



Review Article

JANAPADODHWAMSA: BASED ON A REGRETTABLE FIRE INCIDENT IN KERALA'S BRAHMAPURAM DUMP YARD & THE PREVENTIVE APPROACH TO THE PROBABLE LONGTIME HEALTH HAZARDS THAT CAN SEQUEL

Ganga N^{1*}, Anusha Baburaj², Abhishek S L³

*¹Assistant Professor, Department of Kaumarabhritya, ²Assistant Professor, Department of Samhitha Samskrita Siddhanta, ³Assistant Professor, Department of Shalya tantra, Bapuji Ayurvedic Medical College & Hospital, T R Nagar, Challakere, Chithradurga, Karnataka, India.

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ABSTRACT

On 2nd of March 2023, a massive fire incident happened in Brahmapuram dump yard which resulted in dense smoke enveloping Kochi and nearby premises, suffocating the inhabitants thereafter; acute manifestations of inhaling noxious air were present and none the less are the long-time health hazards that Kochi must face in coming years. Destruction of a community with similarity in disease manifestation, especially within a geographical area, because of *Adharma*, *Pragnjaparadha* can be related with *Janapadodhwamsa*, for which this fire incident can be an epitome. Ayurveda, a science that believe in prevention of a disease, can help in preventing the long-time health hazards that probably can happen after this dump yard fire incident. **Aim:** To review and analyze the Brahmapuram fire incident with respect to *Janapadodhwamsa* and to highlight the Ayurvedic preventive measures that can be adopted against the probable long time health hazards. **Materials and Methods:** Addressing the long-time health impacts that the fire incident could produce with respect to *Janapadodhwamsa*, helps in understanding the same as an environmental disaster impacting health of inhabitants. The approach consisted of thorough searching of several resources which includes Ayurvedic treatises, books, dissertations, conference proceedings, web based scientific databases, e-newspapers and recent updates from all available sources. **Conclusion:** Since the incident was massive of its kind, but had frequently occurred in a smaller dimensions even before, emphasised the need of a review of why the incident occurred, analysing the health impacts it could produce. Thus, this article emphasises the role of Ayurveda in prevention of long time health hazards that it can produce in the residents of the city.

INTRODUCTION

Amongst the hundreds of abandoned homes, is Brahmapuram waste treatment plant located, in 110 acres of land, carrying all the dumped wastes of Kochi city, which is assumed to generate 380 tons a day of which 150 tons are biodegradable and 100 tons remain as plastic wastes^[1].

It has been long 16 years that Brahmapuram is carrying these tons of garbage, being the garbage-can present in the outskirts of Kochi, near the IT park, which prevails against a long-time protest of the villagers living in. On 2nd of March 2023, a massive fire incident happened in Brahmapuram dump yard which resulted in dense smoke enveloping Kochi and nearby premises, suffocating the inhabitants thereafter. The state government declared leave for all schools and professional colleges in the area, encouraged to close doors and windows of homes, offices, preferred not to come out of living areas for unnecessary reasons, advised them to wear N95 masks to ensure that the toxic fumes emitted should not be inhaled. The reason for this unfortunate fire incident even though is

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uncertain, a major role is contributed by the Kochi cooperation, who failed in timely appropriate disposal strategies of the wastes, heaping loads and loads of garbage in the locale. The fire accident resulted in elimination of toxic fumes causing various health problems in the people residing near, which included burning eyes, cough, difficulty in breathing, headache, skin issues etc. along with choking on toxic air. These are just an acute manifestations of inhaling extremely noxious air, none the less are the long-time health hazards that Kochi must face in coming years. Being an environmental disaster polluting the air, it can result in adverse health outcomes especially in the elderly, pregnant women and children despite all living beings in the locality being sufferers. *Janapadodhwamsa*^[2], being any impairment in the common facets of man like *Vayu* (air), *Jala* (water), *Desha* (land), *Kala* (season), can bring in disease outbreaks in the community adversely affecting the whole lot of people influenced by the aforesaid. This was not the first time that dump yard fire has raised, there are many such instances that resulted in health hazards in inhabitants. Destruction of a community with similarity in disease manifestation, especially within a geographical area, because of *Adharma* (unrighteousness), *Pragnjaparadha* (intellectual error) can be related with *Janapadodhwamsa*, for which this fire incident can be an epitome. Ayurveda, being a science that believes in prevention of a disease rather than curing a manifested one, can help in preventing the long time health hazards that probably can happen after this dump yard fire incident in Kerala.

MATERIALS AND METHODS

Acknowledging the massive fire incident of Kerala's Brahmapuram, the magnitude of health hazards it can probably produce, resulted in a thought of how Ayurveda can contribute for the betterment of the circumstances prevailing. Addressing the long-time health impacts that the fire incident could produce with respect to *Janapadodhwamsa*, helps in understanding the same as an environmental disaster impacting health of inhabitants. The approach consisted of thorough searching of several resources which includes Ayurvedic treatises, books, dissertations, conference proceedings, web based scientific databases, newspapers and recent updates from all available sources. This resulted in writing a review article which served as a necessity in the concerned scenario, providing preventive measures to avoid the health impacts this incident could produce.

Janapadodhwamsa and its attributes

Deterioration of *Dhi*, *Dhriti*, *Smriti* leading a person to willfully commit sinful activities is understood as *Janapadodhwamsa*^[3]. *Dhi* is the ability of

a man to decide what is good and what remain bad, *Dhriti* is the capacity of a person to follow a disciplined life and *Smriti* being the ability to analyze past knowledge and decide future, are the core aspects where *Janapadodhwamsa* revolves in^[4]. The prime cause for all the disease manifestation being *Pranjanaparadha*, vitiates all *Shareerika* and *Manasika doshas* thereby bringing in imbalance physically and psychologically^[5]. Coming to the colossal dimensions of *Adharma*, the deviation of righteous path specially when followed by the ruling class, leads to sinful acts being performed consciously by the sub ordinates, destroying the community base, spreading unrighteousness^[6]. When the magnitude of these *Adharma* raises, the manifestations it produces also becomes mightier. When this happens in a locality, there the variations in rain patterns – being very less, or more, or never at all, the wind being affected do not blow efficiently, the water reservoirs dry up resulting in poor agricultural facilities, the medicines grown in that region loses its properties and the inhabitants in that region suffer from diseases due to intake of polluted food and water^[7]. Here is the justification for all people being sufferers despite of having different constitution, diet, physique, vitality, habits, psychic make up, and age^[8]. *Pranjanaparadha* being a form of *Adharma*, serves as the vital sole parameter in vitiation of *Vayu*, *Jala*, *Desha*, *Kala* that can manifest similar diseases in communities confining to a particular area^[9].

The quality of air varying in its properties, to mention a few includes differing from the seasonal character, being extremely cold or warm, excessively dry, or humid, terribly calm, or violent, associated with foul odor, smoke, or dust, the wind blowing from contrary directions, clashing each other, or forming violent whirl winds are the characteristics of polluted air^[10]. Having unpleasant smell, color, taste and touch, having excessive unusual stickiness, devoid of aquatic organisms, and a water body being drying up indicates a quality less water devoid of normal attributes^[11]. Any land free from its normal attributes, being excessively damp, have abundant organisms living in, where people residing loses their virtues, where water reservoirs always alter or overflow, the sun, moon, stars being coppery, and sky covered with grayish clouds represents a polluted land^[12]. A season which differs in its normalcy, creating extremely cold winters, too hot summers, facing extremely violent rainfall may indicate an affected season^[13]. Amongst the four common facets discussed, *Vayu* & *Jala* remain factors that can be modified, *Desha* sustain as a facet that can be left and moved on, but *Kala* remains as a factor that neither can be modified nor controlled by man^[14]. *Jwara*^[15], is the only symptom in *Janapadodhwamsa*

whereas in the same context, explained as *Maraka, Kasa, Swasa, Jwara, Pratishyaya, Vamathu*^[16] are described. *Kasa, Pratishyaya, Shiroruja, Teevra nayana Amaya* are the manifestations by inhaling poisoned air/smoke^[17].

Preventive approach towards Janapadodhwamsa

For manifestation of any disease, the epidemiologic triad - an external agent, a susceptible host and an environment that is supportive for disease progress is inevitable^[18]. Only in the presence of this triangle, an organism can interact with favorable environment and produce disease in a host. This ensures that any tries that can interfere the triad, can easily stop the disease progress pathway making it a bit easier in preventive aspect when compared with a curative one. Even though Ayurveda treatment modalities are highly individualized and customized, based on the common facets of the epidemiologic triad, one can interfere in the disease pathway and help in creating common principles of prevention of any diseases that can confine to communities. The concept of disease prevention is categorized into *Vyaktigata swasthavritta* (measures followed by an individual) and *Samajika swasthavritta* (measures followed by a society)^[19]. *Dinacharya, Ratricharya, Ritucharya, Ashta ahara vidhi vishesha ayatana, Achara rasayana, Panchakarma, Rasayana* etc constitutes *Vyaktigata swasthavritta* whereas *Sadvritta, Dhoopana, Rakshakarma, Mantrocharana* are included under *Samajika swasthavritta*. These principles are easy to follow, simple steps which when performed systematically can interfere the progression of a disease to prevent the same. These major principles have immense possibilities in altering and balancing not only the *Shareerika doshas* like *Vata, Pitta, Kapha*, which are vitiated to cause a physical disease but normalizes various *Manasika doshas, Satwa, Rajas, Tamas*, that are imbalanced in a psychological illness. Following the same efficiently can wipe out the possibilities of a long-time health impacts that this regrettable and unfortunate fire incidence can produce.

DISCUSSION

Janapadodhwamsa in relation to Brahmapuram fire incident

Analyzing the references stated above, the important and prime cause for Brahmapuram incident can be acknowledged as the deviation from performing allotted duties by the government officials. Along with the said reason, unrighteous path followed by the inhabitants of Kochi city, Kerala also contributes to the scenario. Industrial, commercial, domestic, chemical and agricultural wastes being the sources of waste

production in any region, can be broadly classified into bio-degradable and non-bio-degradable forms^[20]. Waste prevention, minimalizing the production of wastes, reusing the recycled wastes, energy recovery by the process of biodegradation or proper disposal of wastes remains as the strategies to manage it^[21]. Willfully when citizen dump these wastes near living areas, knowingly when the cooperation collects wastes and dump them in a yard prepared only for waste management concerns, consciously when the dumped wastes is not separated as biodegradable and non-bio-degradable ones, deliberately when these wastes are accumulated for past 16 years without further processing it, all comes under *Pranjanaparadha* (intellectual error), constituting *Adharma*. This forms the basic framework of causes, identified as *Adharma*, which is the root cause of producing *Janapadodhwamsa*. Interestingly, it was astonishing to note the recommendations of the study report on a previous fire breakout at Brahmapuram waste treatment plant dated Feb 2019. The report recommended to study soil, sediment, water, and air in the buffer zone of dump yard, expected to assess the ingestion exposure to dioxins and furans compounds via food chain, moreover, insisted to establish a modern solid waste treatment plant to manage incoming wastes^[22]. This establishes that the officials knew the impact of heaping tons of garbage at Brahmapuram, but neglected the study reports priory submitted and left over the consequences to fate of the dump yard. This is where the term *Pranjanaparadha* (intellectual error) has its role to perform.

This unfortunate fire accident resulted in emission of toxic fumes enveloping Kochi city, causing various health problems in the people residing nearby, that included burning eyes, cough, difficulty in breathing, headache, skin issues etc along with choking on noxious air. *Kasa, Pratishyaya, Shiroruja, Teevra nayana Amaya* are enumerated as the acute symptoms produced by inhalation of toxic fumes^[23]. After the regrettable fire incident that happened on 2nd March 2023, the air quality of Kochi had a sudden deterioration, and had surged beyond 300, indicating severely unhealthy air quality index^[24]. The index recorded 282 on March 5th, 257 on March 10th & 207-209 on March 12th indicating unhealthy air quality²⁵. The meter at Vyttila, an intersection of Kochi could read the particulate matter of 2.5 and fine particles 10 indicating the presence of chemical air pollutants like nitrogen dioxide, ammonia, sulphur dioxide, carbon monoxide, ozone along with dust matters^[26]. Dioxin, furan, black carbon, polycyclic aromatic hydrocarbons, lead, mercury, formaldehyde etc are other unrecorded harmful chemicals that can be present in the air after

the incident at Brahmapuram^[27]. Even though *Jwara* is the only manifestation mentioned in *Janapadodhwamsa*, one should perceive the depth of it, understanding that it contains all the other diseases included in it. This justifies that the fire accident had the ability to alter the normal quality of air surrounding the city, making it toxic enough to impact health.

The probable long-time health hazards

All poisons exhibit the ten properties of *Visha* (poison) which have ability to vitiate *Tridosha*^[28]. When a person inhales the toxic air, the *Doshas* by leaving its normal functions, obstructs the *Prana*, *Kapha* blocks all the *Srothas* (channels), and the affected person falls unconscious^[29]. A cross sectional case comparison study based on Mumbai dumping site reveals that higher prevalence of respiratory illness, eye irritations and stomach problems raised in the inhabiting communities near the site when compared to the unexposed citizens^[30]. 326 acres of land at Deonar dump yard experienced a fire break out on 27th of January 2016, which was very massive of its kind, and resulted in huge emission of the very toxic smokes releasing hexachlorobenzene (HCB) to the environment^[31]. Low-level long-term exposure to HCB can result in damage to developing fetus, result in kidney and liver damage, cause fatigue, eye irritation, and skin concerns^[32]. High contents of ozone, carbon dioxide, sulphur dioxide in noxious air brings in difficulty in breathing, chest pain, upper respiratory tract concerns, cardiac and lung problems^[33]. An observational study on Bellolampo landfill fire highlights the increase in very preterm and very low birth weight infants who are born to mothers who were exposed to land fill fire emissions during early conception^[34]. Prolonged exposure to high dose dioxins can cause health problems related with reproduction, hormonal imbalances, and thyroid concerns^[35]. A case study of Thohoyandou landfill reveals that the inhaled nitrogen dioxide and sulphur dioxide can trigger the episodes of asthma in a previously ill person and the inhalation of heavy metals can result in reduced lung function, ataxia, paralysis, neuro toxicities and lung cancer^[36]. Myocardial infarctions, angina, obstruction of blood vessels etc can occur when human beings inhale particulate matter in air^[37]. The noxious fumes arising from burning of solid wastes can be carcinogenic to cause cancer, kidney ailments, lung defects^[38]. The burning fossil fuels that produce nitrogen oxide and sulphur dioxide can result in acid rain attacks which produces many health concerns specially over skin^[39]. All these references are just a few to mention and prove that dump yard fire incidents like that happened recently in Brahmapuram, can contribute drastically to

alter the health status of residents there. Along with these drastic health impacts, there are probable chances of earthquakes, landslides, floods, cyclones, extreme drought, and various epidemics when this incident is considered as a natural disaster or an environmental hazard^[40]. In a nutshell, it is evident that the health impact of a massive fire incident like that happened at Brahmapuram can impact the overall health of a person, starting from acute manifestations like burning eyes, irritable throat etc to different drastic systemic involvements resulting in multi organ failure, or cancer, neurologic disorders like devastating illness, deteriorating the health status of a society. Moreover, the influence of it over developing foetus, pregnant ladies are regretful.

Preventive Approach

Dincharya, Ratricharya, Rithucharya

Awakening early in the morning, when the morning light help to maintain the circadian cycle, regularizes the daily rhythms, which if not done apt produces impaired alertness, altered performance, disorientation, tiredness, GI manifestations, and result in inappropriate timing of defecation, and causes depression^[41]. *Adharaneeya vegas*^[42], being means of eliminating metabolic wastes, daily should be practiced as a routine to maintain general health. *Danta dhavana, Jihwa nirlekhana, Mukha prakshalana, Gandusha, Kavala, Tambula* are procedures that help to maintain oral hygiene, which when practiced daily can prevent manifestation of diseases^[43]. When we chew sticks of medicinal plants, volatile oils, tannic acid, sulphur and sterols contribute to antiseptic, bactericidal properties, preventing plaque formation, bad odour and enhancing anti-cariou property and improving the sense of taste, preventing other systemic illnesses^[44]. Oil pulling on a regular practice, improves oral hygiene and inhibits various local and systemic pathologies, by improving tongue hygiene as it interacts and interconnects body systems^[45]. The hygiene of nose and oral cavity is important as they remain as the first region in human body that the microorganism enters through and a regular cleansing of the same can prevent many diseases as avoided in the initial stage of entry itself. This is important to understand in a *Janapadodhwamsa* caused by air pollution mainly, as the prime route of entry of microbes is through mouth and nose. A randomized controlled trial comparing the effect on health of immersion bathing and shower bathing in 38 participants revealed that the visual analogue scale scores were significantly better for fatigue, pain, stress, smile and self-reported to have better skin health after the intervention^[46]. *Ratricharya*, that includes *Sandhya varjya, Ratribhojana, Netra prakshalana, Anjana, Dhoomapana, Maithuna, Nidra* on its systematic

following, helps in attaining longevity, and makes life disease free^[47]. *Rasanjana* with honey when applied as *Anjana*, was found to relieve burning eyes, redness of eyes, conjunctival congestion, mucopurulent discharge in conjunctivitis and papillary hypertrophy^[48]. *Dhoomapana*, a procedure by which a person has to inhale medicated smoke helps in preventing diseases of head, nose and eyes, avoiding recurrent upper respiratory tract infections, reducing lung related concerns^[49]. Adequate sexual activity has a positive effect on the psychological wellness and relationships regulating psycho-neuro-endocrinal factors^[50]. Continuous sleep deprivation can lead to chronic health concerns like obesity, diabetes mellitus, high blood pressure and heart diseases^[51]. The main principle of prevention of health hazards in Ayurveda can be attained easily by following certain disciplines and restricting diet as explained in *Ritucharya*^[52]. Adaptations of the body in accordance with the environmental and climatic changes are the key for the practices of *Ritucharya*^[53]. In a human clinical study, bio-physical and bio-chemical changes occurred during *Ritusandhi*, which caused provocation of mainly *Vata Kapha pradhana Tridosha*, and highlighted the presence of *Jwara*, *Pratishyaya*, *Alasya* along with impaired *Agni*^[54]. A good knowledge of *Ritucharya* with reference to *Kriyakala* becomes a path finder to create harmony in the vitiating body humours during environmental changes thereby providing early diagnosis and prognosis for adopting preventive and curative methods^[55]. In brief, one can estimate the benefits of *Dincharya*, *Ratricharya*, *Rithucharya* by attaining hygiene, getting a clear and fresh sense perception, strengthening the body and mind, staying calm and pleasant, promoting health and longevity^[56].

Ashta Ahara Vidhi Vishesh Ayatana

Especially when it comes to the dietary aspect of a person who is prone to a disease manifestation, importance inevitably should be given to the origin of the food, properties of food consumed, processing of the same, contact of the eatables with fire, its contact with water, churning of food, appropriately combining one food with another, in respect to seasonal availability and stage of the disease prevailing, based on the rules of consumption, and depending on the consumer habits^[57]. Evidences from various clinical trials and epidemiological studies reveals that a traditional diet design containing whole grains, legumes, seeds, nuts, predominant in plant based foods like fresh fruits and vegetables, lower in animal based foods, reduces the risk of non-communicable diseases ranging from cardio-vascular ailments to cancer^[58]. An unbalanced diet along with unhealthy lifestyles like inappropriate and insufficient sleep, physical

inactivity, stress, environmental pollution, habits like smoking, alcoholism can contribute to metabolic alterations resulting in non-infectious chronic pathologies like kidney ailments, cardio vascular complaints, long-time respiratory diseases, cancer etc^[59]. This emphasizes the role of diet and rules of consumption in prevention of chronic diseases expected to cause by an environmental disaster as mentioned above. In relation with Brahmapuram incident, the entry of various disease causing factors via food chain can be prevented to a major extent only by following the steps of *Ashta ahara vidhi vishesh ayatana*.

Sadvritta, Achara rasayana

These are certain prescribed ethical codes and conducts, in both personal and social perspective that an individual should abide by, to get a physically healthy, mentally stronger, socially stable and spiritually enlightened journey of life. These are systematic steps when followed from childhood that carves a brave man for a well-being society. It reminds a person to perform his own duties, enlightens him regarding the consequences that his irresponsibility might cause personally and to the surrounding. Practicing good traits is the base to prevent disease manifestation and thus it can prevent *Pranjanaparadha*, avoiding *Adharma*, which are the root causes of *Janapadodhwamsa*.

Dhoopana, Rakshakarma, Mantrocharana

Dhoopana, being a potent drug delivery system through inhalation, has potency to cross the blood-brain barrier increasing the bio-availability of drugs used, acts as a purifying, disinfecting, sterilizing medium preventing the entry of microorganisms that is passed on in air^[60]. The method of following a 3 tire system of fumigation, namely *Dhoopana*, *Anudhoopana*, and *Pratidhoopana*^[61] emphasizes the concern of Ayurveda literatures over the preventive aspects of air pollution and resulting diseases. Even though the practices of *Rakshakarma* like performing *Homa*, *Mantrocharana*, *Mani dharana*, *Udaka kumbha sthapana*, *Ulukhala sthapana* etc^[62] are told in the context of new born baby care, one can utilise the same for preventing the possible illness that can be caused by polluted air. Regular chanting of *Mantra*, helps in prevention and relieving of diseases that manifests in the respiratory, circulatory and digestive tracts along with speech related disorders, cognitive disorientations and intellectual disabilities^[63]. All of these serves as *Daivavyapashraya* approach of preventing a disease, which is on its path to decline in present day.

Garbhini Paricharya

Ayurveda always gave importance to *Athulya gothra vivaha*, *Garbha purva shodhana* for both husband and wife, once conceived, *Masanumasika garbhini paricharya*, after delivery priority was given to the care of *Sutika*, *Navajatha*, isolating them in *Sootikagara* and *Kumaragara*^[64]. With appropriate following of diet and regimen told in *Garbhini paricharya*, one can attain a healthy baby with good energy and strength bestowed^[65]. It also helps in getting a normal vaginal delivery, restoring the physiology in the delivered woman, making her attain her vitals back to normalcy^[66]. This serves as a basic approach to prevent the health hazards that probably a pregnant lady can attain, when she inhale the noxious emissions from the fire incident and thus prevent its effects in developing foetus, appreciating early diagnosis and interventions if any sequels identified.

Panchakarma, Rasayana

Panchakarma, the major five cleansing procedures, including various body treatments with oils and pastes, steam therapy etc. followed by inducing vomiting episodes, purgation therapy, therapeutic nasal drops, bloodletting, medicated enemas, helps in clearing the accumulated metabolic wastes, especially in the body channels including digestive, respiratory and cardiovascular tracts that can resume the natural functioning of the body to its optimum^[67]. By adopting these prestigious procedures at least twice in a year ensures that body is free from drastic diseases and imbalances. *Vamana* in *Vasantharitu*, *Virechana* in *Sharad ritu*, *Basti* in *Varsha ritu* not only prevents disease manifestations, but acts as a preservative, promotive, curative and rehabilitative therapy^[68]. The nasal administration of medicines helps in elimination of morbid *Doshas* accumulated in the head that have responsibility of disease manifestation^[69]. The present day lifestyle derangements contribute much towards the accumulation of toxins into blood resulting in various diseases specially that of skin^[70]. *Raktamokshana*, has its own influence in preventing many of the skin manifestations by removing blood contained noxious substances, preventing its vast systemic complications^[71]. *Rasayana* therapy following *Panchakarma*, have a definitive role in effective treatment of allergic disorders, bronchial asthma, autoimmune disorders, cancer, pulmonary tuberculosis etc and enhances the quality of life^[72]. *Medhya rasayana*, have a pivot role in preventing and managing various neuro-degenerative conditions and stress induced concerns^[73]. *Rasayana* serves as the first line of prevention against *Janapadodhwamsa* as it can modulate immunity to combat several infective, long time, inflammatory and autoimmune diseases^[74].

CONCLUSION

Brahmapuram waste treatment plant located in a 110 acres of land, assumed to accumulate 380 tons of wastes eliminated daily from the Kochi city of Kerala, experienced a massive fire incident on 2nd of March, 2023. This incident emitted various noxious fumes that covered the city completely leading to inhalation of this by residents. Considering this regrettable fire incident as one of an environmental disaster, it can be related to *Janapadodhwamsa*. Since the incident was massive of its kind, but had frequently occurred in a smaller dimensions even before, emphasized the need of a review of why the incident occurred, analysing the health impacts it could produce. *Dinacharya*, *Ratricharya*, *Ritucharya*, *Ashta ahara vidhi visheshaya*, *Acharya rasayana*, *Panchakarma*, *Rasayana* etc constitutes *Vyaktigata swasthavritta* whereas *Sadvritta*, *Dhoopana*, *Rakshakarma*, *Manthrocharana* are included under *Samajika swasthavritta*. These major principles have immense possibilities in altering and balancing not only the *Shareerika doshas* like *Vata*, *Pitta*, *Kapha*, which are vitiated to cause a physical disease but normalizes various *Manasika doshas*, *Satwa*, *Rajas*, *Tamas*, that are imbalanced in a psychological illness. Following the same efficiently can wipe out the possibilities of long-time health impacts that this regrettable and unfortunate fire incidence can produce. Thus, this article emphasises the role of Ayurveda in prevention of long time health hazards that it can probably produce in the residents of the city.

REFERENCES

1. A walk through the ghost village Brahmapuram, deserted thanks to Kochi's garbage. The News Minute. (Cited 2023 March 10). Available from: <https://www.thenewsminute.com/article/walk-through-ghost-village-brahmapuram-deserted-thanks-kochis-garbage-41040>
2. Acharya Charaka. Charaka samhitha. Vimana sthana, 3/6. reprint ed 2015. Chaukhamba Orientalia. Varanasi. Pg 241
3. Acharya Charaka. Charaka Samhitha, shareera sthana, 1/98, reprint ed 2015. Chaukhamba Orientalia. Varanasi. pg 296
4. Acharya Charaka. Charaka Samhitha, shareera sthana, 1/98, reprint ed 2015. Chaukhamba Orientalia. Varanasi. pg 296
5. Acharya Charaka. Charaka Samhitha, shareera sthana, 1/102, reprint ed 2015. Chaukhamba Orientalia. Varanasi.pg 297
6. Acharya Charaka. Charaka Samhitha, Vimana sthana, 3/20. reprint ed 2015. Chaukhamba Orientalia. Varanasi. Pg 242

7. Acharya Charaka. Charaka Samhitha, Vimana sthana, 3/6. reprint ed 2015. Chaukhamba Orientalia. Varanasi. Pg 241
8. Acharya Charaka. Charaka Samhitha, Vimana sthana, 3/4. reprint ed 2015. Chaukhamba Orientalia. Varanasi. Pg 240
9. Acharya Charaka. Charaka Samhitha, Vimana sthana, 3/20. reprint ed 2015. Chaukhamba Orientalia. Varanasi. Pg 242
10. Acharya Charaka. Charakasamhitha, Vimana sthana, 3/6, re print ed 2015. Chaukhamba Orientalia. Varanasi. Pg 241
11. Acharya Charaka. Charaka samhitha, Vimana sthana, 3/6/2. re print ed 2015. Chaukhamba Orientalia. Varanasi. Pg 241
12. Acharya Charaka. Charaka samhitha, Vimana sthana, 3/6/3. reprint ed 2015. Chaukhamba Orientalia. Varanasi. Pg 241
13. Acharya Charaka. Charaka samhitha, Vimana sthana, 3/6/4. reprint ed 2015. Chaukhamba Orientalia. Varanasi. Pg 241
14. Acharya Charaka. Charaka samhitha, Vimana sthana, 3/11. reprint ed 2015. Chaukhamba Orientalia. Varanasi. Pg 241
15. Acharya Charaka. Charaka samhitha, Vimana sthana, 3/38. reprint ed 2015. Chaukhamba Orientalia. Varanasi. Pg 245
16. Acharya Sushrutha. Sushrutha samhitha, Sutra sthana, 6/18. Chaukhamba Sanskrit series. Pg 42
17. Acharya Sushrutha. Sushrutha samhitha, Kalpa, 3/16, Chaukhamba Sanskrit series. pg 30
18. Introduction to epidemiology. Concepts of disease occurrence. CDC Home. Available from: <https://www.cdc.gov/csels/dsepd/ss1978/lesson1/section8.html>
19. Mahesh Raju. B, Gurubasavaraj Yalgachin, Durga Bhavani. Preventive Principles of Diseases According to Ayurveda. International Journal of Ayurveda and Pharma Research. 2018;6(6):72-76.
20. What are the trends in wastes and their effects on human health and the environment. EPA United states environmental protection Agency. (Cited 2023 March 19). Available from: <https://www.epa.gov/report-environment/wastes>
21. Waste management strategies. Environmental biology. Lumen. Available from: <https://courses.lumenlearning.com/suny-monroe-environmentalbiology/chapter/15-2-waste-management-strategies/>
22. https://kspcb.kerala.gov.in/assets/uploads/widget/projects/Study_Report_On_The_Emission_Of_Dioxins_And_Furans_During_The_Fire_Breakout_At_Brahmapuram_Waste_Treatment_Plant_-_February_2020.pdf
23. Acharya Sushrutha. Sushrutha samhitha, Kalpa, 3/16, Chaukhamba Sanskrit series. pg 30
24. Kochi chokes as air quality drops; AQI crosses 200 on Sunday. Mathrubhumi.com Available from: <https://english.mathrubhumi.com/news/kerala/kochi-chokes-as-air-quality-drops-aqi-crosses-200-1.8384761>
25. Kochi chokes as air quality drops; AQI crosses 200 on Sunday. Mathrubhumi.com Available from: <https://english.mathrubhumi.com/news/kerala/kochi-chokes-as-air-quality-drops-aqi-crosses-200-1.8384761>
26. PCB stops measuring Kochi's air quality even as 'chemical cocktail' pervades city. onmanorama. Available from: <https://www.onmanorama.com/news/kerala/2023/03/12/pollution-control-board-kochi-air-quality-measurement.html>
27. PCB stops measuring Kochi's air quality even as 'chemical cocktail' pervades city. onmanorama. Available from: <https://www.onmanorama.com/news/kerala/2023/03/12/pollution-control-board-kochi-air-quality-measurement.html>
28. Acharya Sushrutha. Sushrutha samhitha, Kalpa sthana 3/25. Chaukhamba Sanskrit series. Pg 31
29. Acharya Sushrutha. Sushrutha samhitha, Kalpa sthana 3/25. Chaukhamba Sanskrit series. Pg 31
30. Shri Kant Singh, Praveen Chokhandre, Pradeep S. Salve, Rahul Rajak, Open dumping site and health risks to proximate communities in Mumbai, India: A cross-sectional case-comparison study, Clinical Epidemiology and Global Health, Volume 9, 2021, Pages 34-40, (<https://www.sciencedirect.com/science/article/pii/S2213398420301652>)
31. Shri Kant Singh, Praveen Chokhandre, Pradeep S. Salve, Rahul Rajak, Open dumping site and health risks to proximate communities in Mumbai, India: A cross-sectional case-comparison study, Clinical Epidemiology and Global Health, Volume 9, 2021, Pages 34-40, (<https://www.sciencedirect.com/science/article/pii/S2213398420301652>)
32. Shri Kant Singh, Praveen Chokhandre, Pradeep S. Salve, Rahul Rajak, Open dumping site and health risks to proximate communities in Mumbai, India: A cross-sectional case-comparison study, Clinical Epidemiology and Global Health, Volume 9, 2021, Pages 34-40, (<https://www.sciencedirect.com/science/article/pii/S2213398420301652>)
33. Shri Kant Singh, Praveen Chokhandre, Pradeep S. Salve, Rahul Rajak, Open dumping site and health risks to proximate communities in Mumbai, India: A cross-sectional case-comparison study, Clinical Epidemiology and Global Health, Volume 9, 2021, Pages 34-40, (<https://www.sciencedirect.com/science/article/pii/S2213398420301652>)
34. Mazzucco W, Costantino C, Restivo V, Alba D, Marotta C, Tavormina E, Cernigliaro A, Macaluso M, Cusimano R, Grammata R, Tramuto F, Scodotto S, Vitale F.

- The Management of Health Hazards Related to Municipal Solid Waste on Fire in Europe: An Environmental Justice Issue? *Int J Environ Res Public Health*. 2020 Sep 11; 17(18): 6617. doi: 10.3390/ijerph17186617. PMID: 32932886; PMCID: PMC7558387
35. As Brahmapuram fire smoulders on Day 12, a look at how toxic the air in Kochi really is. *South first*. Available from: <https://thesouthfirst.com/kerala/did-smoke-from-waste-dump-fire-kill-kochi-man/>
36. Njoku PO, Edokpayi JN, Odiyo JO. Health and Environmental Risks of Residents Living Close to a Landfill: A Case Study of Thohoyandou Landfill, Limpopo Province, South Africa. *Int J Environ Res Public Health*. 2019 Jun 15; 16(12): 2125. doi: 10.3390/ijerph16122125. PMID: 31208082; PMCID: PMC6617357
37. Njoku PO, Edokpayi JN, Odiyo JO. Health and Environmental Risks of Residents Living Close to a Landfill: A Case Study of Thohoyandou Landfill, Limpopo Province, South Africa. *Int J Environ Res Public Health*. 2019 Jun 15; 16(12): 2125. doi: 10.3390/ijerph16122125. PMID: 31208082; PMCID: PMC6617357.
38. Njoku PO, Edokpayi JN, Odiyo JO. Health and Environmental Risks of Residents Living Close to a Landfill: A Case Study of Thohoyandou Landfill, Limpopo Province, South Africa. *Int J Environ Res Public Health*. 2019 Jun 15; 16(12): 2125. doi: 10.3390/ijerph16122125. PMID: 31208082; PMCID: PMC6617357.
39. What is Acid rain. EPA United States Environmental Protection Agency. Available from: <https://www.epa.gov/acidrain/what-acid-rain>
40. Dr. Shruthi S. Shet, Dr. Venkatakrishna K. V. Critical analysis on the concept of Janapadodhwamsa - A Literature Review. *wjpls*, 2021, Vol. 7, Issue 10, 45 - 49.
41. Kohyama J. Early rising children are more active than late risers. *Neuropsychiatric Dis Treat*. 2007 Dec; 3(6): 959-63. doi: 10.2147/ndt.s2087. PMID: 19300634; PMCID: PMC2656341.
42. Acharya Charaka. *Charaka samhitha, Sutra sthana*, 7/26. reprint ed 2015. Chaukhamba Orientalia. Varanasi. Pg 50
43. Acharya Vagbhata. *Ashtanga Hridaya, Sutra sthana*, 2/2. Chowkhamba surabharati prakashan. Pg 31
44. Tubaishat RS, Darby ML, Bauman DB, Box CE. Use of miswak versus toothbrushes: oral health beliefs and behaviours among a sample of Jordanian adults. *Int J Dent Hyg*. 2005 Aug; 3(3): 126-36. doi: 10.1111/j.1601-5037.2005.00136.x. PMID: 16451363.
45. Tubaishat RS, Darby ML, Bauman DB, Box CE. Use of miswak versus toothbrushes: oral health beliefs and behaviours among a sample of Jordanian adults. *Int J Dent Hyg*. 2005 Aug; 3(3): 126-36. doi: 10.1111/j.1601-5037.2005.00136.x. PMID: 16451363.
46. Goto Y, Hayasaka S, Kurihara S, Nakamura Y. Physical and Mental Effects of Bathing: A Randomized Intervention Study. *Evid Based Complement Alternat Med*. 2018 Jun 7; 2018: 9521086. doi: 10.1155/2018/9521086. PMID: 29977318; PMCID: PMC6011066.
47. Acharya Bhavamishra. *Bhava prakasha*, 1/5/261. Reprint edition 2018. Chaukhamba orientalia. Varanasi. Pg 91
48. Bhardwaj A, Tanwar M. Effect of rasanjana madhu ashchyotana in netra abhishyanda (mucopurulent conjunctivitis). *Ayu*. 2011 Jul; 32(3): 365-9. doi: 10.4103/0974-8520.93916. PMID: 22529652; PMCID: PMC3326884.
49. Acharya Charaka. *Charaka samhitha, Sutra sthana*, 5/32. reprint ed 2015. Chaukhamba Orientalia. Varanasi. Pg 40
50. Mollaioli D, Sansone A, Ciocca G, Limoncin E, Colonnello E, Di Lorenzo G, Jannini EA. Benefits of Sexual Activity on Psychological, Relational, and Sexual Health During the COVID-19 Breakout. *J Sex Med*. 2021 Jan; 18(1): 35-49. doi: 10.1016/j.jsxm.2020.10.008. Epub 2020 Oct 23. PMID: 33234430; PMCID: PMC7584428.
51. The health hazards of insufficient sleep. Harvard Health Publishing. Available from: <https://www.health.harvard.edu/staying-healthy/the-health-hazards-of-insufficient-sleep>
52. Thakkar J, Chaudhari S, Sarkar PK. Ritucharya: Answer to the lifestyle disorders. *Ayu*. 2011 Oct; 32(4): 466-71. doi: 10.4103/0974-8520.96117. PMID: 22661838; PMCID: PMC3361919.
53. Thakkar J, Chaudhari S, Sarkar PK. Ritucharya: Answer to the lifestyle disorders. *Ayu*. 2011 Oct; 32(4): 466-71. doi: 10.4103/0974-8520.96117. PMID: 22661838; PMCID: PMC3361919.
54. Thakkar J, Chaudhari S, Sarkar PK. Ritucharya: Answer to the lifestyle disorders. *Ayu*. 2011 Oct; 32(4): 466-71. doi: 10.4103/0974-8520.96117. PMID: 22661838; PMCID: PMC3361919.
55. Thakkar J, Chaudhari S, Sarkar PK. Ritucharya: Answer to the lifestyle disorders. *Ayu*. 2011 Oct; 32(4): 466-71. doi: 10.4103/0974-8520.96117. PMID: 22661838; PMCID: PMC3361919.
56. Mahesh Raju. B, Gurubasavaraj Yalgachin, Durga Bhavani. Preventive Principles of Diseases According to Ayurveda. *International Journal of Ayurveda and Pharma Research*. 2018; 6(6): 72-76.
57. Vd. Sampada S. Sant Et.al. Concept of ashta ahara vidhi vishesh ayatane & its importance in health. *wjpmr*, 2022, 8(9), 109-112
58. Cena H, Calder PC. Defining a Healthy Diet: Evidence for The Role of Contemporary Dietary Patterns in Health and Disease. *Nutrients*. 2020 Jan 27; 12(2):

334. doi: 10.3390/nu12020334. PMID: 32012681; PMCID: PMC7071223.
59. Noce A, Romani A, Bernini R. Dietary Intake and Chronic Disease Prevention. *Nutrients*. 2021 Apr 19; 13(4): 1358. doi: 10.3390/nu13041358. PMID: 33921568; PMCID: PMC8072965.
60. WHO Covid -19 Research Database. World Health Organisation. Available from: <https://pesquisa.bvsalud.org/global-literature-on-novel-coronavirus-2019-ncov/resource/en/covidwho-903289>
61. Acharya Vridha Jeevaka. Kashyapa samhitha, Kalpa sthana, 1/ 47. Chaukhamba Viswabharati. Pg 323
62. Acharya Charaka. Charaka samhitha, Shareera sthana, 8/47. reprint ed 2015. Chaukhamba Orientalia. Varanasi. Pg 349
63. Puja Upadhyay, & Murlidhar Paliwal. (2021). Review of Mantra Chikitsa in Ayurveda. *Journal of Ayurveda and Integrated Medical Sciences*, 6(5), 261 - 269. <https://doi.org/10.21760/jaims.v6i5.1370>
64. Puja Upadhyay, & Murlidhar Paliwal. (2021). Review of Mantra Chikitsa in Ayurveda. *Journal of Ayurveda and Integrated Medical Sciences*, 6(5), 261 - 269. <https://doi.org/10.21760/jaims.v6i5.1370>
65. Prashant Rajaram Shirke, Review on Ayurvedic concept of Garbhini Paricharya. *J Ayu Int Med Sci*. 2022; 7(1): 195-198. <https://jaims.in/jaims/article/view/1690>
66. Prashant Rajaram Shirke, Review on Ayurvedic concept of Garbhini Paricharya. *J Ayu Int Med Sci*. 2022; 7(1): 195-198. <https://jaims.in/jaims/article/view/1690>
67. Conboy L, Edshteyn I, Garivaltis H. Ayurveda and Panchakarma: measuring the effects of a holistic health intervention. *Scientific World Journal*. 2009 Apr 27; 9: 272-80. doi: 10.1100/tsw.2009.35. PMID: 19412555; PMCID: PMC2699273.
68. Conboy L, Edshteyn I, Garivaltis H. Ayurveda and Panchakarma: measuring the effects of a holistic health intervention. *Scientific World Journal*. 2009 Apr 27; 9: 272-80. doi: 10.1100/tsw.2009.35. PMID: 19412555; PMCID: PMC2699273.
69. Kumar, V. (2017). A Conceptual Study On Mode Of Action Of Nasya. *International Journal of Ayurveda and Pharma Research*, 5(7). Retrieved from <https://ijapr.in/index.php/ijapr/article/view/728>
70. Patel, K. (2021). Role of Rakta Mokshana (Bloodletting) In Various Disease -A Brief Review: DOI: *International Research Journal of Ayurveda & Yoga*, 4(7), 96-100.
71. Ibid
72. Singh R.H., Sodhi J.S., Dixit U.. (2020). Rasayana Adhyaya. In: Dixit U., Deole Y.S., Basisht G., (Eds.), *Charak Samhita New Edition* (1st ed. pp.74). CSRTSDC. <https://doi.org/10.47468/CSNE.2020.e01.s06.002>
73. Singh R.H., Sodhi J.S., Dixit U.. (2020). Rasayana Adhyaya. In: Dixit U., Deole Y.S., Basisht G., (Eds.), *Charak Samhita New Edition* (1st ed. pp.74). CSRTSDC. <https://doi.org/10.47468/CSNE.2020.e01.s06.002>
74. Dr. Priyadeep Raj, Dr. Rohitash Gurjar, Dr. B. Swapna. Role of Rasayana in Janapadodhwamsa Such As Covid 19. *International Journal of Pharmaceutical Research and Applications*. Volume 6, Issue 2 Mar-Apr 2021, pp: 421-424

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***Address for correspondence**

Dr. Ganga N

Assistant Professor,
Department of Kaumarabhritya,
Bapuji Ayurvedic Medical College
& Hospital, T R Nagar, Challakere,
Chithradurga, Karnataka.

Email:

ganganarendran93@gmail.com

Ph: 9400571566

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