REVIEW ARTICLE
©2023 The Academy of Environmental Biology, India
Journal of Ecophysiology and Occupational Health, *Vol 25(1), DOI: 10.18311/jeoh/2025/44223, 23-31, March 2025*
ISSN (Online) : 0972-4397
ISSN (Online) : 0974-0805

Exploring Ayurvedic Dietary Principles Through a Scientific Lens: A Review of Nutritional Practices

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Abstract

The globalisation of dietary habits has markedly increased the prevalence of metabolic syndromes. This shift encompasses not only the types of food consumed but also the manner of consumption. While extensive research has focused on the nutritional content and types of food, the practices surrounding food intake have received comparatively less attention. Ancient Ayurvedic texts provide detailed guidelines on several facets of eating behaviour, including amount, timing, manner of consumption, eating pace, dining environment for food consumption and postprandial activities. This review aims to systematically compile and evaluate these traditional recommendations alongside contemporary research findings. A comprehensive search of Ayurvedic literature and scientific databases, such as PubMed, was done to gather relevant information. The review highlights that diverse eating behaviours such as consumption rate, timing, dining environment, mindful eating and concurrent activities (e.g., listening to music or watching television) can significantly influence health outcomes. The amalgamation of traditional Ayurvedic principles with contemporary research offers valuable insights into optimising dietary practices for improved health outcomes.

Major Findings: This review highlights that traditional Ayurvedic eating practices, including consumption rate, meal timing, dining environment, mindful eating, and avoidance of concurrent activities, play a significant role in health outcomes. Integration of these practices with contemporary research suggests that optimizing eating behaviors can contribute to better metabolic health and prevent the onset of metabolic syndromes.

Keywords: Chrononutrition, Eating Speed, Incompatible Diet, Mindful Eating, *Viruddha Aahara*

1. Introduction

The food we consume plays a significant role in the sustenance of life. It is the major energy source required for all biophysical and biochemical activities occurring in the human body. The proper functioning of the human body requires sufficient nourishment intake. Thus, the food has been termed "*Prana*" (vital or source of vitality) by Ayurveda scholars since it provides the body with the necessary nutrients, promotes physical growth and development, enhances mental qualities like intelligence and strength and also improves the complexion[1]. It has been further mentioned that the body has been derived from the *Panchamahabhuta* (five fundamental elements i.e., *Aakasha*, *Vayu*, *Agni*, *Jala* and *Prithvi*) and it gets nourished from the *Panchabhautika Aahara* itself[2]. Thus, the healthy or diseased state of the body is determined by the intake of wholesome and unwholesome food respectively[3]. It means that practising healthy dietary habits results in a healthy body, while faulty dietary habits tend to manifest multiple disorders in the body. These dietary practices also influence the mental health and psychological reactions of a person including moods, loving relationships, violence, etc. The potential impact of nutrition on mental health has led to the concept of "Nutritional psychiatry or Nutripsychiatry"[4]. Thus,

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Article Received on: 25.05.2024 Revised on: 01.09.2024 Accepted on: 12.09.2024

Aahara (diet) has been regarded as "*Mahabhaishjya*" or "*Paramaushadhi*" (best medicine). It has been said that one can adopt healthy eating habits and therefore cure any sort of illness; yet, if one does not follow healthy eating habits, no amount of medication will be able to cure his ailments. This concept is very similar to the phrase in the Greek system of medicine by Hippocrates which states, "Let thy food be thy medicine and medicine be thy food"[5]. Furthermore, it has been emphasised that if the guidelines for eating are not followed correctly, even healthy food consumed in sufficient quantities can potentially cause a disturbed metabolism and the appearance of diseases[6]. It has also been advised that if a person is accustomed to unwholesome food, then it should not be discontinued abruptly but should be broken off gradually in a proportion of a quarter and the wholesome food should be consumed correspondingly[7]. Acharya Charak has advocated the four basic domains of dietetics that one should follow for the maintenance of health, which, if not followed may lead to the manifestation of multiple diseases in the body. These components are *Hitashi* (consuming wholesome foods), *Mitashi* (consuming meals in appropriate quantities), *Kalabhoji* (having meals at the proper time) and *Jitendirya* (controlling how to eat)[8]. These eating behaviours are depicted in Figure 1.

The current trend of modernisation and globalised marketing of various food products has contributed to an increased burden of non-communicable diseases, including metabolic syndrome and obesity. Weight loss or maintenance strategies focus on physical activity, calorie restriction, nutritious foods and avoiding high-fat diets[9]. These strategies can be more effective if coupled with the second aspect of dietetics: eating procedures.

Ayurveda compendia contains extensive descriptions of diet and dietetics, including how much food is appropriate to consume, when to consume it, what constitutes a wholesome and unwholesome diet, food incompatibilities and proper eating procedures, including timing, technique, dining area, serving method, utensil selection as well as activities that should be done or avoided just after having a meal. These can be divided into "What to eat" and "How to eat" categories.

In recent years, numerous studies have predominantly focused on the "what to eat" aspect of dietetics, leading to the development of new fields such as nutrigenomics, Ayurneutrigenomics (which tailors dietary advice according to the psychosomatic constitution)[10], disease-specific diets (e.g., ketogenic or low-fat diets), functional foods and nutraceuticals[11]. This focus has prompted the food industry to introduce healthy diet packages as alternatives to processed foods and products containing preservatives. However, the equally important "how to eat" component has received comparatively less attention, despite its significant potential impact on health. To address this gap, this review article was prepared to gather and synthesise relevant descriptions from Ayurvedic texts and critically analyse them in the context of modern dietary needs. Adopting proper eating methods alongside appropriate dietary practices could help individuals maintain their health and reduce the global burden of non-communicable diseases.

2. Material and Methods

Classical Ayurvedic texts, including the *Sushruta Samhita*, *Charak Samhita*, *Ashtanga Sangraha* and *Ashtanga Hridaya*, were meticulously reviewed for descriptions

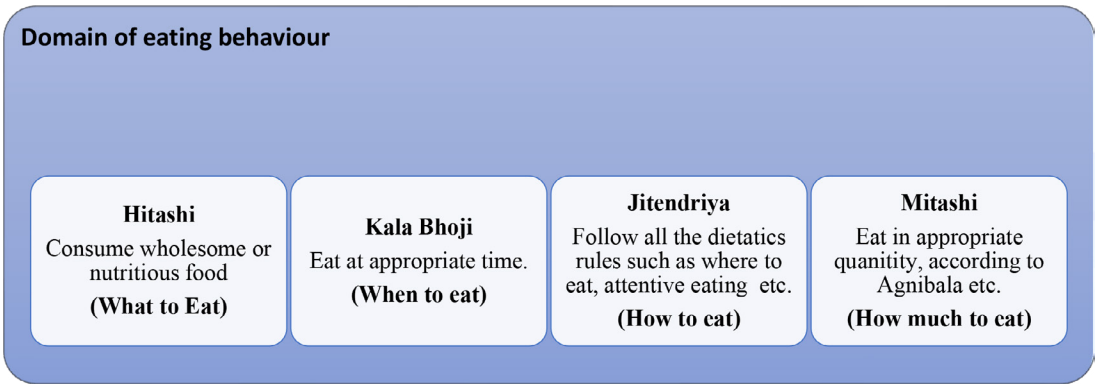


Figure 1. Domain of eating behaviour.

related to the practices of food consumption. Additionally, contemporary research articles were systematically searched using electronic databases such as PubMed and ScienceDirect, with keywords including "eating rate," "mindful eating" and "chrononutrition." The most relevant and recent articles were selected for inclusion in the study.

3. Review and Discussion

Ayurveda emphasises both health domains, i.e., health maintenance and reinstatement of homeostasis if disturbed[12]. As, the primary objective of Ayurveda is the prevention of disease by maintaining homeostasis through lifestyle, dietary and behavioural measures, the quality of food and sleep are the foremost determinants for the sustenance of health[13]. Ayurveda literature possesses a huge description of dietetics and sleep physiology. The various aspects of diet and dietetics can be categorised into domains such as "What to eat", "How to eat", "Where to eat" and "When to eat". The other three components except what to eat, can be combined in a single domain "How to eat". These descriptions have been documented under the "*Aaharavidhividhana*" (dietary practices) i.e. consumption of warm and unctuous food, taking food in proper quantity, taking food after the digestion of previously consumed food, avoidance of food items possessing antagonising properties, dining at a hygienic place, not eating in a hurried manner or slowly, avoidance of talking or laughing while eating and concentrating on food while eating, and after analysing the qualities of the food, whether it is suitable for the body or not, etc[14]. The different aspects under this dimension such as appropriate time for food intake, the pace of intake, practices to be performed after having a meal, attentive eating, etc. have been discussed under the following subheadings.

3.1 Time for Food Intake

The optimal timing for consuming food is not specified with the day-night cycle or clock time in Ayurvedic texts. However, it is recommended that meals be consumed only after the previous meal has been fully digested when there is a sensation of hunger, a feeling of lightness in the body, *Agni* (biological fire) is intensified, fatigue is relieved and faeces and flatus pass easily[15]. The person taking food at a scheduled time spends a long healthy life[16].

Taking food before the complete digestion of the previous meal or when not experiencing hunger leads to diminished digestive strength and the formation of *Aama* (a by-product of impaired digestion)[17], manifesting many ailments (such as metabolic syndrome) or even death[18]. The "wanting of food" or hunger is initiated when the blood concentration of glucose, amino acid, fatty acid, leptin, etc are reduced. The decrease in their concentration might be due to the completion of digestion and metabolism of the nutrients. The blood concentration of these nutrients is the outcome of complex metabolic interaction and regulates satiety or hunger hormones i.e. ghrelin and leptin. Thus, eating during this inter-digestive phase might lead to disturbance in these metabolic pathways resulting in the manifestation of metabolic disorders[19].

Further, when a person consumes food after a prolonged period, their "*Jatharagni* (digestive strength)" becomes impaired, predominantly due to an imbalance in *Vata Dosha*. This can lead to complicated digestion and a reduced appetite for subsequent meals[20]. It is also recommended to avoid suppressing sensations of hunger and thirst and to refrain from extending the

Table 1. The impact of consuming meals by not considering the scheduled time and quantity[16]

Eating at the proper time maintains health.	*Kalabhojana Arogya Karanama*
Having meals once a day leads to easy digestion of the food.	*Ekashanabhojana Sukha Parinamkarnam*
Having meals in excess quantity.	*Atimatra Ashanama Aamaprodosha Hetunama*
Fasting or abstinence from food reduces longevity.	*Anasana Ayusho Hrasakaranama*
Taking food in reduced quantity causes emaciation.	*Pramitaashanma Karshaniyanama*
Having a meal before the complete digestion of food manifests disorders related to *Grahani.*	*Ajeerna Adhyashana Grahani Dushanama*
Irregularity in meals (in terms of time and quantity) disturbs the *Agnibala.*	*Vishamashana Agnivaishmya Karanama*
Having meals according to *Agnibala* promotes the digestive process.	*Yathaagnibhyavaharo Agni sandhukshanama*

duration between meals. Suppressing hunger can lead to emaciation, weakness, altered body complexion, generalised body aches, aversion to food and dizziness[21]. However, *Langhana* (taking easily digestible foods or less quantity of food) and *Upavasa* (fasting) have been indicated as therapeutics in many clinical conditions[22]. The impact of consuming meals by not considering the scheduled time and quantity is discussed in Table 1.

In recent years, chrononutrition, an emerging area of medicine has revealed the possible relationship between temporal eating patterns, circadian rhythm and metabolic health. It also consists of energy distribution, time-restricted eating, frequency and regularity of eating and their possible effect on health. The time of eating has an influential role in synchronising the alignment between the central and peripheral clock of the body. The time-restricted eating has been proven to be protective for cardiometabolic health while frequent and irregular diet habits increase the risk for cardiovascular disorders[23]. Studies on experimental models have demonstrated that eating at an inappropriate time even for a short duration may lead to obesity and metabolic disorders by inducing leptin resistance, hyperphagia, hepatic fat accumulation, etc. by desynchronising alignment between central and peripheral clock[24]. The prevalence of snacking on packaged foods, late-night eating and unhealthy dietary choices is on the rise, particularly among university students, which has increased the incidence of chronic diseases and reduced health-related quality of life[25,26].

3.2 Quantity of Meals

An individual should also be conscious of the appropriate amount of food to be consumed. This needs to be considered in terms of calorie values of the food but according to the *Agnibala* (digestive power), attributes of the food i.e. *Guru* (delayed digestibility) or *Laghu* (easily digestibility)[27]. The *Agnibala* of the subject does not remain the same and varies according to season, age, etc. Thus a person should take the appropriate quantity of food according to the *Agnibala* at that time. For instance, the *Agnibala* is good during the winter and adulthood, thus the meal portion can be large but small during the old age and rainy season due to weak *Agnibala*[28]. It has also been advised that food with late or easy digestibility should not be taken in large quantities. The quantity of the meal one should take has also been explained in terms of the stomach capacity i.e. one part should be filled with solid food, one part with liquid food and one part should be left for the action of *Dosha* (biological entities regulating all physiological processes in the body)[29]. The meal consumed in appropriate quantity gets digested in proper time, does not cause disturbance in equilibrium, does not produce undue heaviness over the abdominal area or body, does not cause any discomfort in performing activities such as sitting, walking, laughing, etc., there should be a sense of satiety from hunger and thirst as well as the proper functioning of the sense organ. Meal consumed in this quantity promotes the complexion and strength of the body. The meal consumed in less quantity does not nourish the body properly, reduces complexion, strength and intellect, and even causes the aggravation of *Vata Dosha* but the food consumed in large quantities leads to aggravation of all *Dosha* as well as formation of *Ama*[30].

3.3 The Pace of Meal Intake

Ayurveda scholars have also mentioned that meal intake should not be done too hurriedly or slowly[14]. Having food in a hurry may lead to the displacement of food from the oesophagus. One cannot fully experience the flavour of food or notice the presence of foreign bodies while eating hurriedly[31]. Eating food in a hurry reduces the contact time of food with the tongue and teeth which causes improper mixing of food with saliva as well as very little disintegration of food articles. The improper mixing of food with saliva will not generate taste perception as well as the secretion of digestive juices. These two factors i.e., improper disintegration and reduced digestive juice secretion will lead to delayed metabolism. However, having food too slowly also has some drawbacks. It leads to an increase in the quantity of the meal as satiety is not achieved. Also, the food becoming cold further hampers digestion. The extended eating duration affects the food substrate being in different phases of metabolism. The cold food needs to create optimum temperature in the body to facilitate its appropriate digestion. Thus, increasing the metabolic overload in our body. Many studies have shown a positive association of self-rated eating speed with being overweight[32], high waist-height ratio[33], insulin resistance, impaired glucose tolerance[34], Type II diabetes mellitus[35-36], non-alcoholic fatty liver diseases[37], metabolic syndrome[38-39], cardiovascular diseases etc[40]. Further, some studies have also been done to evaluate the association of eating speed with appetite and blood concentration of

appetite hormones, but have not concluded any positive association[41].

3.4 Attentive Eating

Emphasis has also been placed on paying attention to the food while eating. One should be attentive to food while eating and should appreciate the food one is having[14]. Vedic culture says that one should be mindful while eating by acknowledging the texture and flavour of the food, by doing this we pay our gratitude to the people who provide us with food. It has been also advised that one should not laugh or talk while eating. Laughing or talking while eating may lead to overeating, prolonged duration of the meal, improper digestion as well as improper deglutition. It is well well-known fact that epiglottis controls the passage of food and air in the oesophagus and trachea respectively by closing or opening one pathway at a time. Performing both acts at a time may lead to the entry of air into the oesophagus or the entry of food to the larynx, both these conditions can lead to severe health issues. Nowadays, people often watch television or smartphones while eating. It has been said that, while taking the meal one should be attentive to a meal, joyful, devoid of psychological disturbance such as anxiety, fear, greed, etc. as this condition may cause improper digestion of dyspepsia despite having a normal quantity of food[42]. These conditions stimulate the sympathetic nervous system, inhibiting the action of the parasympathetic nervous system on the Gastrointestinal Tract (GIT), reducing the secretion of digestive juices as well as movement, thus disturbing digestion and metabolism. In the recent past, studies have been done to find the association between watching television, meal size and health consequences. A systematic review evaluating the associations between children's diet quality and watching television during meal or snack consumption has concluded that eating while viewing television is associated with poorer diet quality such as frequent consumption of sugar-sweetened beverages, more high-fat/high-sugar foods and fewer vegetables and fruit. This behaviour further leads to increased incidences of development of childhood obesity[43]. Evidence suggests that enhancing the memory of meals through increased attention to food during consumption may reduce subsequent energy intake. These findings align with the hypothesis that memory significantly influences appetite regulation and control[44]. In the recent past, randomised control trials have been conducted to evaluate the effect of mindful eating on weight loss, food behaviour, etc., and have revealed that mindful eating is helpful in body weight reduction[45]. A systematic review and meta-analysis of twenty-four studies suggest that attentive eating alone without conscious calorie counting can provide a novel approach to weight loss or maintenance strategies[46].

3.5 Dining Area or Ambience for Eating

The dining area should be devoid of dust, pollution, sun rays, noise and crowds. It should be well equipped with clean and good quality utensils[14]. A good ambience with required accessories has a good psychological impact and favours the appropriate digestion of food. One should not have food in an open place, under trees, in bed or in dark rooms[47]. Dietary behaviours in the current era are frequently overlooked, particularly with the widespread consumption of street food. This type of food is regularly exposed to dust and pollutants from vehicular emissions and contaminants associated with crowded environments. Food vending has become an important social issue because of its adverse effect on health due to multiple factors such as inadequate knowledge of vendors regarding food safety, hygiene practices, place of preparation, contaminated utensils, etc. However, apart from these factors, the ambience for eating also impacts over behaviour of eating[48]. The components of the ambience can trigger sensations in the consumer which might increase or decrease the quantity of food intake. The situational and sensory factors may convert behavioural attention into actual eating behaviour. Eating food alone or in a group is a determinant for meal size, meal duration as well as postprandial regulations. However, dining with family members has been shown to enhance the quality of food choices among children[49].

3.6 The Equipment and Utensils

The utensils for taking food, as well as cookware for cooking, have been a matter of concern for many decades. Nowadays, the most commonly used utensils are glassware, plastic wares, aluminium utensils, teflon-coated utensils, etc. However, the safety concern of these utensils is still a matter of debate. The effects of aluminium traces found in food prepared in aluminium vessels are still not concluded. Different vessels have been advocated by Ayurveda scholars for storing and serving food. For example, *ghee* should be kept in iron vessels, vegetable

soup, rice gruel, drinkables in silver vessels, boiled water after cooling in copper vessels, drinkable water in mud pots, beverages prepared from sesame, root and whey in bronze vessels, fruits and vegetables in leaf vessels, etc[50]. Further, the effect of serving food in these vessels has also been mentioned in Ayurveda. The beneficial effect of having a meal in the banana leaves, jackfruit leaves, etc. has been also discussed. Banana leaves are recognised for their potential health benefits, including anti-cancer properties. Additionally, they contribute to the enhancement of food flavour and aroma[51].

3.7 Post-Prandial Activities

The activities that should be done or avoided after having a meal are also discussed. One should avoid activities such as swimming, riding a vehicle, sitting near the fire, direct exposure to breeze or sunlight, drinking too much water, sleeping, laughing, unpleasant environments, etc. just after having a meal[52]. Day sleeping after having a meal can disturb muscle metabolism (Vitiation of *Mamsavaha Srotas*) while exposure to sunlight after a meal can manifest skin disorders or cardiovascular diseases (Vitiation of *Raktavaha Srotas*)[53]. Further one should not consume food articles such as flattened rice, eatables prepared from rice flour, etc after having a meal[54]. Following a meal, it is recommended to rinse the mouth and hands thoroughly, walk at least 100 feet and listen to pleasant sounds. After walking this distance, sleeping in the left lateral position is advised. However, these post-meal practices have not been extensively studied. Although some research has explored the effects of immediate post-meal exercise, the broader impact of these practices remains underexplored. A systematic review has concluded that postprandial exercise, like 20 minutes of walking immediately after a meal, beneficially impacts blood sugar levels by reducing glycaemic excursions. It has been also revealed that post-meal exercise may lower the risk of low-grade inflammation diseases and cardiovascular diseases. Delayed exercise after eating diminishes this effect. Pre-meal exercise doesn't affect postprandial hyperglycaemia[55]. Another systematic review has concluded the beneficial effect of post-meal exercise on improved post-prandial glycaemic response. However, the intensity or type of exercise has not been emphasised in both studies[56].

4. Conclusion

The Ayurveda texts contain extensive descriptions related to diet and dietetics, many of which have been shown to have a vital influence on the body's health or disease state. This health system outlines numerous aspects, such as eighteen types of incompatible diets, wholesome and unwholesome foods, daily dietary recommendations and the effects of various diets all of which pertain to the "what to eat" component. Furthermore, factors such as meal timing, solitary versus group eating, eating environment, eating rate, mindful eating and post-meal practices fall under the "how to eat" component. Several studies have explored these aspects, including eating rate, mindful eating and meal timing. The appropriate timing of meals has been shown to play a crucial role in regulating the circadian rhythm. Although the eating rate has been positively associated with various disease conditions, most studies rely on self-reported measures (i.e., fast, medium, or slow eating) and no standardised criteria exist to assess the eating speed accurately. Moreover, the duration of time for which certain post-meal practices should be avoided is not specified and research on the effects of these practices is lacking. Thus, retrospective or cross-sectional studies are needed to investigate the impact of these activities on metabolic health. Furthermore, the types of utensils and vessels recommended for different foods in Ayurveda require further investigation to determine their potential health benefits and any chemical changes that may occur when food is stored in vessels made of various materials. While gold or silver vessels may not be affordable for all economic classes, wooden and earthenware vessels are viable alternatives, however, their safety, hygiene and potential for microbial contamination should be thoroughly evaluated.

5. References

1. Dwivedi LD, Dwivedi BK, Goswami PK. Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Sutrasthana; Annapanavidhiadhyaya. Varanasi: Chowkhambha Krishnadas Academy. 2016; 27:349-50.
2. Thakrala KK. Sushruta Samhita of Sushruta with Nibandhasangraha commentary of Dalhana, Sutrasthana; Annapanavidhiadhyaya. Varanasi: Chowkhambha Orientalia. 2016; 46:526.

3. Dwivedi LD, Dwivedi BK, Goswami PK. Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Sutrasthana; Yajjahapurishiyadhyaya. Varanasi: Chowkhambha Krishnadas Academy. 2016; 25:3.
4. Dal N, Bilici S. An overview of the potential role of nutrition in mental disorders in the light of advances in nutripsychiatry. Curr Nutr Rep. 2024; 13(2):69-81. Epub 2024 Feb 8. PMID: 38329691; PMCID: PMC11133159. https://doi.org/10.1007/s13668-024-00520-4
5. Renger F. Klaske van Norren W. Let thy food be thy medicine..when possible. Eur J Pharmacol. 2018; 836:102-14. ISSN 0014-2999. https://doi.org/10.1016/j.ejphar.2018.06.026
6. Sabnis M. Viruddha Ahara: A critical view. Ayu. 2012; 33(3):332-6. PMID: 23723637; PMCID: PMC3665091. https://doi.org/10.4103/0974-8520.108817
7. Jyotirmitra. Ashtanga Sangraha of Vagbhatta with Shashilekha Commentary of Indu, Sutrasthana; Viruddhaannavigyaniya. Varanasi: Chaukhambha Sanskrit Sansthana. 2016; 9:16.
8. Dwivedi LD, Dwivedi BK, Goswami PK. Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Sutrasthana; Tasyashitiyadhyaya. Varanasi: Chowkhambha Krishnadas Academy. 2016; 6(11).
9. Varkevisser RDM, van Stralen MM, Kroeze W, Ket JCF, Steenhuis IHM. Determinants of weight loss maintenance Varkevisser RDM: A systematic review. Obes Rev. 2019; 20(2):171-211. https://doi.org/10.1111/obr.12772
10. Banerjee S, Debnath P, Debnath PK. Ayurnutrigenomics: Ayurveda-inspired personalized nutrition from inception to evidence. J Tradit Complement Med. 2015; 24;5(4):228-33. PMID: 26587393; PMCID: PMC4624353. https://doi.org/10.1016/j.jtcme.2014.12.009
11. Pandey MM, Rastogi S, Rawat AK. Indian traditional Ayurvedic system of medicine and nutritional supplementation. Evid Based Complement Alternat Med. 2013; 2013:376327. Epub 2013 Jun 23. PMID: 23864888; PMCID: PMC3705899. https://doi.org/10.1155/2013/376327
12. Dwivedi LD, Dwivedi BK, Goswami PK. Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Sutrasthana; Arthedashamahamuliamadhyaya. Varanasi: Chowkhambha Krishnadas Academy. 2016; 30(26).
13. Dwivedi LD, Dwivedi BK, Goswami PK, editors (2nd edition). Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Sutrasthana; Ashtaniditiyaamadhyaya: Varanasi. Chowkhambha Krishnadas Academy, 2016; 21(51).
14. Dwivedi LD, Dwivedi BK, Goswami PK, editors (2nd edition). Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Vimanasthana; Rasavimanam: Varanasi: Chowkhambha Krishnadas Academy, 2016; 1(24). https://doi.org/10.21760/jaims.v1i3.4413
15. Kunte AM, editor (reprint edition). Ashtanga Hridaya of Vagbhatta with Sarvangasundara commentary of Arundutta, Sutrasthana; Matrashitiyadhyaya: Varanasi: Chowkhambha Sanskrit Sansthana, 2016; 8(55).
16. Dwivedi LD, Dwivedi BK, Goswami PK, editors (2nd edition). Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Sutrasthana; Yajahapurushiyadhyaya: Varanasi: Chowkhambha Krishnadas Academy. 2016; 25(40).
17. Dwivedi LD, Dwivedi BK, Goswami PK, editors (2nd edition). Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Vimanasthana; Trividhakukshivimanam: Varanasi: Chowkhambha Krishnadas Academy. 2016; 2(7).
18. Thakrala KK, editor (reprint edition). Sushruta Samhita of Sushruta with Nibandhasangraha commentary of Dalhana, Sutrasthana; Annapanavidhiadhyaya: Varanasi: Chowkhambha Orientalia. 2016; 46:471).
19. Yeung AY, Tadi P. Physiology, obesity neurohormonal appetite and satiety control. [Updated 2023 Jan 3]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024. Available from: https://www.ncbi.nlm.nih.gov/books/NBK555906/
20. Thakrala KK, editor (reprint edition). Sushruta Samhita of Sushruta with Nibandhasangraha commentary of Dalhana, Sutrasthana; Annapanavidhiadhyaya: Varanasi: Chowkhambha Orientalia. 2016; 46:473.
21. Dwivedi LD, Dwivedi BK, Goswami PK, editors (2nd edition). Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Sutrasthana; Naveganadharayeta: Varanasi: Chowkhambha Krishnadas Academy, 2016; 7:20.
22. Dwivedi LD, Dwivedi BK, Goswami PK, editors (2nd edition). Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Sutrasthana; Langhanabrihaniyaadhyaya: Varanasi: Chowkhambha Krishnadas Academy, 2016; 22:18.
23. Flanagan A, Bechtold DA, Pot GK, Johnston JD. Chrono-nutrition: From molecular and neuronal mechanisms to human epidemiology and timed feeding patterns. J Neurochem. 2021; 157(1):53-72. Epub 2020 Dec 10. PMID: 33222161. https://doi.org/10.1111/jnc.15246
24. Yasumoto Y, Hashimoto C, Nakao R, Yamazaki H, Hiroyama H, Nemoto T, Yamamoto S, Sakurai M, Oike H, Wada N, Yoshida-Noro C, Oishi K. Short-term feeding

at the wrong time is sufficient to desynchronize peripheral clocks and induce obesity with hyperphagia, physical inactivity and metabolic disorders in mice. Metabolism. 2016; 65(5):714-27. Epub 2016 Feb 9. PMID: 27085778. https://doi.org/10.1016/j.metabol.2016.02.003

25. Sogari G, Velez-Argumedo C, Gómez MI, Mora C. College students and eating habits: A study using an ecological model for healthy behavior. Nutrients. 2018; 23;10(12):1823. PMID: 30477101; PMCID: PMC6315356. https://doi.org/10.3390/nu10121823
26. Kim Y, Kwak JH, Paik JK. Association of night eating habits with health-related quality of life (HRQoL) in university students. Healthcare (Basel). 2022; 28:10(4):640. PMID: 35455818; PMCID: PMC9031917. https://doi.org/10.3390/healthcare10040640
27. Jyotirmitra, editor (reprint edition). Ashtanga Sangraha of Vagbhatta with Shashilekha Commentary of Indu, Sutrasthana; Matrashitiya: Varanasi: Chaukhambha Sanskrit Sansthana. 2016; 11:2.
28. Dwivedi LD, Dwivedi BK, Goswami PK, editors (2nd edition). Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Sutrasthana; Matrashitiyadhyaya: Varanasi: Chowkhambha Krishnadas Academy. 2016; 5:3.
29. Dwivedi LD, Dwivedi BK, Goswami PK, editors (2nd edition). Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Vimanasthana; Trividhakukshivimanam: Varanasi: Chowkhambha Krishnadas Academy. 2016; 2:3.
30. Dwivedi LD, Dwivedi BK, Goswami PK, editors (2nd edition). Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Vimanasthana; Trividhakukshivimanam: Varanasi: Chowkhambha Krishnadas Academy. 2016; 2:6-7.
31. Dwivedi LD, Dwivedi BK, Goswami PK, editors (2nd edition). Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Vimanasthana; Rasavimanam:Varanasi: Chowkhambha Krishnadas Academy. 2016; 1:25.
32. Lee JS, Mishra G, Hayashi K, Watanabe E, Mori K, Kawakubo K. Combined eating behaviors and overweight: Eating quickly, late evening meals, and skipping breakfast. Eat Behav. 2016; 21:84-8. https://doi.org/10.1016/j.eatbeh.2016.01.009
33. Ochiai H, Shirasawa T, Nanri H, Nishimura R, Matoba M, Hoshino H, *et al*. Eating quickly is associated with waist-to-height ratio among Japanese adolescents: A cross-sectional survey. Arch Public Health. 2016; 74:18. https://doi.org/10.1186/s13690-016-0130-3
34. Otsuka R, Tamakoshi K, Yatsuya H, Wada K, Matsushita K, Yang P, *et al*. Eating fast leads to insulin resistance: findings in middle-aged Japanese men and women. Prev Med. 2008; 46(2):154-9. https://doi.org/10.1016/j.ypmed.2007.07.031
35. Totsuka K, Maeno T, Saito K, Kodama S, Asumi M, Yachi Y, *et al*. Self-reported fast eating is a potent predictor of development of impaired glucose tolerance in Japanese men and women: Tsukuba medical center study. Diabetes Res Clin Pract. 2011; 94(3):e72-4. https://doi.org/10.1016/j.diabres.2011.08.015
36. Radzeviciene L, Ostrauskas R. Fast eating and the risk of type 2 diabetes mellitus: A case-control study. Clin Nutr. 2013;32(2):232-5. https://doi.org/10.1016/j.clnu.2012.06.013
37. Nishi T, Babazono A, Maeda T, Imatoh T, Une H. Effects of eating fast and eating before bedtime on the development of non-alcoholic fatty liver disease. Popul Health Manag. 2016; 19(4):279-83. https://doi.org/10.1089/pop.2015.0088
38. Zhu B, Haruyama Y, Muto T, Yamazaki T. Association between eating speed and metabolic syndrome in a three-year population-based cohort study. J Epidemiol. 2015; 25(4):332-6. https://doi.org/10.2188/jea.JE20140131
39. Tao L, Yang K, Huang F, Liu X, Li X, Luo Y, Wu L, Guo X. Association between self-reported eating speed and metabolic syndrome in a Beijing adult population: A cross-sectional study. BMC Public Health. 2018; 18(1):855. https://doi.org/10.1186/s12889-018-5784-z
40. Paz-Graniel I, Babio N, Mendez I, Salas-Salvadó J. Association between eating speed and classical cardiovascular risk factors: A cross-sectional study. Nutrients. 2019; 11(1):83. PMID: 30621124; PMCID: PMC6356451. https://doi.org/10.3390/nu11010083
41. Shah M, Crisp K, Adams-Huet B, Dart L, Bouza B, Franklin B, Phillips M. The effect of eating speed at breakfast on appetite hormone responses and daily food consumption. J Investig Med. 2015; 63(1):22-8. PMID: 25361054. https://doi.org/10.1097/JIM.0000000000000119
42. Dwivedi LD, Dwivedi BK, Goswami PK, editors (2nd edition). Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Vimanasthana; Trividhakukshivimanam: Varanasi: Chowkhambha Krishnadas Academy. 2016; 2:9.
43. Avery A, Anderson C, McCullough F. Associations between children's diet quality and watching television during meal or snack consumption: A systematic review. Matern Child Nutr. 201; 13(4):e12428. https://doi.org/10.1111/mcn.12428
44. Higgs S, Donohoe JE. Focusing on food during lunch enhances lunch memory and decreases later snack intake. Appetite. 2011; 57(1):202-6. Epub 2011 May 4. PMID: 21569808. https://doi.org/10.1016/j.appet.2011.04.016

45. Pepe RB, Coelho GSMA, Miguel FDS, Gualassi AC, Sarvas MM, Cercato C, Mancini MC, de Melo ME. Mindful eating for weight loss in women with obesity: A randomized controlled trial. Br J Nutr. 2022; 1-10. PMID: 36529854. https://doi.org/10.1017/S0007114522003932
46. Robinson E, Aveyard P, Daley A, Jolly K, Lewis A, Lycett D, Higgs S. Eating attentively: A systematic review and meta-analysis of the effect of food intake memory and awareness on eating. Am J Clin Nutr. 2013; 97(4):728-42. Epub 2013 Feb 27. PMID: 23446890; PMCID: PMC3607652. https://doi.org/10.3945/ajcn.112.045245
47. Thakrala KK, editor (reprint edition). Sushruta Samhita of Sushruta with Nibandhasangraha commentary of Dalhana, Sutrasthana; Annapanavidhiadhyaya: Varanasi: Chowkhambha Orientalia. 2016; 46:449-53.
48. Rane S. Street vended food in developing world: hazard analyses. Indian J Microbiol. 2011; 51(1):100-6. doi: 10.1007/s12088-011-0154-x. Epub 2011 Jan 26. PMID: 22282636; PMCID: PMC3209856. https://doi.org/10.1007/s12088-011-0154-x
49. Stroebele N, De Castro JM. Effect of ambiance on food intake and food choice. Nutrition. 2004; 20(9):821-38. doi: 10.1016/j.nut.2004.05.012. PMID: 15325695. https://doi.org/10.1016/j.nut.2004.05.012
50. Thakrala KK, editor (reprint edition). Sushruta Samhita of Sushruta with Nibandhasangraha commentary of Dalhana, Sutrasthana; Annapanavidhiadhyaya: Varanasi: Chowkhambha Orientalia. 2016; 46:449-53.
51. Hegde S, Nair LP, Chandran H, Irshad H. Traditional Indian way of eating - An overview. J Ethn Foods. 2018; 5(1):20-3. https://doi.org/10.1016/j.jef.2018.02.001
52. Thakrala KK, editor (reprint edition). Sushruta Samhita of Sushruta with Nibandhasangraha commentary of Dalhana, Sutrasthana; Annapanavidhiadhyaya: Varanasi: Chowkhambha Orientalia. 2016; 46:460-64.
53. Dwivedi LD, Dwivedi BK, Goswami PK, editors (2nd edition). Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Vimanasthana; Srotovimanam: Varanasi: Chowkhambha Krishnadas Academy. 2016; 5:14-15.
54. Dwivedi LD, Dwivedi BK, Goswami PK, editors (2nd edition). Charak Samhita of Agnivesha with Ayurvedadeepika commentary of Chakrapanidutta, Sutrasthana; Tasyashitiyoadhyaya: Varanasi: Chowkhambha Krishnadas Academy. 2016; 5:9.
55. Engeroff T, Groneberg DA, Wilke J. After dinner rest a while, after supper walk a mile? A systematic review with meta-analysis on the acute postprandial glycemic response to exercise before and after meal ingestion in healthy subjects and patients with impaired glucose tolerance. Sports Med. 2023; 53(4):849-69. Epub 2023 Jan 30. PMID: 36715875; PMCID: PMC10036272. https://doi.org/10.1007/s40279-022-01808-7
56. Aqeel M, Forster A, Richards EA, Hennessy E, McGowan B, Bhadra A, Guo J, Gelfand S, Delp E, Eicher-Miller HA. The effect of timing of exercise and eating on postprandial response in adults: A systematic review. Nutrients. 2020; 12(1):221. Erratum in: Nutrients. 2020; 12(5). PMID: 31952250; PMCID: PMC7019516. https://doi.org/10.3390/nu12051263

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