

Personalized lifestyle interventions w.s.r. to Sareera Prakruthi for prevention & management of lifestyle diseases- A Review article

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Abstract:

Lifestyle diseases is a major challenge being faced by the medical sector. The direct and non-direct costs involved cripples not only the affected individual but also poses a burden on the nation's economy. Medical support alone is not sufficient to tackle the problem. These diseases originate from a faulty diet and lifestyle followed by the individual and an effective intervention to modify these etiological factors can yield best results.

The concept of Prakruthi is unique to Ayurveda. Research works conducted in the field of Ayurgenomics have established the association between the genetic make up and the SareeraPrakruthi (Physical Constitution) of an individual. Understanding the Prakruthi can help in identifying the vulnerability of an individual towards various clinical ailments. A conducive diet and lifestyle in harmony with the individual Prakruthi can help in prevention and management of the lifestyle diseases effectively.

The present paper is an attempt to explore the relationship between the Prakruthi and Lifestyle diseases and to design a personalized approach based on Prakruthi for the prevention and management of these clinical conditions.

Key Words: Lifestyle Diseases, Prakruthi, Ayurgenomics, diet, lifestyle

Introduction:

Lifestyle diseases has been a growing concern for the health sector in the past decades. Life-style Diseases are those diseases which are linked with one's lifestyle and can be controlled by modifications in diet, environment and behaviour. With the global adaptation of urbanization and industrialization the incidence of Life-style Diseases (LSD) has been fast growing. Health statistics from WHO reveal that LSDs kill 41 million people each year (71% global deaths). More than 15 million people die from LSDs between 30-69 years of age (pre-mature deaths) and alarmingly 77% LSD deaths occur in low- and middle-income countries⁽¹⁾.

Though the list of LSD is too big, however, Obesity, Type 2 Diabetes Mellitus, Cardio-vascular diseases, Stroke and Lung cancer are the most common among them. The expenditure includes Direct cost, i.e., the expenses the individual bears for consultation, investigations, medications and therapeutic procedures; and the Indirect cost i.e., the expenses on travelling and hospital admission including the bed and food charges. Beyond this, the decreased productivity further burdens the national economy and affects the socio-economic growth of the country. Thus, mortality and morbidity associated with LSD is thus a great challenge not only to the medical system but to the entire nation.

Etiopathogenesis of LSD is complex and multi-factorial. It involves various Risk factors including both Modifiable (Behavior, Diet, Sleep, Physical activity) and non-modifiable

(Age, Family history, Gender, Ethnicity). Previous studies have established that dietary and life-style interventions can effectively contribute in the management of LSD. However, such interventions need to be personalized. The concept of Prakruthi is unique to Ayurveda and can define the vulnerability of the individual to various clinical condition. It is based on the Tri-dosha principle where Vata is the regulating force, Pitta reflects the metabolism and Kapha responsible for anabolism. The individual Prakruthi is determined right at the time of fertilization itself depending upon the predominance of the Dosha in the combining sperm and ovum based on the status of sperm & ovum (parental Age), Time of fertilization & implantation (season and status of uterus), and Gestational diet & regimes⁽²⁾. Accordingly, 7 Prakruthis have been enumerated namely Vata, Pitta, Kapha, Vata-pitta, Vata-kapha, Pitta-kapha, and Vata-pitta-kapha⁽³⁾. This Prakruthi mediates the Phenotype, Digestive power, Sleep patterns, Preferences, Temperament and Susceptibility to ailments, etc. Thus, designing a diet and lifestyle intervention based on individual Prakruthi can yield more satisfying results in LSD.

Materials

The present paper is a review of the available literature from both online and offline sources to explore how understanding the Prakruthi can help in early identification of disease vulnerability and how personalized lifestyle interventions can be developed for effective prevention and management of LSD. The textbooks and articles in online media related to the

scope of this paper were reviewed. The observations were critically analyzed and conclusions were made.

Discussions

Based on the literature review the characteristics of different Prakruthis was tabulated as in Table No. 1:

The previous researches done in the field of Ayurgenomics have revealed the relationship between the genetic composition and the individual Prakruthi and how it influences the disease pathogenesis. The scope of Ayurgenomics includes identifying the disease predisposition, targeted disease screening, and designing prevention, diagnosis and therapeutic models.

The association between the individual Prakruthi and disease vulnerability has been established in previous researches.

In Lipid Profile, TG, total cholesterol, VLDL, LDL, LDL/HDL ratio was observed to be higher in Kapha when compared to Pitta and Vata males⁽⁴⁾. Kapha is the anabolic moiety as explained in the textbooks and thus this finding is in concordance to the Ayurveda literature. Hematological parameters like hemoglobin, PCV, and RBC count high values in Pitta males in comparison to Vata and/or Kapha. This observation is in terms with the textual references stating that blood is the seat of Pitta. Vata is the regulating factor, understood as the neurological regulation in the physiological systems. It is the factor identified to be responsible for all kinds of stimulations. In concordance to this, the previous studies have quoted the up regulation of genes involved in regulation of cyclin dependent protein kinase activity and regulation of enzyme activity observed to be higher in Vata predominant males and similarly an over-expression of genes related to nucleocytoplasmic transport in Vata predominant females. Kapha is understood to be responsible for slowing down the physiological systems. Supportive to this the observations from previous works quoting an overall down-regulation of genes of fibrinolysis involved in negative regulation of blood coagulation in Kapha predominant males⁽⁵⁾. The findings that Extensive metabolizer genotype is predominant in Pitta Prakriti individuals while poor metabolizer genotype was highest in Kapha Prakriti individuals supports the literature that Kaphaprakruthi people have poor digestive capacity while the digestive power is intense in Pitta prakruthi people⁽⁶⁾. Strong correlation was observed for insulin resistance, cytokine

(IL6) and inflammatory markers with the risk factors of coronary artery disease. IL6, TNF alpha and hsCRP is observed to be positively correlated with Kapha group. And a higher incidence of CAD was observed in Vata, Kapha & kapha Prakriti individuals⁽⁷⁾. Basal metabolic rate (BMR) and energy consumption was observed to be high in Pitta predominance prakriti type individuals leading to tissue destruction and pre-mature aging and average life span was observed to be low when compared to Kapha pre-dominance prakriti type having lower BMR and presenting with delayed ageing and longer life-span⁽⁸⁾. The CD14 surface antigen is preferentially expressed by monocytes, macrophages, granulocytes (weak expression), B-cells, dendritic cells and hepatocytes and is known to mediate the innate immune response to bacterial lipopolysaccharide. In previous works, CD14 expression was observed to be higher in pitta dominant individuals. This finding is in concordance to the Ayurvedic principles suggesting that pitta prakriti has a higher tendency to develop hypersensitive skin responses, in particular, flares. Interleukin 2-R (CD25) which is a transmembrane polypeptide is expressed mainly by activated B-cell, T-cell and NK-cells and regulates both innate and adaptive immune response mechanism. Its deficiency results in recurrent infections and lymphocyte infiltration in multiple tissues. Previous studies reported a higher expression of CD25 in individuals with kapha prakriti which supports the Ayurvedic literature that individuals with kapha prakriti show strong immune response as compared to vata prakriti⁽⁹⁾.

Based on Prakruthi the temperament has been described as follows:

VataPrakruthi- Mentally unstable, Jealous, Angry & violent, Gets irritated and angry very easily.

Pitta Prakruthi- Fearless, Short-tempered, Brave, do not forgive easily, get angry & irritated easily

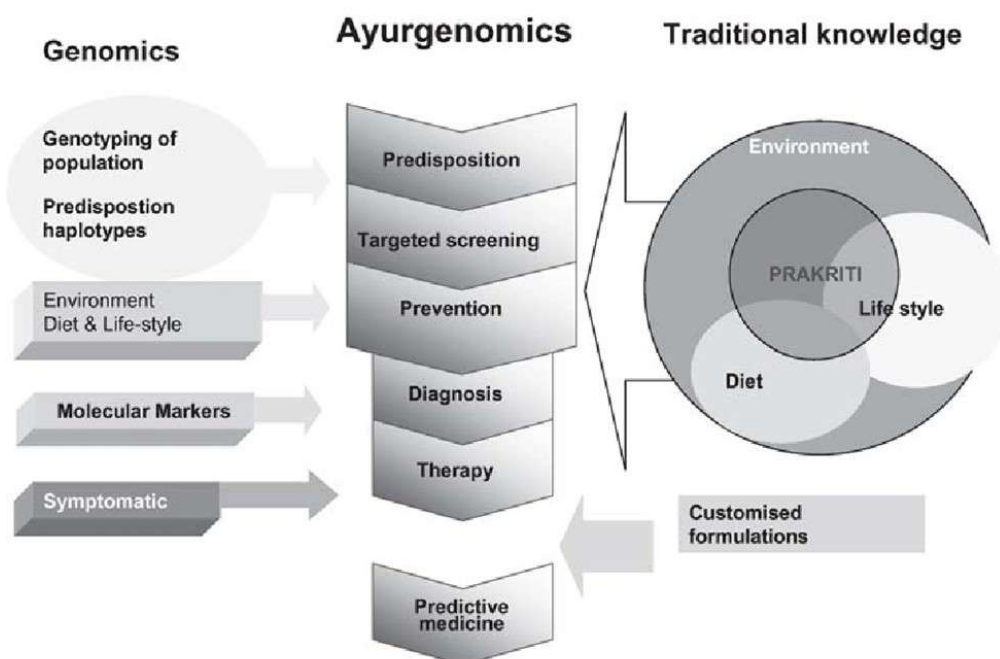
Kapha Prakruthi- Mature, Tolerant, Patient, Hardworking, do not get angry or irritated, Polite, do not get depressed, easily forgive others

In a previous study, it was observed that people with Kapha dominant Prakruthi had excellent Stress Handling Capacity (61.36%), VataPrakruthi people with good Stress Handling Capacity were 22.73%. Out of which 15.90% had Pitta dominant Prakriti. No person with Vata Prakruthi had excellent Stress Handling Capacity⁽¹⁰⁾. The findings are in concordance with the description of Prakruthi based temperaments.

Table No. 1: Showing characteristics of different Prakruthis

Trait	Vata Prakruthi	Pitta Prakruthi	Kapha Prakruthi
Body frame	Thin	Medium	Broad
Musculature	Weakly developed	Moderate	Well developed
Skin	Dry & cracked	Soft, thin, tendency for moles & acnes	Smooth & firm, clear complexion
Hair	Dry, thin, easily breaks	Thin, oily, early greying	Thick, Smooth & firm
Weight gain	Unresponsive	Fluctuating	Tendency to gain weight
Food & bowel habits	Frequent, variable, irregular	Higher capacity for food & water consumption	Low digestive capacity & stable food habits
Movements & physical activities	Excessive & brisk	Moderate	Less mobile & slow
Tolerance for seasons	Cold intolerant	Heat intolerant	Tolerant to both heat & cold
Disease resistance & healing capabilities	Poor	Good	Excellent
Metabolism	Moderate	Quick	Poor
Communication	Talkative	Sharp, incisive communication with analytical abilities	Less vocal with good communication skills
Initiation capabilities	Quick, responsive & enthusiastic	Moderate, upon conviction & understanding	Slow to initiate
Memory	Quick grasping, poor retention	Moderate grasping & retention	slow grasping, good retention
Ageing	Fast	Moderate	Slow
Disease predisposition	Developmental, neurological, dementia, movement & speech disorders, arrhythmias	Ulcer, bleeding disorders, skin diseases	Obesity, diabetes, atherosclerotic conditions

Chart No. 1: Ayurgenomics



Previous studies have concluded that Unhealthy diet, lifestyle and sleep patterns can bring about alterations in the microbiome & epigenetics and induce cellular injuries which can lead to in-flammation which in turn further stimulates such alterations which on long term results in clinical conditions like Obesity, Type 2 DM, CVD, Cancer, Depression etc. Thus, they suggested that lifestyle interventions can effectively reverse the alterations at the microbiome and epigenetics level and revert the cellular injury, thereby prevent and manage the NCDS effectively.

Based on these observations, a personalized lifestyle protocol can be developed based on the Ayurvedic principles taking into consideration the individual Prakruthi.

Lifestyle Interventions for Prevention and Management of NCDs

Dinacharya- daily routines

- Time of awakening- Brahma Muhurta- 4:30-5:00 am Being the time predominant in Vata, it helps to maintain the Circadian rhythm- the harmony between the internal and the external environment by mediating the neuro endo-crine functioning
- Personal hygiene measures. Herbal collyrium (Anjanam), Nasal oil administration (PratimarshaNasyam), herbal fume inhalation (Dhumapanam) can be advised especially for kapha predominant prakruthi as the secretions are more profuse in these people.
- Oil massage (Abhyangam) is Nourishing and indicated for Vataprakruthi, Vatapradhana Vata Pitta prakruthi to control tissue degeneration and premature ageing. However, it is not indicated for Kapha predominant prakruthi.
- Powder massage (Udwarthanam)- Depleting in nature, helps in reducing adipose tissue and is indicated for Kaphaprakruthi, kapha predominant Kaphavataprakruthi, and not for indicated for Vata pre-dominant prakruthi.
- Exercise- Generally Indicated for all except cases of severe physical contra indications. However, the nature and duration are depending on the season and individual physical capacity. Kaphaprakruthi needs to do more rigorous exercises for longer durations while Vata pitta prakruthi should indulge in less rigorous exercises and shorter duration be maintained. Likewise, during colder seasons and during autumn exercise can be done more rigorously for longer duration while during summer, spring, monsoon seasons less rigorous exercises are advisable that too for only shorter duration
- Sleep is nourishing in nature. In kapha pre-dominant persons excessive sleep may precipitate diseases due to over nourishment viz obesity related syndromes. So, day sleep is strictly contra indicated. In vata predominant persons sleep can help in nourishment and can reduce the chances of degenerative diseases. Thus, day sleep can be advised.

II. Seasonal variations in Tridoshas

- Vata – pre morbid in summers and morbid in Monsoon
- Pitta- pre morbid in Monsoon and morbid in Autumn
- Kapha- pre morbid in late winters and morbid in spring Accordingly, seasonal purifications can be advised based on Prakruthi.
- Monsoon – herbal enema therapy, especially for Vataprakruthi.
- Autumn – purgation, especially for Pitta prakruthi.
- Spring – emesis, especially for Kaphaprakruthi.

Regarding Diet,

- Cereals are in general cold potency, pre-dominantly sweet, sluggish, unctuous, nourishing and Kapha increasing. So, general indication in degenerative diseases. Whereas, Millets in general are dry, cold, predominantly astringent & sweet, light, depleting and Vata increasing, kapha decreasing. So, general indication in diseases due to over nourishment.
- Pulses in general – predominantly astringent & sweet, dry, cold potency, light, constipating, Vata increasing, Kapha Pitta decreasing
- Meats- Animals like cow, camel, frog, crocodile, large fishes, aquatic birds are generally heavy, nourishing, hot, unctuous, pre-dominantly sweet; increase Kapha Pitta, decrease Vata. Animals like hen, quail, pecking birds like pigeon, parrot etc, rabbit, deer etc are light, cold, predominantly sweet & astringent; increases vata, decreases Pitta kapha
- Milk – predominantly sweet, cold, soft, unctuous, heavy, sluggish; increases kapha, decreases Vata
- Curd- unctuous, hot, nourishing- increases kapha, decreases Vata
- Buttermilk- light, astringent, sour, stimulates metabolism- Kapha Vata decreasing
- Butter- cold, stimulates metabolism, Vata Pitta decreasing
- Ghee- Vata Pitta decreasing
- Oils- Sesame oil- Hot, penetrating, constipating, Vata decreasing, Pitta increasing; Mustard oil- Pungent, hot, penetrating, light, Vata decreasing, Pitta increasing; Flax seed oil- Hot, Kapha Pitta increasing; Coconut oil- Sweet, Nourishing, Pitta Vata decreasing. Based on this understanding the personalized diet charts can be designed for individual Prakruthis.

Thus, **Diet chart for Vata Prakruthi** 11,12 is [Refer Table No. 2]

Further, based on the specific etiology, disease wise conducive and non-conducive diet and activities has been advised in the texts. These must be advised with due consideration to prakruthi, taking care that diet and lifestyle must not oppose the Prakruthi.

Table No. 2: Showing Diet chart for Vata Prakruthi^(11,12)

Diet	Conductive	Non conductive
Taste	Sweet, Sour, Salt	Pungent, Bitter, Astringent
Cereals	Rice, wheat, Njavara rice	Millet
Pulses	Tuvar dal [lentils], black gram, soya bean, green gram, ground nut	Horse gram, red lentils, dry peas, soya, bengal gram,
Fats /Oils	All types of oils and ghee particularly sesame, olive, badam [almond], mustard, sun flower, ground nut, coconut, rice bran, wheat bran, palm, linseed	Grape seed oil, all fried and roasted food, bakery products, burgers and pizzas, chocolates, ice cream, honey, junkfood
Nuts & Seeds	All kinds of nuts, dry fruits & oil seeds. Preferably ground nuts, almonds, cashews, pista, apricot, acrods, sesame, poppy seeds, linseeds, pumpkin seeds	All roasted nuts and seeds, spiced nuts, popcorns, dry roasted grams.
Spices	ginger, asafoetida, garlic, mint, cumin, coriander, cinnamon, pudina, clove, nutmeg, pepper, mustard, curcuma, cardamom, rock salt, blacksalt, tamala-patra, all spice, curry leaves,	Too much of spices, red and green chilies of any kind.
Milk & milk products	fresh and warm milk with cream, butter, ghee,	buttermilk, yogurt, curds, old cheese, Lassi
Bathing	Warm water bath/shower, Oil bath / oil massage at regular intervals, steam bath, sauna bath	Cold water bath; river, pond, well and waterfalls bath
Exercise	Light exercise, warm water swimming, loosening exercise	Heavy exercises, long walking, exposure to cold breeze, tread mill, cycling, trekking, hiking, skydiving, skating, jogging, horse riding, heavy vehicle driving and racing, outdoor play.
Sexual act	Less	Frequent/ daily
Sleep	7-8 hrs daily, only at night	Day sleep, keeping awake at night
Rejuvenation	Enema in monsoon	
Profession	Office job, less travelling, other than roaming jobs.	Monotonous working, travelling and touring, marketing profession.
Yoga practices	Yoga asanas, Pranayamas- Anulomaviloma, Ujjai, Bhramari, Sukshma vyayama and meditation.	Dynamic yoga, power yoga

Table No. 3: Showing Diet chart for Pitta Prakruthi

Diet	Conductive	Non conductive
Taste	Bitter, astringent and sweet taste food & drinks	Pungent, sour and salt taste food and drinks.
Cereals	White rice, wheat, barley, oats, sprouted grains, navara, ragi,	Millet, rye, brown rice, red rice, buck wheat & corn
Pulses	Green gram, thuvardal [lentils], pulses, gram sprouts.	Horse gram, red lentils, dry peas, soya, bengal gram,
Fats /Oils	Oils like olive oil, soya oil, grape seed oil, wheat and rice bran oils, food items prepared with moderate ghee,	Mustard oil, coconut oil, sesame oil, sun-flower oil, almond oil, palm oil, All deep oil fried and roasted foods.

Nuts & Seeds	Dates(fresh], pumpkin seeds, melon seeds, Cumin seeds, dill seeds, carom seeds and fennel seeds.	All dry fruits and nuts, particularly ground nuts, cashew, almonds, acrodes, , Pistachio, dry coconut , salted and spiced nuts. Seeds like sesame, linseed, poppy seeds
Spices	Spices like cumin, coriander, fennel, saffron, cardamom, cinnamon, tur-meric, fresh ginger	Spices like black pepper, dry ginger, all kinds of chilies, cloves, mustard seeds, Salts, asafoetida, garlic, pulao spices.
Milk & milk products	fresh and warm milk with cream, ghee, buttermilk,	Sour milk products, sour creams.
Bathing	Warm / cold water bath/shower, Sauna bath, warm water Jacuzzi and tub bath, oil bath and massage with-out steam.	Hot water- bath/shower/swimming, Steam bat sunbath, Jacuzzi and sauna
Exercise	Light exercise, micro exercise, all types of exercise with moderate ef-fort, early morning and late evening walking in gardens and parks, skewing	Heavy exercises, long walking, exposure to hot air, tread mill, cycling, trekking, skating, jogging, horse riding, heavy vehicle driving and racing, outdoor play
Sexual act	Moderate	Regular & Frequent
Sleep	Moderate	Day sleep except during summer
Rejuv-enation	Purgation in Autumn	
Profession	Less intellectual jobs, routine and casual work, less focussed fields.	Monotonous working, travelling and tour-ing, marketing profession, intellectual and focussed work.
Yoga practices	Yoga asana, Pranayama – Chandranulomaviloma, sheetal-isheetkari-sadanta, Bhramari medita-tion.	Dynamic yoga, power yoga, Pranayama – Suryaranulomaviloma.

Table No. 4: Showing Diet chart for Kapha Prakruthi

Diet	Conducive	Non conducive
Taste	Pungent, bitter and astringent taste foods and drinks, warm and hot, dry & less fatty foods.	Sweet, sour and salty taste food and drinks, cold and chilled foods, fatty foods.
Cereals	Wheat, white and stored rice, millets – ragi, jawar, corn buckwheat, oats, barley.	Brown rice, red rice, new rice, new wheat, Basmati rice.
Pulses	All types of grams and pulses- thovar dal [lentil], Green gram, black gram, horse gram, Bengal gram, red dal, Kaboolchana.	Soya beans and soya products, white and red beans
Fats /Oils	Sunflower oil, sesame oil, margarine oil, lin-seed oil, groundnut oil, mustard oil, olive oil, almond oil, coconut oil, small quantity of ghee.	Rice and wheat bran oils, Grape seed oil, palm oil.
Nuts & Seeds	All dry nuts and seeds preferably: dry dates, almonds, cashew nuts, apricots, pumpkin seeds, sunflower seeds, cucumber seeds, ground nuts, sesame seeds, copra, sesame, poppy seeds, linseeds,.	Pistachio, fresh dates, poppy seeds.
Spices	All spices in moderate quantity,- ginger, black and white pepper, clove, cinnamon, turmeric, cardamom, long pepper, coriander, jeera [cumin], allspices, cinnamon leaves, camphor, saffron.	

Milk & milk products	Low fat milk, spiced buttermilk	Butter, buttermilk, yogurt, curds, aged cheese, lassi, ghee and pannier
Bathing	Hot water bath/shower, swimming and tub bath, oil bath and body massage with steam, hot powder massage [udvarthana], herbal powder massage [churnapindasweda], foot massage [padaghatha],	Cold water bath, shower, swimming and tub bath.
Exercise	Dynamic exercises, Power yoga, brisk walking, running, jogging, skiing, hiking, wrestling, swimming, horse riding, skating, cycling and treadmill.	Indoor games and sedentary sports
Sexual act	Preferred	
Sleep	4-6 hours at night only.	Day time sleeping,
Rejuvenation	Emesis therapy during Spring	
Profession	All marketing professions, driving, sports	Sedentary work.
Yoga practices	Yoga-dynamic asana, practice of Sooryanulo-maviloma Pranayama [right nostril breath-ing].,	Chandranulomaviloma Pranayama [left nostril breathing] cooling Pranayama – Sheethali, Sheethkari and Sadantha Pranayama, relaxation techniques.

Conclusion:

Lifestyle diseases is a challenge not only to the individual or the family but also to the Socio-Economic development of the country. Concept of Prakruthi can open the doors to the solutions for unresolved questions in the prevention & management of LSDs wherein interventions can be planned beyond mere medications. Prakruthi assessment can prove helpful in deciding the vulnerability and to design an appropriate life-style.

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