

**Case Study****TRIPHALAGUDUCHYADI VATI WITH DIET AND LIFESTYLE MODIFICATION IN THE MANAGEMENT OF CHILDHOOD OBESITY- A CASE REPORT****Vishal Prajapati<sup>1\*</sup>, Sonam Chaudhary<sup>2</sup>, Chuman Lal Bhaskar<sup>2</sup>, Virendra K. Kori<sup>3</sup>, Kalpana. S. Patel<sup>4</sup>**<sup>1</sup>Ph.D. Scholar, <sup>2</sup>PG Scholar, <sup>3</sup>Associate Professor, <sup>4</sup>Professor and Head, Department of Kaumarbhritya, IPGT & RA, Jamnagar, Gujarat, India.**KEYWORDS:** *Sthaulya*, Childhood Obesity, Ayurveda, *Triphalaguduchyadi Vati*.**ABSTRACT**

Childhood Obesity (*Sthaulya*) is one of the major non communicable diseases of the modern era, increasing in prevalence. Diet (*Ahara*) and life-style (*Vihara*) play significant role both in the development and control of obesity *Sthaulya* (obesity). As per Ayurveda texts, over consumption of energy dense foods along with sedentary lifestyle hampers the functioning of *Medodhatvagni* results in decrease fat metabolism hence causes obesity. So *Triphalaguduchyadi Vati* was chosen to break the etiopathogenesis of *Sthaulya* and to enhance the fat metabolism. A 16 year old, 11<sup>th</sup> standard, Hindu male child visited with parents to KB OPD, IPGTRA, Gujarat Ayurved University, Jamnagar, having chief complaint of progressive weight gain since 6-7 years. *Triphalaguduchyadi Vati* was intervened in appropriate dose for 8 weeks along with modified diet and lifestyle. Physical and laboratory assessments were done before and after the intervention. After 8 weeks of drug intervention, there was marked relief in symptoms, also there was significant decrease in physical and laboratory parameters. After reviewing, this case study it can be concluded that *Triphalaguduchyadi Vati* with modified diet and lifestyle is effective treatment regimen for *Sthaulya* in children.

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**INTRODUCTION**

Obesity is a leading preventable cause of death worldwide, with increasing prevalence in adults and children, and it is one of the most serious public health problems of the 21st century.<sup>[1]</sup> Due to the unrestricted access to energy-dense foods at various platforms like school canteen and school neighbourhood combined with low knowledge about dietary components in school children hence there is often increased caloric intake per body weight per day. Excessive body weight is associated with various diseases particularly cardiovascular diseases, type 2, diabetes mellitus, obstructive sleep apnea, certain types of cancer and osteoarthritis.<sup>[2]</sup> Guidelines for obesity and overweight based on body mass indices (BMI) for Asian Indians were revised based on the consensus developed through discussions by Prevention and Management of Obesity and Metabolic Syndrome group.<sup>[3]</sup> The

revised guidelines categorize overweight as a BMI of 23.0-24.9.<sup>[4]</sup> And obesity as a BMI $\geq$ 25 using values lower than the ethnic-specific BMI previously advocated for Asian Indians.<sup>[3]</sup>

Rapidly changing dietary practices and a sedentary lifestyle have led to increasing prevalence of childhood obesity (5-19 yr) in developing countries i.e., 22% in India.<sup>[5]</sup> The incidence of obesity has been felt most dramatically in urban areas and gradually acquires its place in semi-urban and rural areas. Childhood obesity can harm seriously children's health<sup>[6]</sup> and it is a potential cause for some social and psychological problems.<sup>[7]</sup> It could also generate high direct or indirect economic burden for the family.<sup>[8]</sup> Behaviour intervention, medication and surgery are the common treatments approaches for childhood obesity.<sup>[9]</sup> As modern medicine is showing its own

limitations due to adverse drug effects and lacking in proper management of obesity, medical world is looking for the best alternative treatment options like Ayurveda and Yoga.

In Ayurveda, *Sthaulya* has been described by Acharya Charak as one of the eight despicable persons (*Ashtanindita*) in the context of the body.<sup>[10]</sup> The traditional concept of etiopathogenesis, prognosis, and management of obesity is very similar and equally advanced to the *Medoroga/Sthaulya roga* of Ayurveda, which was apprehended by Acharya Charaka. Sushruta has explained the etiopathogenesis based on an endogenous entity due to *Dhatvagni Mandya*.<sup>[11]</sup> Overweight or obesity is mostly found in people with predominantly *Kapha*-type constitutions. The Ayurveda principle is the perfect answer to overweight because Ayurveda does not recommend any weight loss pills or fast weight loss programs. Bio-purificatory and pacificatory measures are important tools of Ayurveda therapeutics. Instead of this, it promotes dietary restriction, moderate exercise, the practice of *Yogasanas* and *Pranayama* and certain effective Ayurveda formulations in the management of this disease without harmful side effects. *Triphala guduchyadi Vati* is an Ayurvedic polyherbal preparation comprising of *Haritaki* (*Terminalia chebula* Retz.), *Bibhitaki* (*Terminalia bellirica* Roxb.), *Amalaki* (*Emblica officinalis* Gaertn.), *Musta* (*Cyperus rotundus* Linn.), and *Guduchi* (*Tinospora cordifolia* Thunb.)<sup>[12]</sup> This polyherbal formulation with *Kapha-Vatahara* and *Medohara* property improve fat metabolism in an obese individual and thus helps in maintaining the weight.

#### Basic information of the patient

OPD Registration no. PG18087757; Age: 16 years; Sex: Male; Religion: Hindu; Socioeconomic status: Upper middle class. Father has studied 12<sup>th</sup> standard and currently doing business, Mother has studied 12<sup>th</sup> standard, and she is house wife.

#### Pradhanavedanavishesa (Chief complaints)

As per parents child was having below complaints since 6-7 years:

Progressive increase in body weight (*Bhara Vridhi*)

Increased appetite (*Atikshudha*)

Exertional dyspnoea (*Ayasena Swasa*)

Heaviness of the body (*Anga Gaurav*)

Excessive Sweating (*Swedadhikya*)

Bad body odour (*Gatra Daurgandhya*)

Excessive sleeping habit (*Atinidra*)

Lack of enthusiasm (*Utsaha hani*)

#### Vartamanavyadhivritta (History of present illness)

As per parents, child was normal weight before 6-7 years after that he suddenly started gaining weight along with above symptoms gradually. He had not taken any treatment for the above complaints. His parents visited to the OPD enquiring Ayurvedic solutions for his condition. Ayurvedic treatment was started on 11/12/2018 after taking parent's consent and child's assent. He used to take 1-2 extra meal to fulfil his satiety level.

#### Purvavyadhivritta (History of past illness)

There was no past history of psychological or endocrinal illness or any history of long term medication.

#### Chikitsa Vrittanta (Treatment history)

Patient had not consulted to any physician before Ayurvedic management.

#### Kulaja Vrittanta (Family history)

Patient had positive family history both his parents and elder brother were obese. No consanguinity found.

#### Birth history

**Antenatal:** Mother had excess weight gain during pregnancy. **Natal:** Full term LSCS (due to Previous C- section) was done. Cry soon after birth with weight 3.5kg.

**Postnatal history:** No any postnatal complications.

**Viruddhabhisamskrati (History of immunization):** Proper for age

**Vaiyaktika Vrittanta (Personal history)**

#### Aharaaja (Dietary Pattern)

As per Dietary history, child had history of skipping morning breakfast followed by over eating in the lunch time with fried and junk foods. He used to take high calorie diet i.e., cold drinks, Pizza, Burgers with cheese etc. His diet was dominant in *Madhura rasa* (sweet diet).

#### Viharaja (Life Style)

Sleep was more than required (>12 hrs), Day sleeping, Taking meal while watching TV, Irregular outdoor play, doing work unsatisfactorily under mental pressure and takes time (*Alasya/Utsahahani*).

#### Examination

Patient was afebrile. Pulse was 84/min, Respiratory Rate was 20/min and Blood Pressure was 130/80mmHg. No abnormality was noticed in the functioning of Respiratory, Circulatory or Digestive system.

**Anthropometric Measurements**

Weight- 98.90kg; Height- 169cms; BMI- 34.6kg/m<sup>2</sup> 1. (> 95<sup>th</sup> percentile of CDC growth chart 2006); Waist hip ratio- 0.88; Chest circumference- 103cms.

**Astavidhpariksha**

*Nadi* (pulse)- 84/min.; *Mala* (Bowel Pattern) occasional constipation; *Mutra* (Urine)- Regular; 3. *Jihva* (Tongue)- *Sama* (coated suggestive of improper digestion); *Shabda* (speech)- *Guru swara Sparsha* (touch)-*Snigdhangā*; *Drika* (eyes)- Normal; *Akriti* (appearance) – *Sthula* (Obese).

**Sroto Pareeksha (Examination of body channels)**

*Rasavaha*- *Tandra*, *Ayathakala Palita*; *Raktavaha*-*Vyanga* (*Acanthosis nigricans*) *Medo Vaha*- *Pipasa*, *Alasya*, *Vishrasharirgandha*, *Sarvakala Tandra*-*Nidra*, *Swedavaha*- *Atiswedanam Srotodushti*.

**Investigations**

Hb%, TLC, RBC, FBS, Lipid profile, APO-B were done before and after the treatment. TSH, Stool-Urine routine and microscopic were done before therapeutic intervention.

**Differential Diagnosis****Exogenous (due to faulty diet and lifestyle):**

Patient had history of frequent consumption of high calorie diet, day sleeping, No/Less physical activity.

2. **Endogenous** (Endocrinal disorders like Hypothyroidism)- TSH-1.6mU/L (Normal).

**Psychological Disorders**- Child was a class 5 student and had normal IQ level, No history of any psychological disorders.

**Diagnosis**

As per above history, BMI, anthropometric and laboratory parameters child was diagnosed as grade 2 obesity due to exogenous causes i.e. faulty diet and lifestyle.

**Management****Therapeutic intervention**

*Triphalaguduchyadi Vati* was prepared by taking mentioned ingredients in proposed proportions in the Pharmacy, IPGT & RA, Gujarat Ayurved University, Jamnagar, Gujarat. (Table 1)

**Table 1: Composition of Triphalguduchyadi Vati**

Sr. No.	Ingredient <sup>[12]</sup>	Botanical /English Name	Part Used	Ratio
1.	<i>Haritaki</i>	<i>Terminalia chebula</i> Retz.	Dried Fruit	1 parts
2.	<i>Bibhitaki</i>	<i>Terminalia bellirica</i> Roxb.	Dried Fruit	1 parts
3.	<i>Amalaki</i>	<i>Emblica officinalis</i> Gaertn.	Dried Fruit	1 parts
4.	<i>Musta</i>	<i>Cyperus rotundus</i> Linn.	Dried Rhizome	1 parts
5.	<i>Guduchi</i>	<i>Tinospora cordifolia</i> Thunb.	Dried Stem	1 parts

**Posology of Triphalaguduchyadi Vati**

Dose\*: 5.5gm (11 *Vati*); Route of Administration: Oral; Time of Administration: *Pragbhakta* (Before meal) in three divided doses; *Anupana*: *Usnodaka* (Luke warm water); Duration: 8 weeks with weekly follow up.

\*Dose was calculated as per age on the basis of *Sharangdhars* rule. <sup>[13]</sup>

Child dose =  $\frac{\text{Adult dose} \times \text{Age of Child (in years)}}{16}$  Adult dose of *Churna* = 6gm (API)

16

Physical Assessments were done every week for 8 weeks. During weekly follow up daily food pattern and physical activity were noted by 24hr. recall method. *Charaka* has mentioned a special type of diet, which are *Guru* and *Apatarpana*. It acts in two ways. One is the neutralization of *Vayu* and *Agni* by heaviness of the food, another is non- nourishment of the *Medas* rather it prevents the further formation of fat. So, patient was advised to strictly follow the modified diet and lifestyle along with medication. (Table 2)

**Table 2: Modified Diet & Lifestyle** <sup>[14,15,16]</sup>

<b>Pathya- Apathya Aahara</b>		
Diet component	To be Followed	To be Avoided
<i>Shooka dhanya</i> (Cereal grain)	Barley, Millets, 1 yr. Old rice, Corse wheat flour	Fine powder of Wheat, Refined wheat flour, Rice
<i>Shami Dhanya</i> (Pulses)	Green gram, Bengal gram, Red gram, Horse gram	Black gram
<i>Shaak Varga</i> (Vegetables)	Leafy vegetables, Brinjal, Drum Sticks, Bottle gourd Bitter gourd, Raddish, Carrot, Cucumber, Ridge gourd, Cabbage, Ginger etc .	Potato, Sweet potato, Beet root

Fruits	Orange, Papaya, Apple, Gvava, Pomegranate, Watermelon etc.	Banana, Mango, Dry fruits etc.
<i>Drava-Dravya</i> (Liquids)	Cow Milk, Buttermilk, Honey, Lukewarm Water, Sesame Oil, Mustard Oil, Ginger Water, Coconut water	Cold water/ cold drinks, Milk products, Sugarcane products like refined sugar etc.
<i>Mamsa</i> (Non-veg.)	--	Egg, Chicken, Mutton, Pork, etc.
Others	--	Maggi, Pasta, Breads, Cakes, Cookies, Pastries, Chocolates, Cheese, Ice cream, Yogurt, Packaged foods, Processed food and Restaurant fried foods - Pizza, Burger, French fries etc.
<b><i>Pathya- Apathya Vihara</i></b>		
<b>To be Followed</b>		<b>To be Avoided</b>
Daily physical exercise for minimum ½-1 hour like <i>Suryanamaskar</i> , brisk walking, cycling, skipping, swimming, playing outdoor games etc. Drink Luke warm water before meal Take a walk after meal Drink a glass of Luke warm water after waking up in the morning.		<i>Avyayama</i> (No/Less exercise) <i>Divasvapna</i> (Day sleep)/ Excessive sleeping Sitting in one position and on foam seat for long duration Avoid watching T.V. while eating Excess food intake Bath with cold water) Screen time <2-3 hours

**Assessment Criteria**

Improvement was assessed on the basis of percentage relief observed in the presenting complaints. Following grading criterion being followed in the institute was adopted to assess the effectiveness of the therapy. (Table 3)<sup>[17]</sup>

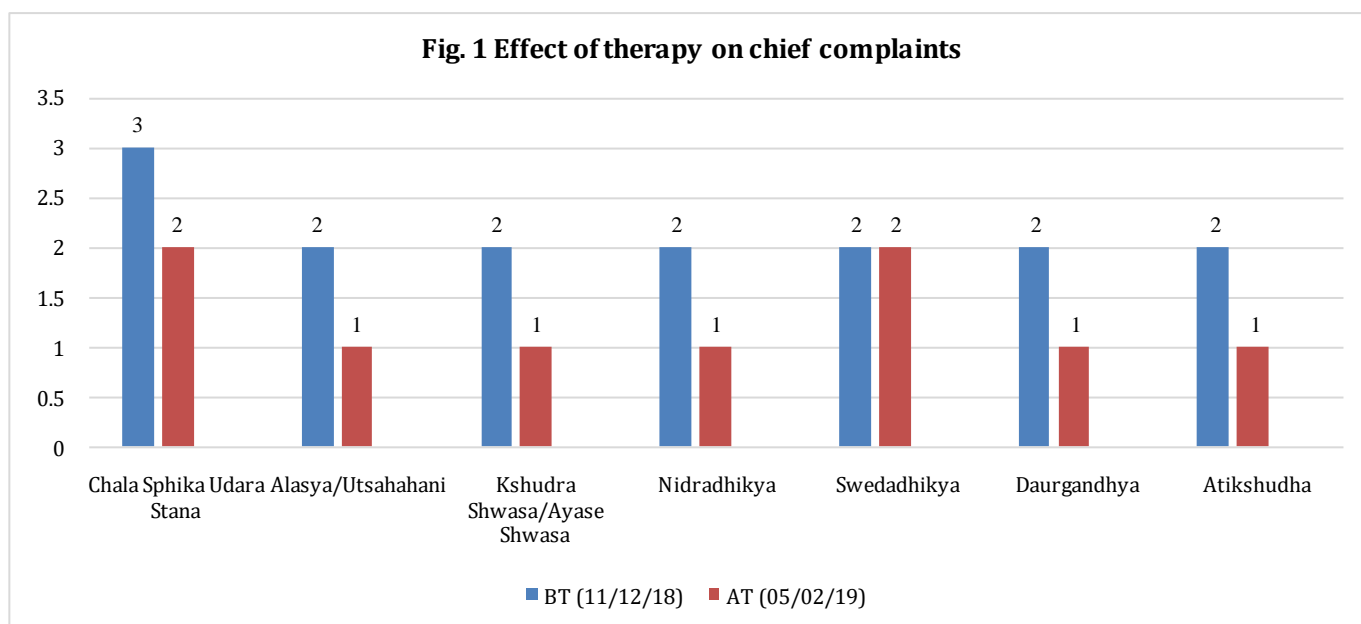
**Table 3: Grading Criteria**

Sr. No.	Parameters	Grade
1	<b><i>Chala Sphika Udara Stana</i> (Visible Movement In Hip-Abdomen-Breast)</b>	
	Absence of visible movements (in the areas) with fast movement	0
	Little visible movement (in the areas) after rapid movement like running and skipping	1
	Visible movement (in the areas) with brisk walking (133 steps/ min.)	2
	Movement (in the areas) even after slow walking (75 steps/min.)	3
	Movement (in the areas) even after changing posture	4
2	<b><i>Alasya/ Utsahahani</i> (Laziness/ Lack of Enthusiasm)</b>	
	No <i>Alasya</i> or Lack of Enthusiasm (doing work satisfactorily with proper vigor in time)	0
	Doing work satisfactorily with late initiation	1
	Doing work unsatisfactorily under mental pressure and takes time	2
	Not starting any work on his own responsibility and doing little work very slowly	3
	Does not take any initiation and does not want to work even after pressure	4
3	<b><i>Kshudra Shwasa/Ayase Shwasa</i> (Dyspnoea on Exertion)</b>	
	No Dyspnoea even after heavy work	0
	Dyspnoea after moderate work but relieved later and tolerable; dyspnoea By climbing upstairs of 10 steps and time taken will be more than 15 sec.	1
	Dyspnoea after little work but relieved later and tolerable; dyspnoea by climbing upstairs of 10 steps and time taken will be more than 25 sec.	2



	Dyspnoea after little work but relieved later and not tolerable; dyspnoea by climbing upstairs of 10 steps and time taken will be more than 35 sec.	3
	Dyspnoea in resting condition	4
4	<b>Nidradhikya (Excess sleep)</b>	
	Normal and sound sleep for 6 – 8 hrs/24 hrs. with feeling of lightness and relaxation in the body and mind	0
	Sleep >8 -9 hrs/24 hrs. With slight heaviness in the body.	1
	Sleep >8 -9 hrs/24 hrs. With heaviness in the body.	2
	Sleep >10 hrs/24 hrs. With heaviness in the body associated with <i>Jrimbha</i> and <i>Tandra</i> .	3
5	<b>Swedadhikya (Excess Sweating)</b>	
	Sweating after heavy work and fast movement or in very hot weather.	0
	Profuse sweating after moderate physical work / play activities	1
	Sweating after brisk walking for 1 minute (133 steps).	2
	Profuse sweating after slow walking for 1 minute.	3
	Sweating even at rest or by mild activities in cold weather.	4
6	<b>Atikshudha (Excess Hunger)</b>	
	As usual / routine	0
	Slightly increased (1 meal extra with routine diet).	1
	Moderately increased (2 meals extra with routine diet).	2
	Markedly increased (3 meals extra with routine diet).	3
7	<b>Daurgandhya (Body Odour)</b>	
	No odour.	0
	Bad odour but not offensive.	1
	Strong odour but can be lessened by use of deodorants or perfumes.	2
	Very strong odour even after using fragrances (use of deodorants or perfumes).	3

Fig. 1 Effect of therapy on chief complaints



**Table 4: Effect of therapy on Anthropometric measurements**

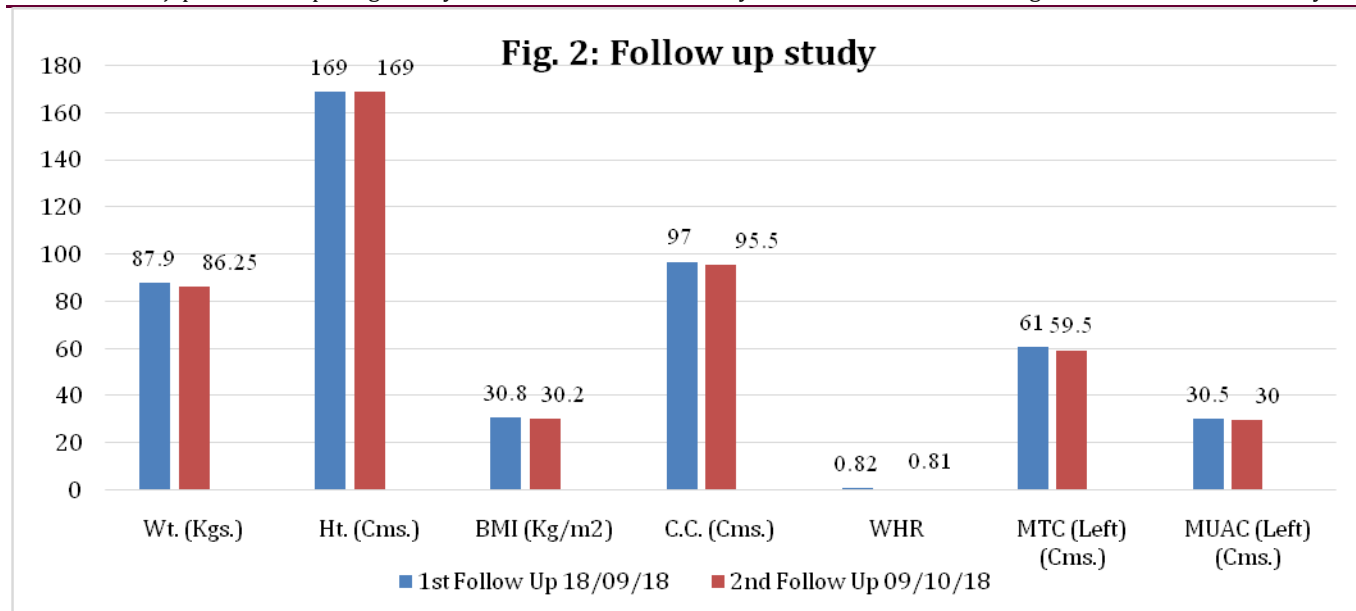
Measurements	Before treatment (11/12/18)	After treatment (05/02/19)	Percentage of improvement
Weight (Kgs.)	98.90	88.65	10%
Height (Cms.)	169.0	169.0	0%
BMI (Kg/m <sup>2</sup> )	34.6	31.1	10%
Chest Circumference (Cms.)	103.0	98.0	5%
Waist/ Hip Ratio	0.88	0.87	1.13%
Mid-Upper Arm Circumference (Cms.)			
Right	35.0	32.0	9%
Left	34.5	32.0	7%
Mid-Thigh Circumference (Cms.)			
Right	66.0	60.0	9%
Left	65.0	60.5	8.5%
Skin Fold Thickness (mm.)			
Biceps- Left	18.1	13.1	28%
Biceps- Right	18.4	13.0	29%
Triceps- Left	30.2	22.1	27%
Triceps- Right	30.4	22.6	26%

(BMI- Body mass index)

**Table 5: Effect of therapy on Laboratory Parameters**

Parameters	Before treatment (08/12/18)	After treatment (06/02/19)	Percentage of improvement
Hb%	15.0	16.5	10%
RBC	5.16	5.75	5%
WBC	7600	9000	-18%
FBS	92	85	8%
S. Cholesterol	114	115	-1%
S. Triglycerides	53	65	-23%
S. HDL	41	43	5%
S. LDL	62	59	5%
S. VLDL	11	13	-18%
APO-B	60	49	18%

(Hb- Hemoglobin, RBC- Red blood counts, WBC- White blood counts, FBS- Fasting blood sugar, HDL- High density lipoproteins, LDL- Low density lipoproteins, VLDL- Very low density lipoproteins, APO-B- Apolipoprotein- B)



## DISCUSSION

Over indulgence in *Kapha* and *Meda Sadharmi Amarasa* containing etiological factors leads to *Kapha Bhuishttha Dosha vrudhi* in the body, which due to its nature, produces *Agni vikruti* causing the production of *Ama*. This *Ama* goes directly to *Meda Dhatu* and lead to increase and accumulation of *Meda* by creating *Medodhatwagni-mandya*. Vitiated *Kapha* and *Meda* causes *Medovaha Sroto Sanga*, leading to *Margavrodha* of *Vata*. This vitiated *Vata* circulates in whole body especially in the *Koshta*, later on causing *Jathragni Sandhukshana* which results in *Kshudhaadhikya* and *Shighra Jarana* of *Ahara*. *Medodhatwagni Mandhya* takes place due to which the capacity to digest *Medamasa* by the *Medodhatwagni* is hampered, leading to the formation of *Apakwa Meda* which is incapable of nourishing the *Utter Dhatu*. The *Ama Meda* gets accumulated in *Sarvanga* especially in the *Sphig-Udar-Stana* regions resulting in *Sthaulya*.<sup>[18]</sup> As per the *Rasapanchaka* of the ingredients of the *Triphalaguduchyadi Vati* the drugs like *Haritaki*, *Bibhitaki*, *Amalaki*, *Musta* and *Guduchi* mostly have *Tikta-Katu Rasa*, *Ruksha-Laghu Guna*, *Ushna Veerya*, *Katu/Madhur Vipaka* hence they together have *Kapha-Medhohara* properties along with *Lekhaniya* and *Dipaneeya* action.<sup>[19]</sup> *Tikshna Guna* acts on *Srotas* (channels) immediately and pierces the smallest cells of the vessels and removes the obstruction caused by lipids.<sup>[20]</sup> These *Gunas* also activate the *Jatharagni* and *Dhatvagni* and maintain their status.<sup>[21]</sup> *Tikta*, *Katu Rasa*, *Laghu*, *Ushana* properties present in trial drug are very useful for *Ama Pachana*, so by means of these properties digestion of *Ama*, restoration of *Agni (Deepana)* at the *Dhatu* level, removal of excessive *Kledaka Kapha* takes place. *Tikta* and *Katu Rasa* are also *Kleda* and

*Meda Nashaka*.<sup>[22,23]</sup> *Tikta* and *Kashaya Rasas* have *Lekhana Guna* that scraps out excessive *Kapha* and *Meda* from *Srotas*. In addition to *Lekhana*, *Kashaya Rasa* also has the property of *Shoshana*<sup>[24,25]</sup> which absorbs the excessive fluids and lipid substances caused by hypercholesterolemia. *Laghu Guna* acts as *Kaphahara*, reduces the tissue weights (*Langhana*)<sup>[26]</sup> and clears the channels of the body (*Srotoshodhana*). All *Dravyas* are *Ushna* in *Virya*, which oppose any increment of *Kapha* and *Medas* by the *Vilayan* property.<sup>[27]</sup>

As per fig. 1, after 8 weeks of intervention of *Triphalguduchyadi Vati*, 50% improvements were seen in *Alasya/Utsahahani*, *Khsudra Shwasa/Ayasen shwas*, *Nidradhikya*, *Daurgandhya* and *Atikshudha* whereas 33% improvement in *Chalashika-Udara-Stana* and no improvement in *Swedadhikya*. As per table no. 4, after 8 weeks of intervention, there was 10% reduction in both Weight and BMI, 5% and 1.13% improvement in chest circumference and waist hip ratio respectively. Other anthropometric measurements had also shown marked reduction. As per table no. 5, it was noted that there was significant improvement in laboratory parameters like 10 % improvement in Hb%, 5% in RBC, S. HDL & S. LDL, 8 % in FBS, whereas 18% improvement in APO-B. There were insignificant increase in S. cholesterol, S. Triglycerides, S. VLDL but that were within normal limits. The study without intervention of *Triphalguduchyadi Vati* had shown that there was further decrease in anthropometric parameters by following just modified diet and lifestyle (Fig. 2).

## CONCLUSION

In present case study, significant reduction in Weight, BMI and WHR was seen. The

*Triphalguduchyadi Vati* along with modified diet and lifestyle is effective for weight reduction. Hence, it can be concluded that this Polyherbal drug is effective regimen for weight loss in children. But its further efficacy has to be proved on large sample size.

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