

## A REVIEW ARTICLE ON CHILDHOOD OBESITY: PREVALENCE AND AYURVEDIC PERSPECTIVE

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### ABSTRACT

Childhood obesity is a known pioneer to obesity and other non-communicable diseases in later life. However, the enormity of the problem among children and teenagers in India is uncertain due to paucity of well-conducted countrywide studies and lack of uniformity in the cut-points used to define childhood overweight and obesity. Environmental and genetic factors, lifestyle preferences and culture play a major role in the increasing prevalence of childhood obesity worldwide. In *Ayurveda*, obesity has been defined under the headings of *Sthaulya* in *Ashtoninditiya Purush* (undesirable physics) in which mainly *Meda* (fat) and *Mamsa* (Muscle) *Dhatu* is pretentious. By following the guidelines on the basis of *Ayurvedic* fundamentals like *Ahar-Vihar* (Diet - Activities), Drugs, *Yoga* and *Panchakarma* therapy especially *Lehkan Basti* parents can effectively manage their child's obesity.

**KEYWORDS:** Childhood obesity, *Sthaulya*, *Ahar-Vihar*, Herbal Drugs, *Yoga*, *Lekhan Basti*.

## INTRODUCTION

The term over weight refers to excess body weight for a specific height whereas the term obesity is used to define excess body fat. Overweight and obesity primarily happen either due to excess calorie intake or insufficient physical activity or both.<sup>[1]</sup> Furthermore, various genetic, behavioural, and environmental factors play a role in its pathogenesis. Childhood obesity is a forerunner of metabolic syndromes, poor physical health, mental disorders, respiratory problems and glucose intolerance. Developing countries like India have a unique problem of 'double burden' wherein at one end of the variety we have obesity in children and adolescents while at the other end we have underweight. Globally the prevalence of childhood obesity has risen in recent years. The International association for the study of obesity (IASO) and International Obesity Task Force (IOTF) estimate that 200 million school children are overweight or obese.<sup>[2]</sup> There is lack of national representative data on obesity in children from India with its widely fluctuating geographical, social and cultural norms. India is a fast growing economy, currently undergoing major epidemiological, nutritional and demographic transitions<sup>[3]</sup>. The percentage of children aged 6–11 years in the United States who were obese increased from 7% in 1980 to nearly 18% in 2012. Similarly, the percentage of adolescents aged 12–19 years who were obese increased from 5% to nearly 21% over the same period.<sup>[4, 5]</sup> In 2012, more than one third of children and adolescents were overweight or obese.<sup>[4]</sup> In 2011-2014 The prevalence of obesity was 8.9% among 2- to 5-year-olds compared with 17.5% of 6- to 11-year-olds and 20.5% of 12- to 19-year-olds. Childhood obesity is also more common among certain populations.<sup>[6]</sup> globally, between 2000 and 2014; the percentage of children under the age of 5 who were overweight grew from 5.1 per cent to 6.1 per cent<sup>[7]</sup>. Although definition of obesity and overweight has changed over time, it can be defined as a surplus of body fat. There is no agreement on a cut off point for excess fatness of obesity in children and adolescents. According to WHO, Obesity are defined as "abnormal or excessive fat accumulation that presents a risk to health".<sup>[8]</sup>

It is difficult to develop one simple index for the measurement of overweight and obesity in children and adolescents because their bodies undergo a number of physiological changes as they grow. Depending on the age, different methods to measure a body's healthy weight are available.<sup>[9]</sup>

**Body Mass Index (BMI):** A child is considered obese when his/her Body Mass Index (BMI), a measurement obtained by dividing a person's weight by the square of the person's height,

exceeds 30 Kg/m<sup>2</sup>.<sup>[8]</sup> The fundamental cause of childhood overweight and obesity is an energy imbalance between calories used up and calories expended. Global increases in childhood overweight and obesity are attributable to a number of factors including: A global shift in diet towards increased intake of energy-dense foods that are high in fat and sugars but low in vitamins, minerals and other healthy micronutrients. A trend towards decreased physical activity levels due to the increasingly sedentary nature of many forms of recreation time, changing modes of moving, and increasing urbanization.<sup>[10]</sup>

### Childhood obesity: an Ayurvedic perspective

In *Ayurveda* *Atisthaulya* has been described since very early days in various *Samhitas*. *AsCharaka* has described *Sthaulya* among the *AstaNinditha Purusha*<sup>[11]</sup>, *Sleshma Nanatmaja*,<sup>[12]</sup> *Santarpana Nimitaja*,<sup>[13]</sup> *AtiBrumhana Nimitaja*<sup>[14]</sup> and *SamsodhanaYogya*.<sup>[15]</sup> Besides that, other aspect of *Atisthaulya* and line of treatment have been described on various places. A person in whom there is excessive accumulation of *Meda* (fat/adipose tissue) and *Mamsa* (flesh/muscle tissue) leading to looseness of hips, abdomen, and breast has been categorized as *Atisthula*.<sup>[16]</sup> *Medas* is body tissue leading in *PrithviandApaMahabhutas similar to KaphaDosha*.<sup>[17]</sup> It is characterized by *Snighdha* (unctuous), *Guru* (heavy), *Sthula* (space occupying), *Picchila* (slimy), *Mridu* (soft) and *Sandra* (dense) *Guna* (qualities).<sup>[18]</sup> *Sneha* (oleation), *Sweda* (production of sweat), *Drudhatva* (compactness), and *Asthipushti* (nourishment of bones) are the main function of *Medo Dhatu*.<sup>[19]</sup>

Consumption of *Guru* (heavy to digest), *Sheeta* (cold), *Snigdha* (unctuous), *Madhuradi* (sweet) *Kaphavardhaka* drugs along with lack of exercise and deskbound lifeStyle result in excessive nourishment of *Medas* while other *Dhatu*s (bodily elements) are deprived of nourishment. Disproportionately increased *Medas* is accountable for several serious consequences reported in *CharakaSamhita* like *Ayuhrasa* (decrease of life span), *Javoparodha* (decrease in enthusiasm and activity), *Dourbalya* (decrease of strength), *Dourgandhyam* (bad odour), *Swedabadha* (excess perspiration) and *KshutPipasadhikya* (excessive hunger and thirst).<sup>[16]</sup> When analyse *Samprapti* (path-physiology) of *Atisthaulya*, *Sroats* (channels) are obstructed by fat (*Medasavrutamargata*).<sup>[20]</sup>

### AYURVEDIC MANAGEMENT OF CHILDHOOD OBESITY

**Diet Regimen (*Ahara*):** Oily and deep fried food articles like noodles, pizza, hamburger, hot dog buns, French fries, pasta etc. should be avoided. The food articles sweetened with sugar

like chocolate, sweets, cold drinks (sodas) should not be given to children. Children should be provided with a morning meal (breakfast) that includes whole grains, fruits, and protein. Skipping meals does not promote weight loss. Half glass of water should be taken before meal. More of fruits and vegetables should be included in the diet. Fruits: *Bilva* (*Bael* fruit), *Amalaki* (Indian gooseberry), *Bibhitaki* (*Beleric Myrobalan*), *Haritaki* (*Myrobalan*), *Jambu* (*Syzygium cumini*). Vegetables: *Patol* (pointed gourd), *Shigru* (drumstick), *Trapusha* (cucumber), *Vartaka* (brinjal), *Granjana* (carrot). If the child does not accept these fruits and vegetables as such, then make it more palatable by serving in the form of fruit chat or vegetable halva. Concept given by *Acharya Charak* for *Atisthaulya* management is use of *Guru-Aptarpan* food (*Guru ChAptarpanmChIstaStulanamKarshanmPrati*)<sup>21</sup> and “*VataghnaAnnapananiSleshmaMedoHarani ch*”<sup>[22]</sup>

### **Liquid Intake (*Anupana*)**

Children should be given Luke warm water in winter season while room temperature water (not cold) in summer season in the evening time. Other liquids that are beneficial in reducing childhood obesity are honey water (*Panam ChaAnuMadhuUdkam*) and *Arista* (*AristaanschAnupanarthe*).<sup>[23]</sup>

### **Physical activity (*Vyayama*)**

*Vyayam*<sup>[24]</sup> play a significant role to resolve obesity. Children should be encouraged for physical activity, at least 60 minutes of fitness every day that may be in the form of sports, morning walk or cycling, *Yog*, and *Aasan*.

### **Sleep (*Nidra*)**

Excessive sleeping or nap after lunch should be avoided. *Prajagran* (night awaking) is an important factor for weight loss<sup>[24]</sup>.

### **Psychotherapy (*SatvavajayaChikitsa*)**

Parents should set a good example for children by choosing a healthy diet and doing abundant exercises, emotional support and lot of encouragement to be active. Children should be praised for making small changes and efforts for weight loss. Along with physical activity doing some mental work or stress also reduce obesity (*Chintan*).<sup>[24]</sup>

### Specific Ayurvedic treatment

Ayurvedic treatments are very effective in natural weight reduction along with the above regimen. But these treatments must be taken in appropriate dose according to the body weight and under medical supervision. In *Ashtanga Hridaya*<sup>[25]</sup> and in *Ashtanga Samgraha*<sup>[26]</sup>, it has mentioned various therapeutic and prophylactic measures to cure and prevent this disease and considered *Rasanjana* as a drug of choice for *Sthaulya*. Use of *Langhana* therapy is indicated for *Brimhaniya* disorder like *Sthaulya*.<sup>[27]</sup> Some success in controlling obesity is also achieved by *Ayurvedic Panchkarma* therapy i.e. *Vasti* because *Vata* is playing an important role in *Samprapti* of *Sthaulya*.<sup>3118</sup> Here, in *Vasti* procedure, *Acharya Susrutha* described a *Lekhana Vasti* (a type of *Niruhavasti*) in *Chikitsa Sthana* which can be used in *Sthaulya*.<sup>[28]</sup> The drugs which are used for preparation of *Lekhanavasti* (*Lekhaneeya Mahakashaya*)<sup>[29]</sup> possess following *Gunas* like; *Katu*, *Tikta*, *Kashaya Rasa*, *Laghu*, *Ruksha*, *Tikshna Guna*, *Ushnavirya*, *Katu vipaka Lekhana*, *Kapha-Vatahara*, *Deepana-Pachana* and *Sroto-Shodhaka* properties.<sup>[30]</sup> Having all these properties, *Dravya* of *Lekhanavasti* performs *Shodana* by means of the penetration into deeper *Dhatu*'s and corrects the *Datvagni* which helps in reducing *Sthaulya*.

### CONCLUSION

Childhood obesity is a chronic disorder that has multiple roots. It has significant impact on both physical and psychological health. In addition, psychological disorders such as depression occur with increased frequency in obese children. Overweight children are more likely to have cardiovascular and gastrointestinal diseases as compared with those who are lean. It is believed that both overconsumption of calories and reduced physical activity are mainly involved in childhood obesity. *Ayurveda* in which obesity is described as *Sthaulya* can provide an effective management of this disease by applying various methods described in ancient texts. It has been widely accepted that yoga, *Asanas* can heal such kind of diseases very efficiently. However various treatments (*Lekhanavasti*, *Langhanam*, *Vyayam*, *Yoga* etc.) mentioned in different texts should be tested on large scale before coming to any conclusion on regarding the procedure and drug.

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