



Research Article

A CLINICAL STUDY TO EVALUATE THE EFFECT OF *KARSHYAHAR YOGA GRANULES AND KSHEERBALA TAILA MATRA BASTI* IN *KARSHYA W.S.R* TO UNDERNUTRITION IN CHILDREN

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ABSTRACT

Undernutrition among children is one of the serious issues prevailing in developing countries. Despite many efforts India has still higher number of incidence of undernutrition. *Karshya roga* mentioned in Ayurveda can be the most probable correlation of undernutrition. As Ayurveda has remarked very minute detail about concept of *Brihmana* and *Balya* which is the mainstay therapy for *Karshya*. Therefore we can use Ayurvedic medicine as a better alternative for the management of undernutrition. **Aim:** To evaluate the efficacy of *Karshyahar yoga* granules and *Ksheerbala taila matra basti* in *Karshya w.s.r.* to undernutrition in children. **Materials and Methods:** The study was conducted on 40 children of undernutrition for a period of 3 months. Clinical features (weight, height, *Daurbalya* etc) and hematological parameters (Hb gm%, ser. protein etc) were documented before and after treatment. **Statistical Analysis Used:** Observations of the study were analyzed and findings were evaluated by using statistical methods **Results:** In the present study 12.5% patients showed marked improvement, 42.5% patients showed moderate improvement and 45% patients showed mild improvement. No adverse effect of the trial drug was observed during the study. **Conclusions:** The results showed that *Karshyahar yoga* granules along with *Ksheerbala taila matra basti* is more effective in comparison to single use of *Karshyahar yoga* granules in the management of undernutrition in children.

INTRODUCTION

Undernutrition denotes insufficient intake of energy and nutrients to meet an individual's needs to maintain good health. According to WHO, it includes wasting (low weight-for-height), stunting (low height-for-age) and underweight (low weight-for-age). It is one of the supreme health and nutritional problem in developing countries. Health of the individuals living in a country is one of the basic determinants for the development of that country. WHO has described malnutrition as a "global problem" having adverse effects on the survival health performance and progress of population groups.

The prevalence of undernutrition exceeds 900 million people across the world. Child and maternal undernutrition is responsible for approximately 3.5 million deaths in children below the age of 5 years and for 45% of the disease burden in this age group.^[1] Over 33 lakh children in India are malnourished and more than half of them fall in the severely malnourished category.^[2] According to the National Family Health Survey (NFHS)-5, India has unacceptably high levels of stunting, despite marginal improvement over the years. In 2019-21, 35.5 percent of children below five years were stunted and 32.1 percent were underweight. India ranks 116 out of 174 countries on the human capital index. However, only nine states showed a decline in the number of stunted children, 10 in wasted children and six in underweight children. The percentage of stunted, wasted and underweight children increased or remained unchanged in the remaining states.^[3]

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AIMS AND OBJECTIVES**Primary Objectives**

- To analyze the etiopathogenesis of *Karshya* from modern and Ayurvedic point of view.
- To study the efficacy of *Karshyahar yoga* granules and *Ksheerbala taila matra basti* in management of *Karshya*.

Secondary Objectives

- To evaluate the safety of both drugs in children.

Ethical Clearance

The proposed clinical study was presented in form of synopsis in front of the Institutional Ethical Committee. Clinical trial was started after approval from Chairman of Ethical committee vide certificate no. Ayu/IEC/2019/1234.

CTRI Registration

The study had also been registered in Clinical Trial Registry of India vide CTRI Reg. No. CTRI/2021/09/036251.

MATERIAL AND METHODS**Selection of the Patients**

- **Source of patients:** Patients of *Karshya* (undernutrition) fulfilling the diagnostic criteria had been randomly selected from OPD and IPD of *Kaumarbhritya*, R.G. Govt. P.G. Ayurvedic College and Hospital, Paprola, Dist. Kangra (H.P.) irrespective of gender, religion, and socio-economic status etc.
- **Age group:** Children between 2 to 16 years of age were included in the study.
- **Number of cases:** Total 45 cases have been registered out of which 5 cases discontinued the treatment during the course.

Diagnostic Criteria

Subjects found to be under-weight on the basis of IAP classification of underweight according to age (Grade I and Grade II) and parameters such as BMI (Body Mass Index), MAC (Mid Arm Circumference), as well as the Ayurvedic parameters of *Dashavidha pariksha*, *Ashtavidha pariksha* and *Karshya lakshana* mentioned in *Charak samhita sutra sthana* were diagnosed as underweight.

Inclusion Criteria

1. Individuals of both genders between age group of 2–16 years.
2. Individuals with poor weight gain, lean and thin body as per IAP (Grade I & Grade II) classification of underweight.

3. Individual fulfilling the description of *Karshya* described in our texts like *Shushka-sphika*, *Shushka-udara*, *Shushka-griva*, *Dhamani-jala-darshan*
4. Parents of patient willing to participate in the trial.

Exclusion Criteria

1. Patient suffering from severe malnutrition (grade III and grade IV)
2. Patient with congenital anomaly.
3. Patient with chronic ailments like tuberculosis, malignancy, cardiac and renal problems.
4. Patient suffering from UTI, diabetes mellitus etc.
5. Patient with physical disability.
6. Individual below or above the mentioned age group.
7. Parents of the patient not willing to participate in the trial.

Assessment Criteria

Assessment of effects of the therapy was done on the basis of decided objective and subjective criteria. For the purpose of assessment, a detailed clinical research proforma was prepared to incorporate various parameters like *Dashavidha pariksha*, *Ashtavidha pariksha* etc. Patients were thoroughly assessed during the trial period after every fourth weeks. Following objective and subjective parameters were adopted for assessment.

Objective Criteria of Assessment: Included various anthropometric measurements and biochemical investigations.

1. Anthropometrical Measurements

- a) Body Weight
- b) Height
- c) Body Mass Index (BMI)
- d) Mid Arm Circumference (MAC)

2. Biochemical Investigations

- CBC
- ESR
- Serum protein
- LFT (SGOT, SGPT, Serum bilirubin)
- Urine examination (Routine & Microscopy)

Laboratory investigations have been carried out before commencement and after completion of the trial.

Subjective Criteria of Assessment: Subjective criteria were decided according to *Atikrishna lakshana* mentioned in *Charak samhita sutra sthana*.^[4] To assess the improvement, in clinical symptomatology of the-patients, scoring system was adopted. Symptoms were accorded grade according to their severity. Gradation of symptomatology of *Karshya* is as mentioned:

Table no.1

Subjective Assessment Grade	
<i>Daurbalya</i>	
Sluggish	3
Moderately active	2
Active	1
Very active	0
<i>Kshudha (Appetite)</i>	
Child does not willing to take food	3
Child does not ask but take food by request	2
Child willing to take food but not take adequately	1
Child himself take food and take adequately	0
<i>Dhamni Jala Darshan</i>	
Prominent	3
Visible	2
Visible and prominent on pressure	1
Not visible easily even after pressure	0
<i>Sthula Parva (Joints)</i>	
Relatively look larger	3
Prominent	2
Covered	1
Deeply seated with extra fat	0
<i>Nidra (Sleep)</i>	
Disturbed	2
Short but sound	1
Long and sound	0
<i>Bowel habit</i>	
Passing stool after 2 or more than 2 days	3
Passing stool on alternate days	2
Passing stool once a day but hard stool	1
Normal	0

Trial Drugs

Karshyahar yoga granules for oral intake and *Matra basti* with *Ksheerbala taila* were selected for the present study. Drug for oral intake was prepared in the form of granules in order to enhance its palatability in children.

Doses and Duration

Doses were according to the body weight and age of the child.

1. *Karshyahar yoga* granules:^[5]

- *Anupana* - Milk & honey
- Dosage - 130mg/kg bid

➤ Duration - 3 months

2. *Ksheerbala taila matra basti*.^[6]

The dose of *Matra basti* had been decided according to *Acharya Kashyapa*. Administration schedule was of 21 days ^[7] (3 sittings of 7 days with 3 days interval).

Patients were divided into four groups on the basis of age range:

Age (years) Dose

1. 2-3 - 15ml
2. 4-5 - 20ml

3. 6-11 - 40ml
4. 12-16 - 80ml

Contents of *Karshyaha yoga* granules and *Ksheerbala taila* are presented in Table no. 2 and Table no. 3 respectively.

Ingredients of Trial Drugs

Table 2: Ingredients of *Karshyaha yoga* granules

S.no	Name	Botanical Name	Family	Part used	Quantity
1.	<i>Vidarikand</i>	<i>Pueraria tuberosa</i> DC	<i>Fabaceae</i>	<i>Kand</i>	1 part
2.	<i>Yava</i>	<i>Hordeum vulgare</i> Linn	<i>Poaceae</i>	Fruit	1 part
3.	<i>Godhum</i>	<i>Triticum sativum</i> Lam	<i>Poaceae</i>	Fruit	1part
4.	<i>Sharkara</i>				2 part

Table 3: Ingredients of *Ksheerbala taila*

S.No	Name	Botanical Name	Family	Part Used	Quantity
1.	<i>Bala mool</i>	<i>Sida cordifolia</i> Linn.	Malvaceae	Root	1 part (<i>Kwatha</i>)
2.	<i>Ksheera</i>	Cow milk			1 part
3.	<i>Tila taila (murchitta)</i>	<i>Sesamum indicum</i> Linn.	Pedaliaceae	Seed	1part

Analytical Study of Trial Drug

The trial drug sample was subjected to various physiochemical analytical tests to evaluate the standards of drug.

Analytical test reports of the trial drug *Karshyaha yoga* granules are as follows.

Nature of preparation: Powder

Colour: Creamish

Odour: Characteristics

Taste: Sweet and slightly bitter

pH: 4.64

Moisture content: 04.50%

Total Solid: 95.50%

Total Ash: 01.42%

Acid Insoluble Ash: negligible

Water Soluble Extractive: 49.88%

Predicted shelf life (ASLT): 1 year from the date of manufacturing date.

Analytical test reports of the trial drug *Ksheerbala taila* are as follows

Nature of preparation: Medicated oil

Color: Reddish Brown

Odour: Characteristic

The obtained results were interpreted as given in table no.4:

Table no. 4

Interpretation	P value
Insignificant result	>0.05
Significant	Between 0.05 to 0.001
Highly significant	<0.001

Loss on drying: 0.37%

Refractive Index: 1.469

Weight per ml: 0.917

Saponification value: 182

Qualitative test: negative test for mineral oil

Predicted shelf life (ASLT): 3 years from the date of manufacturing

Grouping of Patients

Selected patients were randomly divided into following two groups:

- Group I - In this group 22 patients were managed with trial drug i.e., *Karshyaha yoga* granules.
- Group II - In this group, 23 patients were managed with both *Karshyaha yoga* granules and *Ksheerbala taila matra basti*.

Data Documentation and Statistical Analysis

Data was statistically analyzed by using appropriate tests "Student's paired T test" for individual group and "unpaired T test" for intergroup comparison were used for parametric data. For non-parametric data "Wilcoxon signed rank sum test" was used for individual group and "Mann Whitney 'U' test" was used for intergroup comparison.

Overall Assessment Criteria

Relief in symptoms was evaluated on the basis of above-mentioned criteria's and result was presented as following:

Table no. 5

3	Marked improvement in symptoms (>75%)
2	Moderate relief in symptoms (50-75%)
1	Mild relief in symptoms (25-50%)
0	No relief (<25%)

OBSERVATIONS AND RESULTS

In the present clinical study total 45 patients were registered for the clinical trial, out of them 5 patients did not turn up for follow-up. These 5 patients were dropped out from the study and remaining 40 patients completed the trial. The effects of the therapy in 40 patients who completed the trial were analyzed and are presented herewith in the tabular form.

Effect of therapy on Anthropometric Parameters Group I (Table no. 6)

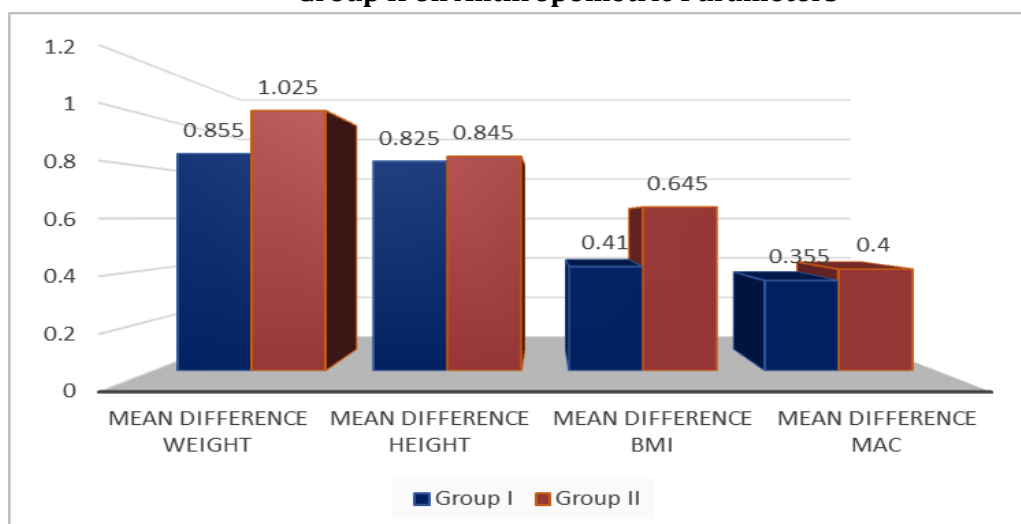
Anthropometric Parameters	n	Mean score		d	% of change	± S.D.	± S.E.	t value	p value
		BT	AT						
Weight	20	19.825	20.680	0.855	4.31	0.332	0.0742	11.530	<0.001
Height	20	122.885	123.710	0.825	0.67	0.316	0.0707	11.675	<0.001
BMI	20	12.610	13.020	0.410	3.251	0.229	0.0512	8	<0.001
Mid Arm Circumference	20	14.895	15.250	0.355	2.34	0.164	0.0366	9.695	<0.001

Group II (Table no. 7)

Anthropometric Parameters	n	Mean score		d	% of change	± S.D.	± S.E.	t value	p value
		BT	AT						
Weight	20	16.075	17.1	1.025	6.37	0.299	0.0668	15.336	<0.001
Height	20	114.100	114.945	0.845	0.74	0.15	0.0336	25.134	<0.001
BMI	20	12.040	12.685	0.645	5.357	0.344	0.0769	8.383	<0.001
Mid Arm Circumference	20	14.120	14.520	0.400	2.83	0.159	0.0355	11.255	<0.001

Effect of therapy on anthropometric parameters in both the groups was found to be highly statistically significant. P value of all the parameters in both the groups was <0.001. Although on comparing % age relief, group II had advantage over group I in improving all the anthropometric parameters. It might be due to additional effect of *Basti as Brihmana and Shodhana*.

Fig.no.1. Graphical Presentation of Comparison of Mean Difference of B.T. & A.T between Group I and Group II on Anthropometric Parameters



Effect of therapy on Subjective Parameters Group I (Table no. 8)

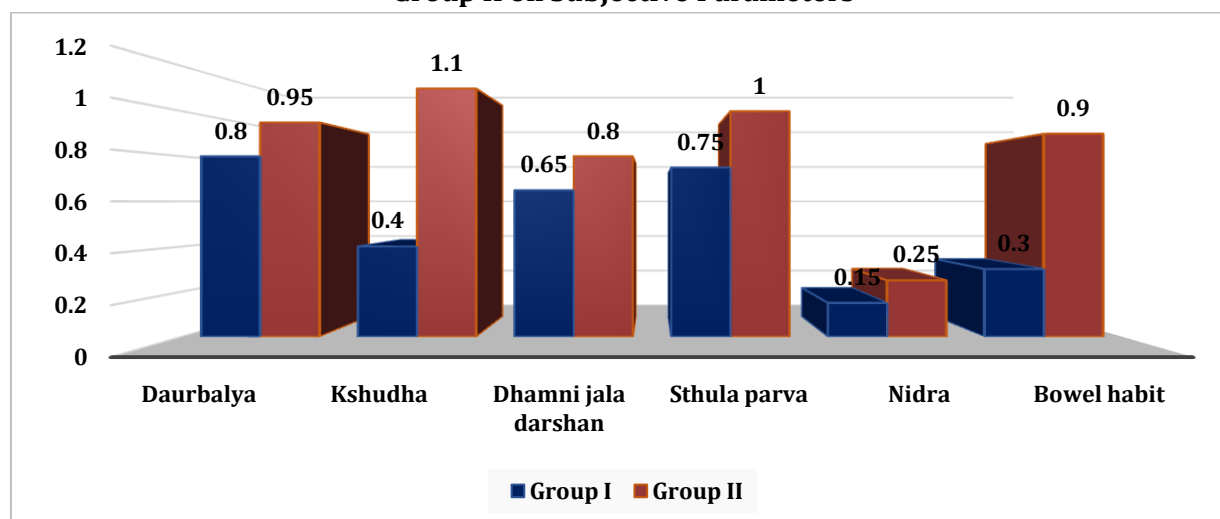
Subjective parameters	N	Mean score		D	% of change	Median		±S.D.	±S.E.	Z Value	P value
		BT	AT			BT	AT				
<i>Daurbalya</i>	20	1.8	1	0.8	44.4	2	1	0.523	0.117	-3.771	<0.001
<i>Kshudha</i>	20	1.4	1.00	0.400	28.57	1	1	0.598	0.134	-2.530	=0.001
<i>Dhamni Jala Darshan</i>	20	1.20	0.550	0.650	54.16	1	1	0.489	0.109	-3.61	<0.001
<i>Sthula Parva</i>	20	1.55	0.8	0.75	48.38	2	1	0.639	0.143	-3.873	<0.001
<i>Nidra</i>	20	0.450	0.300	0.150	33.33	0	0	0.366	0.0819	-1.73	=0.083
Bowel Habit	20	0.700	0.400	0.300	42.85	1	0	0.571	0.128	-2.460	=0.014

Group II (Table. No.9)

Subjective Parameters	N	Mean score		D	% of change	Median		±S.D.	±S.E.	Z Value	P value
		BT	AT			BT	AT				
<i>Daurbalya</i>	20	1.7	0.75	0.95	55.8	2	1	0.605	0.135	-3.755	<0.001
<i>Kshudha</i>	20	1.7	0.9	1.1	47.05	2	1	0.616	0.138	-3.557	<0.001
<i>Dhamni Jala Darshan</i>	20	1.35	0.55	0.800	59.25	1	1	0.410	0.091	-4.00	<0.001
<i>Sthula parva</i>	20	1.9	0.9	1	52.63	1	1	0.440	0.0993	-3.879	<0.001
<i>Nidra</i>	20	0.550	0.300	0.250	45.45	0	0	0.444	0.0993	-1.73	=0.083
Bowel habit	20	1.1	0.2	0.9	81.81	1	0	0.912	0.204	-3.140	=0.002

Effect of therapy on *Daurbalya*, *Dhamni jala darshan* and *Sthula parva* in both the groups was found to be highly statistically significant (p value<0.001) and the percentage relief in *Daurbalya* in group I was 44.4% and group II was 55.8%. Percentage of *Dhamni jala darshan* reduction was 54.16% in group I and 59.25% in group II. *Sthula parva* was found to be decreased by 48.38% in group I and 52.63% in group II. Improvement in *Kshudha* was found to be little bit more in Group II when compared statistically i.e., p value = 0.001 in group I and less than 0.001 in group II. Effect of therapy on *Nidra* was not found to be statistically significant in both the groups. As maximum no. of patients i.e., 62.22% of total patients had long and sound sleep. That's why we cannot conclude the effect of drug on *Nidra* (sleep). There is predominance of *Kapha* in pediatric age group that's why maximum number of patient has sound sleep. On comparing statistically, improvement in bowel habit was more in Group II (p value = 0.002) as compared to Group I (p value= 0.014).

Fig.no.2. Graphical presentation of Comparison of Mean Difference of B.T. & A.T between Group I and Group II on Subjective Parameters



Effect of therapy on Biochemical Parameters Group I (Table no.10)

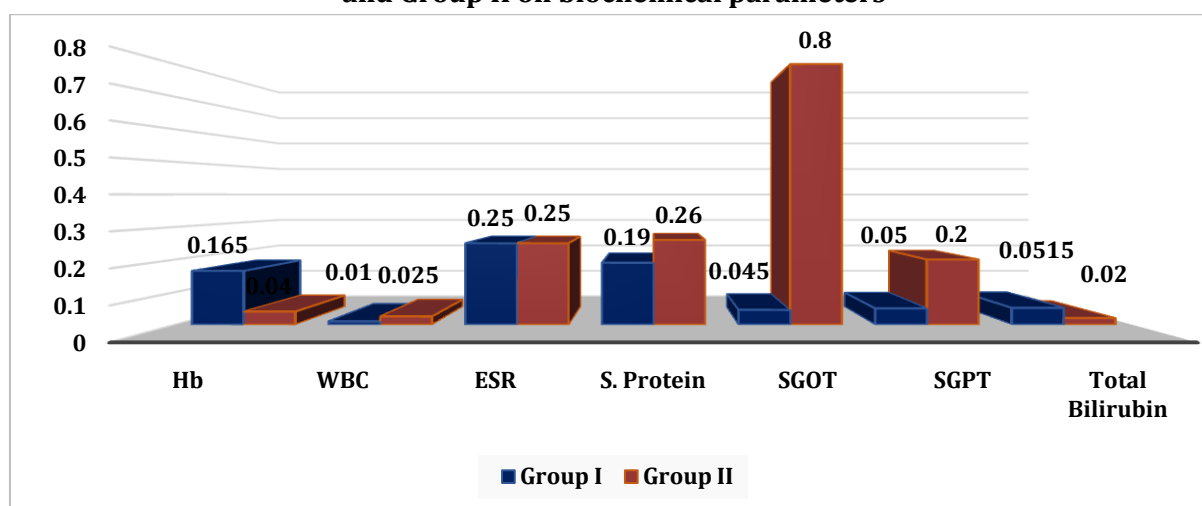
Biochemical parameters	n	Mean score		D	% of change	±S.D.	± S.E.	't' value	P value
		BT	AT						
Hemoglobin	20	11.375	11.540	0.165	1.45	0.416	0.0930	1.774	0.092
TLC	20	7.530	7.520	0.0100	0.133	0.619	0.138	0.0723	0.092
ESR	20	10.250	10	0.250	2.439	1.333	0.298	0.839	0.943
Serum Protein	20	6.966	6.775	0.190	2.727	0.401	0.0897	2.123	=0.04
SGOT	20	29.050	28.600	0.0450	1.549	1.432	0.320	1.406	0.176
SGPT	20	18.500	15.55	0.050	0.270	1.395	0.320	0.160	0.874
Total bilirubin	20	0.425	0.410	0.0515	3.529	0.157	0.0350	0.429	0.673

Group II (Table no. 11)

Biochemical parameters	n	Mean score		D	% of change	±S.D.	± S.E.	't' value	P value
		BT	AT						
Hemoglobin	20	11.830	11.870	0.0400	0.338	0.402	0.0899	0.445	0.661
TLC	20	7.215	7.240	0.0250	0.346	0.881	0.197	0.127	0.900
ESR	20	8.700	8.450	0.250	2.873	1.372	0.307	0.815	0.425
Serum Protein	20	7.191	7.450	0.260	3.615	0.289	0.0647	4.010	<0.001
SGOT	20	29.750	28.950	0.800	2.689	2.215	0.495	1.615	0.123
SGPT	20	22.550	22.75	0.200	0.886	1.399	0.313	0.639	0.530
Total Bilirubin	20	0.425	0.405	0.0200	4.70	0.259	0.0579	0.346	0.733

Effect of therapy on biochemical parameters in both the groups was not significant statistically except in case of serum protein and also no harmful effect was seen during or after completion of trial. Effect of therapy on serum protein in group I showed 2.727% increment which was statistically significant (p value = 0.04) whereas in group II, serum protein showed 3.615% increment, which was statistically highly significant (p value < 0.001). On comparing the intergroup difference, group II showed statistically high advantage over group I in increment of serum protein.

Fig.no.3. Graphical presentation of Comparison of Mean Difference of B.T. & A.T between Group I and Group II on biochemical parameters



Overall Effect of Therapy

Table no. 12

Category	Group I		Group II		Total	% age
	N	%	N	%		
Marked Improvement	1	5%	4	20%	5	12.5%
Moderate Improvement	7	35%	10	50%	17	42.5%
Mild Improvement	12	60%	6	30%	18	45%
No Improvement	0	0	0	0	0	0

In Group I, 5% patient showed marked improvement, 35% patients showed moderate improvement and 60% patients showed mild improvement. In Group II 20% patients showed marked improvement, 50% patients showed moderate improvement, 30% patients showed mild improvement i.e., among total 40 patients, 42.5% patients showed moderate improvement while 45% patients showed mild improvement followed by only 12.5% patients showed marked improvement.

Discussion on Probable Mode of Action of Therapy

Karshyahar yoga granules

- **Vidarikand:** It is *Madhura, Guru, Snigdha, Sheeta* and *Vata-pitahara*.^[8] As there is vitiation of *Vata dosha* in *Karshya*. *Madhura rasa, Snigdha* and *Guru guna* will help to pacify *Vata dosha*.
- **Yava:** Due to its *Ruksha guna* and *Katu vipaka*,^[9] it will balance the status of *Agni*. *Yava* also has property of *Srotoshodhan*. Hence help in removing obstruction in microchannels and promotes proper nourishment of *Dhatu*. *Yava* is enriched with appropriate amount of fibres which take care of bowel functions, hence helps in improvement of bowel function.
- **Wheat & Sugar:** Both has *Madhura rasa, Vrishya* and *Guru guna* which will pacify *Vata dosha*.^[10] *Karma* like *Vata-pitaghanta, Balya, Brihmna* help to combat undernutrition.
- **Go-Ghrita and Madhu:** Both add to the palatability of the *Aushadha*, which is an important factor to be considered for administration to the children suffering from *Karshya*. *Ghrita* is also a high source of energy. Therefore beneficial in protein energy malnutrition. *Goghrita* have *Deepana* property so, it restores the function of the *Agni* and when *Agni* got corrected, *Kshudha* (appetite) will increase and finally food intake of child will increase leading to correction in nourishment. *Ghrita* is considered to be the best *Sneha*, which cause *Snehana* to the tissue thus nourishes the body. *Madhu* with its *Prabhava* acts as *Vrishya*. Along with this, it has *Deepana* and *Srotovishodhak* property. Thus it helps in relieving the *Sanga* in *Dhatuvaha srotas* and enhances absorption of drug.

➤ **Go-Dugdha:** It was used as *Anupana* in the present study. *Anupana* helps in proper digestion and assimilation of food or medicine and enhance strength of the body.^[11] Milk is also a good source of protein and energy. Hence very useful in PEM.

Probable Mode of Action of *Matra basti*

Basti chikitsa is one amongst the Ayurvedic *Panchkarma* therapies which is used to expel the vitiated *Dosha* and *Mala* out of the body through the intestinal route. It strengthen our body; promotes *Bala* (strength), *Agni* (digestive fire), *Dharana shakti* (memory), *Varna* (lustre).^[12] Various toxins entering our body get accumulated in our gastrointestinal tract. As time passes these toxins tend to increase and get spread in all channels of our body causing variety of diseases. In Ayurveda we can correlate toxins to *Doshas* and expulsion of *Dosha* with time can prevent the disease. The main abode of *Vayu* is *Pakvashaya*^[13] and *Basti* pacifies this *Vayu* by its potency lodging in the *Pakvashaya*. None of the given management can pacify *Vayu* like *Basti*. It is considered as the *Ardha chikitsa* for many of the disorders.^[14] *Vata* is the cardinal factor in causing almost all the disorders because *Pita* and *Kapha* are immobile in nature. It is only the vitiated *Vata dosha* that carries the *Pita* and *Kapha dosha* along with it to cause the diseases. That is why *Basti* is considered as the most proactive therapy of *Panchakarma* and in Ayurveda it is regarded as the treatment above all treatment. Some references about the mode of action of *Basti* mentioned in Ayurvedic Samhita has been given below:

- The given *Basti* will reach *Nabhipradesha, Kati, Parshva, Kukshi* and the *Virya* of *Basti* spread throughout the body and will churn the *Dosha chaya* and *Mala chaya* and expel out *Pureesha* and *Dosha* completely without any complication.^[15]
- *Acharya Parashara* had highlighted the importance of *Guda*, by saying that *Guda* is *Mula* for all the *Siras* in the body, hence the medicine administered through *Guda* reaches up to head and nourishes the body.

Absorption of *Sneha*

Sneha is considered as *Vatahara, Mridukara* (produces softness in the channels and tissue which

causes easy elimination of toxic and waste products) and removes the obstruction in the channels produced by the *Mala* i.e., *Malanam vinihanti sangam*.^[16] Apart from these functions, *Sneha* protects the mucous membrane from the un-toward effect of irritating drugs in the *Basti dravya*.

Oil, *Ghrita* and *Vasa* are used in both the *Niruha* and *Anuvasana*. For the digestion of *Sneha* present in *Basti*, *Acharya Chakrapani* stated that the fat adhered to the colon is acted upon by the *Agni* located above the colon while it exudates to the exterior. If the *Agni* does not come into direct contact with such *Sneha*, even then, parts of *Jatharagni* which gets mixed up with *Sneha* may digest that.^[17] This is specially inkling about presence of some factors of digestion which is not yet discovered. A study was made in which *Brimhana basti* was administered to twenty patients to ensure whether the *Sneha* and other materials of *Basti* get absorbed or not. It was seen that the level of fatty acid in the blood had been increased from 36mg to 85mg/100ml of blood and the level of protein had been increased from 0.3 to 1mg/100ml of blood which are highly statistically significant" and indicates the absorption and digestion of the *Basti* material in colon.^[18] The *Sneha* used in *Basti* is mainly composed of triglycerides, fatty acids phospholipids, etc. Short chain and medium chain fatty acids are present in *Ghrita*, milk and other natural oils which are used in *Basti*". These two fatty acids are absorbed through the wall of the colon" as they do not require bile salt or pancreatic lipase or micelle formation for absorption.^[19] SCFA is rapidly absorbed and stimulates colonic NaCl and fluid absorption.^[20] It lowers the colonic pH which protects the colonic mucosal layer from formation of polyps, inhibits inflammation and adhesion of irritants and increases the mineral absorption" it also influences the immune function of the body by production of T helper cell, leukocytes, cytokines and modulation lymph mechanism. The *Sneha* also contains medium chain fatty acids which are having some additional effects of protecting from various infections.^[21]

Basti may act through the nervous system or through the enteric receptors. It may increase the secretion of local enzyme or neurotransmitters. *Basti* influences the normal bacterial flora, thus it increases the endogenous synthesis of vitamin B₁₂, vitamin K etc.^[22] Before the *Matra basti*, *Abhyanga* (oil massage)-directly acts on muscles and makes them strong. *Snehana* makes the body soft and removes obstruction from *Srotas* (microchannels).^[23] The root of *Mamsavaha srotas* is *Snayu* (ligaments), *Tvacha* (skin) and *Raktavahini* (blood vessels). Hence, *Abhyanga* is done over *Tvacha* and *Snayu* and also it involves *Raktavahini*. So here, direct benefit is achieved at

Mamsavaha srotas. *Swedana* done after *Snehana* led to removal of toxin from the microchannels. *Abhyanga* nourishes deeper *Dhatus* too. While *Swedana* (fomentation) is *Srotoshuddhikara* (clears up the micro channels), *Agni deepaka*, *Kaphavata nirodhana* (antagonist of *Kapha*).^[24]

CONCLUSION

Karshya (undernutrition) is one of the supreme health and nutritional problem in developing countries. Health of the individuals living in a country is one of the basic determinants for the development of that country. The administered drugs showed noteworthy improvement in nutritional status of patient in almost all the parameters of assessment criteria. Statistically highly significant results were noticed in both the groups among the symptoms like *Daurbalya*, *Kshudha*, *Dhamni jala darshan* and *Sthula parva*. Therapy given in group-II where patients were managed with *Ksheer bala taila matra basti* as well as *Karshyaha yoga granules* proved better in management of *Karshya* in comparison to group- I where patients were managed with only *Karshyaha yoga granules*. No untoward effects were observed in the both groups during the entire trial period.

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