

# Role of Ayurveda in Life Style Disease with Special Reference to Obesity - Management and Prevention

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**Short title:** Ayurveda in life style diseases

**Abstract:** *Predisposing to non communicable diseases are based on their way of living and habits. The main factors contributing to lifestyle diseases are disturbed biological clock, bad food habits, and ignorance toward physical activity. According WHO report on non communicable diseases in 2014, India has the highest rate of cardiac arrest in the world as one person dies in 33 seconds due to heart attack in India. WHO estimates almost 60% of the total mortality reported in India. To face with this challenges WHO target is halt to rise in diabetes and Obesity. Obesity increases the likelihood of diabetes, hypertension, coronary heart disease, stroke and certain types of cancer. In the management and prevention of life style diseases, Ayurved offers various regimens like Dincharya (daily regimen), Ritucharya (seasonal regimen), Rasayan therapy (Rejuvenation), Shodhan (detoxification) and some herbal drugs working on Dhatvagni along with proper diet (pathya-apathya). There are drugs described in the classical texts and number of studies conducted which proved their work as anti-obesity and hypolipidemic and may prevent from fearful complications and help to improve quality of life.*

**Keywords:** Chronic diseases; lifestyle diseases; obesity; Ayurveda; Non communicable diseases; NCDs

## 1. Introduction

Today chronic diseases are major health problem worldwide. Development of chronic diseases specifically heart diseases, diabetes, obesity, metabolic syndrome, chronic obstructive pulmonary diseases (COPD) are considered as diseases of industrialized countries, internationally are known as non-communicable diseases(NCDs) [1]. Now the percentage of infectious diseases are decreasing and chronic diseases are increasing much faster in low- and middle-income countries than in high-income countries. In the global race of development in economic growth, urbanization, market integration, foreign direct investment were significant determining factors of which leads to increase in mortality rates of heart disease and NCDs [2]. According to WHO status report on NCD, 2014 deaths occur due to all NCDs are 62% in males and 52.2% in female [3]. The percentage of total global deaths due to chronic diseases/NCDs is expected to increase to 70 percent and the global burden of disease to 56 percent in 2030. [Maskari F, 2010]. WHO set nine global targets to control NCDs. The report based on data of current situation, identifying the opportunities and priority area to attain the targets. [WHO status report, 2014]. Out of nine targets one target is to control obesity and overweight.

## 2. Obesity and Life Style Disorder

Abnormal or excessive fat accumulation is called as obesity and overweight which may badly impair the health. According to WHO obesity is a BMI greater than or equal to 30 while overweight is a BMI greater than or equal to 25. Obesity and overweight may lead to hypertension,

diabetes mellitus, heart failure and many type of cancers ultimately obesity is the major cause of life style disorder/NCDs [4]. The prevalence of obesity has increased by 22 % in the span of four years of 2010 to 2014 [5]. Kenchaiah S *et al* reported in their study that obese women had doubled the risk of heart failure as compared to normal BMI while obese men had a statistically increased the risk of heart failure by 90 percent. [6]

## 3. Obesity and Ayurvedic Approach

In Ayurvedic text Obesity has described as *Sthaulya* means a person who has excessive fat and flesh accumulated in buttocks, belly and breast and whose life process and energy come down constantly. [7] Charaka has described eight body traits that are to be avoided called as *Ashtanindaniya Purush* [8]. Among these Obesity and leanness deserve special attention [9]. Digestive power is strong in obese individuals because *Vata* is overactive in stomach due to its obstruction by *Meda dhatu* and it causes hunger and thirst [10]. Food digested by the patient quickly and trigger the urge to eat frequently. If the desire not pacified he may suffer from serious illness as sequence. (Ch.Su.21/7-8).

The obese are continually ill and need to be managed by slimming and reducing measures [9]. Etiological factors according to Ayurvedic text may be classified into two types. 1. Exogenous causes-which are *Medas* potentiating diet and regimen. 2. Exogenous causes i.e. *Dosha, Dhatu, Mala* etc. [11]

**Evidence based interventions and clinical implications**

**Table 1:** Summary of studies

Study	Description	Sample	Study Duration	Key Findings
Goyal R <i>et al</i> [12] (2011)	Cinical study on the role of <i>Agnimanthadi</i> compound in the management of obesity	83	2 months	Better reduction in weight, BMI and other symptoms in obesity in comparison to control group
Suple Y <i>et al</i> [13] (2015)	Clinical study of <i>Lekhan Basti</i> (with and without <i>Katu taila</i> ) in obesity	40	16 days	<i>Lekhan Basti</i> with <i>Katu taila</i> was better in improving HDL and decreasing TC,LDL,TG,VLDL while <i>Lekhan Basti</i> with sesame oil had impact only on TC and TG. Decrease in BMI significantly shown in sesame oil group
Nayak AP [14] (2015)	Comparative study of <i>Lekhan</i> therapy in the management of obesity	24	90 days	<i>Lekhan Basti</i> and <i>Lekhan Vati</i> were given in one group while other group was treated with <i>Lekhan Vati</i> . Decrease in Cholesterol and skin fold thickness proved the efficiency of <i>Lekhan</i> therapy. Average weight loss was 1.5 kg while post therapeutically loss was 9.5kg
Sankh K <i>et al</i> [15] (2013)	Clinical study on <i>Bilwa patra swarasa</i> in the management of <i>Sthaulya</i> (Obesity)	30	12 weeks	<i>Bilwa patra</i> swaras 30 ml and honey 12 ml were given early in the morning in empty stomach and found significant reduction in weight 2.57% and reduction in BMI 2.65% which was statistically significant. In tricep skin fold reduction found 18.8%
Patil YR <i>et al</i> [16] (2012)	Efficacy of <i>Karshaniya yavagu</i> (Ayurvedic preparation) in management of obesity	60	90 days	Ayurvedic preparation made up of <i>Coix lacryma –Jobi</i> ( <i>Gavedhuka</i> ) and honey was given and compared with placebo. In both groups low calorie diet was given. It is observed that weight, waist, circumference and waist:hip ratio of experimental group show significant results over the control group.

#### 4. Discussion

The evidences show need of weight reduction to avoid non major non communicable diseases like heart stroke, hence WHO set one of the target to control obesity. Ayurved physicians should assist the patient and society using evidence based clinical implications. *Agnimanthadi* compound shows better reduction in weight and BMI. The contents of the compound are *Agnimanth* (*Cleoderdendrum phlomidis*) antidiabetic property [17], *Mustaka* (*Cyperus rotundus*) has *Lekhana* (abrading) and *mutral* (diuretic) property [18]. The compound of these two powders was given *bhavana* of *Gomutra* (*Bos indicus*) which has a property of *Rasayan* responsible to modulate the function in human body[19]. Cow urine can enhance the efficiency and potency of the drug.

*Lekhan Basti* containing *Triphala* decoction, cow urine, honey, *Yavaskar* and sesame oil and *Katu taila* (flaxseed oil) lowers the BMI. The composition of *Lekhan Basti* have *Katu*, *Tikta*, *Kashay Rasa*. In terms of properties they are *Laghu*, *Tikshna* and *Sukshma* cause depletion of *Meda dhatu* [20]. Research studies suggest that polyunsaturated fatty acid increases the plasma level of leptin which would help in reduction of weight[21]. One of the content of *Lekhan Basti* i.e. Sesame oil contains polyunsaturated fatty acid may facilitate in the reduction of body weight[22]. *Triphala* and its constituents have the potential to decrease weight with lipid profile modulating properties [23]. In such a way all together action of *Lekhan Basti* may be worked as antiobesity. According to Charaka, *Basti* works on whole body as it enters in *Pakwashaya* which is *mula* (root) of *sharira* having *Shiras* and *Dhamani* and spread all over the body[24].

Drug administered through rectal route is amenable for local as well as systemic [25]. *Basti* stimulates Central Nervous System by stimulating Enteric Nervous System [26].

Researcher has conducted the study on *Lekhan Basti* with one of the content as *Katu taila* (Flaxseed oil). *Lekhan Basti* with *Katu taila* was better improving HDL and decreasing TG, LDL, VLDL but various studies reported that flaxseed oil do not have effect on dyslipidemia [27,28]. Flaxseed significantly reduces the circulating total and LDL cholesterol concentration but flaxseed oil is do not have such effect[29], hence the present study needs further revalidation.

*Bilwa patra* (*Aegle marmelos* leaves) with honey and found significant reduction in weight. *Bilwa patra* have umbelliferone which reduces the body weight, TG, TC and can act as antiobesity by lipolysis in adipocytes [30]. Sankh K *et al* (2013) has carried study found significant reduction in weight and in BMI with the help of *Bilwa Swaras* and honey.

Garg A reported in their studies that aqueous extract of *Aegle marmelos* (AmAe) and ethanol extract of *Aegle marmelos* (AmEe) have inhibitory effect on hypertrophy and hyperplasia of adipose tissue and cause decrease of body weight gain. In addition to weight reduction they have lowered TC, TG and increased HDL levels. AmAe and AmEe may help to regulate lipid storage with mobilization of adipocytes [31].

Ayurvedic preparation made up of *Coix lachryma –jobi* with honey was given for 90 days and found significant weight loss in the study conducted by Patil YR(2012). Kin So(2007) reported the water extract of *Coix lacryma jobi* may regulate neuroendocrine activity in the brain and act on obesity [32]. Body weight and adipocyte size were significantly lowered in water extract of lachryma group associated with improved glucose and lipid metabolism [33]. *Coix* exerted inhibitory activity on adipocytes differentiation via acting on adipogenesis and may help to act as antiobesity [34].

## 5. Conclusion

Obesity is the high risk cause of diabetes, hypertension and coronary heart diseases. In the management and prevention of obesity Ayurveda can play a major role. The therapy like *Lekhan Basti* as well as the drugs like *Agnimanthadi* compound, *Bilwa patra* swaras and diet like *Karshniya Yavagu* found effective in the management of obesity and dislipidemia

## References

- [1] Maskari FA. Lifestyle Diseases: An Economic Burden on the Health Services. *Unchronicle* July 2010 ; Vol. XLVII No. 2 2010
- [2] Stuckler D. Population Causes and Consequences of Leading Chronic Diseases: A Comparative Analysis of Prevailing Explanations. *The Milbank Quarterly* 2008; 86(2): 273–326
- [3] Global Status Report on noncommunicable diseases 2014, WHO [www.who.int/nmh/publications/ncd-status-report-2014/en/](http://www.who.int/nmh/publications/ncd-status-report-2014/en/) Accessed on 20.06.2017
- [4] Boutayeb A, and Boutayeb S. The burden of non communicable diseases in developing countries. *International Journal for Equity in Health* 2005; 4(2) doi:10.1186/1475-9276-4-2
- [5] Burden of NCDs and their risk factors in India (Expected from Global Status Report on NCDs -2014) [http://www.searo.who.int/india/topics/noncommunicable\\_diseases/ncd\\_situation\\_global\\_report\\_ncds\\_2014.pdf](http://www.searo.who.int/india/topics/noncommunicable_diseases/ncd_situation_global_report_ncds_2014.pdf) accessed on 23.10.2017]
- [6] Kenchaiah S, Evans JC, Daniel L, Wilson Peter WF, Benjamin EJ, Larson MG *et al* , Obesity and the risk of heart failure, *N Engl J Med*. 2002 Aug 1;347(5):305-13. DOI: 10.1056/NEJMoa020245
- [7] Tripathi B, editor,(Reprint). *Charak samhita of Agnivesha ,Sootra sthan; Ashtaunindatiya Adhyay: Chapter 21, Verse .8-9.* Varanasi: Chowkhambha Surbharati Prakashan,2009
- [8] Valiathan MS, The legacy of Charaka, Reprint. Hyderabad: Universities Press Pvt Ltd; 2011. pp 88-89
- [9] Ibidem pp 88-89
- [10] Tripathi B, editor,(Reprint). *Charak samhita of Agnivesha ,Sootra sthan; Ashtaunindatiya Adhyay: Chapter 21, Verse .5* Varanasi: Chowkhambha Surbharati Prakashan,2009
- [11] Gopalani A, Sarmandal B. Obesity. 1st ed Kottakkal : Arya Vaidya Sala; 2013 : 52-53
- [12] Goyal R, Kaur M, Chandola HM. A clinical study on the role of *Agnimanthadi* compound in the management of *Sthaulya* (obesity). *AYU* 2011 Apr-Jun; 32(2): 241–249.
- [13] Suple Y, Sawarkar G. A Clinical study on the effect of *Lekhan Basti* (With and without *Katu taila*) in the management of *Sthaulya* with special reference to Obesity. *Int.J.Res. Ayurveda Pharm* Mar-Apr 2015; 6(2): 238-240 DOI:10.7897/2277-4343.06248
- [14] Nayak AP. A Comparative study of *Lekhan* therapy in the management of *Sthaulya*(Obesity). *IJRAP* July-Aug 2012; 3(4): 507-15.
- [15] Sankh K, Lingadore L, Huded SP,Ashwin HS, Asha HN,Gummadi SV. Efficacy of *Bilwapatra swarasa* in the management of *Sthaulya*(Obesity)-A clinical study. *Int.Res.J.Pharm* 2013; 4(9): 113-116
- [16] Patil YR, Sawant RS. Evaluation of Efficacy of *Karshaniya yavagu* (Ayurvedic preparation) in management of obesity. *IJRAP* March-April 2012; 3(2): 295-298
- [17] Sharma PC, Yelne MB, Dennis TJ. Vol. 2. Delhi, India: Central Council for Research in Ayurveda and Siddha; 2001. Database on Medicinal Plants used in *Ayurveda*; pp. 1–3.
- [18] Ibidem, Database on Medicinal Plants used in *Ayurveda*. 3(12):405.
- [19] Randhawa GK. Cow urine distillate as bioenhancer .*J Ayurveda Integr Med*. 2010 Oct-Dec; 1(4): 240–241.doi: 10.4103/0975-9476.74089 PMID: PMC3117312
- [20] Sharma P. A Clinical study to evaluation effect of *Udvardana* and *Navak Guggul*, *IAMJ* Feb 2015; 3(2): 348-55.
- [21] Hynes GR, Heshka J, Chadee K, Jone PJ. Effects of dietary fat type and energy restriction on adipose tissue fatty acid composition and leptin production in rats. *J.Lipid Res* Feb 2003; 44(5):893-901 PMID 12562868
- [22] Sankar D. Rao MR, Sambandam G, Pugalendi K V. Effect of Sesame Oil on Diuretics or  $\beta$ -blockers in the Modulation of Blood Pressure, Anthropometry, Lipid Profile, and Redox Status .*Yale J Biol Med* 2006 Mar ; 79 (1): 19-26 PMID- 1942178
- [23] Gurjar S,Pal A, Kapur S. *Triphala* and its constituents ameliorate visceral adiposity from a high-fat diet in mice with diet-induced obesity. *Altern Ther Health Med*. 2012 Nov-Dec; 18(6):38-45.
- [24] Tripathi B, editor,(Reprint). *Charak samhita of Agnivesha , Siddhi Sthana; Kalpana Siddhi : Chapter 1, Verse 31.* Varanasi: Chowkhambha Surbharati Prakashan,2009.
- [25] Jannin V, Lemagnen G,Gueroult P,Larroure D,Tuleu C.Rectal route in the 21 st century to treat Children. *Advanced Drug Delivery Reviews* 2014; 73:34-49
- [26] Patel KD, Dei L, Donga SB, Anand N. Effect of *Shatapushpa Taila Matra Basti* and *Pathadi Kwatha* on Poly Cystic Ovarian Disease. *AYU*. 2012 Apr-Jun; 33(2): 243–246. DOI: 10.4103/0974-8520.105245 PMID: PMC3611647
- [27] Prasad K. Flaxseed and Cardiovascular Health. *J Cardiovasc Pharmacol* 2009 Nov ; 54 (5) :369-377. DOI: 10.1097/FJC.0b013e3181af04e5
- [28] Paschos GK, Zampelas A, Panagiotakos DB, Katsiogiannis S, Griffin BA, Votteas V, et al. Effects of Flaxseed oil supplementation on plasma adiponectin levels in dyslipidemic men. *Eur J Nutr* 2007; 46(6): 315-320
- [29] Pan A, Yu D, Demark-Wahnefried W, Franco OH, Lin Xu. Meta analysis of the effects of flaxseed interventions on blood lipids. *Am J Clin Nutr* 2009; 90; 288-97.
- [30] Karmase A, Birari R, Bhutani KK. Evaluation of antiobesity effect of *Aegle marmelos* leaves). *Phytomedicine* 2013 July; 20(10): 805-12 DOI:10.1016/j.phymed.2013.03.014 PMID-2363084
- [31] Garg A, Singh R. Antiobesity-activity of Aqueous ethanol extract of *Aegle marmelos* –*Int. J .Pharma sci Res*. Jan –Feb 2015; 30(1): 53-60.

- [32] Kim SO, Yun SJ, Lee EH. The water extract of adlay seed (*Coix lacrymajobi* var. mayuen) exhibits anti-obesity effects through neuroendocrine modulation. Am S Chin Med. 2007; 35(2): 297-308 PMID-17436369
- [33] Mi Young Sag Mi-Young Song, Hyo Won Jung, Yong-Ki Park. Antiobesity Effect of Water Extract of *Coix lacrymajobi* var. mayuen in High Fat Fed C5BL/6 Mice. Korean Med obes Res 2016; 16 (1): 27-35
- [34] Lee M.K. E. Shin Q. Liu BY, Lee H J , Kim SY. *et al.* Inhibitory activity of three varieties of adlay (Coix seed) on adipocyte differentiation in 3T3-L1 cells. Natural Product Sciences 2010 ; 16 (4 ):291 -294