Indian Journal of Ancient Medicine and Yoga
Volume 3 Number 2, April-June 2010

Role of life style and dietary factors in aetiopathogenesis of *Sthaulya*(obesity)

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ABSTRACT

Obesity - an abnormal growth of the adipose tissue due to enlargement of fat cell size or an increase in number or combination of both,[1] is becoming global health problem now a days. It is the most common nutritional disorder in affluent societies due to luxuries, defective diet & inactive, sedentary life style. Obesity contributes to develop coronary artery disease, diabetes mellitus, hypertension, hyperlipidaemia and 60 to70% cardiac patients die of obesity. It is described as *sthaulya* in ancient Ayurvedic classics. The present study revealed that lack of exercise, excessive intake of sweet, heavy, unctuous food articles and Medo-dhatwagnimandya precipitate obesity with proneness in kapha pitta prakriti subjects.

Key words: *Sthaulya*, *Meda*, Obesity, Overweight

INTRODUCTION

Sthaulya is described as excessive & abnormal increase of *meda dhatu* along with *mamsa dhatu* resulting in pendulous appearance of buttocks, belly and breasts, however increased bulk is not matched by corresponding increase in energy.[2] It is most common nutritional disorder in affluent society, mainly due to absence of physical activity. Other causes may be sleeping during the day, intake of *Kapha* – aggravating diets (heavy, sweet, cool, unctuous food in excess), over intake of food and heredity. The weight charts for men and women according to their height (body mass index) are only rough indications of the state of overweight or obesity. The obesity is described as *'Medoroga'* in Ayurveda[3] and said that, comparatively it is easy to help an underweight person rather than an overweight. The obesity can either be due to an actual increase in fat component (*medo dhatu*) or due to malfunctioning of fat metabolism. Body is made of seven *dhatus* i.e: *rasa, rakta, mamsa, meda, asthi, majja, shukra* but obese are nourished excessively by *meda dhatu* and other remaining *dhatus* get malnourished, *kapha* gets accumulated in between. When *kapha* increases in abnormal fashion, fat metabolism hampered and person becomes obese[4]. Most commonly used definition based on Body Mass Index (Kg/m^2) provide the following values: less than 18.5 is underweight, 18.5 - 24.9 normal healthy, 25.0-29.9 overweight, 30.0 - 34.9 grade 1 obese, 35.0-39.9 grade 2 obese and 40.0 or greater is grade 3 obese/ morbidly obese[5].

Obesity is an increased fat content in the body and now major health problem in India. Obesity has reached epidemic proportions in India in the 21st century, affecting 5% of the country's population.[6] India is following a trend of other developing countries that are steadily becoming more obese. Unhealthy,

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(Received on 19.08.2010, accepted on 24.09.2010)

processed food has become much more accessible following India's continued integration in global food markets. Indians are genetically susceptible to weight accumulation especially around the waist. Recent survey shows 60% middle aged, working class Indians in Mumbai were overweight and 30% children in Delhi's elite schools were in the same category[7]. Obesity increases the risk of various chronic health problems: like diabetes mellitus, arthrosclerosis which may contribute to high blood pressure and coronary artery disease, osteoarthritis, sleep apnea, certain type of cancers such as prostate cancer, breast cancer, cervical cancer or gallbladder cancer. Obese are more likely prone to gastro esophageal reflux disease (GERD) of which heartburn is a major symptom. [8]

MATERIALS AND METHOD

Total 133 patients of obesity were registered from O.P.D. of I.P.G.T& R.A. Hospital, Gujarat Ayurved University, Jamnagar fulfilling the clinical diagnostic criteria of the disease based on Ayurvedic & modern parameters. The patients below the age of 20 years and above 60 years, endocrine disorders like diabetes mellitus, hypothyroidism, cushing's syndrome, hypertension, ischaemic heart disease, cardiac failure, pregnancy with other significant associated illness, taking cortico-steroids, oral contraceptive pills and B.M.I. - 40kg/m^2 and above i.e. class –III extremely high obesity, were excluded. Written consent of the patient was duly taken before starting the therapy. The study was cleared by the Institutional Ethics Committee.

OBSERVATIONS AND RESULT

The demographic data of 133 registered patients of *sthaulya* revealed that maximum patients (42.86%) had *Kapha-pittaja deha prakriti* followed by 38.34% *kapha-vataja deha prakriti.* Maximum (39.85 %) patients belong to age group of 31-40 years and maximum patients were females (84.94%). Religion wise maximum patients were Hindus (69.92%). Majority of patients were housewives (71.42%), maximum patients were from urban area (89.47%). Maximum patients had history of sedentary type of work (44.36%), indulge in vegetarian diet (68.42%) and had consumed *sarva rasa* (45.87%) with maximum patients having consumption of *madhura rasa* in their daily diet (64.66 %) [9]. *Koshtha* wise 53.38% patients were having *madhyam koshtha*. Maximum patients (44.36%) had excess sleep habit. The appetite wise 60.15% patients had excessive appetite.

Table 1: showing age incidence

Age group	No. of patients	Percentage
20-30yrs.	51	38.34
31-40yrs.	53	39.85
41-50yrs.	20	15.04
51-60yrs.	9	6.77
Total	133	100

Table 2: showing sex incidence

Sex	No. of patients	Percentage
Male	20	15.05
Female	113	84.95
Total	133	100

Table 3: showing incidence of occupation in obesity

Occupation	No. of cases	Percentage
House wife	95	71.42
Service	16	12.03
Business	9	6.77
Labour	6	4.52
Student	4	3
Unemployment	3	2.26
Total	133	100

Table 4: showing incidence of rural and urban in obese patients

Area	No. of cases	Percentage
Urban	119	89.47
Rural	14	10.53
Total	133	100

Table 5: showing nature of work in *sthaulya* patients

Nature of work	No. of cases	Percentage
Sedentary	59	44.36
Moderate	53	39.85
Hard	21	15.79
Total	133	100

Table 6: showing incidence of *dehaprakriti* in *sthaulya*

Dehaprakriti	No. of cases	Percentage
Vata-pitta	25	18.8
Kapha-pitta	57	42.86
Kapha-vata	51	38.34
Total	133	100

Table 7: showing incidence of dominant *rasa* (taste) in daily diet in obesity

Dominant rasa in daily diet	No. of cases	Percentage
M,A,L,K,T,Ka	61	45.87
M,A,L	10	7.52
M,L	16	12.04
M,K	2	1.5
M,A,L,K	2	1.5
K	4	3
L	9	6.77
M,A,K	2	1.5
L,K	5	3.76
M,A	2	1.5
M	5	3.76
A,L	8	6.02
A,K	5	3.76
A,L,K,Ka	1	0.75
A,L,K	1	0.75
Total	133	100

M=*Madhura*, A=*Amla*, L=*Lavana*, K=*Katu*, T=*Tikta*, Ka=*Kashaya*

Table 8: showing the incidence of dominant *guna* (properties) in daily diet

Dominant guna in daily diet	No. of cases	Percentage
Guru (heavy)	93	69.93
Madhura (sweet)	86	64.66
Snigdha (unctuous)	88	66.16
Sheeta (cold)	33	24.81

Table 9: showing *aharatmaka* (dietary) *nidana* in obesity

Aharatmak nidana	No. of cases	Percentage
Godhuma (wheat)	133	100
Shali (rice)	59	44.36
Adhyashana (eating before digestion of previous)	71	53.38
Virudhashana (incompatible diet)	83	62.4
Sarpi (ghee)	80	60.15
Dadhi (curd)	62	46.62
Cold drinks	53	39.85
Junk food	80	60.15

Table 10: showing incidence of physical exercise

Aharatmak nidana	No. of cases	Percentage
Godhuma (wheat)	133	100
Shali (rice)	59	44.36
Adhyashana (eating before digestion of previous)	71	53.38
Virudhashana (incompatible diet)	83	62.4
Sarpi (ghee)	80	60.15
Dadhi (curd)	62	46.62
Cold drinks	53	39.85
Junk food	80	60.15

Table 11: showing incidence of *manasika avastha* (psychological condition

Manasika avastha	No. of cases	Percentage
Happy	69	51.88
Anxiety	39	29.32
Excitability	8	6.02
Depression	15	11.28
Nervousness	19	14.28

Table 12: showing incidence of *diwaswapna* (day sleep)

Diwaswapna	No. of cases	Percentage
Present	104	78.2
Absent	29	21.8
Total	133	100

Table 13: showing incidence of *bhojanattora nidra* (sleep immediately after meal)

Bhojanattora nidra	No .of cases	Percentage
Present	76	57.14
Absent	57	42.86
Total	133	100

Table 14: showing incidence of *bhojanattora snana* (bath immediately after meal)

Bhojanottar snana	No. of cases	Percentage
Present	71	53.38
Absent	62	46.62
Total	133	100

DISCUSSION

Maximum patients had obesity between 31-40 year age group, however, patients in different age group were found to be within a constant range varying between 6.76% and 38.34%. According to National Health and Nutrition Examination Survey (NHANES-III) data about 55% of US adults of age 20 years and older are either overweight or obese.[10] According to Ayurveda in *madhya-awastha* (30-60 years) *paripurnata* of all *sharira dhatus* take places.[11] Sex wise maximum patients were females. Studies showed marked gender difference in the incidence rate. Females have tendency to develop obesity due to some factors like less physically active, emotionally unstable, pregnancy, use of oral contraceptive pills, & prone to hypothyroidism, and ultimately produces the obesity. Majority of patients were housewives and previous study showed obesity prevalence in the unemployed women (housewives) were higher[12]. Maximum patients were from urban area. The sedentary life style & intake of junk foods are more common in urban people. Maximum patients had history of sedentary type of work. The combination of excessive nutrient intake and sedentary life style are the main cause of obesity in the last quarter of 20th century[13]. Maximum patients had *Kapha-Pittaja deha Prakriti* followed by *Kaphavataja deha prakriti*. Thus most of the patients had *Kapha* dominant *prakriti*. According to *Charaka*, *sthula purusha* have *kapha* dominant *prakriti*.[14] As maximum patients had *madhyam koshtha* in general is suggestive of *kapha* dominancy which is prime factor for *sthaulya*.[15] Majority of the patients had excessive sleep. According to western system of medicine somnolence is one of the presenting symptoms of obesity and has strong associations with disease.[16] *Charaka* also mentioned the role of *nidra* in *sthaulya*.[17] Maximum patients had happy mental state and *achinta* is being considered as causative factor of *sthaulya*(17). Excessive appetite is directly related to obesity. *Tikshnagni* is the main cause of *sthaulya,* due to *tikshnagni* subjects feel excessive hunger, resulting in excessive food intake leading to weight gain. The 45.87% patients had consumed *sarvarasa.* Obese patients are always fond of eating & have *satmya* to all type of *rasa*. Maximum patients consumed *madhura rasa* in their daily diet, followed by *guru, snigdha, sheeta* dominant *guna,* respectively. *Madhura, guru, snigdha* & *sheeta* properties aggravate *kapha* as well as meda on the basis of *sarvada sarva bhavanam samanyam vriddhi karanam*

siddhanta.[18] *Kapha & Meda* are main *dosha* and *dushya* respectively in *samprapti* of *sthaulya.* According to western system of medicine the diet containing sweet, heavy, unctuous, cold properties have always high calorie value and excessive indulgences of high calorie diet is well established etiological factor of obesity, because extra calorie will be converted in to fat and stored in the cells (fat cells), later increases the number & size of the fat cell.[19] All the patients had consumed *godhuma* (wheat) followed by *shali* (rice), *adhyashana, virudhashana,* consumption of *sarpi, dadhi,* cold drinks & junk food in their diet. *Adhyashana* & *virudhashana* can produce *Aam* dosha and *Agnimandya*, root cause of *sthaulya*.[20] *Godhuma, shali, sarpi, dadhi*, cold drinks & junk foods have similar properties attributed to *meda* on the basis of *sarvada sarva bhavanam samanyam vriddhi karanam* principles.(18) Lack of physical activity (*avyayama, diwaswapa* and *bhojanottaara nidra* & *snana*) were noted as major cause of *sthaulya.* The energy expenditure in human being is under volitional control of physical activity. Due to restricted physical activity and excessive sleep, the level of growth hormone increases, metabolism diminishes and it gradually develops obesity.[21]

CONCLUSION

The sedentary life style, lack of physical exercise, faulty dietary habits (excessive intake of sweet, heavy, unctuous, and cold food items) and urbanization precipitate the disease *sthaulya. Kapha pitta prakriti* persons were found more prone to obesity so they should be advised proper diet regimens and exercise. *Medo-dhatvagni mandya* which leads to excessive formation of improper *meda-dhatu* (fatty tissue) is the root cause of *sthaulya* (obesity).

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