



The Role of Physical Exercise and Diet in management of Medoroga (STHAULYA) Reference Novel Coronavirus Covid 19

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ABSTRACT

Nowadays, due to Covid-19 pandemic circumstance, numerous individuals are Staying from home. Understudy is additionally concern with the online class from home, because of which all physical movement of all individual has been stopped. Medoroga is one of the dominating metabolic problems and driving reason for mortality. Numerous patients with Covid infection 2019 (COVID-19) have identified with the metabolic disorder during the lockdown. The general wellbeing proposes (Work from Home, requests, gyms, terminations of garden and wellness focuses) to forestall Covid-19 spread can possibly decrease day by day physical movement. Ideas of Agni, Prakriti, strategy for victualing ought to be given equivalent consideration while choosing ones dietary and exercise routine to turn away/control Medoroga (STHAULYA). Organizing of diet is generally important to support insusceptibility. According to numerous investigates to give valuable pabulum which contains Zinc, Vitamin C, Vitamin D and invulnerability. It is practically equivalent to Medoroga referenced in Ayurveda compositions. Strick likeness outwardly inspected in both customary arrangement of medication and Ayurveda while portraying its causative components, outcomes and preventive part of exercise and diet in its administration. Striking is outwardly analyzed in both Traditional arrangements of medication and Ayurveda depicting its causative factors, and preventive capacity of movement and diet in its pandemic Covid-19.



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INTRODUCTION

The preventions and treatment on it. Interventions by government. Awareness about the disease and pandemic. The data was collected from differ-

ent websites, news, books and articles. Even after the disease become pandemic, many people are unknown with the facts, the severity of global health outbreaks, precautions to take and importance of intervention by the government as about quarantine and lockdown. This review study reaches up to all the facts regarding COVID-19, and it's pandemic to spread more awareness (Chhapare and Bhutada, 2020). They may be viruses, bacteria or fungi. It may spread through breathing, talking, sneezing, coughing, etc. which generate droplets in the air. Dhoopana Chikitsa (medicinal fumigation) is one of the important faculties in Ayurvedic treatment (Gond and Bhutada, 2020).

A healthy person has adequate resistance to infection. Infection is a successful invasion, establishment and growth of microorganism in the tissue of

the host. The ability is hampered by poor nutritional status. Such a person falls an easy prey to infection frequently either in the form of cold, cough, marginal fever, feeling of weakness and other minor complaints. Immunity can use simply Defence mechanism in the body. The body has two types of defence mechanisms specific and nonspecific. Immunity classifies two ways Specific & Non-Specific, There is the vital importance of proper hydration and nutrition. Individuals who eat an even eating regimen will, in general, be a lower danger of constant sicknesses and irresistible infections and are healthier with stronger immune systems. Thus, the diet must incorporate an assortment of new and natural nourishments consistently to get the nutrients, minerals, dietary fiber, cancer prevention agents and enough water for hydration and protein (Bhutada et al., 2020).

Creature tests controlling flu and herpes simplex infections 1 (HSV-1) in the respiratory lot have demonstrated that moderate exercise, performed previously (for example preparing) or after disease (for a couple of days before indication beginning), improves grimness and mortality to the contamination Hence physical exercise effect on immune system fight against viral attack. Increase in immunity useful for a fight against viral attack. Nutritional deficiency effects on the efficiency of immune against infection Vitamins A, B, C, D and supplement are effective to maintain the function of the immune system. Vitamin A is gathering of retinoids including retinol, retinal and retinoic corrosive, and is one of the most significant factors in keeping up safe framework work. Nutrient A supplementation has been appeared to lessen bleakness and mortality of measles, pneumonia, the runs, intestinal sickness, and HIV disease. Nutrient A supplementation likewise upgrades insusceptible reaction after immunization for measles and flu. Considering the defensive impact of these nutrients on the viral disease, supplementation with different nutrients is prescribed to diminish COVID-19 danger (Mora et al., 2008; Huang et al., 2018).

Aims and objectives

Modern and Ayurvedic management of obesity with the help diet and exercise in a more effective manner.

Definition of obesity/Medoroga

Medoroga is characterized as unusual amassing of fat typically 20% or more over a person's optimal body weight. This is a numerical value of your weight in relation to your height. A BMI between 18.5 and 25 kg/m² indicates a normal weight. A BMI of less than 18.5 kg/m² is considered underweight. A BMI between 25 kg/m² and 29.9 kg/m² is consid-

ered overweight. A BMI of 30 kg/m² or higher is considered obese (BMI, 2019; Nishida et al., 2004)

Medoroga

As per Ayurveda, a person having the pendulous appearance of *Sphika*, *Udara* and *Stana* due to excess deposition of *Meda* along with *Mamsa Dhatu* and also having unequal and abnormal distribution of *Meda* with reduced zeal towards life is called Obese (*Medoroga*) /*Atisthula*. (Anantamati.N.Bammagol et al., 2015; Trikamji, 2011a).

Causative factors of obesity

Indulgence in a sedentary lifestyle, leading to excessive calories consumption rather than its expenditure is the chief cause of obesity. As per Modern sciences, the main etiological factors responsible for Obesity (2020) have been enlisted in Table 1. *Ayurveda* most of the causes described for *Sthaulya/Medoroga* comprises of faulty dietary habits. As per *Sushrut Samhita* treatise, corpulence and leanness (of the body) depend upon *Aahaar Rasa*. When one constantly takes diet increasing *Kapha* humour, indulges in eating when the previous meal is undigested, avoids physical exercise and sleeps in the day, the *Ahara-Rasa* being undigested and more sweet circulating in the body, due to excessive unctuousness, produces fat which causes obesity (Kaviraja, 2003a) *Acharya Charaka* has categorized causative factors of obesity into eight captions. Along with defective lifestyle patterns, *Aacharya Charaka* has also include genetic predisposition and the psychic state as a contributory factor for obesity Shows in Table 2, (Trikamji, 2011b).

Influential Factors concerned with obesity in the context of Ayurveda

1. Influence of 'Ashana' (Paradakara, 2011) in obesity

Based on the quality of food items consumed and the time of consuming food concept of Ashana (the process of food consumption) has been described in Ayurveda. It is considerably involved and plays a key role in either maintenance of health or causation of disease. Intake of food consisting of wholesome and unwholesome things mixed together is known as 'Samasana' (eating of healthy and unhealthy food together); if food is taken in excess, in small quantity or untimely it is known as 'Visamasana' (irregular eating time); if food is taken during indigestion, it is known as 'Adhyasana' (eating one over the other). Person habitual to one of - these three pattern is also much prone to Obesity (Medoroga). (Ambikadatta, 2003)

2. Relation of Prakriti (bodily and mental constitution) and obesity. (Amin et al., 2019)

Table 1: Enlisting causative factors leading to obesity as per conventional science

Lifestyle-related	Others
1. Sedentary lifestyle with little physical exercise	1. Hereditary
2. Emotional distress: People will, in general, eat more at the point when they are disturbed, restless, under pressure or feeling weariness gorging messes and late evening eating condition	2. Medications: antidepressants, antidiabetic drugs, anticonvulsants, antipsychotic drugs, beta-blockers and steroid hormones have been considered obesogenic
3. Excessive utilization of shoddy nourishments and fat-containing nourishments, because of which more fat gets saved in the body causing stoutness	3. Endocrine disorders such as hypothyroidism, Cushing's syndrome, growth hormone deficiency, hypogonadism, and polycystic ovary syndrome
4. Nutrition and Pregnancy—one hypothesis expresses that when youngsters are undernourished during their fetal life when they become grown-ups, they, as a rule, create stomach fat even with the ordinary eating routine. This put them at a more serious danger of creating heftiness	
5. Spending additional time staring at the TV and playing PC games. (Walunj et al., 2020)	

Table 2: Aggravating factors for obesity as per Charaka Samhita

Causes concerned with lifestyle	Causes concerned with mental health	Causes concerned with heredity
Excessive intake of food	Being happy always	Defect in Sperm or Ovum
Intake of Heavy to digest, Sweet, Cold and Oily foods	Not caring about things	
Not doing physical exercise		
Not involving in sexual activity		
Sleeping during the daytime. (Walunj et al., 2020)		

Table 3: Comparative benefits and disadvantages of these types of diet

Diet	Benefits	Disadvantages
Low-calorie diet	Mean weight reduction of 10% in 3 a year and Reduction in, TG, BP, blood glucose, LDL	obedience difficult in long term
Very low-calorie diet	Mean weight reduction of >9-10% in 2-8 weeks Rapid weight reduction	Electrolyte imbalance, hypotension, gallstones Needs medical supervision
Low-carbohydrate diet	Mean weight reduction ~5% in 2-12 months, Faster initial weight loss then a low carbohydrate diet	Ketosis when carbohydrate Intake <50 g/day Ve
Low fat	Mean weight reduction of ~5% in 2-11 months, Faster starting weight reduction than low-fat eating regimens	Less palatable, feel hungry Easily Increase TG

BP, blood pressure; LDL, serum low-density lipoprotein cholesterol; TG, serum triglyceride. (Sacks et al., 2009)

Table 4: Guidelines to be followed with the aim to manage obesity

Contraindicated measures	Directed measures
Overeating and/or eating heavy foods (hard to digest) in large portions	Eat according to your body constitution
Tamasic(unhealthy) foods:- Leftovers, processed, canned foods, fast food	Eat freshly cooked warm food. It will strengthens Agni, digests food better, reduces excess Kapha and Vata
Drinking water after meal, excessive drinking of water irrespective of thirst	Eat fresh and seasonal vegetables and fruit available in your region.
Drinking too cold water and beverages and cold food	Eat food, which has enough oil, and is moist enough (not fried). It tastes better, helps Agni (digestion), builds Dhatusi (body constituents), and increases strength
Cruciferous vegetables, fried foods and heavy to digest foods	Do not eat food with wrong combination. E.g. Honey and ghee (clarified butter) when combined in equal quantities is poisonous. Mixing sour fruits and milk curdles the milk.
Talking or laughing while eating. Eating too fast or while watching TV	Eat only when you are hungry, when previous meal is digested. Eat light meals for breakfast and dinner and heavy meal during lunch time, have early dinner between 6:00 p.m. and 7:30 p.m Eat with proper frame of mind – create pleasant environment Eating sequence: First eat carbohydrates or sweet taste, next eat salty, sour, pungent and bitter foods. Finally eat astringent food. (Walunj <i>et al.</i> , 2020)

Prakriti is one of the fundamental principles led by Ayurveda. It plays an imperative role in the manifestation of the disease, and adopting the personalized approach as per Prakriti can help in assessing the susceptible clinical features of each Prakriti type and may prove supportive to take preventive measure in arresting the far-reaching ominous clinical impacts of the disease. In a cross-sectional survey study intend to study Main Manas and Sharira Prakriti (mental and dominant bodily constitution) in Medoroga (obesity) participants, Kapha and Tamas Pradhana participants were found to be more prevalent to Sthaulya as compared to other Prakriti.

Diet regimen in obesity

Modern science has even accepted dietary interventions as the cornerstones in the management of obesity which mainly focus on energy content and macronutrient composition. Medoroga treatment rule gave by the NIH recommend that individuals who are overweight class. I huskiness and who have, at any rate, two danger components should decrease their energy confirmation by 500 kcal/day (Amin *et al.*, 2019). Current proposals for weight the exec-

utives accentuate the significance of good dieting designs that incorporate an assortment of supplement thick nourishments, limit parts of energy-thick food sources, and reduce energy (Clinical Guidelines, 1998).

Following Four types of diets are usually recommended in the management of obesity (Makris and Foster, 2011).

Low-calorie diet (LCD): Low Fat (< 30% of energy take), 800–1500 kcal/day high in carbohydrate (55–60%), low glycemic-index and have high in fiber.

Low-fat diet: Include of fat to 15–24% in daily of total energy intake 1001–1499 kcal/day

Low-carbohydrate diet: The range of carbohydrate between 60 to 150/day) 1001–1499 kcal.

Very low-calorie Diet - 50–55 % carbohydrate, 200–900 kcal/day, (Diet contain many fiber and have low GI .)<30% fat. Benefits and disadvantages of these diet patterns have been described in Table 3. Studies relating the impact of these eating regimens on stoutness uncovered that all calorie-limited weight control plans bring about equivalent weight reduction independent of the macronutrient syn-

thesis and dietary adherence was seen to be a significant determinant of weight reduction. In this manner, picking an eating regimen with a macronutrient arrangement dependent regarding a matter's taste preference (individual approach) can accomplish better consistency.

Ayurvedic perspective of diet/ Aahaar in obesity (Medoroga)

Aahaar (diet), the first pillar of *Ayu* (life span) means intake of food and refers to the knowledge of proper diet. It provides the first approach we can take to maintain health and to alleviate the symptoms of illness. While diet will not cure well-established diseases, most of the illnesses can be controlled solely by an adjustment in diet and eating habits. Such a diet is a significant aspect of maintaining good health. Notwithstanding appropriate eating routine, *Aahaara* stresses the part of three segments indispensable to solid gastrointestinal working – *Deepan* (the support of solid stomach related fire), *Paachan* (Smooth processing and digestion) and *Anulomana* (legitimate end of waste materials). People become ill and obese because they have problems in one or more of these areas. *Agni* (stomach related fire) controls the craving.

A solid craving called *Deepan* (the support of solid stomach related fire) gives the sign that the stomach related framework is prepared for new food intake (hunger). *Paachan* or sound absorption guarantees appropriate sustenance of the *Dhatu* (body constituents). At the point when absorption is impeded, we may encounter corrosiveness, gas, swelling and queasiness just as a sharp or metallic taste on the tongue. These things show that absorption is slow and *Ama* (undigested segment) is being delivered. On the off chance that you feel that your processing isn't solid yet you actually have some hunger, at that point eat just a modest quantity of effectively edible food. Solid end called *Anulomana* happens before anything else with the goal that the framework is prepared to acknowledge the day's new food. The inappropriate end shows as unpredictable solid discharges, reliably free guts stoppage, hard or clingy stools. These show that poisons and waste are aggregating and maturing in the colon, making its pH acidic and upsetting retention and end. On the off chance that your insides are not moving, extra food will just build the weight on an effectively drowsy colon. At the point when hunger, assimilation and end are typical, we have plentiful energy, solid bodies, great wellbeing and clear personalities ([Walunj et al., 2020](#)).

Importance of Consumption of Food at the Proper time to manage obesity

In *Ayurveda*, the ideal time for having meal has been described based on signs produced in body the ideal time for taking meals is after the end of dung and pee, when the psyche is perfect (without feelings), when the *Dosha* (body Humors) are moving in their regular ways (working ordinarily), when burping is unadulterated without and foul smell or taste when the craving is a well shown when the flatus is moving to descend effectively when the stomach related action is sharp when the receptors are clear working when the body is light. Food ought to be devoured, watching the principles and methodology of taking food ([Acharya, 2011c](#)). One should take food only when he feels hungry. The best time for lunch is between 12 .15 p.m and 1.15 p.m.

Because *Pitta Dosha* responsible for digestion is at the peak in this time interval. The largest meal of the day, maybe lunch. Dinner should be lighter than lunch. As Obesity is a metabolic disorder, therefore the main emphasis is to be given to digestive fire– *Agni* and the diet regimen of an obese person should be planned according to the state of *Agni*. An Obese person with low digestive power (*Mandagni*) should avoid *Guru Aahaar Dravya* (heavy to digest food) and should take *Laghu Aahaar Dravya* (quickly digestible food) more frequently. But in an Obese person with high digestive power (*Teekshanagni*), *Guru* (hard to digest) as well as *Aptarpak* (low-calorie diet) *Aahaar* should be given. *Guru Aahaara* (heavy to digest) will produce a sense of satiety and will help to retard the frequent intake while its *Aptarpaka* (catabolic) quality will help to reduce body weight. Food does not get.

Method of Consuming Food

To facilitate proper nourishment from food consumed, not the only intake of good qualitative food is essential but also a method of consuming food is also equally important. *Acharya Charaka* has described in detail maneuver of eating as *Ashtaaharavidhiyatana*- Eight factors need to be taken into consideration while deciding the diet of the person ([Fock and Khoo, 2013](#)).

Quantity of food

Quantity of food to be taken varies as per individuals based on *Agni, Abhyavarana Shakti* (ingestion capacity). By and large $\frac{1}{3}$ of the limit of stomach ought to be loaded up with solids, $\frac{1}{3}$ with fluids and rest $\frac{1}{3}$ ought to be saved void for the free developments of body humors. *Vata, Pitta* and *Kapha*. The presumption of the capacity of the stomach can be done by ingestion capacity of a person ([Ambikadatta, 2003](#)). Considering the significance of all these above-mentioned factors in order to be sound and increment the stomach related force

(Agni) while getting thinner, steps ought to be followed have been enrolled in Table 4.

Physical Exercise in Obesity

Weight loss can be achieved in a short time interval by following proper diet regimen, be that as it may, keeping up this weight reduction is generally troublesome and frequently requires physical exercise and a balanced diet to be a permanent part of an individual's lifestyle. In spite of the fact that activity isn't successful for introductory weight reduction, physical action is significant for keeping up weight reduction accomplished. (Trikamji, 2011e)

As per *Ayurveda* properly performed, physical exercise/*Vyayama* is able to nullify the adverse effects of even incompatible food (Miller et al., 1997). Physical Exercises, if done properly stimulates muscle metabolism and increases oxygenation. It also strengthens and improves *Mamsa* and *Meda Dhatu*. If done accordingly it brings lightness in the body, increases work power, solidity, tolerance power; decreases *Kapha Dosha* and increases *Jathragni* (digestive power) (Kaviraja, 2003b), *Acharya Charaka* has mentioned *Medadhathu* as site of *Kapha Dosha* (Trikamji, 2011d) *Medadhathu* is in excess in an obese person. So as *Vyaayam* leads to decrease in *Kapha Dosha*, subsequently, *Medadhathu* is decreased and the person becomes lean and thin.

Acharya Charaka has also mentioned *Vyayaam* in the general treatment of *Kaphaj* diseases (Acharya, 2011b) and then mentioned *Atisthaulya* (obesity) in 20 *Nanatamaj Kapha* diseases. (Acharya, 2011a) So *Vyayaam* is helpful in the treatment of obesity. Several benefits of exercise, including maintenance of a healthy state, have been described in *Ayurveda* (Trikamji, 2011c; Kaviraja, 2003d).

Quantity of Physical Exercise (Vyayaam)

Conventional system opines minum up to 301 min/week of exercise is required in order to maintain weight loss inconsistency. (Kaviraja, 2003c) with dietary modifications. While determining the amount of exercise again, the individualistic approach has been adopted in *Ayurveda*. In all seasons day by day exercise ought to be performed by people craving their prosperity by 'Balardha' (half of one's quality) else it hurts. Measures of half of the person's quality have been characterized as when (Prana) *Vayu* arranged in the heart comes out to mouth while performing exercise, it is the indication of the half of solidarity (Donnelly et al., 2009).

Acharya Sushruta has encouraged to do practice in the wake of thinking about age, body, spot, time and diet else one gets beset with the extreme problem,

for example, squandering, thirst, anorexia, regurgitating, inherent drain, energy, exhaustion, fever and dyspnoea Physical exercise ought to be dodged by one experiencing characteristic discharge, skin-niness, dyspnoea, hack and twisted, subsequent to taking food, squandered because of sex and distressed with thirst and happiness (Reena et al., 2014; Kaviraja, 2003c).

DISCUSSION

In synopsis, albeit unequivocal verification for the possible viability of different supplements in lightening destructive impacts of COVID-19 is as yet prospective, supplementation of adequate nutrients and legitimate minor components is prescribed to help forestall lung disease and mitigate COVID-19 manifestation. Critically, all healthful enhancements just diminish the chance of contamination and are just adjuvant treatments, though the main techniques for COVID-19 avoidance and treatment are in the advancement of antibody and medications. (Sun et al., 2020) *Medoroga* is a peril factor in viral pandemics and tainted patients with bulkiness have a more awful infirmity figure. COVID-19 is no exclusion, and a report has as of late been conveyed by Public Health England on the relationship of excess load with COVID-19 (Kwok et al., 2020; Chua and Zheng, 2020; Excess weight and COVID-19, 2020).

CONCLUSION

This examination underlines the function of diet and physical action in the event of weight in the domain of ordinary and *Ayurveda* line of treatment. Being corpulent is more terrible due to the ineptitude of exercises and being generally influenced with a few maladies. The two streams concur that without altering the eating routine and exercise the treatment of Obesity is troublesome. It is the need of pandemic circumstance partner the information on diet and appropriate physical exercise with the examination of fixing to forestall or administer infirmities like quality. The individualistic framework must be followed for dietary regular practice and exercise plan for the heads of strength. Contemplations of *Prakriti*, *Agni*, strategy for eating should be given equivalent idea while picking ones dietary and exercise routine to ruin/control imposingness. In our clamoring schedule, we have to review the critical bearings laid by *Ayurveda* for strong life, with the objective that we can remain sickness free. People should be made careful about the criticalness of Diet and Physical Exercise for expectation and the leading body of weight (*Medoroga*). Substantialness is a danger factor in viral pandemics and contaminated

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Conflict of interest

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REFERENCES

Acharya, J. T. 2011a. Charaka Samhita, Sutrasthana,
Maharogadhyaya Adhyaya, 20/19, reprint edition.
Varanasi Chaukhambha Prakashana, pp.115.

Acharya, J. T. 2011b. Charaka Samhita, Sutrasthana,
Maharogadhyaya Adhyaya, 20/8, reprint edition.
Varanasi Chaukhambha Prakashana, pp.113 .

Acharya, J. T. 2011c. Charaka Samhita, Sutrasthana,
Vimanasthana, Rasavimana Adhyaya, Reprint edi-
tion. Varanasi Chaukhambha Prakashana, 1/21-
26, pp. 237.

Ambikadatta, S. K. 2003. Sushruta Samhita,
Sutrasthana, Anapanavidhi Adhyaya, 46/500-
501, reprint edition . Varanasi, Chaukhambha Sub-
harati Prakashana, pp. 251.

Amin, H., Vyas, H., Vyas, M. 2019. Role of Prad-
hana Sharira and Manas Prakriti (bodily and men-
tal constitution) in the manifestation of sthauilya
(obesity): A cross-sectional survey study. *Interna-
tional Journal of Yoga - Philosophy, Psychology and
Parapsychology*, 7(2):39-47.

Anantamati.N.Bammagol, Azizahmad.I.Arbar,
Veena, K. H. 2015. Preconceptional care in
Ayurvedafor a healthy mother and childA clas-
sical review. *International Journal of Ayurvedic
Medicine*, 6 Suppl(1):22-27.

Bhutada, R. S., Rathi, R., Dasar, D. 2020. Immu-
nity boosting diet during Covid 19. *International
Journal of Research in Pharmaceutical Sciences*,
11(SPL1):832-838.

BMI 2019. Body Mass Index In Adults. Accessed on:
2019-10-20.

Chhapare, S., Bhutada, R. S. 2020. Covid-19: A
Pandemic Situation — Review Article. *Interna-
tional Journal of Research in Pharmaceutical Sci-
ences*, 11(SPL1):1110-1115.

Chua, M. W. J., Zheng, S. 2020. Obesity and COVID-
19: The clash of two pandemics. *Obesity Research
& Clinical Practice*, 14(4):380-382.

Clinical Guidelines 1998. Clinical Guidelines on
the Identification, Evaluation, and Treatment of
Overweight and Obesity in Adults-The Evidence
Report. National Institutes of Health. *Europe PMC*,
6(2):51-209.

Donnelly, J. E., Blair, S. N., Jakicic, J. M., Manore,
M. M., Rankin, J. W., Smith, B. K. 2009. Appro-
priate Physical Activity Intervention Strategies for
Weight Loss and Prevention of Weight Regain for
Adults. *Medicine & Science in Sports & Exercise*,
41(2):459-471.

Excess weight and COVID-19 2020. Insights from
new evidence. London: Public Health, England.
Accessed on: 2020-07-24.

Fock, K. M., Khoo, J. 2013. Diet and exercise in man-
agement of obesity and overweight. *Journal of Gas-
troenterology and Hepatology*, 28:59-63.

Gond, A. G., Bhutada, R. 2020. Concept of dhoopana
and its role in prevention of air born infec-
tion during covid -19 outbreak. *International
Journal of Research in Pharmaceutical Sciences*,
11(SPL1):963-966.

Huang, Z., Liu, Y., Qi, G., Brand, D., Zheng, S. 2018.
Role of Vitamin A in the Immune System. *Journal
of Clinical Medicine*, 7(9):258-258.

Kaviraja, A. S. 2003a. Sushruta Samhita,
Sutrasthana, Doshadhatumalakshayavridhhi
Vidnyaniya Adhyaya, reprint edition. Varanasi,
Chaukhambha Subharati Prakashana, 15/32,
pp.73.

Kaviraja, A. S. 2003b. SushrutaSamhita, Sutrasthana,
Chikitsasthana Anagataabadha Pratishedh
Adhyaya, 24/44-45, reprint edition . Varanasi,
Chaukhambha Subharati Prakashana, pp. 489.

Kaviraja, A. S. 2003c. SushrutaSamhita, Sutrasthana,
Chikitsasthana Anagataabadha Pratishedh
Adhyaya, 24/47-48, reprint edition . Varanasi,
Chaukhambha Subharati Prakashana, pp. 489.

Kaviraja, A. S. 2003d. SushrutaSamhita, Sutrasthana,
Chikitsasthana Anagataabadha Pratishedh
Adhyaya, 24/78-81, reprint edition. Varanasi,
Chaukhambha Subharati Prakashana, pp. 490.

Kwok, S., Adam, S., Ho, J. H., Iqbal, Z., Turkington, P.,
Razvi, S., Roux, C. W. L., Soran, H., Syed, A. A. 2020.
Obesity: A critical risk factor in the COVID -19 pan-
demic. *Clinical Obesity*, 10(6).

Makris, A., Foster, G. D. 2011. Dietary Approaches
to the Treatment of Obesity. *Psychiatric Clinics of
North America*, 34(4):813-827.

- Miller, W. C., Koceja, D. M., Hamilton, E. J. 1997. A meta-analysis of the past 25 years of weight loss research using diet, exercise or diet plus exercise intervention. *International Journal of Obesity*, 21(10):941-947.
- Mora, J. R., Iwata, M., von Andrian, U. H. 2008. Vitamin effects on the immune system: vitamins A and D take centre stage. *Nature Reviews Immunology*, 8(9):685-698.
- Nishida, C., Barba, C., et al. 2004. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. *The Lancet*, 363(9403):157-163.
- Paradakara, P. H. S. 2011. Ashtang Hridaya, Sutrasthana, Matrashitiya Adhyaya, 8/55, reprint edition. Chaukhambha Publication, Varanasi, 160.
- Reena, Moharer, S. R., Vidyalakshmi, K., Shrikantha, P. H. 2014. "VYAYAMA" An essential regimen of the day: ayurvedic view. *Journal of Biological & Scientific Opinion*, 2(5):324-326.
- Sacks, F. M., Bray, G. A., et al. 2009. Comparison of Weight-Loss Diets with Different Compositions of Fat, Protein, and Carbohydrates. *New England Journal of Medicine*, 360(9):859-873.
- Sun, J., Durstine, J. L., et al. 2020. The COVID-19 pandemic and physical activity. *Sports Medicine and Health Science*, 2(2):55-64.
- Trikamji, A. J. 2011a. Charaka Samhita, Sutrasthana, Ashtauninditiya Adhyaya, Reprint edition. Varanasi, Chaukhambha Prakashana, 21/9, pp. 117.
- Trikamji, A. J. 2011b. Charaka Samhita, Sutrasthana, Ashtauninditiya Adhyaya, reprint edition. Varanasi Chaukhambha Prakashana, 21/4, pp. 116.
- Trikamji, A. J. 2011c. Charaka Samhita, Sutrasthana, Maharogadhyaya Adhyaya, 20/17, reprint edition. Varanasi Chaukhambha Prakashana, pp.115.
- Trikamji, A. J. 2011d. Charaka Samhita, Sutrasthana, Navegandharaniyam Adhyaya, 7/32, reprint edition. Varanasi Chaukhambha Prakashana, pp. 50.
- Trikamji, A. J. 2011e. Charaka Samhita, Sutrasthana, Vimanasthana, Rasavimana Adhyaya, reprint edition. Varanasi Chaukhambha Prakashana, 1/21-26, pp. 237.
- Walunj, M., Supriya, P., Tonge, Ankush, H., Gunjal 2020. Diet (aahaar vidhi) and physical exercise (vyayaam): cornerstone in the preventive management of obesity (medoroga). *Ayurlog: National Journal of Research in Ayurved Science*, 8(05).