



ORIGINAL RESEARCH PAPER

General Medicine

PREVALENCE OF *ATITŪLAM* (OBESITY) AND ASSOCIATED DISEASES AMONG PATIENTS AT GOVERNMENT SIDDHA MEDICAL COLLEGE AND HOSPITAL, PALAYAMKOTTAI FROM APRIL 2019 TO SEPTEMBER 2019

KEY WORDS: Atitūlam, Obesity and overweight

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ABSTRACT

ATITŪLAM (Obesity) is a condition involved an excessive amount of fat deposition in subcutaneous tissues and vital organs. In Siddha literatures, etiology of *ATITŪLAM* was explained in detailed. It is increased risk of various metabolic diseases such as heart disease, diabetes, high blood pressure and Fatty liver disease (FLD). Obesity and overweight are increasing consequences for the health system. Being extreme obese means you are especially likely to have health problems related to your weight. Which includes altered diet pattern, precipitating factors and other causes were analyzed. Chronic alcoholism, excessive angry, diabetes mellitus, heart diseases, post-delivery complications and also other factors were precipitating etiological factors for Atitūlam. The objective of this study is to find out the prevalence of atitūlam and determine the various associated diseases with atitūlam. Cross sectional Descriptive study was conducted among 153 typical atitūlam patients reporting to Out Patient Department and In Patient Department at Government Siddha Medical College and hospital, Palayamkottai, Tirunelveli from April 2019 to September 2019. In this study, atitūlam was found more common in males. BMI was found majority with Obese Class I, and 100% of sample are with Waist Hip ratio with above 0.9. Associated diseases of Atitūlam were Hypertension was 49.6%, diabetes 44.4%, hyperlipidemia 56.8% and heart disease was 13.1%. 19.6% respectively. 80.70% of patients had a habit of having fast food and 94.70% patients were with food pattern of mixed diet.

INTRODUCTION

“Atitūlam” (Obesity) is an emerging as one of the most prevalent disorders of recent decades. Atitūlam is a complex disorder involving an excessive amount of body fat. Overweight And Obesity (OAO) isn't just a cosmetic concern. Morbid obesity means it is more dangerous than non-obese people especially in young adults. Overweight is diagnosed when the Body Mass Index (BMI) is between 25 and 29.99. Obesity is diagnosed when the BMI is 30 or more. The BMI is calculated by dividing the weight in kilograms (kg) by the height in meters (m) squared.

Worldwide, the prevalence of overweight and obesity have become more than double since 1980, which reached to 1.9 billion overweight and 600 million obese adults in 2014. In an estimation by WHO it is predicted that around two-thirds of the global burden of disease will be accredited to chronic non communicable diseases, most of them strongly associated with diet. [8]

Developing countries experienced more dramatic rise in the prevalence of obesity in recent decades. Surprisingly, the problems of overweight/obesity are increasing in countries where hunger is still endemic. World Health Organization (2006) also detected that there was higher risk of high blood pressure, heart disease, and type-2 diabetes at an earlier age among people who were undernourished in younger age and obese in adulthood.

During last two decades, in India, the magnitude of dual nutrition burden has escalated because of rapid nutrition, demographic, and epidemiological transition in the states of the country. With growing prevalence of overweight and obesity there is a dearth of studies for India, partly because of the persisting high prevalence of undernutrition. Number of patients with Atitūlam are increasing in Government Siddha medical college and Hospital Palayamkottai day by day and they believe Siddha treatment. However, evaluate the major causes of Atitūlam will help in providing preventive and

curative treatment. In this study, the levels, trends, and differentials of overweight and obesity were examined and the association of demographic and socioeconomic determinants of overweight and obesity was also assessed in GSMC, Palayamkottai and its states for both genders. Modest weight loss can improve or prevent the health problems associated with obesity. Dietary changes, increased physical activity and behavior changes can help to lose the weight.

**LITERATURE REVIEW
SIDDHA ASPECTS**

Atitūlam

In Siddha system of medicine “Atitūlam” as a one of the disease among 4448 diseases in siddha system. Even though this disease is not included in Yugi's classification, there are evidences of usage of the term “Atitūlam” by other names of the disease such as “Parunthoolarogam”.

When we keenly notice the two words sobai and parunthoolam which occurs due to the deficiency of iron as per the above lines, it is very clear that these are separate entities, where “Atitūlam” is increase in body mass and sobai is accumulation of liquid in body tissue.

“Atitūlam” is defined as increase in body mass and excessive deposition of muscles and fat in thigh, breast-and abdomen. There is tiredness, fatigue and breathlessness, decrease in IQ, increased kapha features such as cough, are also present.

The lines mentioned in Pararasa Sekaram, Jeevaraksha mirtham and Anubava Vaidya Deva Ragasiyam, coincides with the symptoms of obesity described in modern medicine.

Aetiology

As per siddha literature food and faulty habits are the reasons for diseases. The food intake and the taste it possesses decides the three humour ratio in the body. If excess sweet taste food and food which transforms into sweet vibaka is consumed that will increase kapha. Excessive usage of sweets

will lead to a kapha constitution. When we keenly observe the qualities of a Kapha thegi it is clear that there is

1. Increased body mass
2. Polyphagia
3. Increased fond of sweet taste
4. Excessive body odor and increased sweating
5. Infertility
6. Elephant like gait
7. Fatty deposition

Over eating and irregular diet habits are main causes for Atitilam. Faulty diet habits are the cause of ailments such as obesity, diabetes and hypertension. This is very clearly illustrated by sage Thiruvalluvar in the Athikaram 'Marunthu' about the faulty diet habits and the after effects. They are, Tamil stanza means as: 'To maintain healthy physique, one should eat after knowing one's digestive capacity. To extend life and to decrease mortality food should be taken according to the need of physique (i.e.). The labour population should take more food than sedentary executives. Everybody should know the characters of the food and it should be in such form that it maintains the Thirithathus in normal ratio.

Food, which are sweeter in taste increase kapha, which in turn causes " Atitilam ". This is very clear that high calorific diets increase body mass index.

If a person without knowing his capacity of digestion, conceives more food, he falls prey to disease and sorrow. One should eat only for his need and not for his taste.

"The earth has enough for every ones need but not enough for every ones greed"

- Food and thoughts.

Six tastes were mentioned in Tamil stanza means as;

1. Increase of fat
2. Increase in body weight
3. Diabetes mellitus
4. Cerebral vascular diseases
5. Increased kapha features

So, increased sweet taste forms a pathway to obesity which in turn leads to dangerous ailments such as obesity, atherosclerosis, Diabetes mellitus and myocardial infarction.

Bitter taste foods have antagonistic action against sweet taste.

1. Decreases fat accumulation and fluid accumulation.
2. Decreases increased kapha feature
3. Decreases all the secretions of the body
4. Increases memory power
5. Decreases accumulation of liquid in fat

Three humour theory

Kapha is the main humour which is affected. It increases in its amount, which leads to

1. Lassitude, Laziness
2. increased body weight
3. Increased sweating and chillness
4. Indigestion
5. Increased sleepy nature

PanchaPootha theory

Earth and water plays a major role in formation of the physique as per siddha theory. Earth is a basic building material of bone, nerve muscles and hair. Water is responsible for fat, blood, semen and urine.

Sweet taste is composed of earth and water when it is increased, earth and water inside the body too increases. This is represented by excessive deposition of fat and muscles.

Gunangal concept

Among Engunangal, Mogam stands for desire. If one's desire

towards food is increased, he will definitely become obsess. Depression due to sedentary life pattern and over eating leads also causes obesity.

Thamogunam and Sedentary life pattern

The food that increases thamogunam mostly are fat and carbohydrate. These food increases Thamo character which are lassitude, increased stamina, oscillation in mind, increased sexual affair, decreased I.Q and excessive sleep in nature.

The basic step in diagnosis charted by the sage Thiruvalluvar was described as follows; When we observe the etiology, it is clear that kapha is increased and pitha decreased (i.e. Sadhagam) Vatha is increased a little. This can be illustrated by increased laziness, which is also a nature of Vatha. So here an imbalance of three thathus occurs and they are converted into three kutas among which increased kapha is the basis of this disease.

MODERN ASPECTS

Obesity is a chronic and extremely common disease characterized by excess body fat which develops gradually and often persists throughout life. If untreated, obesity emerges as a potent life threatening and disabling risk factor.

DEFINITION

The term "obesity" means over weight. Health professionals define "over weight" as an excess amount of body weight that includes muscle, bone and fat. "Obesity" specifically refers to an excess amount of body fat.

Prevalence

Obesity has already emerged as an important health problem in India. The nutrition Foundation of India (NFI) study showed that 32.3% of middle class males and 50% of middle class females in India were obese. The epidemic of obesity has cut across all barriers of class and cultural backgrounds.

Causes of obesity

Obesity is a multifactorial condition. The various factors playing a role in eating and weight control includes: Genetic, Cultural, Socioeconomic, Behavioural, Situational, Metabolic/ Endocrine, Physiological.

Body fat distribution

On the basis of distribution of body fat, obesity may be classified into android obesity and gynoid obesity.

Android obesity

Collection of fat mostly in the abdomen above the waist (apple shaped bodies). Android obesity is also called as abdominal obesity or central obesity.

The hypothalamus in the brain is the center for weight regulation. Increased levels of serotonin in the hypothalamus increases satiety (feeling of satisfaction with what is eaten), while increased levels of noradrenaline in the hypothalamus decreases hunger.

Android obesity is associated with an increased risk of metabolic complications such as coronary heart disease, diabetes mellitus hypertension and dyslipidemia.

Gynoid obesity

Collection of fat on the hips and buttocks below the waist (gluto-femoral, i.e., pear shaped bodies). Gynoid obesity makes the person more prone to mechanical disorders such as varicose veins and disorders of the joints. Women typically collect fat in their hips and buttocks, giving them a "pear" shape. Men usually build up fat around their bellies, giving them more of an "apple" shape. Women with waist measurement of more than 30 inches or men with a waist measurement of more than 40 inches have a higher health risk

because of their fat distribution.

Assessing obesity

Presently there are many objective methods used for assessing obesity in clinical practice

1. DEXA (Dual energy x-ray absorptiometry)
2. Skin fold measurements
3. Waist hip ratio
4. Body mass index

DEXA

Measuring the exact amount of a person's body fat is not easy. The most accurate measures are to weigh a person underwater or to use an X-ray test called Dual Energy X-ray asborptiometry (DEXA). These methods are not practical for the average person and are done only in research centers with special equipment.

Skin fold measurements

Skin fold measurements are taken in specified locations - biceps, triceps, sub-scapular and supra-iliac regions.

There are simple methods to estimate body fat. One is to measure the thickness of the layer of fat just under the skin in several parts of the body. Another involves sending a harmless amount of electricity through a person's body. Both methods are used at health clubs and commercial weight loss programs. Results from these methods, however, can be inaccurate if done by an inexperienced person or on someone with severe obesity.

Waist to hip ratio

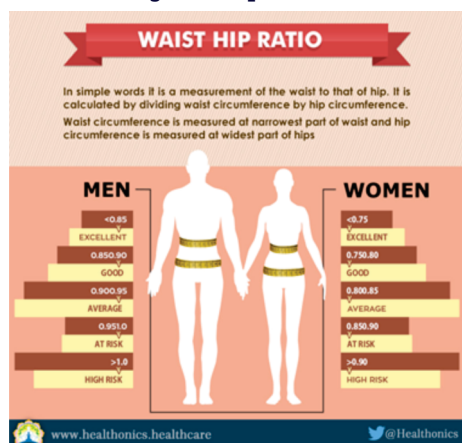
The waist to hip ratio provides information about the distribution of body fat.

Waist circumference correlates well with abdominal fat content. In men, there is increased risk if the waist circumference is 94 cm or more and substantial risk if it is 102 cm or more. For women, the figures are 80 cm or more and 88 cm or more, respectively.

Table 01: desired waist-to-hip ratios

Women	0.8
Men	1.0

Figure 01: measuring Waist Hip Ratio



Body mass index

The body mass index (also called quetelet index) is calculated using the formula:

$$BMI = \frac{\text{Weight (Kg)}}{[\text{Height(m)}]^2}$$

As per the World Health Organisation (WHO) guidelines, a BMI of 25-29.9 is classified as "over weight" while a BMI of 30 or greater is classified as "obese". However, considerable amount of data has shown that in Asians, morbidity and

mortality occur at a lower BMI and smaller waist circumferences as compared to the Asian population. Hence the recent Asia Pacific guideline have proposed that the cut off points for "overweight" and "obesity" should be lower in Indians as compared to the Western population.

Table 02: Classification of overweight and obesity by Body Mass Index (BMI)

	Who guidelines	Asia Pacific guidelines
Underweight	< 18.5	< 18.5
Normal	18.5-24.9	18.5-22.9
Overweight	25.0 - 29.9	> 23
At risk	-	23 - 24.9
Obesity	30.0- 34.9 (Obesity class I)	25 - 29.9 (Obesity class I)
	35.0-39.9 (Obesity class II)	> 30 (Obesity class II)
Extreme obesity	>40 (Obesity class III)	

The drawback of the BMI method is that it does not account for regional weight distribution and lean body mass. Hence, very muscular or very short individuals may be classified as obese when they are not. Hence a more important tool to estimate obesity is the waist-to-hip ratio.

Table 03: Co-morbidities risk associated with different levels of BMI and suggested waist circumference in adults Asians.

Classification	BMI (Kg/m ²)	Risk of co- morbidities	
		Waist circumference	
		< 90 cm (men)	≥ 90 cm (men)
		< 80 cm (women)	≥ 80 cm (women)
Under weight	< 18.5	Low (but increased risk of other clinical problems)	Average
Normal weight	18.5 – 22.9	Average	Increased
Overweight	≥ 23		
At risk	23 – 24.9	Increased	Moderate
Obese I	25- 29.9	Moderate	Severe
Obese II	> 30	Severe	Very severe

Health risk

Obesity is more than a cosmetic problem; it is a health hazard. Approximately 10% of adult deaths in each year are related to obesity. Several serious medical conditions have been linked to obesity, including type II diabetes, heart disease, high blood pressure and stroke. Obesity is also linked to higher rates of certain types of cancer. Obese men are more likely than non-obese men to die from cancer of the colon, rectum, or prostate. Obese women are more likely than non-obese women to die from cancer of the gallbladder, breast, uterus, cervix or ovaries.

Other diseases and health problems linked to obesity include

- Gallbladder disease and gallstones.
- Liver disease
- Osteoarthritis, a disease in which the joints deteriorate. This is possibly the result of excess weight on the joints.
- Gout, another disease affecting the joints.
- Pulmonary problems, including sleep apnoea in which a person stop breathing for a short time during sleep.
- Reproductive problems in women, including menstrual irregularities and infertility.

Health care providers generally agree that the more obese a person is, the more likely he or she is to develop health problems.

MATERIALS AND METHODS

Study design & area

This is a descriptive cross sectional analysis. This study was conducted among the patients reporting to Out Patient Department and In Patient Department at Government Siddha Medical College and Hospital, Palayamkottai-627002, Tirunelveli from April 2019 to September 2019.

Sample size & Sampling

Sample size

All the consequent patients who are attended Out Patient Department and In Patient Department with the symptoms of Atit lam (Overweight and Obesity) at Govt. Siddha Medical College, Palayamkottai-627002 from the period of April 2019 to September 2019.

INCLUSION CRITERIA

Age: Between 20-79 years

Both gender

BMI- More than 25 up to 45

WHR- More than 0.85

Diagnosed Hypertension, Diabetes Mellitus, and hypothyroid patients

EXCLUSION CRITERIA

Age below 20 & Above 79

BMI - Below 25 & above 45

WHR - Below 0.85

Renal Diseases and Endocrine diseases except thyroid disease.

Study design:

Cross Sectional Descriptive Study. The descriptive analysis had done by the Microsoft office excel Software. All this subjected to Ethical clearance was obtained from Institutional ethical review committee.

RESULTS AND OBSERVATIONS

The results were described under the following criteria by Descriptive study of 153 patients from in patients and out patients of both sexes.

Prevalence of Atitūlam:

Distribution of BMI

Table 04 : Distribution of BMI

BMI	Frequency	Percentage
Over weight	48	31.3
Obese class I	59	38.5
Obese class II	43	28.1
Obese class III (Morbid)	3	2.1
Total	153	

The highest incidence was be the Obese class I weight as 38.5% among body mass indexes.

Distribution of Waist Hip Ratio

Table 05 : Distribution of Waist Hip Ratio

Waist Hip Ratio	< 0.9	>0.9
Male	-	94
Female	-	59

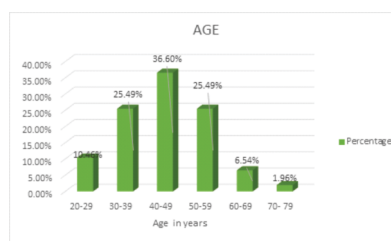
All the selected sample have their Waist hip ratio more than 0.9

Distribution of Age

Table 06 : Distribution of age

Age	Total number of affected patients	Percentage
20-29	16	10.46%
30-39	39	25.49%
40-49	56	36.60%
50-59	39	25.49%
60-69	10	6.54%
70- 79	3	1.96%
Total	153	

Figure 02: Bar chart for the distribution of age



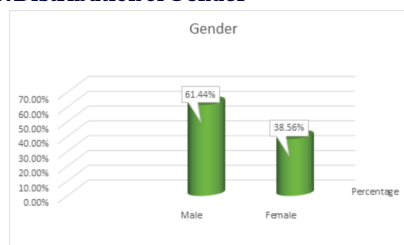
Highest incident of Atitūlam was observed as 36.6 % at the age group of 40-49 years old and next was be 25.49% at the age group of 30-39 and 50-59 years old.

Distribution of Gender

Table 07: distribution of gender

Sex	Total number	Percentage
Male	94	61.44%
Female	59	38.56%
Total	153	

Figure 3: Distribution of Gender



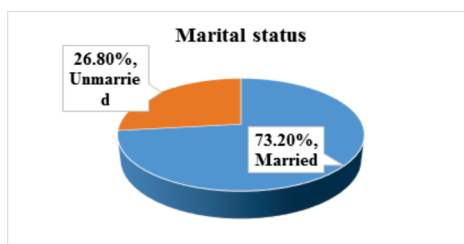
There were 61.44% of male affected out of 153 patients.

Distribution of Marital Status

Table 08: Percentage distribution of marital status

Marital Status	Frequency	Percentage
Married	112	73.20%
Unmarried	41	26.80%
Total	153	

Figure 04: Pie chart for the distribution of marital status



There were 73.2% of married and 26.8% of unmarried affected.

1. Distribution of Altered Diet Habits

Table 09: Distribution of Altered Diet Habits

Occupation	Frequency	Percentage
Mixed diet	108	70.5%
vegetarian	42	29.5%
Total	153	

The highest incident was observed in mixed diet in taking patients that is 70.5%.

Distribution of fast food habit

Table 10: Distribution of fast food habit

Food habit	Frequency	Percentage
Not taking fast food	69	45.1%
Taking fast food	84	54.9%
Total	153	

The highest incident was observed as 54.9 % of patients who

do prefer fast food.

Distribution of Various Associated diseases

Table 11: Distribution of Various Associated diseases

S.No:	Various aetiology	Frequent	Percentage
1	Hypertension history	76	49.6%
2	Diabetes History	68	44.4%
3	Hyperlipidaemia	87	56.8%
4	Heart diseases	20	13.1%
5	Family History	30	19.6%

Among associated diseases Hyperlipidaemia brings a higher percentage with 56.8%, whereas hyper tension and diabetic history also take a similar part.

DISCUSSIONS

The literary study of Atitūlam corresponding with the Overweight and obesity in Allopathic medicine. The objective of the present study was to identify the prevalence of Atitūlam and its associated diseases among the patient attending the hospital in 3 months. Among the 153 sample selected as Atitūlam cases, majority are male 61.44%. considering the BMI obese class I have 38.5% of prevalence, 100% of sample are with WH Ratio above 0.9. which stats that selected sample are having complain of Atitūlam (Obesity) Associated diseases are Hypertension with 49.6%, Hyperlipidemia with 56.8%, Diabetes history with 44.4%. Family history is with 19.6% respectively. There are more finding to be clarified in future to bring out a better results.

CONCLUSIONS

Atitūlam was found more common in males. BMI was found majority with Obese Class I, and 100% of sample are with Waist Hip ratio with above 0.9. Associated diseases of Atitūlam were found Hypertension 49.6% , diabetes 44.4%, hyperlipidaemia 56.8% and heart disease was affected in 13.1%. 19.6% respectively.

In this study were concluded 80.70% of patients had a habit of having fast food. 94.70% patients were with food pattern of mixed diet.

The knowledge of Atitūlam will give benefits to the society to get awareness and prevention of non-communicable diseases and also reducing the severity of disease and mortality. Further literary and clinical studies are essential in future.

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