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Role of diet and lifestyle modification in Hypertension: A complication of Childhood Obesity

Pooja Bhat¹, Nagaratna SJ², Prithviraj Puranik³, Sharashchandra⁴, Chithralekha⁵, Kavya⁶

¹Post Graduate Scholar, Department of PG Studies in Kaumarabhrithya, Sri Dharmasthala Manjunatheshwara College of Ayurveda, Udupi, Karnataka, India.

²Associate Professor, ³Professor and HOD, ⁴Associate Professor, ⁵Assistant Professor, ⁶Assistant Professor, Department of PG Studies in Kaumarabhrithya, Sri Dharmasthala Manjunatheshwara College of Ayurveda, Udupi, Karnataka, India.

ABSTRACT

The incidence of Childhood Obesity has increased rapidly in the last decade. National survey from 1960-1990 the prevalence has grown from 5%-11%. Physical inactivity, change in dietary habits are the most important cause for obesity. This leads to the various other complications such as dyslipidaemia, hypertension, abnormal glucose tolerance and reduced health-related quality of life in paediatric age group. Among the varied complications of obesity, hypertension stands first with the proportion of 24.1%. Ayurveda describes *Stoulya* as a disease which resembles the symptoms like obesity. Both obesity and hypertension can be considered under the broad spectrum of *Rasavahasroto Dusti*. The first line of antihypertensive management is weight loss in case of hypertension related with obesity among children. *Chikitsa* in Ayurveda is broadly categorized as *Nidana Parivarjana*, *Shodhana* and *Shamana* among the three, *Nidana Parivarjana* plays a very important role in managing obesity and its complication right from the beginning. *Nidanaparivarjana* includes avoidance of *Apathya* related to *Ahara-Vihara-Manansika Bhavas* and following *Pathyas* among these factors. The detailed view regarding this is elaborated in this research paper.

Key words: *Stoulya*, *Childhood obesity*, *Hypertension*, *diet*, *life style*.

INTRODUCTION

Obesity in children has increased dramatically in the recent decades. WHO defines childhood obesity as one of the most serious health challenge of the 21st century due to its rapid increasing prevalence and tracking seen till adulthood.^[1] The prevalence of obesity in child grew from 5% to 11%, in National surveys

from 1960-1990.

There is a parallel rise in the condition like dyslipidaemia, hypertension, abnormal glucose tolerance and reduced health-related quality of life in the paediatric age group which is attributed to increasing prevalence of obesity in the population. The COVID-19 pandemic has significantly interrupted children daily routine. Online education lacks recess time, normal activities of school aged child, physical education contributing to obesity in children. India is fighting a dual problem on one hand malnutrition is still widely prevalence on the other hand Childhood obesity is becoming frequent in urban location particularly among children of higher socioeconomic status.

Stoulya is described as *Rasapradoshaja Vikara* and *Medapradoshaja Vikara*. Charaka Samhitha describes it as *Jataragnijanya Vikara* while commentators of Susrutha Samhitha opines it to be *Dhathvagnijanya Vikara*. Both these pathologies have to be considered in order to holistically understand *Stoulya*.

Address for correspondence:

Dr. Pooja Bhat

Post Graduate Scholar, Department of PG Studies in Kaumarabhrithya, Sri Dharmasthala Manjunatheshwara College of Ayurveda, Udupi, Karnataka, India.

E-mail: pooja.h.bhat@gmail.com

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AIM

Dietary approach towards Hypertension, a childhood obesity complication

OBJECTIVES

1. Understanding the childhood obesity & its complication in both modern & ayurveda
2. Understanding the Role of diet and lifestyle modifications in treating childhood obesity & hypertension.

MATERIALS AND METHODS

Literary review of obesity and hypertension and its *Patyapatya* from classical treatises like *Charaka Samhitha*, *Susrutha Samhitha*, *Astanga Hridayam* along with its modern correlations from the relevant text books.

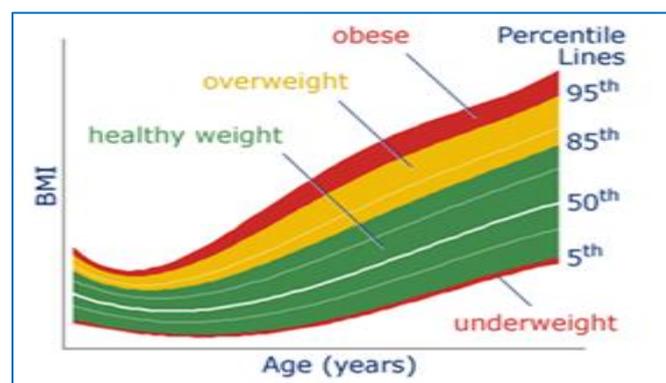
DISCUSSION

Obesity is excess accumulation of body fat. Obesity is classified into 2 types,^[2]

Primary: it is the most common type of obesity in children. Its cause is primarily nutrition and it result from an imbalance between energy intake and energy expenditure.

Secondary: These are uncommon cause of obesity they are- genetic, endocrine, hypothalamic, drugs and environmental triggers.

The root of obesity in adulthood is enrooted in childhood itself. Childhood obesity predisposes an individual to number of secondary complications in later period of life. Childhood obesity leads to higher chances of premature death and disability in childhood.



Parameter to assess obesity are^[3]

- Body mass index: gold standard – children with the BMI more than 95th percentile for age is obese.
- Weight for height: Weight for height more than 120% is diagnosed as obesity.
- Skin fold thickness: Age specific percentile cut-offs should be used with values more than 85 percentile being abnormal.
- Waist circumference: This is marker of abdominal adiposity, a key risk factor for metabolic and cardiovascular effect of obesity.

Hypertension as complication

The 'fast food and cola culture of the west', which has suddenly crept wide and wild into our society is the factor which may result in obesity and its complications. 2 types of complication of obesity in childhood and adolescence can be seen. They are

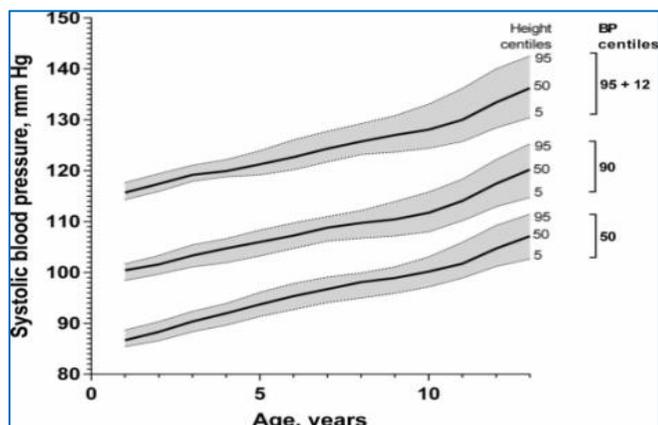
- Those manifested during childhood and adolescence
- Those whose risk of occurrence during adulthood is increased

Among the complications of childhood obesity, proportion of Hypertension is 24.1%, obese children are at 3-fold higher risk for hypertension. Patient with severe cases of childhood hypertension is also at a risk of developing hypertensive encephalopathy, seizure, cardiovascular accident and congestive heart failure in future. Based on these observations, prevention or early detection of and intervention of hypertension are potentially beneficial in preventing the complications of hypertension.

In the present scenario of pandemic because of change in diet, sleep, lifestyle pattern, reduced physical activity, lack of exercise has resulted in increased prevalence of childhood obesity. And may end up in complications.

Childhood hypertension is defined as "average systolic blood pressure and/or diastolic blood pressure that is greater than or equal to 95th percentile for sex, age and height on three or more occasion".^[4]

This chart shows normal blood pressure as per age



Stoulya

According to Charaka

A person due to excessive accumulation of *Meda* and *Mamsa* in the body presents with sagging butt, abdomen and breast, the *Meda* and *Mamsa* are nourished and formed normally and energy levels also below normal.^[5]

According to Susrutha

Kaphavardhaka Ahara, Adhyasana, Avyayama, Diwaswapna and other practices leads to the production formation of *Ama Rasa* or *Apachitha Adhya Rasa Dhathu*, this *Ama Rasa* moves throughout the body leads to *Stoulya*.^[6]

Stoulya Nidana

The *Nidana* of the disease is mentioned in table 1.

Table 1: Nidanas of Stoulya

Aharaja	Viharaja	Manasika	Other
<i>Ati Guru Ahara Sevana</i> (Food which is heavy to digest)	<i>Avyayama</i> (Lack of exercise)	<i>Achinthya</i> (Lack of thinking)	<i>Beeja Swabhava ja</i> (Genetic predisposition)
<i>Madhura Ati-Sevana</i> (Carbohydrate rich food consumption)	<i>Avyavaya</i> (Abstinence)	<i>Nithya Harsha</i> (Exhilaration)	

<i>Ati Sgnigdhahara, Sheethahara Sevana</i> (Excess unctuous and cold food items)	<i>Diwasapna</i> (Day sleep)		
<i>Shleshma Bahula and Picchilahara Sevana</i> (Food slimy property)			
<i>Adhyashana</i> (Repeated eating)			
<i>Navanna Sevana</i> (Fresh crop)			
<i>Anupa Mamsa Sevana</i> (Meat of the animals residing in marshy land)			

Lakshana of Stoulya according to Charaka

Ayushohahrassa (decreased lifespan), *Javoparodha* (retarded movement), *Krichravayava* (difficulty in sexual act), *Dourbalya* (general debility), *Dourgandya* (bad odour of the body), *Swedhabada* (excess sweating), *Atimatra Ksuth* (excessive hunger), *Pipasatiyoga* (excessive thirst).^[7]

Samprapthi of Stoulya

According to Charaka, due to *Nidana Sevana* with predominantly *Kapha* and *Medakara* in nature leads to *Margavarana* in *Medovaha Srotas* causing *Srotorodha*. Due to this *Vayu* starts churning inside the *Kosta* leading to *Jataragni Deepana* and *Sheegra Jarana* of *Ahara*, which interns leading to craving for more food. This ends up in person becoming *Stoulya*. Increased *Jataragni* causes hunger and person consumes more

food and the cycle repeats. The increased *Agni* and *Vayu* together causes various *Upadrava* to the person.

Samprapthi of Dhamanipratichaya

Dhamanipratichaya is one among *Kaphaja Nanathmaja Vikara*, also is an outcome of consumption of *Abhishyandhi Gunayuktha Aharas* as mentioned in *Charaka Sutrastana* 26th chapter and leads to *Siragranthi* (variations in blood vessel) this *Dhamanipratichaya* could be discussed under atherosclerosis or as cause for raised blood pressure resulting due to variations in circulation leading to increased blood pressure. The initial pathology in both *Stoulya* and *Dhamanipratichaya* is same and *Dhamanipratichaya* can be correlated to hypertension thus *Stoulya Samprapthi* is very much similar to pathology of hypertension. The same has been depicted in table 2.

Table 2

<i>Nidana</i> ↓	<i>Nidana</i> ↓
<i>Agnimandya</i> ↓	<i>Kapha Prakopa</i> ↓
<i>Sama Annarasa Utpatti</i> ↓	<i>Abadda Medas</i> (Hyperlipideamia) ↓
Vitiated <i>Rasa Dhatu</i> Formation ↓	Atherosclerosis ↓
Obstructs <i>Medovaha Srotas</i> + <i>Medodhatvagi Mandya</i> ↓	Increased Peripheral Resistance ↓
Increase In <i>Medo Dhatu</i> ↓	Hypertension

<i>Stoulya</i> ↓	
<i>Aruchi, Tama,</i> <i>Asyavairasya,</i> <i>Agninasha, Sada</i>	

Management of hypertension in childhood obesity

The treatment of hypertension in children and adolescence has 2 components, under which weight reduction, increased physical activity and dietary interventions are the major therapeutic lifestyle intervention.

Role of diet

Food is an important part of social life. The diet should not be defined as to prevent the enjoying normal meal or so strict as to preclude treats. Only improved insight, dietary habit and exercise will sustain the optimal weight, there are few diet plans are explained they are:^[8]

- The Atkins diets: High protein, low carbohydrate diet. Eg- meat, cheese
- Formula diet: This is a balanced eating form
- Low fat diet: The diet of around 800 kcal/day Eg- fish, poultry, lean meat
- Low calorie diet: Energy restricted diet in the range of 800-1200 kcal/day
- High dietary fibre diet: Fibre supplementation in the range of 1200-1600 kcal/day.

These dietary strategies can effectively reduce the weight but these are having some drawbacks like Rampant advertisement for western cuisine, high affinity towards junk food, increase in takeout's/dine-in in the urban population. Preference over palatability rather than nutrition

Role of Pathya Apathya as per Ayurveda

In Ayurveda, *Agnidusti* is considered as main causative factor in almost all the diseases and correction of this *Agni* is the main Moto of treatment. *Ahara* is

considered as “Mahabhaishajya”, and usage of Ahara in proper manner will bring back the Agni to normalcy and is considered as Amritha.

For the reduction of weight one can follow the Stoulya line of treatment mentioned in our classics. Management of Stoulya (obesity) in Ayurveda can be divided into 3 steps: *Nidana Parivarjan*, *Shodhana* and *Shamana*. Out of this prevention of development of childhood obesity can be done by *Nidana Parivarjana*, not only in children but also in adult it is used as primary prevention. *Nidana Parivarjana* includes avoiding the factors responsible for the obesity; it includes *Ahara*, *Vihara*, *Manasa Pathya*. Even though *Shamana* and *Shodhana* therapies are effective in treating *Stoulya Nidana Parivarjana* stands first as it can be used as both preventive and curative line of management

Acharya Charaka in the *Matrashiteeya Adhyaya* explains *Nityasevaneeya Aharadravyas* they are: *Shashtika*, *Shali*, *Mudga*, *Saindhava*, *Amalaka*, *Yava*, *Antarikshajala*, *Sarpi*, *Jangala Mamsa*, *Madhu*.

Aharaja Pathya in Stoulya^[9,10]

- *Shuka Dhanya* (cereals): *Yava* (Barley), *Uddalaka*, *Shyamaka*

Kaphavikarhara due to its *Ruksha*, *Laghu Guna*, *Kashaya Rasa* and *Vata Dosha* aggravating properties, as a result helpful in *Medoroga*.^[11]

- *Shami Dhanya* (Pulses): *Kulatta* (Horse gram), *Mudga* (Green gram).

Ushnaveerya, *Kashaya Rasa* and *Amla Vipaka*. With its *Kashaya Rasa* and *Ushnaveerya*. *Kulatta* has *Kapha-Medohara* properties.^[12]

- *Phala Varga* (Fruits): *Triphala* (*Amalaki*, *Haritaki*, *Vibhitaki*), *Bilwa*, *Jambu*.

Ruksha, *Agnideepaka* and *Kaphanashaka*,^[13] so it is helpful in *Medoroga*.

- *Taila Varga* (Oil): *Tila Taila*

Tila Taila is beneficial in *Medoroga* by virtue of its *Madhura Kashaya Rasa* and *Ushnaveerya* properties.^[14]

- *Gorasa Varga: Takra*

Takra is digestive, stimulant, *Agnivardhaka* and recommended in *Medoroga*.^[15]

- *Madya Varga: Arista*

Although *Sura* is *Amla Rasa* and *Amla Vipaka* but being a *Ushnaveerya*, *Ruksha* and *Tikshana* article it is helpful in the *Medoroga*.^[16]

- *Madhu Varga: Makshika*

Madhu is *Guru* but *Kaphashamaka*.^[17] It is also *Yogavahi* in nature means carries the properties of drugs added to it

- *Jala Varga: Ushnodaka*

Drinking hot water is beneficial in diseases like *Kapha* related disorders, *Aamvata*, decreases fat deposition in the body and cleanses the urinary bladder.^[18]

- *Shaka Varga: Green leafy vegetables*

Generally, all kind of *Shaakas* is *Laghu*, *Ruksha* and *Kaphavatashamaka* so they should be included in Diet.^[19]

Other: *Takrarista*, *Shilajathu + Madhu*, *Shilajatu + Agnimanta*, *Rasanjana*, *Kalaloha Raja + Madhu*, *Guggulu*, *Bilwadi Panchamoola + Kshoudra*.

Action

Administration of *Guru* and *Apatarpana*^[20] articles which possess additional *Vata Shleshmahara* (Alleviating *Vata-Kapha-Meda*) properties is considered as an ideal for *Samshamana* therapy. In *Ashtanga Samgraha*^[21] usage of *Laghu* (Light), *Ushna* (Hot), *Ruksha* (Dry), *Tikshna* (Sharp) articles etc. are suggested for obesity management as they possess *Medonashaka Kaphanashaka* and *Stoulyahara* actions.

Apathya

Guru-Madhura-Snigdha Kaphakara Ahara should be avoided, *Atisampurana*, *Avyayama*.

Role of lifestyle modification

There are 2 main components in the management of obesity which includes increase in physical activity and reduction in sedentary lifestyle. One should encourage

for walking, climbing stairs, swimming, running, and playing outdoor games. To achieve the optimum weight loss Minimum of 30-45 minutes of physical activity should be recommended. Avoid day sleeping, go early to bed. Minimize use of vehicles. Increase the amount of daily routine activity, such as gardening, walking and cycling.^[22]

Viharaja Pathya in Stoulya^[9,10]

- *Langhana*: Removes *Ama* thereby clears *Srotas*.
- *Vyayama*: It is *Kapha- Medahara*
- *Prajagara*: It is *Kaphahara*
- *Avoid Divasapna*: *Divasapna* is *Kaphakara*.

Stoulya is predominantly *Kapha* and *Medhaja Roga* hence all these that removes or mitigates accumulation of *Kapha* and *Medha* would relieve *Stoulya*. *Vyayama*, *Prajagara* acts in this regard. *Langhana* being *Adhya Upakrama* helps in *Samprapthi Vigatana*, where *Stoulya* begins with *Saama Annarasa*, *Langhana* acts at this level. *Divasapna* in spite of being *Kaphakara* in nature shares *Shamana Guna* with *Meda*. Hence avoiding *Divasapna* would prevent both *Kapha Prakopa* and *Medodusti*.

Manasika Pathyapathya

Manasika Pathya

- *Chintha* (Thinking)
- *Shoka* (Grief)
- *Krodha* (Anger)

Manasika Apathya

- *Achintha* (Lack of thinking)
- *Nithya harsha* (continuous joy)
- *Manaso Nivrita Priya Darshana* (The one which is pleasant to mind)

Chintha, *Shoka*, *Krodha* are variants of *Rajodosh*. *Rajas* has its similarity with *Vata* and initiates or provokes the rest, hence increase in *Rajas* would invariably cause *Vata Prakopa* *Manso Nivrita Priyadarshana* are mainly nourishes the individual and

are conducive to *Kapha* and *Meda* hence are should be avoided.

Prevention of childhood obesity

- Assess BMI at least annually, monitor for increase in BMI.
- Review dietary and physical activities along with sleep pattern.
- Encourage children to engage in regular physical activities and decrease in sedentary lifestyle.
- Encourage families to create a healthy eating environment that is responsive to hunger and fullness cues.
- Following *Dinacharya* which includes *Nithyasevaneeya Ahara* and proper *Vyayama* after analysing individual capacity as mentioned in classics of Ayurveda.
- *Manas* is also considered *Adhishtana* for disease and there is always association between physical diseases and mental diseases thus is very important to follow *Pathyapathya* related to *manas* in prevention and treatment of *Stoulya*.

By following these preventive measures childhood obesity can be controlled, which interns controls childhood hypertension.

CONCLUSION

According to Ayurveda obesity involves *Agnidusti* and imbalances among *Dosha* along with impaired *Medodhatu*. Children with hypertension related to obesity the first line of antihypertensive management is weight loss. In general, reducing body weight, healthy diet and increasing physical exercise are routine recommendation for the management of hypertension due to childhood obesity.

REFERENCES

1. Gupta P, Menon PSN, Ramji s, PG Textbook of Paediatrics, 2nd ed. vol 1. Jaypee brother medical publication; 2018. P.809
2. Gupta P, Menon PSN, Ramji s, PG Textbook of Paediatrics, 2nd ed. vol 1. Jaypee brother medical publication; 2018. P.810

3. Paul VK, Bagga A. Ghai Essential Paediatrics. Nutrition. 8th ed. Ch. 6. New Delhi: CBS Publication; 2013. p. 95.
4. National High Blood Pressure Education Program Working Group on High Blood Pressure in Children and Adolescents. The fourth report on the diagnosis, evaluation, and treatment of high blood pressure in children and adolescents. Pediatrics 2004; 114:555–576.
5. Charaka S. In: Shukla AV, Tripathi RD, editors. Charaka Samhita. 1st ed., Vol 1. Varanasi: Chaukhambha Sanskrit Pratishthan; 2010. p.301
6. Shastri A, Ayurved Tattva Sandipika hindi commentary on Susrutasamhita of Maharshi Sushruta, Chaukhambha Orientalia, Varanasi, Sutrasthan, 2016; 15(32): 81.
7. Charaka S. In: Shukla AV, Tripathi RD, editors. Charaka Samhita. 1st ed., Vol 1. Varanasi: Chaukhambha Sanskrit Pratishthan; 2010. p.300.
8. Elizabeth KE, Nutrition & child development, 5th ed. Paras medical publisher; 2015. P.271-73.
9. Charaka S. In: Shukla AV, Tripathi RD, editors. Charaka Samhita. 1st ed., Vol 1. Varanasi: Chaukhambha Sanskrit Pratishthan; 2010. p.301-04
10. Sharma PV, Sushurta Samhita Sutrasthan, Vol 1. Chaukhamba Sanskrita Sansthana, Varanasi, Reprint 2018 page.no.169-70
11. Charak Samhita, Agnivesh, Brahmanand Tripathi, Sutrasthan Chapter 27/19 Edition 1 Chowkhambha Surbharti Prakashan, Varanasi. Volume 1, 2014, p.503
12. Charak Samhita, Agnivesh, Brahmanand Tripathi, Sutrasthan Chapter 27/26 Edition 1 Chowkhambha Surbharti Prakashan, Varanasi. Volume 1, 2016, p.504
13. Bhavprakash Samhita, Bhavprakash Nighantu, Brahms Shankar Mishra and Rupalal ji Vaisya, Haritkyadi Varga, Verse43 Chaukhambha Sanskrit Sansthana, Varanasi, Volume 1, 2004 p. 12
14. Bhavprakash Samhita, Bhavprakash Nighantu, Brahms Shankar Mishra and Rupalal ji Vaisya, Dhanya Varga, Verse 64 Chowkhambha Sanskrit Sansthana, Varanasi, Volume 1, 2004, p.651
15. Bhavprakash Samhita, Bhavprakash Nighantu, Brahms Shankar Mishra and Rupalal ji Vaisya, Takra varga, Verse4 Chowkhambha Sanskrit Sansthana, Varanasi, Volume 1, 2004, p. 771
16. Charak Samhita, Agnivesh, Brahmanand Tripathi, Sutrasthan, chapter 27/178 Edition 1 Chaukhambha Surbharti Prakashan, Varanasi Volume 1, 2016,p. 521
17. Bhavprakash Samhita, Bhavprakash Nighantu, Brahms Shankar Mishra and Rupalal ji Vaisya, Kritanna varga, Verse175 Chowkhambha Sanskrit Sansthana, Varanasi, Volume 1, 2004, p. 788
18. Sarangdhar samhita of Sarangadharacharya, Dr Brahmanand Tripathy, Madhyama khand,Verse 160 Chowkhambha Surbharti Prakashan, Varanasi, 2001, p.158
19. Astanga Hradyam of Srimad vagbhata, Sutrasthan Brahmanand Tripathi, Sutrasthan, Chapter6 verse 72, &75-78 Chaukhambha Sanskrit Pratishthana, Reprinted 2004, p. 102,103
20. Charak Samhita, Agnivesh, Brahmanand Tripathi, Sutrasthan Chapter 21/20 Edition 1 Chowkhambha Surbharti Prakashan, Varanasi, Volume 1, 2016, p. 405
21. Ashtanga Sangraham, Vagbhata, Sutrasthan Adhyaya 1/17, First Edition, CCRAS, New Delhi, 1991, p.6
22. Elizabeth KE, Nutrition & child development, 5th ed. Paras medical publisher; 2015. P.275.

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