

**Review Article****MANAGEMENT OF NON COMMUNICABLE DISEASES BY SIDDHA SYSTEM****G. S. Lekha^{1*}, P. Sathiyarajeswaran²**¹Medical Consultant, ²Research officer, Scientist –II and i/c, Siddha Central Research Institute (SCRI), Arumbakkam, Chennai, Tamil Nadu, India.**Article info****Article History:**

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ABSTRACT**Background:** Siddha System is a Philosophy based Medicine that deals with Holistic approach to health. Basically it's a way of life that emphasizes Positive health. The essential life style for healthy living has been formulated in Siddha system of Medicine, according to the Geographical and Seasonal variations. As per Siddha concept, there is vitiation of three humours namely *Vatham, Pittham* and *Kapham* because of food habits and actions. This Paper addresses the problem of Non Communicable Diseases in this decade and discuss about its prevention by means of health measures in Siddha System. The measures for the Management of NCDs includes Regular Physical activity, Balanced diet and liquor, Regular sleep, Stress-free life, Pursuance of hygienic measures described in Siddha Literatures, Cessation of habits like Smoking and Alcohol consumption and then acclimatization of body to climatic variation. **Aim & Objective:** The rationale of this paper is to highlight the extent of the problem and threats posed by the life style modification in current scenario, and finally address the way of intervention by means of Siddha Principles. **Conclusion:** As the current scenario of life-style results in multiple complications like Physical and Metabolic derangement of the body, the follow up of rules and regulations (Daily and Seasonal regimen) mentioned in Siddha System is the proper way for the prevention and Management of NCDs.**INTRODUCTION**

Siddha System of Medicine is a way of life that emphasizes positive health; is the part and parcel of daily diet and hygienic principles. It explains the Principles of daily routine in detail by way of hygienic measures, Yogic Principles, cleansing mechanisms, dietary regime and Sleep Schedule. Basically, the hygienic principles adopted by Ancient Siddhas are wonderful Preventive measures.

As per Siddha concept, there is pathological change in human intimating vitiation of three humours (expression as Metabolic or physical derangement of the body) due to the Unbalanced or Untimely diet or starvation, Control of life forces i.e, 14 natural urges, Physical Inactivity, Stress & Strain, Sleep schedule modification and Breaking of hygienic measures.

Non Communicable Diseases emerged over the past few decades because of the dietary and life-style modification. The burden of Non Communicable diseases (NCDs) continues to increase in the low and middle-income countries despite the widely available evidence for effective interventions^[1]. The rate of

Mortality and Morbidity due to NCDs (68% in 2012)^[2] is ascending annually and is being recorded worldwide.

NCDs are Chronic conditions of non-contagious origin, having no route cause of an (acute) infectious process - "not communicable" and express as functional impairment or disability that does not resolve spontaneously.^[3] Most common NCDs are Cardiovascular diseases, Cancer, Diabetes mellitus, Hypertension, Chronic Respiratory disorders, Obesity, Auto-Immune disorders like Rheumatoid, Psoriasis, Musculo-skeletal disorders like Arthritis, Neurological disorders like Alzheimer's and Urological disorders like Renal Function Impairment, Calculi. Most of these conditions cause premature morbidity, dysfunction, and reduced quality of life; they usually develop and progress over long periods; often initially insidious (unnoticed) and once manifested there is usually a protracted period of impaired health.^[3] As per analytical views the root cause of these NCDs is Life-style modification, Environmental and Seasonal variation.

As indicated by *Siddhas*, the diseases caused by our present birth, i.e, apart from congenital diseases, are due to our food habits and actions. The food and actions of a person should be in association with the nature of the body. The agreement of food means the taste and quality of the food eaten and the person's ability to digest; the agreement of actions means good words, deeds and hygienic measures. According to, Saint. *Thiruvalluvar*, the disease is caused due to the increase or decrease in food consumption that results in alteration of the equilibrium in three humours. Saint. *Thiruvalluvar* also quoted about diet pattern, calorific calculation in diet and the relationship between diet and longevity.

Risk factors for NCDs

Modifiable or Behavioural Risk factors for Non Communicable Diseases are the Physical activity, Diet, Personal hygiene, Stress and Strain, Smoking Tobacco, Alcohol consumption and Environmental exposure to harmful substances. The Non-Modifiable Risk factors for NCDs are Genetic, Age, Sex and Race related issues.^[4] The behavioural risk factors can be reduced or controlled by intervention and modified life style prescribed by Siddhas, thereby reducing the portability of disease(s). As per Siddha concept, if there is any vitiation in *Uyir Dhathu* i.e, in three Life constituents that leads to mutilation in *Udal Dhathu* (Body Constituents-7) and/or *Malam* (Body Excretas-3), predominantly because of diet and/or life-style modification, the Pathological outcome is as *Vatha*, *Pittha* and *Kapha* disorders. For example- over intake of sweet leads to increase in *Kapham* exhibited in the body as increase in Fat and adipose tissue causing Obesity. Moreover eating of more sour, salty and pungent food items leads to elevation of *Pittha* humour which affects body constituents like blood, Alimentary System and generate diseases like Hypertension, haemorrhoids, etc. Hence, essential life-style changes are the primary rationale for the management of Non Communicable Diseases.

Scenario of Life style

About a decade ago the people were living in the Home with thatched roof made of Coconut palm leaves, doing Physical activities like *Surya Namaskaram* (Sun Salutation) in the Morning, following hygienic principles like bathing in the River in the early morning, etc, and following dietary Principles such as usage of Millets and grains for life maintenance, which were sold in the markets as evinced in Sangam period. The present day prescriptions on Millets and grains are renaissance of the traditional ideas. Moreover, planted the herbs like *Ocimum sanctum*, *Neem*, *Clitoria* & *Tridax* in the region of home for daily or incidental usage. On those days the subjects adapt their life-style as per the climatic conditions accordingly and accomplished the Healthy Life.

The second half of the twentieth century witnessed major health transitions in the world, propelled by socio-economic and technological changes

which profoundly altered life expectancy and ways of living while creating an unprecedented human capacity to use science to both prolong and enhance life. On the other hand due to Globalization people started deviating daily chores and diet regimen related to their place which also paves platform for multifold increase in NCD'S. Among these health transitions, the most globally pervasive change has been the rising burden of non-communicable diseases (NCDs).^[4] India too illustrates this health transition, which positions NCDs as a major public health challenge of growing magnitude in the twenty-first century.^[5]

As a measure, the habits of living in Air-conditioned rooms and leading of Sedentary Life-style results in vitiation of three humours mainly because of the reduced perspiration and increased Body temperature. Most prevalent outcome of this life style modification is the expression as Chronic Respiratory disorders, Auto-Immune disorders and Dermatological ailments.

The people, who want to live a healthy life, must first know about the two prime factors, namely the land and the period. Houses where people live should not be affected by the earth heat & dampness and should be arranged so as to get sufficient ventilation and sunlight. Our ancestors lived in such houses for about 100 years. The archeologists say this type of housing (buildings found in Mohenjo-daro and Harappa) is suitable for a healthy and happy living.^[6] Traditionally, Cultural and Food habits are also programmed as per environmental and Seasonal variation.

Management of NCDs

Basically, adapting of Siddha principles is the appropriate way for the management of NCDs. That is, Cleansing of body & balancing of 3 humours *via* the principles of using *Vamanam* (Emetics) once in 6 months which balances *Pittha* humour and alleviates the disorders of digestive System, *Viraesanam* (Purgation) once in 4 months which poises *Vatha* humour and reduces musculoskeletal disorders, *Nasiyam* once in 6 weeks that reduce the risk of COPD, *Savaram* (Shaving) once in a week, *Anjanam* once in 3 days in order to vitiate *Kapha* humour.^[7] and then Consumption of Tailor-made food and drinks in consensus with the Climatic and seasonal variation.

Management of Non Communicable Diseases includes Regular Physical activity, Balanced diet and liquid, Regular sleep, Stress-free life, Pursuance of hygienic measures described in Siddha Literatures, Cessation of habits like Smoking and Alcohol consumption and then acclimatization of body to climatic variation. Moreover diet plays an important role in the prevention and management of Non Communicable diseases or ailments.

Rules for Healthy living

The measures to get free from diseases and to lead a healthy life are the pursuance of daily and

seasonal regimen, consumption of boiled water, diluted butter milk and melted Ghee. Other habits to be avoided are - exposure to Sun's rays in the early morning, Postponing defecation and micturition, Intake of sour curd, consumption of food prepared in the previous day, eating without proper hunger, over indulgence in Sex eating thrice a day, consumption of water while eating, day sleep, staying below the lamp posts or trees at night, sexual action in the day time or immediately after food.^[7] One should have a short walk after a Meal. Disregard of these principles results in vitiation of Life constituents (*Vatham* and/or *Pitham* and/or *Kapam*), reduction in Oxygen supply to Vital organs and expression as physical or functional impairment.

Physical Activity

Asanas or Yogic exercise tone-up all organs & systemic processes; makes the mind alert, improves concentration and helps to maintain buoyancy of spirit.^[8] For better health, people of all ages should include a minimum of 30 minutes of physical activity of moderate intensity (such as brisk walking) daily on the most. Energy expenditure through physical activity is an important part of the energy balance equation that determines body weight.^[9]

Benefits of Physical exercises are Increase in BMR, Circulation, Regulation of Heart & Lung function, Decrease in the level of stress and depression. Moreover it maintains muscle tone and reduces the risk of Musculoskeletal disorders, Obesity, Diabetes Mellitus, Hypertension, etc. Regular Physical exercise contributes to increased production and release of Endorphins, resulting in a sense of euphoria, Increases the self-control sense and helps to sleep better.^[10]

Most of the Yogic *Asanas* are having suitable applications in human health. For Example, *Dhanurasanam* (Bow Pose) is beneficial for Diabetes Mellitus, *Pujankasanam* (Snake Pose) is the Immune modulator, *Pathmasanam* (Lotus Pose), *Vajrasanam* (Kneeling Pose of Firmness) and *Salabasanam* (Gross-hopper Pose) regulates Bowel movements and are useful for the relief of Constipation and other Gastro Intestinal disorders and. *Sarvaankasanam* (Integral Shoulder Pose) - tone-up endocrine glands, Improves blood circulation to upper parts of the body, Regulates Thyroid function and pave a way for Rejuvenation.^[8]

Challenges of Diet

Diet plays a key role as a risk factor for Non Communicable diseases. The Physical, Mental constitution and actions of the body depend upon one's food intake.

As per Siddha concept, human body is the replica of Universe, wherein any change in the Season or environment results in vitiation of humours and body constitution. Hence the dietary items for consumption should be determined and processed as per the Climatic variation and body constitution. For example, Intake of Fatty and Spicy food items are

advisable for people living in cold and frozen environment; on the other hand, if the people living in warm and desiccated milieu are taking such oily and spicy foods, it ends up with Pathological conditions like Haemorrhoids, Bloody stools, Fissures, Hypertension, etc. Therefore Coolant and succulent food items are mandatory for living in desiccated milieu.

Presently, the Traditional and largely plant based diets have been swiftly replaced by high-fat, energy-dense diets with a substantial content of animal-based foods.^[11] Processed foods are often stripped of nutrients designed by nature to protect our heart, such as soluble fibre, antioxidants, and "good" fats, Combine that with additives ends up with a recipe for disaster¹². Most of the processed foods are laden with sweeteners, salts, artificial flavors, factory-created fats, colorings, chemicals that alter texture, and preservatives. But the trouble is not just what's been added, but what's been taken away. The outcome is the expression of NCDs like Diabetes, Hypertension, Obesity, Stroke, PCOS, etc.

On this occasion, the foremost harmful ingredients in the food items are trans fat, refined grains, salt and high fructose corn syrup. Trans fat is worse for heart than saturated fats because they boost the levels of "bad" LDL cholesterol and decrease "good" HDL cholesterol. Unlike saturated fats, trans fats also raise the levels of artery-clogging lipoprotein and triglycerides. That's double trouble for arteries, and causes an estimated 30,000 to 100,000 premature heart disease deaths each year. Choosing of refined grains such as white bread, rolls, sugary low-fiber cereal, white rice, or white pasta over whole grains can boost the heart attack risk by up to 30 percent.^[12]

The daily requirement of Salt is a little amount to replace what's lost to sweat, tears, and other excretions (1500mg/day). Some sodium occurs naturally in unprocessed edibles, including milk, beets, celery, even some drinking water that's a good thing and necessary for life. It helps regulate blood pressure, maintains the body's fluid balance, transmits nerve impulses, makes muscles including heart to contract, and keeps the senses of taste, smell, and touch working properly. Sodium in diets is hidden in processed foods, such as canned vegetables and soups, condiments like soy sauce and fast-food burgers (and fries of course), and cured or preserved meats like bacon, ham, and deli turkey^[12]. Over intake of Salty food items is dangerous to health; body retains fluid simply to dilute the extra sodium in our bloodstream. This raises blood volume, forces the heart to work harder; at the same time, it makes veins and arteries constrict; the combination raises blood pressure. Intake of Rock Salt and fried Salt is advisable as per Siddha concept.

High-fructose corn syrup is in many frozen foods and soft drinks. The intake of High fructose corn syrup forces the liver to pump more heart-threatening triglycerides into the bloodstream. In addition, fructose may annihilate the body's reserves of chromium, a

mineral important for healthy levels of cholesterol, insulin, and blood sugar.^[13]

As a resolution for these types of dietary modifications and outcome, retrospective concern of Ancient ethics and guidelines regarding dietary pattern is mandatory. Accordingly, the breaking of twelve-hours fasting is essentially by means of cereals like Green grams, Black grams, Bengal grams, Cow beans, oil seeds, Gingelly, Pepper, Dried Ginger, Asafoetida, etc. The Lunch plate shall be programmed as with the items like Tubers, Green Vegetables, Pulses, Curd, butter milk, etc which can aggravate even *Vatha* humour.^[6] The reason behind such fortitude is that, the Physical exercise in the morning and follow-up of dietary regimen balances the vitiated humours as well.

During eating at first one should take the sweet taste followed by Pungent, Saline tastes with greens and vegetables and the astringent taste, Sour-curd and pickles at last. This method of tacking Six tastes at the level of digestive fire i.e, fill the 2/4th of stomach with rice and Vegetables, 1/4th with curd, water or milk and the remaining 1/4th is for the vital-air helps in digestion in co-ordination with fire and is beneficial for health^[7].

Moreover the usage of Antagonistic and balancing (*Thrithoda samaporutkal*) food items i.e, the substances neutralizing three humours is ideal for all body constitutions. The said balancing items are the food cooked with Pepper, Turmeric, Cumin seeds, Asafoetida, Dry Ginger, Cardamomum, Fenugreek and Garlic^[6].

Basically, Fruits and vegetables contribute to cardio vascular health through the variety of Phytonutrients, Potassium and fiber they contain. Daily intake of fresh fruit and vegetables (including berries, green leafy and cruciferous vegetables and legumes) in an adequate quantity (400-500g/day) is recommended to reduce the risk of coronary heart diseases, stroke and high blood pressure.^[11] Diet high in fiber reduces total cholesterol and Triglyceride levels while increasing HDL- cholesterol levels. The fibre content should be at least three grams per serving.

Moreover, the body is able to produce all of the cholesterol it needs on a daily basis. Therefore, unlike the daily requirement for dietary fats, cholesterol does not need to be acquired through the diet.

According to Ancient Tamil Classics, the geographical areas (*Kurinji*- Mountainous region, *Mullai* - Forest areas, *Marutham*- Crop land, *Neithal*-Sea shore and *Palai*- Desert area) have features that are ethnic to that area. The features are regional deity, residential area, tree, animals, birds, flower, water source, etc.^[7] The Plants Vegetables and Cereals cultivated in suitable area and Season are ethnic and are the prime edibles for the living organisms pertinent to that region. As an example we can see availability of palm tree in hot and dry places which yields ice apple which cools our body. It provides a perfect balance of minerals and sugar for the body during the summer

season. Moreover, the fruits which are abundant in hot season, is rich in B vitamins, Iron and Calcium.

At present, there are also flaws in the Farming and processing of food items. That is, the usage of fertilizers & chemicals in agriculture is predominant and the production of Genetically Modified foods like Corns, Soy bean, etc is increasing day by day, that results in unexpected and Negative Impacts on human health. Subsequently the food Processing by the usage of repeated used oils and addition of Colouring agents, additives and/or preservatives, which are injurious to health is also in practice.

Most of the un-processed natural foods conquer osteoporosis. Man-made chemicals acidify the body pH which in turn accelerates bone loss and results in osteoporosis.^[14] Back to basics is the best for bone health. So it's wise to begin the morning with a "healthy" breakfast cereal with antioxidants. Antioxidants protect cells from oxidative damage and some of them are proven potent bone protectors as well.

Dares of Drinks

The energy drinks like Pepsi & Coke is made of colouring agents like Caramel which is an artificial caramel carcinogen. Intake of Soda containing processed bleached sugar leads to sudden alteration in insulin level and it enhances the risk of HT, DM, Obesity, Dyslipidaemia and Pre-aging. As the presence of 4- Methyl imidazole in drinks like Soda, Coca, is the leading cause of Infertility, Thyroid dysfunction, Liver and lung Cancer of current age, it has been recently removed from Coca. High fructose corn syrup is another major risky constituent of Coca, Sprite and Pepsi.^[15]

As per the Siddha System of Medicine the beverages and food items for consumption is also being determined by the body condition and Seasonal variation. Basically, the liquid which is not opposed to the qualities of good water together with the qualities opposite to the food is good for consumption. Taking of warm water once after eating is good for health and longevity. Water is being purified by pouring the boiled water into a new mud pot and adding the powders of Liquorice, Sandal or Vettiver into it and cooling for intake^[6].

The examples of liquor determination as per body conditions are - Milk intake is good for exhausted individuals, Honey with water is advisable for obese individuals and Flesh soup is favourable for Tuberculosis patients^[6]. One of the Seasonal determinations is - *Paadhiri* flower (*Steriospermum*) and Camphor is added in water for consumption in the Summer Season. On the other hand, the liquor intake is also being tailored as per the adjoining food items. For examples - Cold water is preferred for the diets made of wheat, curd and sweet items, Hot water is supportive for flour meal, Butter milk is ideal with grains and green leaves^[6].

In order to get rid of the diseases by diet, consume the following substances either as Juice or Soup or Sauce. The substances are Pepper, Dry ginger, Garlic, Coriander leaves, Onion, Cow's milk, Butter milk, Ghee, Sweets & Savories, water, ridged gourd, Snake gourd, Curd and butter^[7].

Hazardous chemicals in Cosmetics

U.S. researchers have found that one in eight of the 82,000 ingredients used in cosmetic and personal care products are hazardous industrial chemicals. This shows that 10,500 industrial chemicals are used as cosmetic ingredients, many of which are carcinogens, reproductive toxins and endocrine disruptors.^[16]

Chemically modified form of coconut oil - Cocamide DEA (diethanolamine) which is a foaming agent in Soap, Shampoo, Conditioner, etc, is a 'Dangerous chemical causing Carcinoma & birth defects', It's being Included by IARC (International Agency for Research in Carcinoma) in the List of harmful chemicals - Proved by the Carcinogenic evidence in Rats. DEA, MEA (mono-ethanolamide) and TEA (tri-ethanolamine) compounds can also react with nitrites in cosmetics to form carcinogenic nitrosamines, which is a possible human carcinogen.

The Cosmetics such as Lotion, body wash, lipsticks contains diethyl phthalate which is a harmonic disruptor causing Reproductive and Neurological Issues. 75 to 90 per cent of cosmetics contain parabens, which can mimic estrogen and interfere with male and Female reproductive functions. Studies indicate that methylparaben applied on the skin reacts with UVB leading to increased skin aging and DNA damage. P-phenylenediamine in Cosmetics has been linked to tumours in laboratory tests conducted by the U.S. National Cancer Institute.^[16]

Other hazardous chemicals notified in Cosmetics includes Dibutyl Phthalate or DBP, BHA (butylated hydroxyanisole), BHT (butylated hydroxytoluene), Formaldehyde -Releasing Preservatives, Synthetic Fragrants, PEGs (polyethylene glycols), Talc, Siloxanes, Sodium Lauryl Sulfate (SLS) and Sodium Laureth Sulfate (SLES), Chemical Sunscreens (with Retinyl Palmitate, Oxybenzone and Octyl Methoxycinnamate) and heavy metals.^[16]

Instead of Cosmetics, Application of Sandalwood Paste along with Camphor on the body is preferred because of its cooling effect.

The usage of such Cosmetics shall be ended up by means of hygienic measures in Siddha System. One among the superior Cosmetics in Siddha is '*Pancha karpa vithi*' which denotes the application of Herbal paste, made by grinding Turmeric, Pepper, Neem seed, chebula and *Amla* seeds with Cow's milk in the given ratio, on the Scalp while taking head bath. It works as a preventive measure for most of the diseases.^[6]

Management of Stress

Stress management can be substantially improved by assisting the patient in equally important areas. These are the techniques to calm the mind and promote a positive mental attitude. It includes, Physical exercise, healthy diet designed to nourish the body and support physiological processes, dietary and botanical supplements designed to support the body as a whole, but especially the adrenal glands. Those who are in fear, anger and mental agony should get rid of their sleeplessness by doing physical exercises in the evening. By taking oil bath, consuming milk, curd or meat, one can have a good sleep.

Practising of Yoga by means of breathing techniques, Meditation techniques paves a way for the relief from Mental Stress.

Adequate sleep is absolutely necessary for long term health and regeneration. Sleep functions as anti-oxidant for the brain. Many of the benefits of sleep are probably mediated through growth hormones. While small amounts of Hormones are secreted at various times during the day, essentially all its secretion occurs during sleep^[11].

During the growth period, more sleep is required and in the grown age less sleep is sufficient. The duration of Sleep as per age of the Individual is already scheduled in Siddha System; i.e, From Birth to childhood - 20 Hours, during Childhood stage - 12 hours, from 5 to 15 years of age - 8 to 10 hours, from 16 to 30 years of age - 7 hours, from 30 to 50 years of age - 6 hours and 8 hours for individuals above 50 years; the designed period of Sleep is the Night only.^[6] Methods of sleeping are also programmed in Siddha Texts as per the seasonal variation.

A healthy person, in order to prolong the life must sleep earlier and wake up from bed early in the Morning i.e, between 4a.m to 5a.m. In the early morning, the fluid in the cavity of the nerve which is responsible for a clear mind will be pure and clear. Theraiyar also stated that by early rising, anger is controlled and the three humours- *Vatha*, *Pitha*, and *Kapha* will be in a state of equilibrium. If one gets up after sunrise, heaviness of the body, laziness and giddiness may develop.^[6]

The alteration in the sleep schedule leads to derangement of three humours, Fatigue of five sense organs, Indigestion, loss of appetite and Psychological disturbances. Day time Sleep results in the raise of Body of temperature, vitiation of three humours and manifest as *Vatha* diseases like *Thandaga Vatham*, *Sarvaanga Vatharogam*, etc.^[6]

The circadian rhythm is important in determining sleeping patterns, time and duration of sleep in every 24 hours. The normal circadian clock is set by the light-dark cycle over 24 hours. There are patterns of brain wave activity, hormone production, cell regeneration, and other biological activities linked to this 24-hour cycle.^[17]

In 1987, Lewy *et al* proposed that the endogenous circadian system was phase delayed relative to the sleep-wake cycle and that morning phototherapy was effective by phase advancing the endogenous circadian rhythms of core body temperature and plasma melatonin levels. This hypothesis was either supported^[18,19] or challenged^[20], experimentally. Most of the studies show that the Morning light exposure to be superior to evening light, which reflects the natural diurnal variation in retinal photoreceptor sensitivity.^[21]

Life-style as per Siddha System

The simple preventive principles in Siddha system is having in depth scientific value though they were designed much before the advent of modern science. The designed rules and regime have been followed as routine custom through several generations.

Daily Regimen

This mentions the systematic order of everyday activities that every person needs to follow in order to avoid lifestyle disorders and related diseases. It describes the methodology to take good care of our body and mind. The Systematic order is,

- 1) Wake-up early in the Morning – Those who wake up at dawn will have clear Intellect and the Neurological functions will be proper. The three humours will be in equilibrium.
- 2) Breathing of fresh air rich in Oxygen, drinking of pure water in the Morning – the excess of *Pittham* will subside and there will be free bowel movements and urination, it balances three humours.
- 3) Excretion of faeces and urine
- 4) Cleansing of natural orifices by using Luke-warm water – otherwise the dirt and filthy matter that accumulates in the eye, nostrils, mouth and umbilicus and produce some Pathology.
- 5) Brushing of Teeth by using herbal twigs – On brushing with pounded tooth powder, twigs all the twenty three types of diseases of the Teeth and their roots caused by the three humours will not occur. Further as they are Astringent in nature, the Teeth will stand as rock till one's death.
- 6) Doing of *Anjana*, *Nasiya* and Mouth gargling with decoction – cleansing of ear, nose, and throat passages and balancing of three humours.
- 7) Physical exercise by way of practicing Yoga which includes *Asanas*, breathing techniques, Meditation techniques, etc.
- 8) Bath - Methods for an oil bath, cleansing agents, seasonal and diet restrictions while taking an oil bath have also been clearly discussed in Siddha Classics.
- 9) Diet – Ideal time, quantity and quality of food intake, diet restrictions as per body conditions of the

Individuals, determination of Food items as per taste and actions of the entity, seasonal and land variation, etc.

- 10) Sleep- The quantity and quality of sleep equally influences one's good health.^[6]

Seasonal Regimen

Siddha System structures out the guidelines to be followed in different seasons, in order to prevent illnesses and help one's wellbeing. The guidelines are related to modifications in diet, lifestyle, etc. with respect to a particular season. In this position sudden alteration in food or habits in the Transient period leads to Pathological outcome and hence gradual adaptation to seasonal variation is mandatory. i.e, the Seasonal conducts of the ongoing season should be gradually stopped and the regimen of the next season should be gradually initiated during this Transient period so as to help our body acclimatize to seasonal changes.

Some of the guidelines are, In *Kaar kaalam* (early rainy season) and *Koothir kaalam* (latter rainy season) there is vitiation of *Pittha* humour and reduction in appetite and hence the preferable diet is easily digestible food items and it's better to avoid butter milk and oily food items. The deranged humours are being neutralized by giving Purgatives and Emetics; appetizers and digestive stimulants are useful for the maintenance of body health at this period.^[6]

In *Muun Pani kaalam* (Early winter) and *Pinpani Kaalam* (Late winter) the temperature is cold and clammy, the night is longer than usual. Hence early raising and oil bath is mandatory to neutralise *Vatha* humour. As the Skin shrinks, pores of hair gets closed at this season it is essential to maintain the Body temperature. It's by way of wearing blankets and footwear, handling of boiled water and exposure of the body to evening Sun light^[6].

In *Ilavaenil Kaalam* (Spring Season) and *Muduvaenil Kaalam* (Summer) its right to reside in ventilated area. To overcome the ill effects of deranged *Kapham*, *Nasiya*, *Vamana* and oleation therapy is advisable at this period. Moreover, avoid hot, dry and bulky food items that assimilate with difficulty at this period.^[6]

Scientifically, the turnover of serotonin by the brain was lowest in winter. Moreover, the rate of production of serotonin by the brain was directly related to the prevailing duration of bright sunlight and rose rapidly with increased luminosity. The changes in release of serotonin by the brain underlie mood seasonality and seasonal affective disorder.^[22] Moreover the diurnal variations in brain serotonin are driven by the Photic cycle and are not circadian in nature.^[23]

Recently, the significant correlation was found between the monthly incidence of AMI and month-to-month variation in surface pressure, cosmic ray index

and solar flare counts. The pattern of incidence was seen to be modified by full moon and new moon.^[24] Hence the regular follow-up of Daily and Seasonal Regimen in Siddha system helps in Prevention and Management of NCDs. For example, waking up early in the Morning and exposure of body to Sunlight prevents most of the diseases by means of balancing three humours.

Other interventions

Cessation of Smoking

Tobacco smoke is enormously harmful to health. There's no safe way to smoke. In the United States, the mortality rate for smokers is three times that of people who never smoked, according to the Centers for Disease Control and Prevention. It's one of the leading causes of preventable death. Nicotine is a Mood-altering and habit forming agent, which Increases the risk of COPD & Lung cancer. Nicotine causes blood vessels to tighten, lowers good cholesterol levels, this leads to atherosclerosis and Hypertension, and raises the risk of forming blood clots. Smoking also increases risk of cancer of the mouth, throat, larynx, and esophagus. Chronic Smoking has effects on Insulin, develop Insulin resistance; Increases the risk of type 2 diabetes.^[25] Hence Cessation of Smoking is mandatory for the Management of Non communicable Diseases.

Alcohol consumption

Long-term Alcohol intake upshots as Liver disease - Cirrhosis of Liver, Nerve damage, Sexual problems, Permanent damage to the brain, Vitamin B₁ deficiency, which can lead to a disorder characterized by amnesia, apathy and disorientation, Unintentional or Intentional injuries and Ulcers. Alcoholism also increases the risk of Hypertension, stroke and other heart-related diseases. Chronic usage leads to Gastritis, Malnutrition, Cancer of the mouth and throat.^[26]

NCDs are largely preventable by means of effective interventions that tackle shared risk factors.

WHO's Action Plan for NCDs

Under the leadership of the WHO more than 190 countries agreed in 2011 on global mechanisms to reduce the avoidable NCD burden including a *Global action plan for the prevention and control of NCDs 2013-2020*. This plan aims to reduce the number of premature deaths from NCDs by 25% by 2025 through nine voluntary global targets. The plan offers a menu of "best buy" or cost-effective, high-impact interventions for meeting the nine voluntary global targets such as banning all forms of tobacco and alcohol advertising, replacing trans fats with polyunsaturated fats, promoting and protecting breastfeeding, and preventing cervical cancer through screening.^[27]

Implementation of measures for the prevention of NCDs consists of policies that promote government-wide action against NCDs. The policy includes stronger anti-tobacco controls, promoting

healthier diets, physical activity, reducing harmful use of alcohol, along with improving people's access to essential health care.

CONCLUSION

As the rate of Morbidity and Mortality due to NCDs increasing yearly, pursuance of Preventive regimen in SIDDHA system is essential for the prevention and Management of NCDs. i.e., If the rules and regulations regarding Life-style in Siddha System is properly followed, then the occurrence of NCDs are preventable.

One such lifestyle approach, Therapeutic Lifestyle Changes (TLC) is recommended by various health organizations (American Diabetes Association, American Heart Association, The Obesity Society, etc.) as a sound therapeutic strategy for overweight or obese persons at risk for type 2 diabetes and/or coronary heart disease.^[28]

'While our **NUTRITION** has radically changed - our **BIOLOGY** really hasn't.' That's why, the modification of life-style results in multiple complications like physical and Metabolic derangement of the body. Siddha is the Holistic system of Medicine in which prognosis is total, i.e., relating to all systems in the body and mind; it highlights the 'Way of Life' for Positive health benefit, regular pursuance of which can lead a **HEALTHY LIFE**.

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