]</sup>.
2. Again there is a mention of *Karshya* as a '*Swedana Ayogya Rogi*' by mentioning the words *Durbala*, *Ati Vishushka* <sup>[6]</sup>.
3. In Charaka sutrasthana 21<sup>st</sup> chapter, *Karshya* is considered to be the effect of *Nidranasha* <sup>[7]</sup>.
4. *Atikarshya* has been considered as one of the '*Ashtau Nindita Purusha*' in Charaka sutrasthana 21<sup>st</sup> chapter, 2<sup>nd</sup> *Shloka* <sup>[8]</sup>.
5. In Charaka sutrasthana 22<sup>nd</sup> chapter, 26<sup>th</sup> *Shloka* - *Karshya* is mentioned as an indication for '*Brihana Chikitsa*'<sup>[9]</sup>.

**Sushruta Samhita**

It is also an important ancient encyclopedia available for acquiring an ideal knowledge of Ayurveda, also throws light on *Karshya*.

1. In Sushruta sutrasthana 15<sup>th</sup> chapter 3<sup>rd</sup> *Shloka*, *Mamsa Kshaya Lakshana* have been mentioned which are related to *Karshya* [10].
2. In Sushruta sutrasthana 15<sup>th</sup> chapter, 31<sup>st</sup> *Shloka*, it is clearly written that *Sthaulya & Karshya* are *Rasa Nimittaja* [11].
3. In Sushruta Sutrashtana 35<sup>th</sup> chapter 12 - 17<sup>th</sup> *Shloka*, anthropometry has been discussed [12].
4. In Sushruta sutrasthana 35<sup>th</sup> chapter 40<sup>th</sup> *Shloka*, it has been mentioned that *Deha* (body) is of 3 types namely *Sthoola*, *Krishna*, and *Madhya* [13].

**Ashtanga Sangraha**

One of the Brihatrayees recognized for its sutrasthana.

1. In Sutrashtana 19<sup>th</sup> chapter, *Karshya* has been mentioned as *Lakshana* of *Vata Vriddhi* [14].
2. In sutrasthana 24<sup>th</sup> chapter, 49-50<sup>th</sup> *Shloka*, *Lakshana* of *Karshya* are written [15].

**Ashtanga Hridaya**

Another reliable textbook is Astanga Hridaya.

1. In Astanga Hridaya sutra sthana 11<sup>th</sup> chapter, 6<sup>th</sup> *Shloka*, *Karshya* has been mentioned as *Lakshana* of *Vata Vriddhi* [16].
2. In Astanga Hridaya sutra sthana 14<sup>th</sup> chapter, 29 - 34<sup>th</sup> *shloka* describes *Karshya* to be the effect of *Ati-Langhana*. *Lakshanas* and treatment of *Karshya* have been explained [17].

**Laghutrayi****Madhava Nidana**

Madhavakara of Madhava Nidana has also not mentioned *Karshya* Roga as *Svatantra Roga*. So *Pancha Nidana* related to *Karshya* Roga is not available in *Madhava nidana*.

**Sharangadhara Samhita**

In Prathama khanda of Sharngdhar samhita, 7<sup>th</sup> chapter, while dealing with *Vata Vyadhi's*, the word *Karshya* has been mentioned [18].

**Bhava Prakasha**

Bhavaprakasha Samhita is the only text where *Karshya* Roga has been assigned separate chapter as *Karshya Rogaadhikara* (Bh.Pra. 40<sup>th</sup> chapter). *Hetu*,

*Lakshana*, *Samprapti*, *Saadhyasadhytvata* & *Chikitsa* of *Karshya* are explained in detail [19].

**Kashyapa Samhita**

In Sutra sthana rogadyaya, 32<sup>nd</sup> *shloka* mentioned *Vataja Roga*, where *Karshya* is also included 27. In Siddhi sthana, *Chikitsa* for *Krusha* person is said as *Brihan chikitsa*. *Karshya* or *Krushata* when develops because of *Svatantra Hetu* or its own etiological factors, then it is called as *Karshya Roga*; if it is associated with a symptom in other disorders it is only called as *Karshyata* or *Krushata* as a symptom. It is that condition in which person goes on losing his weight due to *Rooksha Annapana*, *Langhana*, *Pramitashana* etc. He can't tolerate *Sheeta-Ushna*, *Trushna* etc and easily get affected with other diseases. His immunity in both aspects i.e., *Vyadhibalavirodhitwa* and *Vyadhi Utpada Pratibhandhakatwa* is reduced. This is the result of *Rasa-Rakta-Mamsa Dhatu Kshaya*, which gives rise to *Shareera bala Kshaya* and *Alpa Prana Shakti*. So impairment in functioning of *Dosha-Dhatu* and *Mala* is seen. That's why he is not called *Swastha* individual and this condition becomes one of the separate disease entity [20].

**Samprapti** [21]

According to Acharya Sushruta, the *Nidanas* of *Atikrishna* are the person who takes *Vata* vitiating *Ahara*, excessive intake of *Kashaya Rasa Pradhana Aharas*, *Alpa bhojana*, *Ati Maithuna*, *Ati Adhyayana*, *Ati Bhaya*, *Shoka*, *Chinta*, *Ratri Jagarana*, *Trishna* and *Pipasa Vega Nigraha* etc. From all these *Nidanas* the *Rasa Dhatu* which gets formed will be less in quantity and *Ruksha* in nature. During circulation throughout the body it does not nourishes the other *Dhatu*s, by providing the nourishment. Because of its inadequate quantity, it leads into the manifestation of *Atikarshata* or *Karshya Vyadhi*.

As mentioned earlier, the dietary habits of the patient of *Karshya* are such that, he takes less *Pushtikara Ahara*. On the other hand his habits are such which may be considered as responsible for excessive use of energy (over exertion). So the body may have to break the valuable tissue. If this condition persists for longer period of time, then the condition of *Atikarshya* develops.

So in this condition first *Kshaya* of circulating *Rasa dhatu*s occurs which leads to the less nutritional supply to the other *Dhatu*s leading to the depletion of body tissues and ultimately resulting in *Atikrishata*.

**Samprapti Ghataka of Karshya**

<b>Dosha:</b> <i>VataVriddhi, PittaKshaya, KaphaKshaya</i>	<b>Sanchara Sthana:</b> <i>Sarva Shareera</i>
<b>Dushya:</b> <i>Rasakshaya leading to Uttarotara Dhatu Kshaya especially Mamsa, Meda</i>	<b>Adhistana:</b> <i>Rasavaha Srotas</i>
<b>Agni:</b> <i>Manda &amp; Vishama</i>	<b>Vyatka Sthana:</b> <i>Sarva Shareera</i>
<b>Ama:</b> <i>Jatharagnijanya &amp; Dhatwagnijanya Ama</i>	<b>Vyadhi Prakara:</b> <i>Chirakari</i>

<b>Strotas:</b> Rasavaha, Mamsavaha, Medovaha	<b>Sadyasadyata:</b> Sukha Sadhya in Naveena Avastha. Kastha Sadhya in Deerga Kaalanubhandhi
<b>Dushti Prakara:</b> Sanga	<b>RogaMarga:</b> Bahya (Rasa Raktadi Dhatu)
<b>Udbhava Sthana:</b> Amashaya, Pakwashaya	

## Drug Review

### Ashwagandha [22]

निरुक्ति- अर्शवस्थ गन्ध इव गन्धो यस्याः सा। अर्शवस्येव गन्धः उत्साः। येन।



अर्शवगांधाननल्लश्लेष्मक्ष्वत्रशोथक्षयपि।

बल्या रसायनी नतक्ता कषायोष्णानतशक्रला ॥ (भा.प्र.)

'Ashwa' means horse and 'Gandha' means smell so Ashwagandha means the one that smells as that of horse. The root has a strong aroma that is described 'horse-like'. Another meaning is that after ingesting it gives the person so much stamina and strength as compared to horse or the person is able to ejaculate without getting tired like that of horse.

### Rasa Panchaka

- **Rasa** - Tikta, Katu, Madhura, Kashaya
- **Guna** - Laghu, Snigdha
- **Virya** - Ushna
- **Vipaka** - Madhura

**Prabhav-** Adhobhagahar, Virechan

- **Doshagnata** - Kapha-Vatashamaka
- **Classification (Gana)**
  - Charak- Balya, Madhurskandhara
  - Bhav Prakash - Guduchyadi Varga

### Chemical Constituents

It contains a bitter alkaloid 'Somniferin' having hypnotic property, also resin, fat and colouring matters. Roots contain 'Withanol', reducing sugar, phytosterol, ipuranol, mixture of saturated and unsaturated acids. The plant has steroidal lactones withanolides, withaferin which are estrogenic compounds. Steroidal lactone of withanolide series i.e. withanolides D, E, F, G, H, I, J, K, L, M, N, O and traces of withanolide G, P, S, Q, R along with withaferin A, visamine, anaferin, tropine, pseudotropine, cuscohygrine, anahygrine, hygrine, withasomnine, withanol (C<sub>25</sub>H<sub>35</sub>O<sub>5</sub>), withanine, withanane, pseudowithanine nicotine, somniferine (C<sub>12</sub>H<sub>6</sub>N<sub>2</sub>), somniferinine, somnitol, sucrose, glucose, sitosterol, choline (root), amino acids include proline, valine,

tyrosine, alanine, glycine, hydroxyproline, aspartic acid, glutamic acid, cystine and cysteine (berries) and fatty acids (seed oil). Ashwagandhine, Aswagandhinine, Withaferine A and a crystalline compound are mainly studied chemical constituents of Ashwagandha.

### Cow milk or "Go Dugdha"

#### Actions

- **Doshagnata** - Kapha Vardhaka
- **Naadivaha sansthaana** - Medhya, nidrajanaka
- **Shwasanavaha sansthaana** - Kasa, Shwasahara, Hikka Nigraha
- **Prajanana sansthaana** - Shukra Janana, Sthanya Janana
- **Rakthavaha sansthaana** - Hridya, Shonita Sthaapan
- **Mootravaha sansthaana** - Mootral
- **Twachya** - Varnya
- **Saathmikiranana** - Shramahara, Santaanakara
- **Rogagnata of Go-dugdha** - Useful in Amlapitta, Gulma, Udara Vikaara, Madaatyaya, Anidraa Vikaar, Krushata, Dourbalya, Pandu, Shosha, Mootra Kricchra etc.

### Control Drug- Protien-x Powder

Protinex Health and Nutritional Drink Mix For Adults with High protein & 8 Immuno Nutrients is ready to serve beverage mix that helps meet the nutrient requirements of Indian adults. Protinex Original contains 17 essential vitamins and minerals including 8 immuno nutrients that support immunity, build strength and provide energy. Made with a unique hydrolyzed protein formulation, which is easy to digest and helps in 50% faster absorption of Proteins. Protinex consists of nutrients that help in building bone strength, growth and maintenance of muscle mass, metabolism and formation of blood cells.

Protinex original easily makes its place in everyday diet plan, and it is suitable for daily consumption. It can be taken with milk or water.

## MATERIALS AND METHODS

### Source of Data

The study was conducted on 72 clinically diagnosed patients of *Karshya* on the basis of subjective and objective parameter and was randomly selected from O.P.D & I.P.D of Ayurved hospital.

**Literary:** All the Ayurvedic, modern and contemporary, text including the journals and internet sources about the disease and drug were reviewed and documented for the intended study

**Drugs:** Raw drugs were collected directly from the market and authentication of drugs was done.

- *Ashwagandha choorna* was prepared by the standard method given in the *Sharangdhar samhita mandhyam khanda adhyaya*.
- Standardization of prepared *Ashwagandha choorna* was carried out in a GMP certified company.

**Study design:** A single blind, comparative randomized prospective clinical study.

**Ethical clearance:** Ethics committee approval was taken.

### Written Informed Consent

A written informed consent of all patients included in study was taken in best language patient understands. Patients were explained the entire procedure and protocol, its effects, complications, risks etc and after the patient was willing, he/she was included in the study. Also the patient was explained that he/she has the freedom to leave the study at any point of time, if he/she wishes to.

**Study Centre:** Hospital's OPD & IPD of Kaychiktsa department.

**Place of Drug Preparation:** Hospital's Ras-Shastra and Bhaishajya Kalpana Department.

### Plan of Study

**Sample size:** Total 72 patients which were randomly divided into 2 groups. Subjects will be initially treated with drug "Albendazole" in 200mg dosages for eradication of worms from the intestinal flora.

## Subjective Criteria

### Daurbalya

1	No <i>Daurbalya</i>	0
2	Not able to perform strenuous activity	1
3	Not able to perform moderate activity	2
4	Cannot perform moderate activity but can perform mild activity without any Difficulty	3
5	Even mild activities cannot be performed	4

**Group A (Study Group- 36 patients):** *Ashwagandha choorna* 6gm (powdered form) + milk (250ml)

**Group B (Control Group- 36 patients):** (proteineX) (powdered form) 5gm + milk (250ml)

**Dosage:** *Choorna* form of *Ashwagandha* in dual dosage of 12gm in two divided dose for one month. (Ashtanga Hridaya Samhita, Uttar Sansthana, Chapter 39, Rasayana Vidhir, *Ashwagandha Rasayana*, Verse 147)

**Anupan:** Both groups will be administered with 250ml of milk

**Aushadhi sevan kala:** *Pragbhakta kala* (which is suitable for individuals with *Apatarpanjanya Karshya*) (Sushruta Samhita, Utra Tantra, Swasthokrama Adhyaya, 64/69.)

**Diet Consumption:** No specific diet recommendation, subjects can continue with their normal routine diet.

**Diet Restriction:** Avoid pungent, bitter and astringent substances, and junk food.

## Criteria for Selection of Patients

### Inclusion Criteria

- Subjects in age group between 16 to 30 years irrespective of gender, religion, socio-economic status and food habits.

(*Madhya* (middle age or young age) more than 16 years up to 70 years of age sub divided into: *Vridhhi*- up to 20 years (growth phase), *Yauvana*- up to 30 years (youth and adolescence) (Sushrut Samhita; Sutrasathana. 35/34-36),

- Signs and symptoms of *Karshya*/undernutrition like, underweight, low BMI etc.

### Exclusion Criteria

- Subjects who are having infectious diseases like tuberculosis, congenital and hereditary problems, malignancies, mal absorption syndromes and metabolic disorders repeated worm manifestation.
- Any other acute systemic illness.

### Objective Criteria

- Serum protein at the start and end of study period i.e.; on '1<sup>st</sup>' & '3<sup>rd</sup>' visit
- Anthropometric measurements on subsequent visits as described in the activity chart.
- Measurement of height and weight, MUAC, and BMI.

**Bhram**

1	No reeling of head / <i>Bhrama</i>	0
2	Sometimes feeling of reeling head/ <i>Bhrama</i>	1
3	Feeling of reeling head/ <i>Bhrama</i> <3 times a day	2
4	Feeling of reeling head / <i>Bhrama</i> > 3 times a day	3
5	Frequently feeling of reeling of head change of posture causes the severe problem	4

**Kshudha mandya**

1	Regular usual	0
2	Slightly decreased (2 meal)	1
3	Moderately decreased (1 meal)	2
4	Markedly decreased (no meal )	3

**Nidra nash**

1	Sound sleep	0
2	Sleep sound when interrupted can sleep again	1
3	Sleep sound when interrupted cant sleep again	2
4	Disturbed sleep but can sleep for few hours	3

**Sr Protein Gradation**

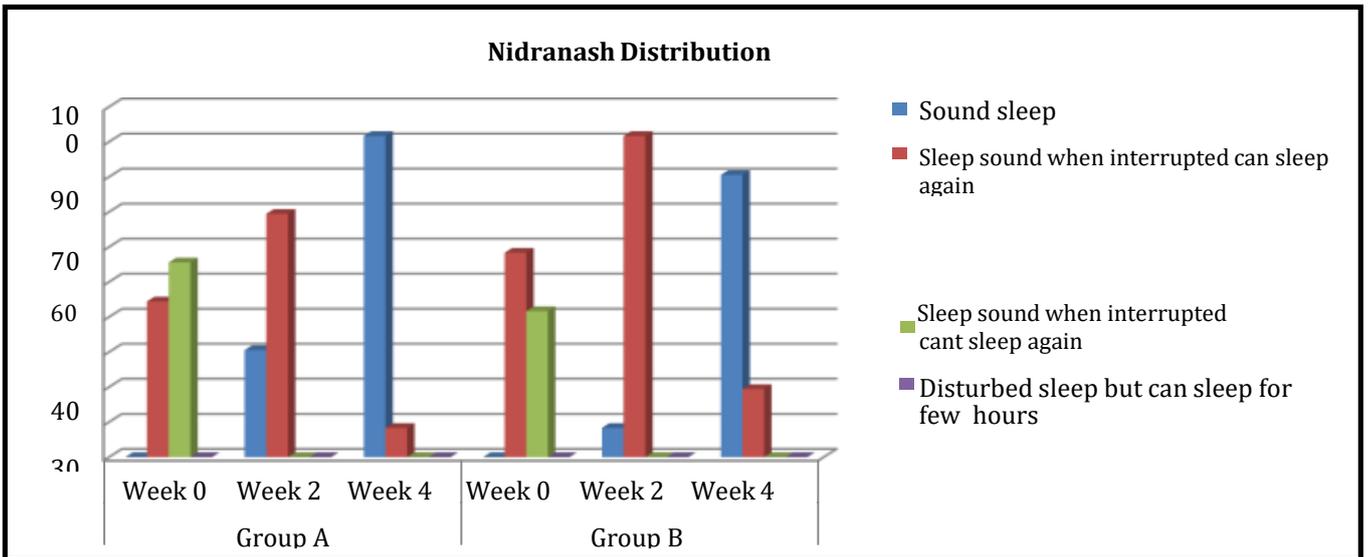
	Sr Protein		Grade
1	7.9-8.5		3
2	7.2-7.8		2
3	6.5-7.1		1
4	5.8-6.4		0

**OBSERVATIONS AND RESULTS**

**Statistical Analysis:** Data Analysis is a key phase of research work. The present chapter entitled ‘Data Presentation, Analysis and Interpretation comprised of four sections Part ‘A’, Part ‘B’ and the details of each section are given below,

- A. Presentation, analysis and interpretation of data are done with help of sorting the raw data, its coding, classification and tabulation, percentage calculation and drawing the inferences.
- B. Statistical analysis is done by using measures of central tendency, measures of variation, testing of hypothesis is done by using statistical tools like Paired t test, ANOVA etc. In the present chapter the information comprising to several variables is presented in order to pertain a fair comprehensive profile of respondents.

<b>Nidranash Distribution</b>						
<i>Nidranash</i>	Group A			Group B		
	Week 0	Week 2	Week 4	Week 0	Week 2	Week 4
Sound sleep (grade 0)	0	30.6	91.7	0	8.3	80.6
Sleep sound when interrupted can sleep again (grade 1)	44.4	69.4	8.3	58.3	91.7	19.4
Sleep sound when interrupted can't sleep again (grade 2)	55.6	0	0	41.7	0	0
Disturbed sleep but can for few hours (grade 3)	0	0	0	0	0	0
Total Percentage	100	100	100	100	100	100



**Interpretation**

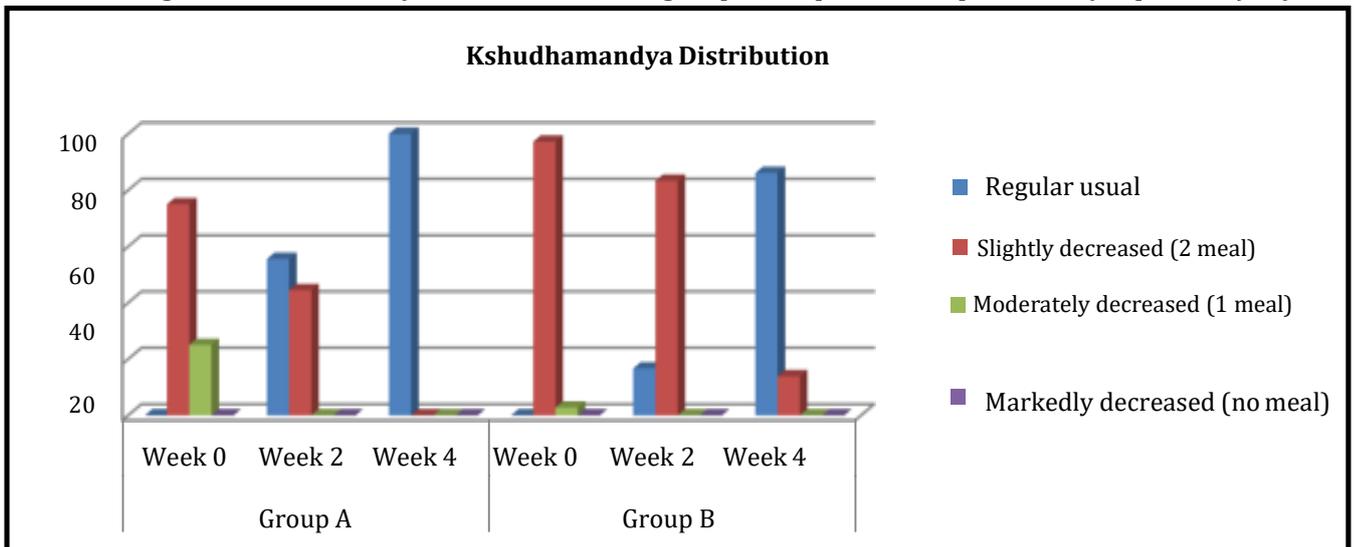
Considering the *Nidranash* distribution, In a group A, 55.6 percent respondents (20 patients) says that , in sound sleep when it is interrupted then they can't sleep again while 44.4 percent respondents (16 patients) says that when they interrupted can sleep again at week first but after 2 weeks treatment 69.4 percent (24 patients) improved and after the 4 weeks of treatment respondents cured 91.7 percent (33 patients).

In a group B , 41.7 percent respondents (15 patients)says that , in sound sleep when it is interrupted then they can't sleep again while 58.3 percent respondents (21 patients)says that when they interrupted can sleep again at week first but after 2 weeks treatment 91.7 percent (33 patients)improved and after the 4 weeks of treatment respondents cured 80.6 percent (29 patients).

This shows that treatment A is better than Treatment B with 11.1 percent difference.

<b>Kshudhamandya Distribution</b>						
<b>Kshudhamandya</b>	<b>Group A</b>			<b>Group B</b>		
<b>Parameters</b>	<b>Week 0</b>	<b>Week 2</b>	<b>Week 4</b>	<b>Week 0</b>	<b>Week 2</b>	<b>Week 4</b>
Regular usual (grade 0)	0	55.6	100.0	0	16.7	86.1
Slightly decreased (2 meal) (grade 1)	75.0	44.4	0.0	97.2	83.3	13.9
Moderately decreased (1 meal) (grade 2)	25.0	0	0	2.8	0	0
Markedly decreased (no meal ) (grade 3)	0	0	0	0	0	0
Total Percentage	100	100	100	100	100	100

Considering the *Kshudhamandya* distribution, In a group A, 75 percent respondents (27 patients) says that

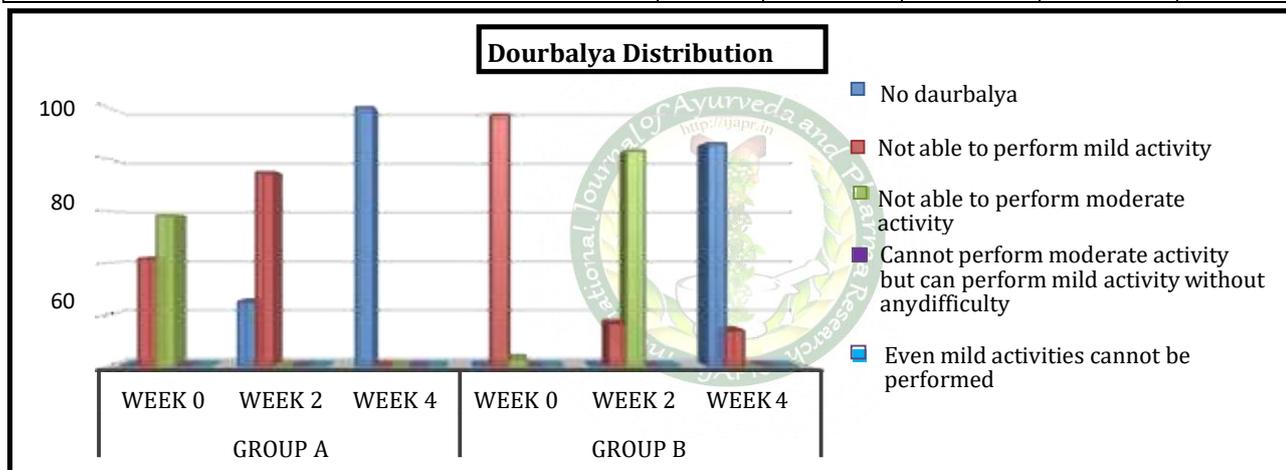


it is slightly decreased to 2 meals and 25 percent (9 patients) said that it is moderately decreased to 1 meal in a first week but after 4<sup>th</sup> week 100 percent respondents having 100 percent *Ksudhamandya* which is showing improvement.

In a group B , 97.2 percent respondents (35 patients)says that it is slightly decreased to 2 meals and 2.8 percent (1 patient)said that it is moderately decreased to 1 meal in a first week but after 4<sup>th</sup> week 86.1 percent (30 patients) respondents *Ksudhamandya* which is showing improvement.

This shows that treatment A is better than Treatment B with 14.9 percent difference.

<b>Dourbalya Distribution</b>						
<b>Dourbalya</b>	<b>Group A</b>			<b>Group B</b>		
<b>Parameters</b>	<b>Week 0</b>	<b>Week 2</b>	<b>Week 4</b>	<b>Week 0</b>	<b>Week 2</b>	<b>Week 4</b>
No <i>Daurbalya</i> (grade 0)	0	25.0	100.0	0	0.0	86.1
Not able to perform strenous activity (grade 1)	41.7	75.0	0.0	97.2	16.7	13.9
Not able to perform moderate activity (grade 2)	58.3	0	0	2.8	83.3	0
Cannot perform moderate activity but can perform mild activity without any difficulty (grade 3)	0	0	0	0.0	0	0
Even mild activities cannot be performed (grade 4)	0	0	0	0.0	0.0	0
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>



**Interpretation**

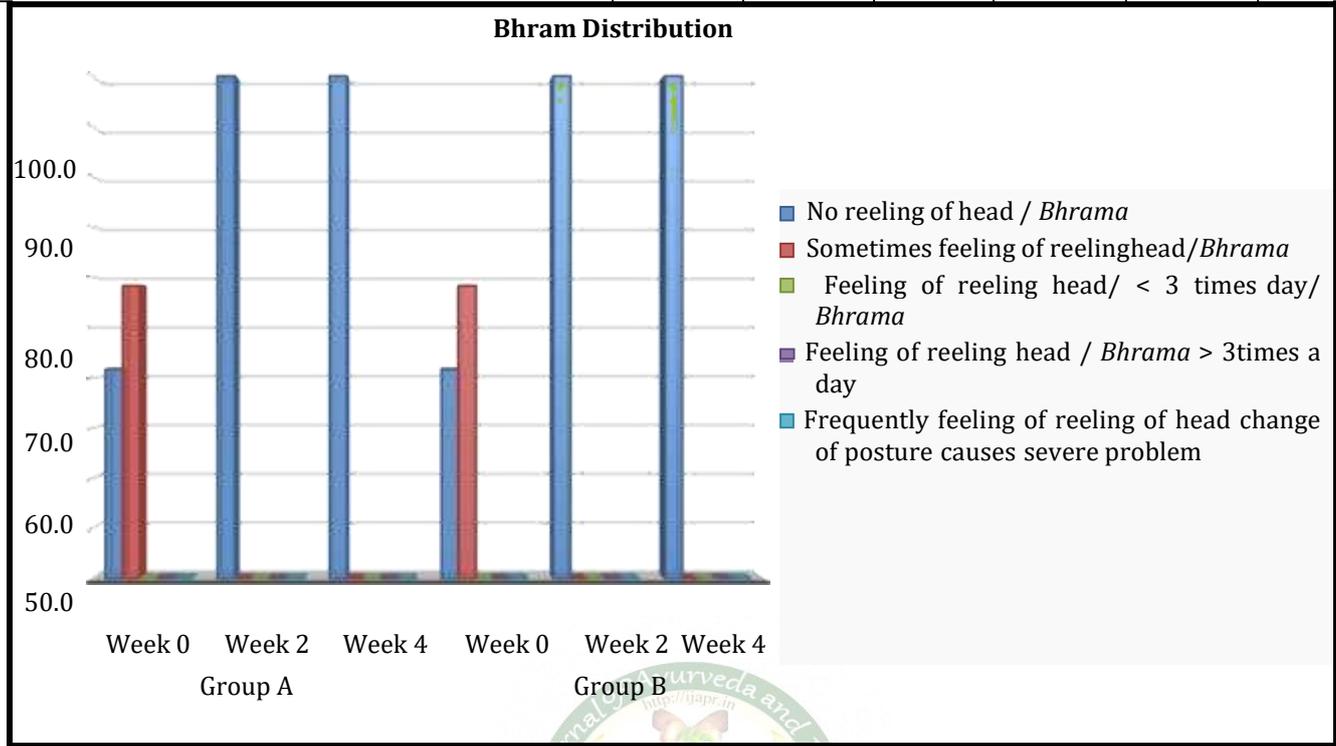
Considering the *Dourbalya* distribution, In a group A, 58.3 percent respondents (21 patients) said that they are not able to do moderate activity and 41.7 percent (15 patients) said that they are not able to do mild activities too in a first week but after 4<sup>th</sup> week 100 percent respondents feeling no weakness which is showing improvement.

In a group B, 97.2 percent respondents (35 patients) not able to perform mild activity and 2.8 percent (1 patient) not able to perform moderate activity in a first week but after 4<sup>th</sup> week 86.1 percent respondents (30 patients) is showing improvement.

This shows that treatment A is better than Treatment B with 14.9 percent difference.

<b>Bhram Distribution</b>						
<b>Bhram Parameters</b>	<b>Group A</b>			<b>Group B</b>		
<b>Parameters</b>	<b>Week 0</b>	<b>Week 2</b>	<b>Week 4</b>	<b>Week 0</b>	<b>Week 2</b>	<b>Week 4</b>
No reeling of head/ <i>Bhram</i> (grade 0)	41.7	100.0	100.0	41.7	100.0	100.0
Sometimes feeling of reeling head/ <i>Bhram</i> (grade 1)	58.3	0.0	0.0	58.3	0.0	0.0
Feeling of reeling head/ <i>Bhram</i> <3 times a day (grade 2)	0.0	0	0	0.0	0.0	0
Feeling of reeling head/ <i>Bhram</i> >3 times a day	0	0	0	0.0	0	0

(grade 3)						
Frequently feeling of reeling of head, change of posture causes the severe problem (grade 4)	0	0	0	0.0	0.0	0
Total	100	100	100	100	100	100



**Interpretation**

Considering the *Bhram* distribution, In a group A, 58.3 percent respondents (21 patients) said that sometimes they feel of reeling head or *Bhram* and 41.7 percent (15 patients) feeling no *Bhram* in a first week but after 4<sup>th</sup> week 100 percent respondents having 100 percent respondents said that there is no reeling of head or *Bhram* which is showing improvement.

In a group B, 58.3 percent respondents (21 patients) said that sometimes they feel of reeling head or *Bhram* and 41.7 percent (15 patients) feeling no *Bhram* in a first week but after 4<sup>th</sup> week 100 percent respondents having 100 percent respondents said that there is no reeling of head or *Bhram* which is showing improvement.

This shows that there is no difference in treatment of group A & B.

Weight Distribution				
Weight Parameters	Group A		Group B	
	Week 0	Week 4	Week 0	Week 4
42.6 – 46.6	50	5.6	41.7	16.7
46.7 – 50.7	44.4	22.2	50	44.4
50.8 – 54.8	5.6	66.7	8.3	36.1
54.9 – 58.9	0	5.6	0	2.8
Total	100	100	100	100

**Interpretations**

As considering weight parameter, In a group A, 50 percent respondent (18 patients) has a weight in between 42.6 to 46.6 and 44.4 percent respondents (16 patients) has weight in between 46.7 to 50.7 but after 4 weeks it rises to 50.8 to 54.8 to the 66.7 percent (24 patients).

In a group B, in a week first 50 percent (18 patients) lies in 46.7 to 50.7 weight group and 41.7 percent (15 patients) lies in a group 42.6 to 46.6 and after treatment weight rises to 46.7 to 50.7 age group and only 36.1 percent (13 patients) lies in the age group 54.9 to 58.9

Group A shows the better improvement than group B by 20 percent rise.

MUAC Distribution				
MUAC Parameters	Group A		Group B	
Parameters	Week 0	Week 4	Week 0	Week 4
20.5 – 22.5	25.0	0.0	2.8	0.0
22.6 – 24.6	55.6	30.6	50.0	8.3
24.7 – 26.7	19.4	52.8	47.2	72.2
26.8 – 28.8	0	16.7	0.0	19.4
Total	100	100	100	100

**Interpretations**

As considering weight parameter, In a group A , 25 percent respondent (9 patients) has a MUAC in between 20.5 to 22.5 and 55.6 percent respondents (20 patients) has MUAC in between 22.6 to 24.6 but after 4<sup>th</sup> week it rises to 52.8 percent (19 patients) in the group of 24.7 to 26.7 .and 16.7 percent (6 patients)shows the MUAC as in the group of 26.8 to 28.8 .

In a group B, in a week first 50 percent (18 patients) lies in 22.6 to 24.6 MUAC group and 47.72 percent (17 patients) lies in a group 24.7 to 26.7 and after treatment it rises to 24.7 to 26.7 percent as per 72.2 percent (26 patients) only 19.4 percent (7 patients) lies in the group 26.8 to 28.8.

Group A shows the better improvement than group B by 20 percent rise.

BMI Distribution				
BMI Parameters	Group A		Group B	
Parameters	Week 0	Week 4	Week 0	Week 4
16.5-17.2	25	0	16.7	0
17.3-18.0	55.6	2.8	55.6	0
18.1-18.8	19.4	2.8	27.8	58.3
18.9-19.6	0	94.4	0	41.7
Total	100	100	100	100

**Interpretations**

As considering BMI parameter, In a group A, 55.6 percent (20 patients) respondent has a BMI in between 17.3 to 18 and 25 percent (9 patients) respondent’s lies in between 16.5 to 17.2 but after 4<sup>th</sup> week it rises to 94.4 percent in the group of 18.9 to 19.6 and only 2.8 percent (1 patient) shows the BMI as in the group of 18.1 to 18.8.

In a group B, in a week first 55.6 percent (20 patients) lies in 17.3 to 18.0 of BMI group and 27.8 percent (10 patients) lies in a group 18.1 to 18.8 and after treatment it rises to 58.3 percent (21 patients) , 18.1 to 18.8 in the group percent as per 41.7 percent (15 patients)only in the group 18.9 to 19.6.

There was a certain improvement after the treatment.

Serum protein Distribution				
Sr Protein Parameters	Group A		Group B	
Parameters	Week 0	Week 4	Week 0	Week 4
7.9-8.5	0	19.4	0	0
7.2-7.8	5.55	52.7	11.1	25.0
6.5-7.1	52.7	36.1	33.3	33.3
5.8-6.4	22.2	5.55	38.8	0

**Interpretations**

As considering Sr. Protein parameter, In a group A , 52.7percent (19 patients) respondent has a sr protein in between 6.5-7.1 and 22.2 percent (8 patients) respondents lies in between 5.8-6.4 but after 4<sup>th</sup> week it rises to 52.7 percent (19 patients) lies in the group of 7.2-7.8 and 36.1 percent (13 patients)respondent has raise of sr protein in the group 6.5-7.1 and 19.4 percent respondent has sr protein level in 7.9-8.5.

In a group B , 38.8 percent (14 patients) respondent has a sr protein in between 5.8-6.4 and 33.3 percent (12 patients) respondents lies in between 6.5-7.1 , 11.1 percent (4 patient) were in 7.2-7.8 but after 4<sup>th</sup> week 25 percent (9 patients) respondent has raise of sr protein in the group 7.2-7.8, 33.3 percent having sr protein level between 6.5-7.1

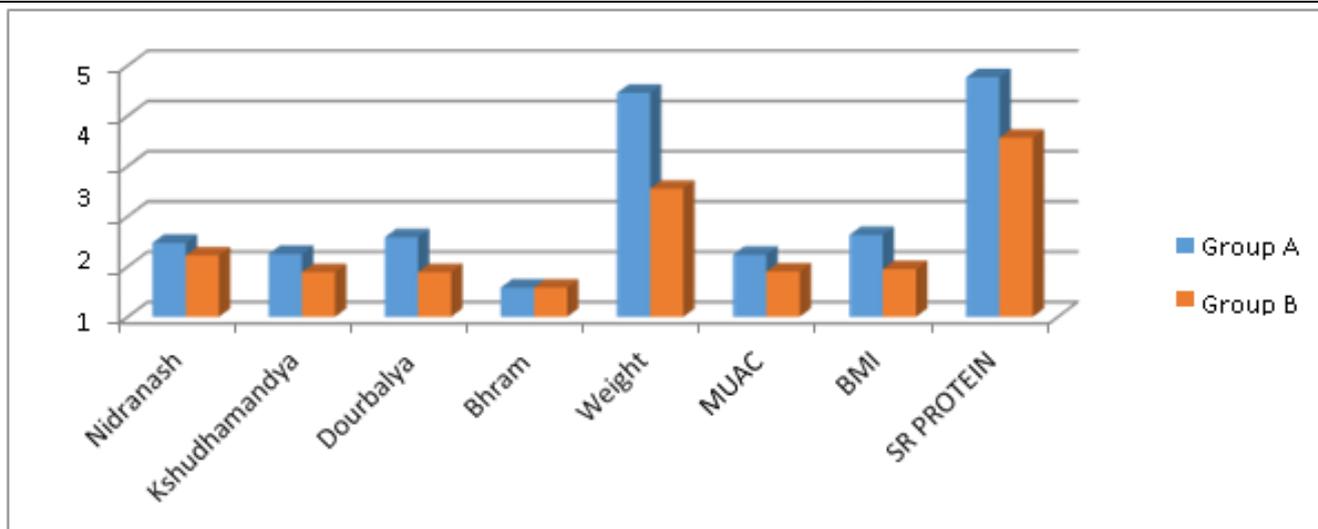
Group A shows the better improvement than group B by 20 percent rise while considering sr protein levels.

**Pair wise comparison using Wilcoxon Signed Ranks Test**

Time pairs	Z value	p value of Wilcoxon Signed Ranks Test
Nidranash Week 2- Nidranash Week 0	-5.568	00.000**
Nidranash Week 4- Nidranash Week 0	-5.397	00.000**
Nidranash Week 4- Nidranash Week 2	-4.690	00.000**
Kshudha Mandya Week 2- Kshudhamandya Week 0	-5.385	00.000**
Kshudha Mandya Week 4- Kshudhamandya Week 0	-5.529	00.000**
Kshudha Mandya Week 4- Kshudhamandya Week 2	-40.000	00.000**
Daurbalya Week 2- Daurbalya Week 0	-5.477	00.000**
Daurbalya Week 4- Daurbalya Week 0	-5.410	00.000**
Daurbalya Week 4- Daurbalya Week 2	-5.196	00.000**
Bhram Week 2- Bhram Week 0	-4.583	00.000**
Bhram Week 4- Bhram Week 0	-4.583	00.000**
Bhram Week 4- Bhram Week 2	00.000	1.000#

Time pairs	Z value	p value of Wilcoxon Signed Ranks Test
Weight week 4- Weight week 0	-5.578	0.000**
MUAC week 4- MUAC week 0	-5.000	0.000**
BMI week 4- BMI week 0	-5.429	0.000**
Sr Protein week 4- SR Protein week 0	-5.300	0.000**

	Group A (Mean Difference)	Group B (Mean Difference)
Nidranasha	1.472	1.222
Kshudhamandya	1.250	0.889
Dourbalya	1.583	0.889
Bhram	0.583	0.583
Weight	4.4556	2.5500
MUAC	1.2361	0.9000
BMI	1.6306	0.9500
SR Protien	4.7681	3.5642



Thus from the above graphical presentation its concluded that treatment of “*Ashwagandha rasayan*” is more effective in “*Apatarpanjanya Karshya*” than that of “protein x powder”

### DISCUSSION

By the statistical analysis, patients of Group A had shown significant results in *Nidranaash*, *Daurbalya*, *Kshudhamandya*, MUAC, BMI and sr. protein after the treatment, while non-significant result in *Bhram* after the treatment. At the time of Follow up, patients of Group A had shown highly significant results *Nidranaash*, *Daurbalya*, *Kshudhamandya*, MUAC, BMI and sr. protein and non-significant results in *bhram*.

But comparing both the groups, Group A is more significant than Group B, both after treatment and follow up.

**Nidranash:** Significant improvement was observed in *Lakshanas* of *Nidranaash*, using *Ashwagandha rasayan* in the present study. *Ashwagandha* benefits *cognitive function*. *Glycowithanolides*, one of the many compounds found in *Ashwagandha*, reduces cortisol. *Aswagandha* possesses *Rasa*, *Guna*, *Veerya* and *Vipaka* as, *Katu*, *Tikta* and *Kashaya* are *Pitta Shamaka* and due to *Ushna Virya* of the drug it is *Vata Shamaka*. The drug have *Vata shamak* and *Nidrajanaka* properties by virtue of which these have shown significant therapeutic result. The drug was given along with cow milk. Milk possessing *Madhura Rasa*, *Snigdha*, *Guru*, *Shlakshna*, *Picchila*, *Manda Gunas*, *Sheeta Virya*, *Madhura Vipaka*, *Vatapittahara* and *Shleshmakrit* properties, it acts as an excellent sleep promoting adjuvant.

**Kshudhamandya:** *Ashwagandha* possesses, *Tikta rasa*, *Laghu guna*, *Ushnaveerya* by virtue of this property it acts as *Agnideepana* initially and *Balya*, *Brimhana*, *Rasayana* along with cow milk it acts *Agnivradhana* as milk is consider best among *Agnideepanadravya*. Cow milk contains medium chain triglycerides which are immediate source of energy.

**Daurbalya:** *Ashwagandha Rasayana* is *Madhura* and *Tikta Rasa*, *Snigdha Guna*, *Ushna Veerya* and *Madhura*

*Vipaka*, having *Vata Pitta Shamana* and *Kapha Vardhaka* effect. *Laghu Guna* of *Ashwagandha (Withania Somnifera)* helps in kindling the *Agni*. *Ashwagandha (Withania Somnifera)* powder (*Choorana*) was given with cow milk, which causes *Snehana* to the tissues. Milk is considered as a complete and ideal food. The main sugar present in milk is lactose. Lactose favours the absorption of calcium and phosphorous and the synthesis of some B-complex vitamins in the small intestine. These properties of *Ashwagandha rasayan* prove to be effective in management of *Daurbalya* in the present study.

**Bhram:** *Brama* is a condition which is caused due to the vitiation of *Vata* and *Pitta* and involvement of *Rajo guna*. The morbid *Vata*, *Pitta* and *Rajo guna* afflicts the brain and causes *Bhrama*. It is a condition explained in the context of a disease “*Murcha*” i.e.; loss of consciousness or fainting. *Ashwagandha rasayan* is advocated in the management of symptoms of *Apatarpanjanya Karshya*, “*Bhram*” due to its *Snigdha guna*, *Madhura vipaka*, and *Vata-pitta shaman* and *Satvik kapha vardhak* properties. Thus in this present study *Ashwagandha rasayan* has proved to be useful in combating symptoms like *Bhram* in management of *Apatarpanjanya Karshya*.

**Weight:** In the present study it is observed that , *Ashwagandha rasayan* possesses anabolic properties which helps in gaining or increasing the total body weight in individuals suffering from *Apatarpanjanya Karshya*. *Madhur rasa*, *Ushna veerya* helps to increase the *Dhatvaagni*, which metabolizes the increase in body weight.

*Ashwagandha rasayan* is administered with cow milk which has *Balya* properties, and ultimately leads to *Poshana* of *Dhatu*, thus increasing the total body weight of the individual.

**MUAC:** MUAC is considered as a parameter in accessing "Apatarpanjanya Karshya". Increase in the total body weight and muscle mass has already been proven in studies of "Ashwagandha rasayan". Ashwagandha Rasayana produces the anabolic (Brimhana) effect on the different tissues of the body. Ashwagandha (Withania Somnifera) acts both on Agni and Poshaka Rasa. Being rich in proteins contains essential amino acids and steroids. It is the anabolic to Mamsa according to Charaka. Thus, increase in muscle mass is accessed by measuring MUAC, which showed significant results in the present study.

**BMI & Sr Protein level:** Ashwagandha (Withania Somnifera) acts both on Agni and Poshaka Rasa. Being rich in proteins contains essential amino acids and steroids. It is the anabolic to Mamsa according to Charaka. It has the ability to nourish all the tissues of the body by increasing the Adya Dhatu i.e., Rasadhatu. The anabolic steroids found to be present in the formulation and the procedure of drug administration might influence protein metabolism. Such anabolic agents if given in conjunction with an adequate diet for conditions characterized by wasting of bones and muscles prove to be beneficial to the patient suffering from Karshya. Ashwagandha (Withania Somnifera) is also an "adaptogen," as it increases resistance to physical, chemical and biological stressors, builds energy and general vitality.

## CONCLUSION

Karshya is considered as Vyadhi and also as a Lakshana. But to understand in its better way, it was taken as a separate disease in the present study. This study shows that the disease Karshya is more common in the age group of 16-30 years. Dourbalya, Bhram, Kshudhanash, Nidranaash, are found as cardinal signs of Apatarpanjanya Karshya. It can be concluded in this study that Doshbala Pravrutta factor is mainly responsible for the disease. The disease was developed in later stage of life due to poverty undernourishment and etiological factors. In the clinical part of the study, it was observed that Rukshannapana, Ati Vyayama Chinta, Shoka and Bhaya were having more impact in the manifestation of Karshya vyadhi. Poor and middle class people cannot afford nutritious food and they are more prone to malnutrition. Poor Ahar shakti was noted in maximum number of patients In case of Nidana sevana and Stroto dushti the present study substantiate the theoretical observation made by Acharyas is very relevant in the present era.

It proves the anabolic effect of drug Ashwagandha Rasayan in symptoms like Kshudhamandya, Nidranash, Daurbalya and Bhram; significant results were observed in group A and marked improvement seen in weight gain, MUAC, BMI and increased serum protein levels.

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