A STUDY ON DIAGNOSTIC METHODOLOGY AND SYMPTOMATOLOGY OF SEYA KAMAALAI

(IRON DEFICIENCY ANAEMIA)

(DISSETERATION SUBJECT)

For the partial fulfilment of the requirements to the Degree of

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I dedicate my dissertation work to my beloved parents
## INDEX

<table>
<thead>
<tr>
<th>S.NO</th>
<th>CONTENTS</th>
<th>PG.NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>AIM AND OBJECTIVES</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>REVIEW OF SIDDHA LITERATURE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[A] SIDDHA PHYSIOLOGY</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>[B] SIDDHA PATHOLOGY</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>[C] DIAGNOSTIC METHODOLOGY</td>
<td>28</td>
</tr>
<tr>
<td>4.</td>
<td>READING BETWEEN LINES OF SEYA KAMAALAI</td>
<td>49</td>
</tr>
<tr>
<td>5.</td>
<td>REVIEW OF LITERATURE-SEYA KAMAALAI</td>
<td>67</td>
</tr>
<tr>
<td>6.</td>
<td>PATHOLOGY OF SEYA KAMAALAI</td>
<td>81</td>
</tr>
<tr>
<td>7.</td>
<td>DIFFERENTIAL DIAGNOSIS</td>
<td>88</td>
</tr>
<tr>
<td>8.</td>
<td>MODERN ASPECTS</td>
<td>96</td>
</tr>
<tr>
<td>9.</td>
<td>MATERIALS AND METHODS</td>
<td>136</td>
</tr>
<tr>
<td>10.</td>
<td>OBSERVATION AND RESULTS</td>
<td>143</td>
</tr>
<tr>
<td>11.</td>
<td>DISCUSSION</td>
<td>182</td>
</tr>
<tr>
<td>12.</td>
<td>CONCLUSION</td>
<td>185</td>
</tr>
<tr>
<td>13.</td>
<td>BIBLIOGRAPHY</td>
<td>187</td>
</tr>
<tr>
<td>14.</td>
<td>ANNEXURE</td>
<td></td>
</tr>
</tbody>
</table>
Siddha medicine is the most ancient and primitive medical system. Siddhars through their extraordinary perception and vision have understood the science and mechanism of metabolic processes, growth development, onset of diseases, treatment etc.

In humans, health is the general condition of a person's mind, body and spirit, usually meaning to be free from illness, injury or pain. Dietary habits and choices play a significant role in quality of life, health and longevity. Siddha system believes in the principle of “Food is medicine and medicine is food” and during lactating mothers are advised to take the foods rich in iron, protein and fibre so as to prevent many nutritional disorders both to the child as well as the mothers.

The physiological function in the body is mediated by three humors, vali azhal and iyyam that are made up of five elements. Maintaining a perfect state of equilibrium of three basic humours by means of the dietary habits, regular physical and mental activities. In normal healthy condition, the three humours exist with the ratio of 1:1/2:1/4 respectively. According to Siddha theory the root cause of any disease is alteration in the equilibrium of three humors i.e. Vatham, Pitham and Kabam.

The Siddha principle comprises of examination of tongue, eyes, pulse, complexion, modulation in speech, tactile perception and examination of urine and stool. All these together constitute “Envagai thervugal” which form the basis of diagnostic methodology in Siddha system of medicine. Besides these, Envagai thervugal, there are some other parameters in Siddha systems which are greatly helpful in diagnosing various diseases, they are Manikkadai nool (Wrist circumference sign) and Sothidam (Astrology).

Diagnosis of diseases is an important factor in any system of medicine, unless the diagnosis is correct, even though good medicines were to be administered to the patient there will be no radical cure, unless the root cause of it is rectified. Without proper understandings of the signs and symptoms of the disease, one could not attempt treatment.

Siddhars have classified diseases in to 4448 types. Sage Yugi was the pioneer among the Siddhars who classified diseases based on signs and symptoms and mainly three humours.

The author has selected the disease from the “Yugimuni Vaithiya Kaaviyam” for the clinical study of dissertation work on the basis of Siddha concept.
The clinical symptoms of “Seya kamaalai” relates more with the signs and symptoms of “Iron deficiency anemia” in Modern classification than any other condition.

Iron deficiency is the most common cause of nutritional anaemia in the world and it is recognised as a major public health problem throughout the globe, especially in the developing countries. Iron deficiency anemia is so common in rural and remote places due to poor standard of living, ignorance about diet though various reasons.

It affects billions of people worldwide, especially women of reproductive age, pregnancy women and young children. It is the most common type of anemia met in clinical practice.

The WHO estimates that more than 1/3rd of the world population are anemic, of which iron deficiency anemia is the most common and serious problem of public health significance. Prevalence of anemia in India is among the highest in the world but within the country prevalence rates differ substantially between different regions.

Globally, Anemia affects 1.62 million people which correspond to 24.8% of the population. The highest prevalence is in preschool-age children (47.4%) and the lowest prevalence is the men (12.7%). However, the population group with the greatest number of individuals affected is non-pregnant women (468.4 million/30.2%).

National Family Health Survey has reported anemia prevalence of 56.2 percent in women of 15-49 yr and 24.3 percent in men aged 15-49 yr. Iron deficiency is the most common cause of anemia in the world affecting 30% of the world's population equivalent to 500 million people.

Prevalence of anemia in rural populations in Tamilnadu is as high as 52%. This could be explained due to lack of awareness in these individuals. 60-70% of Indian adolescent girls are anemic. In children and young adults particularly in deprived socio-economic group, the prevalence of Iron deficiency anemia is 5% and 10% respectively.

In most developing countries anaemia in pregnancy makes an important contribution to maternal mortality and morbidity. Early detection of anaemia can help to prevent complications related to pregnancy and delivery as well as child development problem. So it is most important to diagnose seya kamalai for its proper treatment.
Clinical features of anemia are grouped under the name Paandu for all practical purposes among the Siddha physicians in the present times. Now here in the Siddha literature the clinical features of iron deficiency anemia had been mentioned in a single heading under “Seya kamalai”.

Iron deficiency anemia is so common in rural and semi urban places due to poor standard of living, ignorance about diet though various reasons. So it is most important to diagnose Seya kamaalai for its proper treatment. Hence I have selected the topic “Seya kamaalai” for my dissertation work.

I hope the outcome of this study will be greatly helpful to medical practitioners for better understanding the disease “Seya kamaalai”.

2. AIM AND OBJECTIVES

2.1 AIM:

To conduct a study on Seya kamaalai as mentioned in yugimuni vaithiya kaaviyam, thereby to evolve a diagnostic methodology for Seya kamaalai in Siddha system of medicine.

2.2 OBJECTIVES:

2.2.1 PRIMARY OBJECTIVES:

1. To elucidate a diagnostic methodology for Seya kamaalai

2. To correlate clinically, the symptoms of Seya kamaalai with that of closely resembling condition in modern medical literature which in turn helps in globalization of Siddha system among other medical systems.

2.2.2 SECONDARY OBJECTIVES:

1. To analyse literally on the Etiology, Pathogenesis, Clinical presentation of Seya kamaalai

2. To help in deriving a proper line of treatment and preventive measures for Seya kamaalai based on Siddha system of medicine by evolving a diagnostic method for the disease.
3. A. REVIEW OF LITERATURE- SIDDHA PHYSIOLOGY

3. A.1. SUGARANA NILAI (PHYSIOLOGICAL STATE) IN SIDDHA MEDICINE

The five basic elements, namely Aagayam (Space), Kaal (Air), Thee (Fire), Neer (Water), and Mann (Earth) are the building blocks of all the physical and subtle bodies existing in this whole universe. These are called as the ‘Adippadai Boothams’ (Basic Elements) (or) ‘Panchaboothams’.

These five elements together constitute the human body and origin of other material objects are explained as Pancheekaranam (Mutual Intra Inclusion). None of these elements could act independently by themselves. They could act only in co-ordination with other four elements. All the living creatures and the non-living things are made up of these five basic elements. The five basic elements form the connecting link between the Microcosm (Man) and Macrocosm (World). This concept is evident from Siddhar’s lines,

"அற்பற்றும் உலகின் உற்பத்தியுடைய இன்று மனிதன்னை;
விளையாட்டில் உலகின் உள்ளூர் வளர்கிறது;"

Any change in the universe due to natural or unnatural causes will create changes in human systems. For example the natural disorders like cyclone, heavy rain, mist and scorching sun or man created impurities of air and water will create changes both in the atmosphere and in the human body. Hence the change in the elementary conditions of external world has its corresponding change in the human organs.

As per the above lines, the universe and the human body are made of five basic elements.
3. A.2. THE 96 BASIC PRINCIPLES (96 Thathuvam)

According to Siddha system of medicine, ‘Thathuvam’ is considered as a science that deals with basic functions of the human body. Siddhars described 96 principles as the basic constituents of human body that include physical, physiological, psychological and intellectual components of an individual. These 96 Thathuvams are considered to be the cause and effect of our physical and mental well-being. The Thathuvam is the author of the conception of human embryo on which the theory of medicine is based.

1. BOOTHAM – 5 (ELEMENTS)
1. Aagayam - Firmament
2. Vaayu - Flatus(Air)
3. Thee - Fire
4. Neer - Fluid(Water)
5. Mann - Firm Ground( Earth)

2. PORI – 5 (SENSE ORGANS)
1. Sevi (Ear) - a structural component of ‘Aagayam’ bootham
2. Thol (Skin) - a structural component of ‘Vaayu’ bootham
3. Kann (Eye) - a structural component of ‘Thee’ bootham
4. Naakku (Tongue) - a structural component of ‘Neer’ bootham
5. Mookku (Nose) - a structural component of ‘Mann’ bootham

3. PULAN – 5 (FUNCTIONS OF SENSE ORGANS)
1. Kaetal - Hearing, a functional component of Aagayam bootham
2. Thoduthal - Touch, a functional component of Vaayu bootham
3. Paarthal - Vision, a functional component of Thee bootham
4. Suvaithal - Taste, a functional component of Neer bootham
5. Nugarthal - Smell, a functional component of Mann bootham
4. KANMENTHIRIYAM – 5 (MOTOR ORGANS)
1. Vaai (Mouth) - Speech is delivered in relation with Space element.
2. Kaal (Leg) - Walking takes place in concordance with Air element.
3. Kai (Hands) - Giving/Taking are carried out with the influence of Fire element.
4. Eruvaai (Rectum) - The excreta is eliminated in association with Water element.
5. Karuvaai (Sex Organs) - The Sexual acts are carried out in association with the earth element.

5. KARANAM – 4 (INTELLECTUAL FACULTIES)
1. Manam - Thinking about something
2. Bhuddhi - Deeply analyzes the same
3. Agankaaram - Determination to do the same
4. Siddham - Accomplishment of the determined Thing

6. ARIVU – 1 (WISDOM OF SELF REALIZATION)
To analyze good and bad

7. NAADI – 10 (CHANNELS OF LIFE FORCE RESPONSIBLE FOR THE DYNAMICS OF PRANAN)
1. Idakalai - Starts from the right big toe, runs criss-cross to end in the left nostril
2. Pinkalai - Starts from the left big toe, runs criss-cross to end at the right nostril.
3. Suzhumunai - Starts from moolaathaaram and extends upto centre of head
4. Siguvai - Located at the root of tongue; it helps in the swallowing of food and water
5. Purudan - Located in right eye.
7. Atthi - Located in right ear.
8. Allampudai - Located in left ear.
9. Sangini - Located in genital organ
10. Gugu - Located in ano-rectal region
8. VAAYU – 10 (VITAL NERVE FORCE WHICH IS RESPONSIBLE FOR ALL KINDS OF MOVEMENTS)

1. Uyir kaal (Piraanan)
   This is responsible for the respiration of the tissues, controlling knowledge, mind and five sense organs and digestion of the food taken in.

2. Keel nokku kaal (Abanan)
   It lies below the umbilicus. It is responsible for the downward expulsion of stools and urine, ejaculation of semen and menstruation.

3. Paravu kaal (Viyanan)
   This is responsible for the motor and sensory function of the entire body and the distribution of nutrients to various tissues.

4. Mael nokku kaal (Uthanan)
   It originates at Utharakini. It is responsible for digestion, absorption and distribution of food. It is responsible for all the upward movements.

5. Samaanan (Nadu kaal)
   This is responsible for the neutralization of the other 4 Valis i.e. Piranan, Abanan, Viyanan and Uthanan. Moreover it is responsible for the nutrients and water balance of the body.

6. Naagan
   It is a driving force of eye balls responsible for movements.

7. Koorman
   It is responsible for the opening and closing of the eyelids and also vision. It is responsible for yawning.

8. Kirukaran
   It is responsible for the salivation of the tongue and also nasal secretion. Responsible for cough and sneezing and induces hunger.

9. Devathathan
   This aggravates the emotional disturbances like anger, lust, frustration etc. As emotional disturbances influence to a great extent the physiological activities, it is responsible for the emotional upsets.
10. Dhanancheyan

Expelled three days after the death by bursting out of the cranium. It is responsible for edema, plethora and abnormal swelling in the body in the pathological state.

9. AASAYAM – 5 (VISCERAL CAVITIES)
1. Amarvasayam (Reservoir Organ) - Stomach. It lodges the ingested food.
2. Pakirvasayam (Absorption Site)-Small intestine. The digestion and assimilation of food, absorption of saaram from the digested food are done by this asayam.
3. Malavasayam (Excretory organ for solid waste) -Large Intestine, especially rectum, the place where the expulsion of undigested food parts and flatus takes place.
5. Sukkilavasyam (Genital organs.) –Site of production and development of spermatazoa and ovum.

10. KOSAM – 5 (FIVE STATUS OF THE HUMAN BODY OR SHEATH)
1. Annamaya Kosam -Gastro intestinal system
2. Pranamaya Kosam - Respiratory system
3. Manomaya Kosam - Mental System
4. Vignanamaya Kosam - Nervous system and higher intellect
5. Aananthamaya Kosam -Reproductive system

11. AATHARAM – 6 (STATIONS OF SOUL) “அுடற்செய்முறை போன்ற விளக்கம்”
1. Moolatharam

Situated at the base of spinal column between genital and anal orifice and beneath the perineum. Letter “அுடற்செய்முறை” is stationed here.

2. Swathitanam

Located 2 fingerwidths above the Moolaatharam, (i.e.) midway between genital and navel region. Letter “அுடற்செய்முறை” is inherently present here. Earth element is attributed to this region.
3. **Manipooragam**  
Located 8 fingerwidths above the Swathitanam, (i.e.) at the naval center. Letter “ω” is inherently present here. Element is water.

4. **Anakatham**  
Located 10 fingerwidths above Manipooragam, (i.e.) location of heart. Letter found is “δ”. Element is fire.

5. **Visuthi**  
Located 10 fingerwidths above the Anakatham (i.e.) located in throat. Letter “αν” is inherently present. Element is Air.

6. **Aakinai**  
Situated between the two eyebrows. Letter “ω” is inherently present here. Element is Space.

12. **MANDALAM – 3 (REGIONS)**
1. **Thee Mandalam (fire zone)**  
Fire Zone is found 2 finger widths above the Moolaathaaram
2. **Gnayiru Mandalam (Solar zone)**  
Solar zone, located 4 finger widths above the umbilicus.
3. **Thingal Mandalam (lunar zone)**  
Lunar zone is situated at the center of two eye brows

13. **MALAM – 3 (THREE IMPURITIES OF THE SOUL)**
1. **Aanavam**  
This act clouds the clarity of thought, cognitive power of the soul, yielding to the egocentric consciousness like ‘I’ and ‘Mine’ claiming everything to be his own (Greediness).
2. **Kanmam**  
Goes in collaboration with the other two responsible for incurring Paavam (the Sin) and Punnyam (Sanctity / virtuous deed).
3. **Mayai**  
Serves as an obstacle due to the mentality of claiming ownership of the others property and thereby inviting troubles.
14. **THODAM- 3 (THREE HUMOURS)**
1. **Vali (Vatham)** - It is the creative force formed by combination of Vaayu and Aakaya bootham
2. **Azhal (Pitham)** - It is the protective force. Formed by Thee bootham
3. **Iyam (Kabam)** - It is the destructive force. Formed by Mann and Neer Bootham.

15. **EADANAI -3 (PHYSICAL BINDINGS)**
1. **Porul Patru** - Materialistic affinity
2. **Puthalvar Patru** - Sibbling / Familial bonding
3. **Uлага Patru** - Worldly affections

16. **GUNAM – 3 (THREE COSMIC QUALITIES)**
1. **Sathuvam (Characters of Renunciations or Ascetic Virtues)**
   The grace, control of senses, wisdom, penance, generosity, Excellence, calmness, truthfulness is the 8 qualities attributed to their benevolent trait.
2. **Raasatham (Royal character)**
   Enthusiasm, wisdom, valour, virtue, penance, offering gift, art of Learning, listening are the 8 traits
3. **Thamasam (Carnal / Immoral Character)**
   Immorality, lust, anger, murderousness, violation of justice, gluttony, falsehood, forgetfulness, fraudulence, etc.

17. **VINAI – 2 (ACT)**
1. **Nalvinai** - Good Acts (Meritorious acts)
2. **Theevinai** - Bad Acts (Sinful acts)

18. **RAGAM – 8 (THE EIGHT PASSIONS)**
1. **Kaamam** - Lust
2. **Kurotham** - Grudge / Hatred
3. **Ulobam** - Stingy
4. **Moham** - Infatuation
5. **Matham** - Rut (The feeling of high ego towards oneself)
6. **Marcharyam** - Internal Conflict, Envy
7. **Idumbai** - Mockery
8. **Ahankaram** - High Ego
19. AVATHAI – 5 (FIVE STATES OF CONSCIOUSNESS)

1. Ninaivu - State of wakefulness with the 14 karuvikaranathigal in all vibrancy (5 Pulan, 5 Kannaenthiriyam and 4 Karanam) and is able to experience the pleasures and pains.

2. Kanavu – State of dreams. In this 10 karuvikaranathigal (5 Pulan, 5 Kannaenthiriyam) except karanam all lies dormant in the neck.

3. Urakkam - State of Sleep after which one cannot recapitulate what is seen or heard. The respiration lies in the heart.

4. Perurakkam - State of Repose (Tranquil or Peaceful State). The Jeevaathma lies in the naabi, producing the respiration.

5. Uyirpadakkam – Oblivious of the surroundings. The Jeevaathma is deeply immersed in Moolaathaaram resulting in a state of unawareness.

3. A.3.THE UYIR THATHUKKAL

The physiological units of the Human body are,

- Vali (Vatham),
- Azhal (Pitham) and
- Iyyam (Kapham).

They are also formed by the combination of the five basic elements. Accordingly Vali is formed by the combination of Vali (Air) and Aagayam (Space). This is the Creative force. Azhal is formed by Thee (Fire). This is the Force of Preservation. Iyyam is formed by Mann (Earth) and Neer (Water). This is the Destructive Force. These three humors are in the ratio 4:2:1 in equilibrium which is a healthy normal Condition. They are called as the life forces or humours.

"பராமினி தக்கத்துலகம் பாய்பாற்று வில் தானியகம் தானியின் வெப்ப தயாரியடு தோன்றும்
பராமினி பூட்டிபவற்று தானியத் பிள்ளியில்
தானியானை பூட்டிக்கும் முன்வேறு
தானியம் தொடங்கும் முடிக்கும் போது
அதுதோடு முடிக்கும் முடிக்கும் முடிக்கும் முடிக்கும்
சாய்த்து பிள்ளியில் எற்று எற்று எற்று எற்று
-புத்தாண்டின் திகை இதை காண்டு வாச்சுதல்"
THE FORMATION OF UYIR THATHUWKAL,

"தன் ஓப்பிள் கையுடோ ப்ளிமாளம்
ப்ளாம் பிளகோ ப்ளாமன்து ப்ளாமாளம்
ப்ளாம் கீழோ மூக்கிலெ சுமி ப்ளாமாளம்
தன் ஓப்பிள் ப்ளாமன்து ப்ளாமாளம் கீழோ" -பிஞாயாராம் சிங் பிள கால்கியின்

The Vali naadi is formed by the combination of Abanan and Idagalai.
The Azhal naadi is formed by the combination of Piranan and Pinkalai.
The Iyya naadi is formed by the combination of Samanan and Suzhumunai.

I. Vali (Vatham)

Vali is soft, fine and the temperate (coolness and hotness) which could be felt by touch.

The sites of vali

According to Vaithya Sathakam, Vali dwells in the following places:

"கீழோ கையுடோ ப்ளாமாளம் ப்ளாமால்
கீழோ கையுடோ ப்ளாமாளம் ப்ளாமால்
கீழோ கையுடோ ப்ளாமாளம் ப்ளாமால்
கீழோ கையுடோ ப்ளாமாளம் ப்ளாமால்" -காம்கியின்

According to Sage Thirumoolar and Sage Yugi muni, the location of Vatham is the anus and the sub navel region.

Properties of Vali

1) To stimulate the respiration
2) To activate the body, mind and the intellect.
3) To activate the fourteen different types of natural reflexes or urges.
4) To activate the seven physical constituents in functional coordination.
5) To strengthen the five sense organs.

In the above process Vatham plays a vital role in assisting the body functions.

II. Azhal (Pitham)

The nature of Azhal is Atomic. It is sharp and hot. The ghee becomes watery, salt crystallises and jaggery melts because of heat. The heat of Azhal is responsible for many actions and their reactions.

The sites of Azhal

According to Vaithiya Sathagam, the Pingalai, Urinary bladder, Stomach and Heart are the places where Azhal is sustained. In addition to the above places, the umbilicus, epigastric region, stomach, sweat, saliva, blood, essence of food, eyes and skin are also the places where Azhal sustains. Yugi muni says that, the Azhal resides in urine and in the places below the neck region.
The character of Azhal

Azhal is responsible for the digestion, vision, maintenance of the body temperature, hunger, thirst, taste etc. Its other functions include thought, knowledge, strength and softness.

The functions of Azhal

1) Maintenance of body temperature
2) Produces reddish or yellowish colour of the body.
3) Produce heat energy on digestion of food.
4) Produces sweating
5) Induces giddiness.
6) Produces blood and the excess blood is let out.
7) Gives yellowish colouration to the skin, eyes, faeces and urine
8) Produce anger, heat, burning sensation, inaction and determination.
9) Gives bitter or sour taste.

Types of Azhal

1. Aakkanal – Anila pitham or Prasaka pitham – The fire of digestion.
   It lies between the stomach and the intestine and causes digestion and dries up the moist ingested substance.

2. Vanna eri – Ranjaga pitham – Blood promoting fire
   This fire lies in the stomach and gives red colour to the chyle and produces blood. It improves blood.

3. Aatralanki – Saathaga pitham – The fire of achievement
   It gives energy to do the work.

   It gives colour, complexion and lusture to the skin.

   It lies within the eyes and causes the faculty of vision. It helps to visualize things.
III. Iyyam (Kapam)

The nature of Iyyam

Greasy, cool, dull, viscous, soft and compact are the natures of Iyyam.

Sites of Iyyam

Head, tongue, eyes, nose, throat, thorax, bone, bone marrow, Joints, blood, fat, sperm and colon are the sites of Iyyam. It also lies in stomach, spleen, the pancreas, chyle and lymph.

The natural quality of Iyyam

Stability, greasiness, formation of joints, the ability to withstand hunger, thirst, sorrow and distress are the qualities. It also helps to withstand sufferings.

Functions of Iyyam

Greasiness, strength, roughness, knowledge, cool, growth, heaviness of bone, restriction of joint movements, pallor, indigestion, deep sleep and to have a sweet taste in tongue are the functions of Iyyam. The skin, eyes, faeces and urine are white in colour due to the influence of Iyyam.

Five types of Iyyam

1. Azhal Iyyam -Avalambagam
   Heart is the seat of Avalambagam. It controls all other 4 Iyyams

2. Neerpi iyyam -Kilethagam
   Its location is stomach. It gives moisture and softness to ingested food.

3. Suvai kaan iyyam – pothagam
   Its location is tongue. It is responsible for the sense of taste.

4. Niraivur iyyam – Tharpagam
   It gives coolness to the eyes.

5. Ondri iyyam – Santhigam
   It gives lubrication to the bones particularly in the joints

3. A.4. THE UDAL THATHUKKAL

Udal Thathukkal are the basic physical constituents of the body. They are also constituted by the Five Elements.
SEVEN PHYSICAL CONSTITUENTS OF THE BODY

1. **Saaram** - This gives mental and physical perseverance.
2. **Senneer** - Imparts colour to the body and nourishes the body.
3. **Oon** - It gives shape to the body according to the physical activity and plasters the skeleton to give the body a plumpy appearance.
4. **Kozhuppu** - It lubricates the joints and other parts of the body for smooth functioning.
5. **Enbu** - Supports the frame and responsible for the postures and movements of the body.
6. **Moolai** - It occupies the medulla of the bones and gives strength and softness to them.
7. **Sukkilam** - It is responsible for reproduction.

3. **A.5. UDAL THEE (Four kinds of body fire)**

   There are four kinds of body fire. They are Samaakkini, Vishamaakkini, Deeshaakkini and Manthaakkini.

1. **Samaakkini**

   The digestive fire is called as Samaakkini. This is constituted by Samana Vayu, Anala Pitham and kilethaga Kapham. If they are in normal proportion, then it is called as Samaakkini. It is responsible for the normal digestion of the food.

2. **Vishamaakkini**

   Due to deranged and displaced Samana Vayu, it takes longer time for digestion of normal food. It is responsible for indigestion due to delay in digestive process.

3. **Deeshaakkini**

   The Samana vayu blends up with the Azhal, which leads to increased Anala Pitham, so food is digested rapidly.

4. **Manthaakkini**

   The Samana vayu conjugates with the Iyyam, which leads to increased Kilethaga Kapham. Therefore food is sluggishly digested for a very longer period leading to abdominal pain, distention, heaviness of the body etc.
3. A.6. THINAI

*There are five thinai (the land)*

1. Kurinchi - Mountain and associated areas
2. Mullai - Forest and associated areas
3. Marudham - Agricultural land and associated areas
4. Neidhal - The coastal and associated areas
5. Paalai - Desert and associated areas

3. A.7. KAALAM

Ancient Tamilians divided a year into six different seasons known as Perumpozhudhu and likewise the day into six segments which are known as Sirupozhudhu

**Perumpozhudhu:**

A year is divided into six seasons. They are as follows

- Kaarkalam – Monsoon season (August 16 – October 15)
- Koothirkalam – Postmonsoon season (October 16 – December 15)
- Munpanikalam- Early winter season (December 16 – February 15)
- Pin panikalam – Late winter season (February 16 – April 15)
- Illavenilkalam – Early summer season (April 16 – June 15)
- Mudhuvenilkalam – Late summer season (June 16 – August 15)

**Sirupozhudhu**

A day is divided into six yamams. They are,

1. Maalai (Evening),
2. Idaiyammam (Midnight),
3. Vaikarai (Dawn),
4. Kaalai (Morning),
5. Nannpakal (Noon),

Each perumpozhudhu and sirupozhudhu is associated with the three humors naturally.
3. A.8.FOURTEEN NATURAL REFLEXES/ URGES

The natural reflexes excretory, protective and preventive mechanisms are responsible for the urges and instincts. They are 14 in number,

1. Vatham (Flatus)
2. Thummal (Sneezing)
3. Siruneer (Micturition)
4. Malam (Defaecation)
5. Kottavi (Act of yawning)
6. Pasi (Sensation of hunger)
7. Neer vetkai (Sensation of thirst)
8. Erumal (Coughing)
9. EllaiPu (Fatigue)
10. Thookam (Sleep)
11. Vaanthi (Vomiting)
12. Kaneer (Tears)
13. Sukilam (Semen)
14. Suvasam (Breathing)

These natural reflexes are said to be an indication of normal functioning of our body. A proper maintenance should be carried out and they should not be restrained with force.
3.B. SIDDHA PATHOLOGY

3.b.1. KUGARANA NILAI IN SIDDHA MEDICINE

According to Siddha System, human body sustains the state of healthy living via keeping the Three Humours- Vatham, Pitham and Kabam in equilibrium, influenced by dietary habits, daily activities and the environment around. The three humours represent the five basic elements or bhuthas. In case this equilibrium is disturbed, it leads to a condition known as disease. It is basically the derangement of five elements, which in turn alters the Three Humors. There can either be a decrease or increase in the balance.

3. b.2. DISEASE

Disease is also known by other names viz sickness, distemper, suffering and ailment, distress of mind, chronic disease and dreadful illness.

3.b.3. THE CHARACTERISTICS FEATURE OF DISEASE

Diseases are of two kinds:
1. Pertaining to the body
2. Pertaining to the mind according to the variation of the three humors.

1. Causes of Disease

Excepting the disease caused by our previous births, the disease is normally caused by the disparities in our food habits and actions. This has been rightly quoted in the following verses by Sage Thiruvalluvar,

"என்று கூறியிருந்து சிறைவெப்பு நெய்ந்து
மனித்பிற்பர் தம்மிலிய அன்றை"

The food and actions of a person should be in harmony with the nature of his body. Any increase or decrease in a humor viz. Vatham, Pitham, Kabam leads to the derangement of the three humors. The acceptance of food means the taste and quality of the food eaten and a person’s ability to digest. ‘Action’ mean his good words, deeds or bad actions. According to Thiruvalluvar, the disease is caused due to the increase or decrease of three humors causing the upset of equilibrium.
So disease is a condition in which there is derangement in the five elements, which alters the three humors, reflected in turn in the seven physical constituents. The change could be an increase or decrease in the humours. This shows the following signs as per vitiation of the individual humour.

As per Theraiyar, the cause of disease is vitiated Vatha, Pitha and Kaba, increased appetite, increased thirst, excessive hot, anger, constipation, dysuria polluted water.
## 2. QUANTITATIVE CHANGES OF UYIR THATHUKKAL

<table>
<thead>
<tr>
<th>HUMOUR</th>
<th>INCREASED</th>
<th>DECREASED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VALI</strong> (Vatham)</td>
<td>Wasting, blackish discoloration, affinity to hot foods, tremors, distended abdomen, constipation, weakness, insomnia, weakness in sense organs, giddiness and laziness.</td>
<td>Body pain, feeble voice, and diminished capability of the brain, decreased intellectual quotient, syncope and increased Kaba condition.</td>
</tr>
<tr>
<td><strong>AZHAL</strong> (Pitham)</td>
<td>Yellowish discoloration of conjunctiva, skin, urine and faeces, polypagia, polydypsia, dyspepsia, burning sensation all over the body and decreased sleep.</td>
<td>Loss of appetite, cold, pallor and features of increased Kabam.</td>
</tr>
<tr>
<td><strong>IYYAM</strong> (Kabham)</td>
<td>Loss of appetite, excessive salivation, diminished activity, heaviness, pallor, cold, decreased physical constituents, dyspnoea, flatulence, cough and excessive sleep.</td>
<td>Giddiness, dryness of the joints and prominence of bones. Profuse sweating in the hair follicles and palpitation.</td>
</tr>
</tbody>
</table>
3. **UDAL THATHUKAL**

These are the changes produced when Udal thathukkal are affected.

<table>
<thead>
<tr>
<th>UDAL KATTUKKAL</th>
<th>INCREASED FEATURES</th>
<th>DECREASED FEATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SAARAM</td>
<td>Loss of appetite, excessive salivation, diminished activity, heaviness, pallor, cold, decreased physical constituents, dyspnoea, flatulence, cough &amp; excessive sleep.</td>
<td>Dryness of skin, tiredness, loss of weight, lassitude and irritability while hearing louder sounds.</td>
</tr>
<tr>
<td>2. SENNEER</td>
<td>Boils in different parts of the body, splenomegaly, tumours, pricking pain, loss of appetite, haematuria, hypertension, reddish eye and skin, leprosy and jaundice.</td>
<td>Affinity to sour and cold food, nervous, debility, dryness and pallor.</td>
</tr>
<tr>
<td>3. OON</td>
<td>Tubercular adenitis, venereal diseases, extra growth around neck, cheeks, abdomen, thigh and genitalia.</td>
<td>Lethargic sense organs, pain in the joints, muscle wasting in mandibular region, gluteal region, penis and thighs.</td>
</tr>
<tr>
<td>4. KOZHUPPU</td>
<td>Identical feature of increased flesh, tiredness, dyspnoea on exertion, extra musculature in gluteal region, external genitalia, chest, abdomen and thighs.</td>
<td>Loins pain, splenomegaly and emaciation.</td>
</tr>
<tr>
<td>5. ENBU</td>
<td>Excessive ossification and dentition.</td>
<td>Joint pain, falling of teeth, falling and splitting of hairs and nails.</td>
</tr>
<tr>
<td><strong>6. MOOLAI</strong></td>
<td>Heaviness of the body and eyes, swollen interphalangeal joints, oliguria and non-healing ulcers.</td>
<td>Osteoporosis &amp; Blurred vision.</td>
</tr>
<tr>
<td>----------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td><strong>7. SUKKILAM</strong></td>
<td>Increased sexual activity, urinary calculi.</td>
<td>Dribbling of sukkilam/suronitham or senner during coitus, pricking pain in the testis &amp; inflammed and contused external genitalia.</td>
</tr>
<tr>
<td><strong>(OR)</strong> SURONITHAM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. KAALAM

Change in Elementary conditions of the external world has its corresponding change in the human organs. They are as follows:

<table>
<thead>
<tr>
<th>KAALAM</th>
<th>KUTTRAM</th>
<th>STATE OF KUTTRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Karkaalam</strong></td>
<td>Vatham ↑↑</td>
<td>Ectopic escalation</td>
</tr>
<tr>
<td><em>(Rainy season)</em></td>
<td>Pitham ↑</td>
<td>Insitu escalation</td>
</tr>
<tr>
<td><em>(Aug 16 – Oct 15)</em></td>
<td>Kabam (-)</td>
<td>Restitution</td>
</tr>
<tr>
<td><strong>2. Koothir Kaalam</strong></td>
<td>Vatham (-)</td>
<td>Restitution</td>
</tr>
<tr>
<td><em>(Postrainy season)</em></td>
<td>Pitham ↑↑</td>
<td>Ectopic escalation</td>
</tr>
<tr>
<td><em>(Oct 16 – Dec 15)</em></td>
<td>Kabam (-)</td>
<td>Restitution</td>
</tr>
<tr>
<td><strong>3. Munpani Kaalam</strong></td>
<td>Vatham (-)</td>
<td>Restitution</td>
</tr>
<tr>
<td><em>(Winter season)</em></td>
<td>Pitham (-)</td>
<td>Restitution</td>
</tr>
<tr>
<td><em>(Dec 16 – Feb 15)</em></td>
<td>Kabam (-)</td>
<td>Restitution</td>
</tr>
<tr>
<td><strong>4. Pinpani Kaalam</strong></td>
<td>Vatham (-)</td>
<td>Restitution</td>
</tr>
<tr>
<td><em>(Post winter)</em></td>
<td>Pitham (-)</td>
<td>Restitution</td>
</tr>
<tr>
<td><em>(Feb 16 – Apr 15)</em></td>
<td>Kabam ↑</td>
<td>Insitu escalation</td>
</tr>
<tr>
<td><strong>5. Elavenir Kaalam</strong></td>
<td>Vatham (-)</td>
<td>Restitution</td>
</tr>
<tr>
<td><em>(Summer)</em></td>
<td>Pitham (-)</td>
<td>Restitution</td>
</tr>
<tr>
<td><em>(Apr 16 – Jun 15)</em></td>
<td>Kabam ↑↑</td>
<td>Ectopic escalation</td>
</tr>
<tr>
<td><strong>6. Mudhuvenir Kaalam</strong></td>
<td>Vatham ↑</td>
<td>Insitu escalation</td>
</tr>
<tr>
<td><em>(Post summer)</em></td>
<td>Kabam (-)</td>
<td>Restitution</td>
</tr>
<tr>
<td><em>(Jun 16 – Aug 15)</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. THINAI

<table>
<thead>
<tr>
<th>S. NO</th>
<th>THINAI</th>
<th>LAND</th>
<th>HUMORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kurinchi</td>
<td>Mountain and its surroundings</td>
<td>Kabam</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hilly terrain</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Mullai</td>
<td>Forest and its surroundings</td>
<td>Pitham</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Forest ranges</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Marutham</td>
<td>Farm land and its surroundings</td>
<td>All three humors are in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cultivable lands</td>
<td>equilibrium</td>
</tr>
<tr>
<td>4.</td>
<td>Neithal</td>
<td>Sea shore and its adjoining areas,</td>
<td>Vatham</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coastal belt</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Palai</td>
<td>Desert and its surroundings</td>
<td>All three humors are affected.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Arid zone</td>
<td></td>
</tr>
</tbody>
</table>

6. ALTERATION IN REFLEXES (14 VEGANGAL)

There are 14 natural reflexes involved in the physiology of normal human beings. If willfully restrained or suppressed, the following are resulted.

1. **Vatham (Flatus)**
   
   This urge should not be suppressed. If it is suppressed it leads to chest pain, epigastric pain. Abdominal pain, ache, constipation, dysuria and indigestion predominate.

2. **Thummal (Sneezing)**
   
   If restrained, it leads to headache, facial pain, low back pain and neuritic pain in the sense organs.

3. **Siruneer (urine)**
   
   If restrained, it leads to urinary retention, urethral ulcer, joint pain, pain in the penis, gas formation in abdomen.

4. **Malam (Faeces)**
   
   If restrained, it leads to pain in the knee joints, headache, general weakness, flatulence and other diseases may also originate.
5. **Kottavi (Yawning)**
   If restrained, it leads to indigestion, leucorrhoea, and abdominal disorders.

6. **Pasi (Hunger)**
   If restrained, it leads to the tiredness of all organs, emaciation, syncope, apathetic face and joint pain.

7. **Neer vetkai (thirst)**
   If restrained, it leads to the affection of all organs and pain may supervene.

8. **Kaasam (Cough)**
   If it is restrained, severe cough, bad breath and heart diseases will be resulted.

9. **Haippu (Exhaustiveness)**
   If restrained, it will lead to fainting, urinary disorders and rigor.

10. **Nithirai (Sleep)**
    All organs will get rest only during sleep. So it should not be avoided. If disturbed it will lead to headache, pain in the eyes, deafness and slurred speech.

11. **Vaanthi (Vomiting)**
    If restrained, it leads to itching and symptoms of increased Pitham.

12. **Kanneer (Tears)**
    If it is restrained, it will lead to Sinusitis, headache, eye diseases and Chest pain.

13. **Sukkilam (Semen)**
    If it is restrained, there will be joint pain, difficulty in urination, fever and chest pain.

14. **Swaasam (Breathing)**
    If it is restrained, there will be cough, abdominal discomfort and anorexia.
3. C. DIAGNOSTIC METHODOLOGY

The Diagnostic methodology in Siddha system is unique as it is made purely on the basis of clinical acumen of the physician. The diagnosis is arrived from,

- Poriyal arithal and Pulanal arithal (Examination of sense organs)
- Vinaathal (Interrogation)
- Envagai thervu (Eight fold examination)
- Manikkadai nool (Wrist circumference sign)
- Sothidam (Astrology)
- Assessment of deranged three dosham (Humours), Udal thathukal and 96 principles.

PORIYAL ARIDHAL

The physician should examine the patient’s porigal by his porigal.

1. Mei - To feel all types of sensation
2. Vaai - For knowing taste
3. Kan - For vision
4. Mooku - For knowing the smell
5. Sevi - For hearing

PULANAL ARITHAL

The physician should examine the patient’s pulangal by his porigal & Pulangal

1. Hearing - Ear
2. Vision - Eye
3. Taste - Tongue
4. Sensation - Skin
5. Smell - Nose
VINAADHAL (INTERROGATION)

The physician should interrogate the patient’s name, age, occupation, native place, Socio – economic status, dietary habits, present complaints, history of present illness, aggravating factors, history of previous illness

ENVAGAI THERVUGAL

"அகத்தை வைத்திய கோதர்வம் கம்பிசைப்
பத்துவின் பலம் பிளிய் - நோத்தங்கி மீன்
சாதைக்கு ஓர் போக்கிவிட்டுக்கப் பின் மை நடுநிற்பு நா
சாதைக்கு பாது விளைந்தின்"

- அகத்தை வைத்திய கோதர்வ விளைந்தின் - 4000

According to Agathiyar Vaithiya Sinthaamani Venba – 4000, the Envagaithervu Includes Naadi (Pulse) Naa (Tongue), Niram (Color), Mozhi (Voice), Vizhi (Eyes), Malam (Faeces), Neer (Urine) and Sparisam (Touch & palpation).

"நாடுக் பிளிய் பலமும் போக்கிவிட்டு
நம் நடுநிற்பின் மைக்கு பயணமுகக்"

-முக்கு.

"இளையின் பின்சுருவியில் பிறித்கின்ற காணின்"

-முக்கு.

As per Saint Therayar, the eight methods of diagnosis are Naadi (Pulse) Naa (Tongue), Niram (Color), Mozhi (Voice), Vizhi (Eyes), Malam (Faeces), Neer (Urine) and Sparisam (Touch & palpation).
As per Sage Agathiyar, Naadi (pulse), Malam (stools), Salam (urine), Niram (complexion), Gunam (character), MugaKuri (facies), Thegam (constitution), Vayadhu (age), Elamai are the diagnostic tools.

According to literature KannaSaami Paramparai Vaithiayam, Naadi, Naa, Thegam, Thodu unarvu, Niram, Malam, Salam and Vizhi are the diagnostic tools.
According to Agathiyar Vaithiya Rathina Surukkam, the diagnostic tools are Naadi (Pulse), Vizhi (Eyes), Kurigunam (Signs), Nalkurippu (Chronology), Maeni (Constitution), Malam (Stools) And Neer (Urine).

According to the Paripoorana Naadi, the diagnostic parameters are Mugam (Facies), Pal (Teeth), Vai (Mouth), Naakku (Tongue), Kaayam, Irumalam, Naadi (Pulse).

According to Dhanvantri Vaithiyam, the diagnostic parameters are Naadi (Pulse), Mugam (Facies), Malam (Stools), Neer (Urine), Udal (Constitution), Vizhi (Eyes), Naa (Tongue), Pal (Teeth).
According to the above literature, the diagnostic tools are Naadi (Pulse), Kan (Eyes), Sattham (Voice), Thegam (Constitution), Sparisam and Naa (Tongue).

1. TONGUE EXAMINATION (காதில் வேலை)

"நாட்டில் வேலை காதில் காணப்படும் வேட்டு வடிவம்
காத்காட்டு காணப்படாத வேலைகள் - கூட்டாட்டு
காண்பட்டு பாத்தராக நூற்றுக்கு காணப்படும்
சிவிலான் வேலைகள்.

- அகதியார் கைதியார் கிருட்சு வேலை - 4000

As per Agathiyar Vaithiya Sinthaamani Venba – 4000, fissured and black tongue represent vitiated Vatha humor, pallor represents Kabam, green colour represents Pitha humor and mixed appearance of these features resembles Sanni noi.

In Vali derangement, tongue will be cold, rough, furrowed and tastes pungent. In Azhal, it will be red or yellow and kaippu taste will be sensed. In Iyyam, it is pale, sticky and sweet taste will be lingering. In depletion of Thontham, tongue will be dark with raised papillae and dryness.

Examination of tongue also includes the salivary examination. The following stanza describes salivary examination
2. EXAMINATION OF COMPLEXION (நிற விளக்கம்)

"அரங்கரை பராமார்க்க சிற்றுறுக்கு இந்திய
அரலிபற்றுள்ள கூட்டமையாளர் அதிபர் - பெருமான்
சுந்தர பராமார்க்க அபரப்பித்தருக்கு இந்திய
ஸ்கொட்டியர் முருசையினையை...

- அக்காலை உள்ளிட்டு சிற்றுறுக்கு விளக்கம் - 4000

"முற்படும் வாரிசிக் கிருத்த மூலம்
சுருக்குத்தல் நிறுவனத்தின் இந்தியா
நூற்றாண்டை இணைந்து கூறுதல் காக்கும்
சுருக்குத்தல் பிராந்திய பல்கலைக்கழகம்
பாரதியகத்தின் விளக்கம் சிறுகோள் பல்கலைக்கழகம்
பாரதியகத்தின் விளக்கம் சிறுகோள் பல்கலைக்கழகம்"

-காண்பக்கியம் பொருளாய் சாத்தியம்

"பொருளாய் விளக்கம் கண்டறிய மூலம்
சுருக்குத்தல் நிறுவனத்தின் சிறுகோள்
கூட்ட விளக்கத் திகழும் பல்கலைக்கழக நூற்றாண்டு
சுருக்குத்தல் பிராந்திய பல்கலைக்கழகம்"

-சாந்தநிதி (புனிதமான சிற்றுறு உறுப்பினர்)
In Vali, Azhal and Iyyam vitiations, the colour of the body will be dark, yellow or red and fair respectively.

3. VOICE EXAMINATION (தமிழ் செயல்)

"பார்புப்பாட்டு தவறைச் சிலங்கள் சாகச்சைகள் படுத்தோம்.
செயலாக்காளர் தவறைகள் பல்லாக புரோமைத்து வந்து.
செயலாக்காளர் பல்லாக புரோமைத்து.
செயலாக்காளர் பல்லாக புரோமைத்து.
செயலாக்காளர் பல்லாக புரோமைத்து.
செயலாக்காளர் பல்லாக புரோமைத்து.
செயலாக்காளர் பல்லாக புரோமைத்து.
செயலாக்காளர் பல்லாக புரோமைத்து.
செயலாக்காளர் பல்லாக புரோமைத்து.
ஆனால் பல்வேறுபட்டு பொருள்பாடு.

- கலந்துத் தமிழ் செயல் பாடல்

"சாகச்சையை வகையாக அவர் விளக்குவது.
சாகச்சையை வகையாக அவர் விளக்குவது.
சாகச்சையை வகையாக அவர் விளக்குவது.
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சாகச்சையை வகையாக அவர் விளக்குவது.
ஆனால் பல்வேறுபட்டு பொருள்பாடு.

-பார்ப் பாடல் தமிழ் செயல்
In vitiation of Vali, Azhal and Iyyam, the voice would be normal, high pitched and shrill or low pitched respectively. By the voice, the strength of the body can be assessed.

4. THE EYE EXAMINATION

"அகடியிற்பு ருத்திரம் காட்சியை வரும்போது கலந்து விளக்கத்தில் - அகடியிற்பு
சாது வேறு நிலையை இரண்டு பிள்ளோ விளக்க
சீரமைத்த வகை மற்றும் - 4000"

As per Agathiyar Vaithiya Sinthaamani Venba – 4000, in vitiated Vali eyes turn black and tears shed. In vitiated Azhal humour, mukkutram and in jaundice yellowish discoloration occurs. In vitiated Iyyam, the eyes turn white.

"அகடியிற்பு ருத்திரம் காட்சியை வரும்போது கலந்து விளக்கத்தில் - அகடியிற்பு
சாது வேறு நிலையை இரண்டு பிள்ளோ விளக்க
சீரமைத்த வகை மற்றும் - 4000"

-ஙந்தமையும் போர்ப்போன் காண்டியும்

-புராங்க நிறைந்து வரும் காண்போன்
In Vali disease, the tears are darkened, in Azhal disease they are yellow, in Iyya disease they are whitish in colour and in Thontha disease the tears are multi coloured. In Vali disease there will be excessive tears (epiphora). In disturbance of all the three humours, eyes would be inflamed and reddish.

5. FAECES EXAMINATION (செல்வல் வீடை)

"சுயக்கலை பரக்கல் கருணை பின்விக
செத்துப்பு முதலியற்றுதல் வீடு - அருள்கற்றுனவரை
செருபது சிரவையற்று வீட்டு வருந்து
செத்துப்பு சர்வீலையே விலை.

- அகதியர் வாழ்த்துச் சித்தாரிதி வெண்கல் - 4000"

As per Agathiya Vaithiya Sinthaamani Venba – 4000, in vitiated Vali, the stool is hard and black. In vitiated Azhal, it is hot and red. In vitiated Iyyam it is cool and watery.

" குடியில் வாடு வீட்டு முறையும் பாறையின்
சுயக்கலை குறியீடு குறைந்துகொண்டது
செத்துப்பு முதலியற்றுதல் வீடு
செருபது சிரவையற்று வீட்டு
செத்துப்பு சர்வீலையே விலை
முறைந்து வீட்டுவைக்கு மானச்செய்யம்
பாடல் பொருளேடு தொகையும் பாறை
பாடல் சுயாற்றுதலே வீடுகளுக்கு
சுயக்கலை பரக்கல் கையேற்றுப்போடு.

-குவாடர்கள் பொருளேடு கையேற்று.

In excacerbated Vali, faeces is hard, dry and black in colour. In Azhal vitiation, it is yellow. In Iyyam, disturbance it is pale.
6. URINE EXAMINATION

"Neer' refers to Urine ‘Kuri’ refers to Sign. Theraiyar, one of the renowned authors of Siddha medicine described urine examination and stages of health. He had explained about the colour and consistency of the urine in vitiated humor and disease. He also emphasised the spreading nature of a single drop of oil on the surface of the urine indicating the imbalance of specific dosha and prognosis of disease. Normal urine is straw coloured and odourless. The time of the day and food taken will have an impact on the colour of the urine.

**COLOUR OF URINE**

- Yellow colour – similar to straw soaked water – indigestion
- Lemon colour – good digestion
- Reddish yellow – heat in body
- Colour similar to flame of forest red or flame coloured excessive heat
- Colour of saffron – extreme heat
As per Sikicharatha Theepam,

**CLOUR OF URINE** - **PROGNOSIS**

- Ruby red or milky white - Poor
- Honey - Slow and take long time
- Golden yellow - Good

**NEIKKURI (நீர்கறி)**

“அருக்கு வருடத்திற்கு அவிட்டதுக்கும்
அக்கு அவிட்டு அக்கு அக்கு அக்கு அக்கு
கிறுவை வருடத்திற்கு கூறுக்கு
ஆர்கு வருடத்திற்கு கூறுக்கு
ஜார்கு வருடத்திற்கு கூறுக்கு
நிக்கு வருடத்திற்கு கூறுக்கு
அறிகு வருடத்திற்கு கூறுக்கு
அறிகு வருடத்திற்கு கூறுக்கு
நிக்கு வருடத்திற்கு கூறுக்கு
நிக்கு வருடத்திற்கு கூறுக்கு
அறிகு வருடத்திற்கு கூறுக்கு

-அர்த்தம் கூறுக்கு நிக்கு வருடத்திற்கு
The spreading pattern of oil drop is the indicative of Vali, Azhal and Iyyam diseases e.g.

1. Aravu (Snake Pattern of spread) indicates Vali disease
2. Mothiram (Ring Pattern of spread) indicates Azhal disease
3. Muthu (Pearl Pattern of spread) indicates Iyya disease

In Neikkuri, the rapid spread of oil drop; Pearl beaded and Sieve type of spreading pattern indicates incurable state of the disease. From this, we can assess the prognosis by the Neikkuri.

**SPREADING PATTERN OF OIL** | **INTERVENTION**
--- | ---
Lengthening | Vali
Splits | Azhal
Sieve | Iyyam
Stands as a drop | Poor prognosis
Slowly spreads | Good prognosis
Drop immerses into the urine | Incurable disease
In Vali disease, some regions of the body felt chill and in some areas they are hot. In Azhal disease, we can feel heat. In Iyya disease, chillness can be felt. In Thontham diseases, we can feel altered sensations.

8. NAADI

The ‘Pulse Diagnosis’ is a unique method in Siddha Medicine. The pulse should be examined in the Right hand for male and the left hand for female. The pulse can be recorded at the radial artery. By keenly observing the pulsation, the diagnosis of disease as well as its prognosis can be assessed clearly.

Naadi is nothing but the manifestation of the vital energy that sustains the life within our body. Naadi plays an most important role in Envagai thervu and it has been considered as foremost thing in assessing the prognosis and diagnosis of various diseases. Any variation that occurs in the three humors is reflected in the Naadi. These three humors organize, regularize and integrate basic functions of the human body. So, Naadi serves as a good indicator of all ailments.
Naadi is felt by,

- Vali - Tip of index finger
- Azhal - Tip of middle finger
- Iyyam - Tip of ring finger

The pulse is measured in wheat/grain expansile heights. The normal unit of pulse diagnosis is 1 for Vali (Vatham), ½ for Azhal (Pitham) and ¼ for Iyyam (Kapham).
THE PULSE PLAY

Compared to the gait of various animals, reptiles and birds,

"பார்க்காதேன் கொண்டு மரியாண்ட தேங்கும் மாறு

நிலை வாசுப்பாட்டு பிறந்துசெய்த தேங்கும் பின்னு

சிறுகிளை தேர்வு பறவை மருந்து விளக்குமுறை"  

Naadi is examined in right side for men and on the left side for women.

MANIKADAI NOOL (Wrist circumetric sign)

Agathiya soodamanikayaru ..

"கொண்டாடும் செங்குத்தாய் கட்டு கட்டியின்

மிள்கு உருவாகின் வரலாறு

சிறிய பிள்ளை இருந்து கிளையின

அலகருளின் கொண்டாடும் விளக்கு"

According to the Pathinen Siddhar Naadinool, Manikadainool is also helpful in diagnosis. This manikkadai nool is a parameter to diagnose the disease by measuring the circumference of the wrist by means of a thread and then dividing the measured circumference with the patient’s fingers. By this measurement the disease can be diagnosed.
When the Manikkadai nool is 11 fbs, the person will be stout and he will live a healthy life for many years. When the Manikkadai nool measures between 4 to 6, it indicates poor prognosis of disease and the severity of the illness will be high and it leads to death.

<table>
<thead>
<tr>
<th>MANIKKADAI</th>
<th>INFEERENCE NOOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 fbs</td>
<td>Pricking pain in chest and limbs, gastritis and ulcer result.</td>
</tr>
<tr>
<td>9 ¾ fb</td>
<td>Fissure, dryness and cough will be resulted.</td>
</tr>
<tr>
<td>9 ½ fbs</td>
<td>Odema, increased body heat, burning sensation of eye, fever, Mega noi and anorexia.</td>
</tr>
<tr>
<td>9 ¼ fbs</td>
<td>Dysuria, insomnia, sinusitis and burning sensation of eye.</td>
</tr>
<tr>
<td>9 fbs</td>
<td>Impaired hearing, pain around waist, thigh pain, unable to walk.</td>
</tr>
<tr>
<td>8 ¾ fbs</td>
<td>Increased body heat, skin disease due to toxins, abdominal discomfort, cataract, sinusitis.</td>
</tr>
<tr>
<td>8 ½ fbs</td>
<td>Leucorrhoea, venereal disorder and Infertility will occur.</td>
</tr>
<tr>
<td>8 ¼ fbs</td>
<td>Stout and painful body. Headache. Sinusitis and toxins induced cough.</td>
</tr>
<tr>
<td>8 fbs</td>
<td>Abdominal discomfort, gastritis, anorexia and venereal diseases.</td>
</tr>
<tr>
<td>7 ¾ fbs</td>
<td>Piles, burning sensation of limbs, headache, numbness occur. Within 2 years cervical adenitis and epistaxis results.</td>
</tr>
<tr>
<td>7 ½ fbs</td>
<td>Osteoporosis, abdominal discomfort, burning sensation of eyes, increased body temperature. Within 6 days all the joints of the limbs presents a swelling.</td>
</tr>
<tr>
<td>7 ¼ fbs</td>
<td>Lumbar pain, increased pitha in head, anemia, eye pain, edema and somnolence</td>
</tr>
<tr>
<td>7 fbs</td>
<td>Pitham ascends to head, haematemesis, phlegm, burning sensation of limbs and constipation.</td>
</tr>
<tr>
<td>6 ¾ fbs</td>
<td>Eye ache, dizziness, testis disorder. Within 3 years it causes anuria, pain and burning sensation over limbs, facial sweating results.</td>
</tr>
<tr>
<td>Value (fbs)</td>
<td>Symptoms</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>6 ½</td>
<td>Thirst, anorexia, increased body heat and Vatham results.</td>
</tr>
<tr>
<td>6 ¼</td>
<td>Diarrhoea, belching, vomiting and mucous dysentery</td>
</tr>
<tr>
<td>6</td>
<td>Reduced weight, phlegm in chest. It results in death within 20 days.</td>
</tr>
<tr>
<td>5 ¾</td>
<td>Delirium, dizziness, loss of consciousness. It results in death even if the patient takes gruel diet.</td>
</tr>
<tr>
<td>5 ½</td>
<td>Severity of illness is increased. Toxins spread to the head. Toth darkens. Patient will die in 10 days.</td>
</tr>
<tr>
<td>5 ¼</td>
<td>Patient seems to be sleepy and death results on the next day.</td>
</tr>
<tr>
<td>5</td>
<td>Pallor and dryness of the body. Kabam engorges the throat and the person will die.</td>
</tr>
<tr>
<td>4 ¾</td>
<td>Dryness of tongue and tremor present. Patient will die in 7 days.</td>
</tr>
<tr>
<td>4 ½</td>
<td>Shrunken eyes, odema will present and death results in 9 days.</td>
</tr>
<tr>
<td>4 ¼</td>
<td>Tremor, weakness of limbs and darkening of face occurs. Finally death results in two days.</td>
</tr>
<tr>
<td>4</td>
<td>Pedal edema will be present. Patient will die in 5 days.</td>
</tr>
</tbody>
</table>

3. A.9. THE ASTROLOGY

**Macrocosm and Microcosm**

Man is said to be Microcosm, and the Universe is Macrocosm; since what exist in the Universe exists in the human body too. Man is being an integral part of universal nature. The forces prevailing in the microcosm (Human body) are analogous with that of the forces prevailing in the macrocosm (Universe). The natural forces acting in and through various organs of the body are intimately related to or similar to or correspond to the forces acting in and through the organisms of the world.

This closely follows the Siddhar’s doctrine,

"அன்னையினுள்ளையும் பின்னம்
அன்னையினுள்ளையும் அன்னை
அன்னையினுள்ளையும் அன்றை
அன்றையும் பின்னம் அன்றை
அன்றையும் பின்னம் அன்றை"  

- சுந்தரேஸ்வரேஸ்வரி
**Astral influences:**

All the influences which are radiated from the sun, planets and that of the stars can act upon the human bodies. Moon exercises a very bad impact on the disease in general especially during the period of new moon. For instance, paralysis, brain affections, dropsy, and stimulation of sexual perversions are resulted during the newmoon. Mars causes anemia and lack of nervous vigour. A conjugation of the moon with other planets such as Venus, mars, etc may make its influence still more injurious.

The 8th place forms the laghanam which deals about ones age, chronic diseases, death etc. In the organisms of man, these forces may act in an abnormal manner and cause disease. Similarly, in the great organism of the cosmos, they act abnormally likewise and bring about disease on earth and its atmospheric condition like earthquake, storms etc. The Mars invisibly influences human’s blood constituents. The Venus instigates intersexual love.

The following are the instances in which every sign of the zodiac acts towards some particular parts of the body.

1. **According to T.V.S. Dictionary:**

- Aries - Neck
- Taurus - Neck and shoulder
- Gemini - Arms and hands
- Cancer - Chest and adjacent parts.
- Leo - The heart and stomach
- Virgo - The intestines, base of stomach and umbilicus
- Libra - Kidney
- Scorpio - Genitals
- Sagittarius - Lips
- Capricorns - Knees
- Aquarius - Legs
- Pisces - Feet
2. According to literature Thiruvalluvar periya sunthara sekaram.

1) Mesham - Head
2) Rishabam - Face
3) Mithunam - Neck
4) Kadagam - Shoulders
5) Simmam - Chest
6) Kanni - Side of body
7) Thulaam - Back, stomach
8) Virutchigam - Testicles
9) Thanusu - Thigh
10) Magaram - Knees
11) Kumbam - Heel
12) Meenam - Foot

4.A.10. The Impact of the Planets on the Human Organs

According to the literature Siddha Maruthuvanga Surukkam

Each of these planets hold jurisdiction over some parts of the body similar to the signs of the Zodiac. The planets exercise special power over some parts of the body resulting in a disease or diseases in accordance with their impacts on the three basic humors in the system.

1. Sani (Saturn)

   It exhibits supremacy over the bones, tooth, cartilages, ear, spleen, bladder and brain and gives rise to fever, leprosy, paralysis, dropsy, cancer, cough, asthma, deafness of the right ear, hernia etc.

2. Guru (Jupiter)

   It holds jurisdiction over the blood, liver, pulmonary veins, diaphragm, Muscles of the trunk and sense of touch & smell.
3. **Sevvaai (Mars)**

   It has got power over the bile, gall bladder, left ear, pudendum, kidneys, fever, jaundice, convulsions, hemorrhage, carbuncle, erysipelas, ulcer etc.

4. **Sukkiran (Venus)**

   It exercises its impact on the blood and semen, throat, breast, abdomen, uterus, genitalia, taste, smell, pleasurable sensation, gonorrhea, barrenness, Abscesses or even death from sexual passions or from poison.

5. **Pudhan (Mercury)**

   It holds jurisdiction over the animal, spirit, also over legs, feet, hands, fingers, tongue, nerves and ligaments and produces fevers mania, phrenitis, epilepsy, convulsion, profuse expectoration or even death by poison, witchcraft and so on.

<table>
<thead>
<tr>
<th>Planets</th>
<th>Organs of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Solar force</td>
<td>Heart</td>
</tr>
<tr>
<td>2. Lunar force</td>
<td>Brain</td>
</tr>
<tr>
<td>3. Mars</td>
<td>Gall Bladder</td>
</tr>
<tr>
<td>4. Mercury</td>
<td>Kidney</td>
</tr>
<tr>
<td>5. Venus</td>
<td>Lungs</td>
</tr>
<tr>
<td>6. Jupiter</td>
<td>Liver</td>
</tr>
<tr>
<td>7. Saturn</td>
<td>Spleen</td>
</tr>
</tbody>
</table>

5. **According to literature Thiruvalluvar Periya Sunthara Sekaram.**

   1. Sooriyan - Head
   2. Santhiran - Face
   3. Sevvai - Chest
   4. Puthan - Center of Posterior Trunk
   5. Guru - Stomach
   6. Sukkiran - Groin, Genitalia
   7. Sani - Thigh
   8. Raagu - Hands
   9. Kedhu - Legs
Each of these rasis and the organs of impact as well as the Girahams are found to be related with the resultant diseases of corresponding organs. Therefore, the human body is impregnated with the vital forces that could be acted upon by the astronomical bodies in the sky. With the augmented spiritual force, a sage is able to get control over the above said planets. All the others are under the influence of the forces exhibited by these asteroids.
4. READING BETWEEN THE LINES OF SEYA KAMAALAI

4.1. ACCORDING TO YUGIMUNI VAITHIYA KAAVIYAM

The song for Seya kamaalai is as follows,

"..."

According to the text Yugimuni vaithiya kaaviyam, the sign and symptoms of Seya kamaalai are given as Puffiness of face, Pallor of eyes, Difficulty in breathing, Palpitation, Thirst, Menorrhagia, Poor appetite, Pallor of the body and Fatigue.
<table>
<thead>
<tr>
<th>S.No</th>
<th>LINES OF POEM</th>
<th>BREAK UP SYMPTOMATOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>பூட்டு வெள்ளாடி</td>
<td>PUFFINESS OF FACE</td>
</tr>
<tr>
<td>2</td>
<td>சாதுகள் மாசி</td>
<td>PALLOR OF EYES</td>
</tr>
<tr>
<td>3</td>
<td>சூறை விளை பட்டுடையம்</td>
<td>DIFFICULTY IN BREATHING</td>
</tr>
<tr>
<td>4</td>
<td>அகட்டார் தோக்</td>
<td>PALPITATION</td>
</tr>
<tr>
<td>5</td>
<td>முசுபுல்லா காலம்</td>
<td>DRYNESS OF TONGUE</td>
</tr>
<tr>
<td>6</td>
<td>காண்பா காம்ம்</td>
<td>MENORRHAGIA</td>
</tr>
<tr>
<td>7</td>
<td>அல்லை கொண்டாடி</td>
<td>POOR APPETITE</td>
</tr>
<tr>
<td>8</td>
<td>சிலையில்பாடு பல்பிக்கும்</td>
<td>PALLOR OF THE BODY</td>
</tr>
<tr>
<td>9</td>
<td>சிலையில்பாடு ஆல்லைக்கும் முன்</td>
<td>DIZZINESS, FAINTING</td>
</tr>
</tbody>
</table>
### 4.2 According to T.V.S Dictionary,

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Words from Poem</th>
<th>Tamil Meaning</th>
<th>English Meaning</th>
<th>Lexicon</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>மோசனுக்கிரமை</td>
<td>மோசனு வாழ்ப்பாகம்</td>
<td>Face becoming Swollen</td>
<td>TVS, page no:817, vol-v</td>
</tr>
<tr>
<td>2</td>
<td>கோள்</td>
<td>கோள்</td>
<td>The eye</td>
<td>TVS, page no:1014, vol-II</td>
</tr>
<tr>
<td>3</td>
<td>பலாரின்</td>
<td>பலாரின்</td>
<td>Pallor</td>
<td>TVS, page no:1014, vol-II</td>
</tr>
<tr>
<td>4</td>
<td>இயற்கை நோய்களுக்கான பலாரின் குழுமத்து</td>
<td>இயற்கை நோய்களுக்கான பலாரின் குழுமத்து</td>
<td>Difficulty respiration, dyspnoea, breathing hard</td>
<td>TVS, page no:872, vol-V</td>
</tr>
<tr>
<td>5</td>
<td>திருச்சி</td>
<td>திருச்சி</td>
<td>Suddenly jumping</td>
<td>TVS, page no:1171, vol-IV, Part:II</td>
</tr>
<tr>
<td>6</td>
<td>குமரைக்குறுப்பு</td>
<td>குமரைக்குறுப்பு</td>
<td>Patched ness of the tongue, thirst for water</td>
<td>TVS, page no:1720, vol-IV</td>
</tr>
<tr>
<td>7</td>
<td>குளிர் குழுச்சிக்குறுப்பு</td>
<td>குளிர் குழுச்சிக்குறுப்பு</td>
<td>Menorrhagia</td>
<td>TVS, page no:1014, vol-II</td>
</tr>
<tr>
<td>8</td>
<td>காயம்</td>
<td>காயம்</td>
<td>Food</td>
<td>TVS, page no:106, vol-I</td>
</tr>
<tr>
<td>9</td>
<td>குமரை</td>
<td>குமரை</td>
<td>Body</td>
<td>TVS, page no:811, vol-V</td>
</tr>
<tr>
<td>10</td>
<td>குமரைப்பான காயம்</td>
<td>குமரைப்பான காயம்</td>
<td>To become pallor</td>
<td>TVS, page no:1014, vol-II</td>
</tr>
<tr>
<td>11</td>
<td>கோடையம்</td>
<td>கோடையம்</td>
<td>Head, Hair</td>
<td>TVS, page no:2063, vol-III</td>
</tr>
<tr>
<td>12</td>
<td>காயம் அன்னாயாள்</td>
<td>காயம் அன்னாயாள்</td>
<td>Weighing</td>
<td>TVS, page no:1268, vol-IV</td>
</tr>
</tbody>
</table>
### 4. **ANALOGY OF YUGIMUNI’S LINES & QUOTINGS FROM MODERN TEXT**

#### YUGIMUNI VAITHIYA KAAVITAM

**PHRASES**

(ABOUT SEYA KAMAALAI)

"...வயலந்த விள்ளை...

#### QUOTINGS FROM MODERN TEXT

(ABOUT IRON DEFICIENCY ANAEMIA)

- “When the iron deficiency anaemia develops, then symptoms of anaemia occur:
  pallor, **puffiness of the face**, swelling of the feet and ankles”.
  
  *Ref: Page 1529, Manson's Tropical Diseases - 2009
    Published by Gordon C. Cook, Alimuddin Zumla*

- “**Iron deficiency anemia** with symptoms including a "**puffy face**", "swollen feet and ankles," along with breathlessness, vertigo, apathy, and heart palpitations”.
  
    Published by Kenneth F. Kiple*

- “Blood is also rich in protein, so that chronic blood loss can result in profound protein malnutrition, which is associated with **edema of the face** and limbs”.
  
  *Ref: Page 22-Forgotten People, Forgotten Diseases: The Neglected Tropical- Peter J. Hotez - 2008*
“The result is fatigue, weakness, headache, apathy, pallor, and poor resistance to cold temperatures. In a dark-skinned person, the tongue and eye lining, normally pink, will be very pale. Because haemoglobin is the bright red pigment of the blood, the skin of a fair person who is anemic may become noticeably pale”.

Ref: Nutrition and Diet, published by Linda Kelly DeBruyne, Kathryn Pinna, Eleanor Noss Whitney - 2011

“Ocular Manifestations of Anemia: The eye is a unique avenue to visualize the effects of anemia. The cardinal symptom of conjunctival pallor, usually expressed when the red blood cell count is 50% of normal, is a variable clinical findings”.

Ref: - Page 192, Clinical Medicine in Optometric Practice Published by Bruce G. Muchnick - 2007
QUOTINGS FROM MODERN TEXT
(ABOUT IRON DEFICIENCY ANAEMIA)
“Iron deficiency anaemia is characteristically a hypochromic, microcytic anaemia. Signs and symptoms besides the usual anaemia manifestations of white facial complexion, shortness of breath, fatigue, heart palpitation, and dizziness, glossitis(inflammation of the tongue), cheilosis (red lips with fissures at the angles), and koilonychias”.
Ref: - Page 95, A handbook of Chinese hematology
Published By Simon Becker - 2000
“Haematological Iron deficiency anaemia: In severe anaemias there may be general features such as dyspnoea on exertion, angina, or ankle swelling and pale conjunctivae, nail beds and palmar creases”.
Nicholas J. Talley, Isidore Segal, Martin D. Weltman
“The clinical characteristics of iron deficiency anemia are nonspecific and include pallor, rapid exhaustion, muscular weakness, anorexia, lassitude, difficulty in concentrating, headache, palpitations, dyspnoea on exertion, angina on effort, peculiar craving for unnatural foods(pica), ankle oedema, and abnormalities involving all proliferating tissues, especially mucous membrane and the nails. The onset is insidious and may progress slowly over many months or years”.
Ref:- Page 372, Essentials of Medical Biochemistry: With Clinical Cases
N. V. Bhagavan, Chung-Eun Ha - 2011
“Symptoms of anemia include pallor, easy fatigue, breathlessness with exertion, heart palpitations, and loss of appetite”.
Ref: - Page 179, Exercise Physiology: Integrating Theory and Application
William Kraemer, Steven Fleck, Michael Deschences - 2011
PATHOPHYSIOLOGIC CHANGES IN THE IRON DEFICIENCY ANAEMIA
“Dyspnoea on exertion, fatigue, listlessness, pallor, inability to concentrate, irritability, head ache”.
Ref: Straight A's in Pathophysiology
Rita Breedlove, Lippincott Williams & Wilkins - 2005
<table>
<thead>
<tr>
<th>QUOTINGS FROM MODERN TEXT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(ABOUT IRON DEFICIENCY ANAEMIA)</strong></td>
</tr>
</tbody>
</table>

“Iron deficiency anaemia causes dyspnoea, oedema of feet and palpitation”.

Ref: page 162, 2006 - Textbook of obstetrics Published By Padubidri & Anand, V. Padubidri, Ela Anand

“Tachycardia and **palpitations** may occur as the body tries to compensate for the low arterial oxygen content with an increase in cardiac output”.

Ruth A. Hannon, Charlotte Pooler, Carol Mattson Porth

“Signs and symptoms of iron deficiency anaemia are related to impaired oxygen transport: fatigue, dyspnoea, **palpitation**, tachycardia and angina”.

Ref: - Page 344, Quick Look Nursing: Oxygenation: Oxygenation
Lisa Kennedy Sheldon - 2007

“Most of the symptoms of **iron deficiency** are a result of the associated **anemia** and may include fatigue, rapid heart rate, **palpitations**, and rapid breathing on exertion”.

Ref: An Evidence-Based Approach to Vitamins and Minerals: Health
Jane Higdon, Victoria Drake

“**Iron deficiency anemia** is more frequently found in premature or low-birth-weight infants, adolescent girls, alcoholic clients, and the elderly. The symptoms are fatigue, **palpitations**, tachycardia, exertional dyspnea, weakness, and pallor”.

Ref: Medical Surgical Nursing: An Integrated Approach - Page 483
Lois White, Gena Duncan, Wendy Baumle – 2012
“Iron deficiency anemia can be associated with irritability, palpitations, dizziness, breathlessness, headache, and fatigue. Fatigue is a particularly common complaint among patients”.

Ref: Wintrobe's Clinical Hematology - Volume 2 - Page 823
John P. Greer, John Foerster, George M. Rodgers – 2008

“The most common symptoms associated with iron deficiency anaemia include: tiredness, lethargy, dyspnoea. Palpitations. Changes in physical appearance can also occur including dry, flaking nails, spoon-shaped nails, pale complexion, abnormally smooth tongue, Painful ulcers on the corners of the mouth”.

Ref: Oxford Handbook of Perioperative Practice - Page 72
Suzanne Hughes, Andy Mardell - 2009
“Iron deficiency anemia” manifests with the general signs and symptoms of other anemias, but with additional symptoms such as cold intolerance, irritability, concave or ridged nails, glossitis, menstrual irregularities, delayed wound healing, palpitations, and syncope (fainting).”

Ref: Introduction to Pathology for the Physical Therapist Assistant - Page 167 By Moin

“Menstrual disturbances are commonly associated with iron deficiency anaemia”.

Ref: De Gruchy's Clinical Haematology in Medical Practice, 5th Ed- Page 46
Frank Firkin, Colin Chesterman, Bryan Rush - 2008

“Disturbances in menstruation are common in iron deficiency, and not infrequently, or is exacerbated by, excessive menstrual blood loss”.

REF: Wintrobe's Clinical Hematology - Volume 2 - Page 823
John P. Greer, John Foerster, George M. Rodgers - 2008
<table>
<thead>
<tr>
<th>QUOTINGS FROM MODERN TEXT (ABOUT IRON DEFICIENCY ANAEMIA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The dryness of mouth or xerostomia is often seen in association with vitamin A deficiency, ariboflavinosis, pellagra, pernicious anemia, iron deficiency anemia, sprue and dehydration”.</td>
</tr>
<tr>
<td>Ref: Textbook of Orthodontics - Page 134</td>
</tr>
<tr>
<td>Singh - 2004</td>
</tr>
<tr>
<td>“In iron-deficiency anemia, which is the result of an insufficient intake of iron, the tongue also changes appearance. Both the tongue and mouth become sore and in many cases, the papillae of the tongue become atrophied with some red color and with a dry appear”.</td>
</tr>
<tr>
<td>Ref: Diagnostic methods in oriental medicine, page no: 169</td>
</tr>
<tr>
<td>By Yoshiaki Omura</td>
</tr>
<tr>
<td>“Dry tongue in a patient with iron deficiency anemia”.</td>
</tr>
<tr>
<td>Ref: Oral medicine: a clinical approach with basic science correlation irwin walter scopp</td>
</tr>
<tr>
<td>“Typical symptoms include pallor, exhaustion, pale inner eyelids, pale fingernails, a pale, dry tongue, pale, dry skin, and a hollow, easily compressed pulse”.</td>
</tr>
<tr>
<td>Ref: The Earthwise Herbal: A Complete Guide to New World Medicinal Plants, By Matthew Wood</td>
</tr>
<tr>
<td>“Thirst is a symptom of iron-deficiency anemia”.</td>
</tr>
<tr>
<td>Ref: Nutrition and fitness</td>
</tr>
</tbody>
</table>
“The clinical characteristics of iron deficiency anemia are nonspecific and include pallor, rapid exhaustion, muscular weakness, anorexia, lassitude, difficulty in concentrating....”

Ref: Essentials of Medical Biochemistry: With Clinical Cases - Page 372
N. V. Bhagavan, Chung-Eun Ha - 2011

“Symptoms of anemia include pallor, easy fatigue, breathlessness with exertion, heart palpitations, and loss of appetite”.

Ref: Exercise Physiology: Integrating Theory and Application - Page 179
William Kraemer, Steven Fleck, Michael Deschenes - 2011

Iron deficiency during childhood results in decreased appetite and growth retardation. As iron levels decrease, there is less ghrelin, a gastric hormone that increases appetite. A decrease in ghrelin levels in iron deficiency anemia can lead to loss of appetite and an increase in pica or the consumption of non-nutritive items.

Ref: Introduction to public health for chiropractors - page 110
Michael t. Haneline, William c. Meeker - 2010 -
Some women may notice fatigue, light headedness, decreased tolerance for exercise, and pallor, particularly in the nail beds, underside of eyelids, lips, and palms”.

Ref: The New Harvard Guide to Women's Health - Page 36
Karen J. Carlson, Stephanie A. Eisenstat, Terra Diane Ziporyn - 2004

“Iron deficiency anemia, a microcytic hypochromic anemia caused by inadequate supplies of iron needed to synthesize hemoglobin, characterized by pallor, fatigue, and weakness”.

Ref: Mosby's Pocket Dictionary of Medicine, Nursing & Health Professions
Mosby - 2009

“Anemia: Fatigue, pallor and shortness of breath on exertion are common complaints. Symptoms of iron deficiency anemia may include pallor, decreased appetite, abdominal pain, generalized fatigue, sleep disturbances, frontal head ache and shortness of breath with exercise”.

Ref: Chronic Complex Diseases of Childhood: A Practical Guide
- Page 160

“In general, the symptoms of iron deficiency anemia are those of anemia of any cause: fatigue, dyspnea on exertion, and dizziness”.

Ref: Pdq Hematology - Page 52
William F. Kern - 2002
“Patients with this condition may experience the classical symptoms of anaemia-fatigue, shortness of breath and palpitations on exertion”.

REF: Biomedical Sciences: Essential Laboratory Medicine
- Page 356
Raymond Iles, Suzanne Docherty - 2011

“Clinically, iron-deficiency anemia may present with symptoms such as dizziness, headache, heart palpitations, and fatigue”.
Ref: Gynecology: integrating conventional, complementary, and natural - Page 120
Adam Ostrzenski – 2001

“Tachycardia and palpitations may occur as the body tries to compensate for the low arterial oxygen content with an increase in cardiac output. In anemia, the overall oxygen-carrying capacity of haemoglobin is reduced, causing tissue hypoxia. Tissue hypoxia can give rise to fatigue, weakness, dyspnoea and sometimes angina. Hypoxia of brain tissue results in headache, faintness and dim vision”.

Ref: Porth Pathophysiology: Concepts of Altered Health States -
Page 274
Ruth A. Hannon, Charlotte Pooler, Carol Mattson Porth - 2009
In the above mentioned phrase, sage yugi refers about the pallor of conjunctiva of eyes. This is a very common symptom in all types of anemia. The patho-physiology behind this symptom is deficient oxygen supply to the tissues of mucous membrane.

In this first line of the poem, sage yugi states that seya kamalai was characterised by facial edema. Facial edema is a common feature in Iron deficiency anemia, which is due to the fact that oxygen cannot be transported from lungs to the extremities of the body resulting in swelling of the extremities.
In the above mentioned phrase, yugi describes about dyspnoea on exertion. Usually in anemia lungs has to function above its capacity to compensate the oxygen deficiency in tissues, which is characterised by dyspnoea. It is therefore presumed that yugi’s description refers to dyspnoea in iron deficiency anemia.

As the RBC’s has very less oxygen carrying capacity in anaemic individuals, hearts has to pump more blood in order to maintain proper oxygen levels in tissues, which is characterised by palpitations of heart. This leads to a plausible conclusion that yugi’s description in above phrase is about the palpitations felt in iron deficiency anemia.
Heavy menstrual bleeding is considered as the important cause for iron deficiency anemia. Because in menorrhagia there will be loss of blood, which in turn results in heavy loss of iron from our body. This medical fact has been clearly illustrated by Yugi in the above mentioned line.

Long standing chronic iron deficiency anemia causes epithelial tissue changes in some patients leading to dryness of tongue. This is exemplified by Yugi in the text referred above.
Iron is responsible for the production of ghrelin-a gastric hormone, which plays an important role in the increasing appetite. So iron deficiency anemia is characterised by anorexia, which is explained by Yugi in his text above.

In the above mentioned phrase, yugimuni states that seya kaamalai will be characterised by pallor of skin. In iron deficiency anemia skin loses its colour due to low iron content in RBC and decreased oxygen supply, which is seen as pallor of skin. Hence it is clear that pallor of skin quoted in yugimuni’s text refers to the pallor of skin seen in Iron deficiency anemia.
Iron deficiency anemia is characterised by frequent giddiness due to lack of oxygen supply to central nervous system. As Yugimuni describes the same symptom in the above lines it is clear that giddiness is one of the symptoms of Seya kamaalai.

All together it is very clearly known from the above explanations that Seya kamaalai mentioned in Yugi’s text refers to iron-deficiency anemia described in modern system of medicine.
Siddha literatures deal with classification of diseases mainly by Mukkutra theory that is Vaatham, Pitham and Kabam.

"எழுதியவர் காய்ச்சல் மாற்றியடைந்த சமய முக்குறையில் வேறானவை பிள்ளையார் திகழ்ந்த வகைகளில் ஆய்வாக்கம் காண்போக்கிலே காவலும் பிள்ளையார் குறுக்கு பிள்ளையார் பிள்ளையார்.

- சிக்கல்

"உற்பத்திய பிள்ளையார் பிள்ளையார் பிள்ளையார்
நான்கு காய்ச்சல் வேறுபடும் காய்ச்சல்-2-முறைகளில்
விளையாட்டு குழுவில் என்று தெரிச்செய்ய வந்திட்டு
சம்யானம் வழங்குவது வகை.

- குலசந்திரினன்

Kamaalai noi is caused by derangement of Pitham. Hence the basic details regarding Pitham are briefly explained before going into the study about “Seya kamaalai”.

**Mukkutra Theory of Pitham:**

Pitham (Azhal) is one of the three vital humour (Vatham, Pitham, and Kabam). Among the Panchaboodhas, it is formed by the Theyu bootham. In healthy individuals, the existences of the three humours are found in the ratio of 1: ½: ¼ respectively. This is explained as

"ஊர்வேனலை சாஸ்திரலங்கைதல் தொடர் பிள்ளையார் செய்ய
சம்யானம் கால்சரித் அறிய

- குலசந்திரினன்

This ratio is altered when there is disturbance to Pitha thathu, which leads to alteration of Pitham leading to Pitha diseases.
Location of Pitham in the Body:

"காக்கான பின்னிக பின்னநிறமலர் பின்னிக
காக்கான பின்னநிறமலர் காக்கான பின்னநிறமலர்
காக்கான பின்னநிறமலர் காக்கான பின்னநிறமலர்
காக்கான பின்னநிறமலர் காக்கான பின்னநிறமலர்"

- காக்கான பின்னிக

- Pingalai
- Praanavayu
- Moolakkini
- Neerpai - Urinary bladder
- Irudhayam - Heart
- Thalai - Head
- Kopuzh - Naval
- Undhi - Abdomen
- Iraippai - Stomach
- Viyarvai - Sweat
- Naavil oorukindra neer - Salivary secreation
- Senneer - Blood
- Saaram - Chyle.
- Kan - Eye.
- Thol – Skin

Moreover, As per Thirumoolar’s thought,
"மிருக்கிரும் மிருக்கிரும் மிருக்கிரும்சிவில்கின்று"

As per Yugimuni’s thought
"செய்த்தனது ஸ்ரீத்துப்பையிடும் உருளும் உருளும் உருளும் உருளும் உருளும்"
General Characteristics of Pitham:

- Veppam - Hot
- Koormai - Sharpness
- Neippu - Lubricative
- Nekizhchi - Viscosity
- Pitham conceives the properties of the substance to which it combines.

Qualities of Pitham by food:

Some of characters of food we consume lead to aggravation of Pitha humour. Some of the foods have the quality of neutralizing the aggravated Pitha humour, which is given as follows:

"பித்தமில்து பித்தாச்சாதூலம் பசியோசியா நூற்றும்
கங்குப்பன் பயிர் நெடுநாடிக் - பேச்சு
சிர்ந்து பசியோசியா பித்தாச்சாதூலம்
கங்குப்பன் பித்தமில்து பேச்சு.""

"சிர்ந்து பசியோசியா பித்தாச்சாதூலம்
சிர்ந்து பசியோசியா பித்தமில்து - கங்குப்பன்
சிர்ந்து பசியோசியா பித்தமில்து
சிர்ந்து பித்தமில்து பேச்சு.""

- கங்குப்பாபு

Six qualities of food which aggrevate Pitham:

<table>
<thead>
<tr>
<th>Quality</th>
<th>Tamil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot</td>
<td>கவசீனி</td>
</tr>
<tr>
<td>Acidic</td>
<td>புறிபுப்</td>
</tr>
<tr>
<td>Mobility</td>
<td>கங்குப்பசாயும்</td>
</tr>
<tr>
<td>Liquid</td>
<td>கங்குப்பம்</td>
</tr>
<tr>
<td>Aggressive</td>
<td>கங்குப்பம்</td>
</tr>
<tr>
<td>Pungent</td>
<td>கங்குப்பம்</td>
</tr>
</tbody>
</table>
Six neutralizing qualities of food for aggrevated Pitham:

- Cold - குளிர்கள்
- Sweet - செலும்பு
- Immobility - இயக்கியிக்குதல்
- Solid - கைகள்
- Calmness - நோயாடு
- Bitter - பாழு

Qualities of aggrevated Pitham:

- Yellowish tinge of eyes, skin, urine and stool.
- Excessive thirst and appetite.
- Burning sensation all over the body.
- Decrease in sleep.

Qualities of reduced Pitham:

- Decrease in normal colour of the skin
- Loss of appetite
- Chillness
- Affecting the normal growth of Kabha humour

Natural properties of pitham:

"பிதா புகைக்குளிர் பார் கொள்கை பாதுகாக்காத பொருள்
குழாய் வரிசையிலோ தான் - சிங்க
நோயாடியுள்ள புகைக்குளிர் பொருளுடன் காரணம்
அதிகரி பாக்கார் ஆயிலா்"
Physiological Functions of Pitham:

1. Increasing the body’s temperature.
2. Giving red or yellow tinge to the body.
3. Raising the body temperature during digestion and assimilation.
4. Produces perspiration, giddiness.
5. Raising the volume of blood and its expulsion.
6. Gives yellow stain to skin, eye, motion and urine.
7. Anger, irresponsible, immobile, thoughtfulness, emaciation.
9. All tastes are found to be sour, bitter.

Types of Pitham:

"நிகரான நாசனுக்குள் முருக்குமுன் வியாசத்துக்கு நோய்களால் முழுக்குமுன் புதைக்குப் பாடலமா- பாதுகாப்பு பாதுகாப்பு காதல் பாதகால
வேரை வேரை கூர்கால் பார்க்கால
மேனால் மேனால் தொல்லியல் தொல்லியல்."
1. अनालम [Analam] - Gives appetite and helps digestion.
2. प्रसागम [Prasagam] - Gives complexion to the skin.
4. अलोसागम [Aalosagam] - Brightens the eye.
5. सथागम [Sathagam] - Controls the whole body.

**Relationship of Pitham with taste:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt</td>
<td>Water + Fire</td>
</tr>
<tr>
<td>Sour</td>
<td>Earth + Fire</td>
</tr>
<tr>
<td>Pungent</td>
<td>Air + Fire</td>
</tr>
</tbody>
</table>

Salt, sour and pungent tastes increase Pitham, since they are formed by fire (heat). So they possess Veppa Veeriyam.

Astringent, sweet and bitter tastes neutralize Pitham, since they do not contain Agni (heat). Hence they possess Seedha Veeriyam.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Astringent</td>
<td>Earth + Air</td>
</tr>
<tr>
<td>Sweet</td>
<td>Earth + Water</td>
</tr>
<tr>
<td>Bitter</td>
<td>Space + Air</td>
</tr>
</tbody>
</table>

Astringent, sweet and bitter tastes neutralize Pitham, since they do not contain Agni (heat). Hence they possess Seedha Veeriyam.
Aggravation of Pitham in daily routine:

Pitham is raised at the time of 10 a.m to 2 p.m and 10 p.m to 2 a.m.

"நாளையன் காலூருக்கு அடுத்து பித்தம்
பித்தம் பிற்குறுக்கு குருத்திப் பித்தம்
невன்றுக்கு நேல் குருத்திப் பித்தம்
நேல் வியன்று வியன்று குருத்திப் பித்தம்
நேல் வியன்று வியன்று குருத்திப் பித்தம்
நேல் வியன்று வியன்று குருத்திப் பித்தம்

- நாளையன் காலூருக்கு குருத்திப்

Aggravation of pitham in week days:

If pitha gets aggravated at morning hours of Sunday, Tuesday, Saturday and Krishna patcham Thursday, the vigour and vitality of body is maintained.

Seasonal influence on Pitha humour:

Thannilai Valarchi:
Definition:

Provoked kutram in its own locations is called Thannilai Valarchi. It can be perceived by hatefulness of the things, which are causing Thannilai Valarchi and likeliness of the things which are possessing opposite properties.

Season:

Pitham gets Thannilai Valarchi during Kaarkaalam (Avani to Purattasi ie; Aug16-Oct 15)

Vetrunilai Valarchi:
Definition:

Provoked kutram to other locations is called Vetrunilai Valarchi. It can be perceived by signs and symptoms of the affected kutram and the pathological conditions of the udal thathukkal.

Season:

Pitham gets Vetrunilai Valarchi during Koothirkaalam (Ayppasi to Kaarthigai ie; Oct16-Dec 15)
Thannilai Adaithal:
Definition:
Provoked kutram neutralizing its own property is called Thannilai adaithal.
Season: Provoked pitham neutralizes during Munpani kaalam (Margazhi to Thai ie; Dec 16-Feb15).

PHYSIOLOGICAL ASPECTS OF SENNEER THATHU [BLOOD]

Blood is the connective tissue of the body. It reflects the changes that occur in every cell. The blood is the combination of various elements like Venthavalam, Senthavalam, Prakruthi mayai, Pranavayu and Neer. Senthavalam moves like a worm in blood. It is mentioned in the following verses;

"§ÁŢ ÒýÁ¢÷ò ¦¾¡¨¸§Â¡, «õÁ¢÷ À¡Å¢Â §¾¡Ä¢ý ÀÃô§À¡, §¾¡Ä¢¨¼ô ҸĢðÎô ¦À¡¾¢ó¾ Òñ§½¡, Òñ½¢¨¼ °Úõ ¯¾¢Ãô Ò½§Ä¡, ÜÚ ¦ºöÐ þ¨¼Â¢¨¼ ¿¢üÌõ ±Öõ§À¡, ±ÖõÀ¢¨¼ Ó¨¼¦¸Ø ã¨ Çţا¾¡, ÅØÅØòÐ ¯û Ç¢¨¼ ¦Â¡ØÌõ ÅØõ§À¡, ¦ÁøÄ ¿¢ýÚ °Úõ ÒØÅ¢ý ´Øí§¸¡, ¿£Ã¢¨¼ ¨Åò¾ ÁÄò¾¢ý Ìô¨À§Â¡, ¨ÅòÐì ,ðÊ¿ÃõÀ¢ý ¸Â¢§È¡, ¯¼õÀ¢üÌû À¢Ã¢Â¡ ¦¾¡ÚìÌõ À¢½¢§Â¡, ¦¾Ã¢Â¡Ð ýÉР¡ý ±ýÚ «È¢§Âý ±ý¨É.''

-ÀðÊÉò¾¡÷ [¾¢ÕÅ¢¨¼ÁÕà÷ ÓõÁ½¢ì§¸¡¨Å -13]

Nourishment of Senneer:
Of the seven body constituents, Senneer is placed in second order next to saram. This is stated by Thirumoolar as follows,
During the process of digestion in our body, Saaram or Rasa thathu (Chyle) is nourished on the first day. From saaram, Senneer (blood) is nourished on the second day. From senneer, Oon (muscle) is nourished on the third day. From oon, Kozhuppu (fat) is nourished on the fourth day. On the fifth day, Enbu (bone) is nourished from kozhuppu. From enbu, Moolai (bone marrow) is nourished on the sixth day. From moolai, Sukkilam (sperm) or Suronitham (ovum) is nourished on the seventh day. As saaram and senneer are the primary important thathus of the body, they get deranged themselves followed by affection of other thathus.

In seya kamaalai noi, saaram, senneer, and suronitham thathus are mainly affected.

1. Naadi (Pulse)

There are three vital naadi viz, Vatham, Pitham, Kabham present in our body, as mentioned in the following poem,

"Vatha, Pitha and Kabha naadi are in the ratio of 1:1/2:1/4 proportion in normal condition. This is stated as follows,
By combination of the above said three naadi, six thontha naadi are formed. They are Vathapitham, Vathakabham, Pithavatham, Pithakabham, Kabhavatham and Kabhapitham. This is stated as follows,

Naadi is responsible for the existence of life. It is a suitable diagnostic tool used by Siddhars. It is recognised as one of the principle means of diagnosis and prognosis of the disease from time immemorial.

**NAADI**

1. Pitha Naadi:

"அவற்றுடன் பெரும் குறும் பாத்திரத்தின் வேளை
அனுமது மிளகுமாறு பொருள் குறுக்கண்ட
பாத்திர்கள் காணக்கூறு பிற்குறிப்பை
பாத்திரவட்டம் பாத்திரங்கள் சிறுத்து இருந்து
தூயந்து கிளையும் கையும் முதுந்துபட்டு
சிறுத்து கிளையும் கையும் கையும் தூயந்து
நுண்பட்டும் இன்றுழையும் பிற்குறிப்பை

- அகத்தியம்"
6. Pitha Vaatha Naadi:

"சிற்றான்சு பிள்சன் ஒன்று பக்த
உயிரின் நோயால் நாடிய் பொன்
------------------------------------------"

- கதத தான்

SEYA KAMAALAI

சம விழந்தப்
சாரன் காளி கனவு நோய்க் கனவு காலம்
- பிள்சன்முகம் கனவு சிருமெய்-கண்டநிகம் பாகம்-பக்தம்:151

காண்டவை:
பிள்சன்முகம் பிள்சன் பிண்மாதியுள் பாகப்பிழை

-Pals dictionary Page no: 196

ACCORDING TO BALAVAGADAM

1. வாழ்க்காய்கணம்
2. பெருஞ்ச காந்தவை
3. புகற்க்காய்கணம்

1. வாழ்க்காய்கணம்

வாழ்க்காய்கணம் சொன்னாகைத்த
சாதி பெறுவது காணக்கெத்து
பாத்திரத்து பிண்மைத்துக்
பிள்சன் உண்மை பந்திகளை
சிருமெய் இளம்மை பசுறியும்
சிருமெய் பந்திகள் வெற்றுதம்
சாதி மலர்கள் பிண்மாதியுள்ளன
காண்டவை பிள்சன் பிண்மாதியுள்ளன

77
2. முதலாம் காப்பது

3. மூன்றாம் காப்பது

ACCORDING TO YUGIMUNI VAITHIYA KAVIYAM:

1. முதலாம் காப்பது
2. மாற் காப்பது
3. பிற்கு காப்பது
4. மூன்றாம் காப்பது
5. நாள் காப்பது
6. ஐந்தாம் காப்பது
7. முன்னாம் காப்பது
மேலும் காரணம்:

கல்லாலாம்பதிவற்றுடன் கல்லாலாம்பதிக்க பிள்ளை மற்றும் கல்லாலாம்பதிக்க வாசிக்கப்பட்டு காரணமாய் குறிப்பிட்டு வந்தது காரணமாக காரணமாய் குறிப்பிட்டு வந்தது பல்கலைக்கழகத்திலும் இன்று இந்த விழாமாறு பற்றிய பல்கலைக்கழகத்திலும் இன்று.

இல்லாமல் விளக்கம்:

இல்லாமல் விளக்கம் சிக்கியதாக அசைக்கப்பட்டு காரணமாய் காரணமாய் குறிப்பிட்டு வந்தது பல்கலைக்கழகத்திலும் இன்று இந்த விழாமாறு பற்றிய பல்கலைக்கழகத்திலும் இன்று.

பின்னர் காரணம்:

பின்னர் காரணமான விளக்கங்களில் பல காரணமாய் குறிப்பிட்டு வந்தது பல்கலைக்கழகத்திலும் இன்று இந்த விழாமாறு பற்றிய பல்கலைக்கழகத்திலும் இன்று.

குறிப்பிட்டு காரணம்:

குறிப்பிட்டு காரணமான விளக்கங்களில் பல காரணமாய் குறிப்பிட்டு வந்தது பல்கலைக்கழகத்திலும் இன்று இந்த விழாமாறு பற்றிய பல்கலைக்கழகத்திலும் இன்று.
"குறுகு சிறப்பில் கல்வியமைக்கும் விளக்கம் என்று கூறும் ஆட்சியாளர் துணையாரின் அருட்கு கருத்துக்கூற்று பின்பு அந்த விளக்கம் போன்ற முறையில் தொண்டும் செய்யப்பட்டது நிதியாம் குறிக்கு அடுக்கும் விளக்கம் ஒன்று காமராடிய தொடர்"
6. PATHOLOGY OF SEYA KAMAALAI

The basic constitution of the body is made up of 96 Thathuvams. Due to diet and other activities 96 Thathuvams get deranged and result in diseases, either pertaining to body or mind.

6.1. DERANGED 96 THATHUVAS ARE AS FOLLOWS
1. AYMBOOTHAMS (FIVE ELEMENTS)

1. Vaayu - Dyspnoea on exertion
2. Neer - Decreased blood volume, Menorrhagia
3. Thee - Excessive thirst, Giddiness, Complexion changes

2. IYMPORIGAL (PENTA SENSORS)

1. Mei - Pallor of the body
2. Vai - Dryness of tongue
3. Eyes - Pallor of the eyes

3. KANMENTHIRIYAM/ KANMAVIDAYAM (MOTOR ORGANS)

1. Karuvai: Menorrhagia present

4. ANTHAKARANAM (COMPONENTS OF MIND)

Manam - Delusion present
Puthi - Difficulty in analysing
Sitham - Reduced ability to achieve
Akangaram - Indecisiveness present
5. **NAADI (DIFFERENTIAL PULSE PERCEPTION)**

Suzhumunai - Menorrhagia present (Moolaathaaram region)
Siguvi - Poor appetite
Sangini - Menorrhagia present
Kugu - Menorrhagia present (Abaanan region)

6. **AADHAARAM (STATIONS OF SOUL)**

Moolaathaaram - Menstrual disturbances present
Manipooragam - Water element is attributed to Manipooragam region, poor appetite present.
Anaakatham - Fire element is attributed to Anaakatham region, palpitation is present.
Visuthi - Difficulty in breathing because air element is attributed to this region.

7. **MANDALAM (BODY ZONE)**

Thee mandalam – Drowsiness

8. **EDANAI (AFFINITY)**

Increased affinity for salty, astringent, foods result in derangement of Pitha humour which is the root cause of Seya Kamaalai.

9. **GUNAM (CHARACTER)**

All the three Gunam people are found to be affected in the study.

10. **AVATHAI (STATES OF CONCIOUSNESS)**

Urakkam - Excessive sleepiness
Perurakkam - Drowsiness
11. VINAI (ACT)
Both Vinai got affected in the study.

12. PADHINAANGU VEGANGAL (NATURAL URGES/REFLEXES)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pasi</td>
<td>Poor appetite present</td>
</tr>
<tr>
<td>Vaanthi</td>
<td>Symptoms of increased Pitham</td>
</tr>
<tr>
<td>Thookkam(sleep)</td>
<td>Drowsiness</td>
</tr>
<tr>
<td>Kottavi (yawning)</td>
<td>Tiredness present.</td>
</tr>
<tr>
<td>Suronitham</td>
<td>Menorrhagia present</td>
</tr>
</tbody>
</table>

13. Aasayam:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amarvaasayam</td>
<td>Poor appetite present</td>
</tr>
<tr>
<td>Pakirvaasayam</td>
<td>Reduced absorption present</td>
</tr>
<tr>
<td>Suronithavaasayam</td>
<td>Menorrhagia present</td>
</tr>
</tbody>
</table>

14. DERANGED UYIR THATHUKKAL
(HUMORAL OR TRIDOSHA PATHOLOGY)
Panchaboothams manifests in the body as three vital forces,
Vatham
Pitham
Kabham

12.a. VATHAM OR VAYU:

The word Vayu not only implies wind but also comprehends all the phenomenon which come under the function of the central and sympathetic nervous system. Structurally it is the combination of Vayu and Aagaya boothams.

Normally it carries out of respiration, circulation of blood, locomotion, carrying sensory signals and motor signals to and from the brain, micturition, defaecation,
parturition, sensation of hearing, sight, taste etc. It is located in Idakalai, Abanan, Faeces, Spermatic Cord, Pelvic Bones, Skin, Hair, Nerve & Muscle. It is ten types.

In Seya kamaalai, primarily affected Vayukkal are, Piraanan, Abanan, Viyaanan, Samanan, Uthanan, Kirukaran and Devadhathan.

Pranan(Uyirkaal):
It resides in the heart and legs to nose and control knowledge, mind and five objects of sense, useful for breathing. In seya kamaalai, dyspnoea is present, if pranan is affected.

Abanan(Keezh nokkunkaal):
It is located in the lower abdomen and extremities. It is responsible for excretion of urine, stools, ejaculation of sperm and menstrual flow. In seya kamaalai, amenorrhoea or menorrhagia are present, when abanan is affected.

Viyaanan:
It resides mainly at the heart and responsible for movements of the body and sensation. In seya kamaalai, swelling of the face, pallor of eyes due to affection of viyaanan.

Samaanan(nadukkal)
It is located in the stomach, helps for proper digestion and balances the above four vaayus in equilibrium. In seya kamaalai, anorexia and any of the above four vaayus affection are present, when samaanan is affected.

Uthanan(melnokkukal)
It is located in the chest and responsible for vomiting, cough and sneezing reflexes. In seya kamaalai, excessive thirst due to affection of uthanan.
Kirukaran

It is located in the throat and responsible for salivation, nasal secretion and appetite. In seya kamaalai, anorexia and dryness of mouth are present when kirukaran is affected.

Devathathan

Its location is at eruvai and karuvai. It is responsible for laziness, sleep and anger. In seya kamaalai, fatigue and insomnia are present when devathathan is affected.

12.b. PITHAM

It is the life energy manifestation of thee bootham in the body. It is the metabolic thermal life force of the body. It carries out digestion, absorption, metabolism, and colouration of the blood etc.

Pitham is located in the pirana vayu, bladder, moolaakini, Heart, Umbilical region, abdomen, stomach, sweat, saliva, blood, eyes and skin. As moolaatharam is in the akkini mandalam, any pathological condition here can harm the moolakini and eventually derange the pitha humor. Symptoms are produced when deranged pithams affect the seven thathus and malam.

In seya kamaalai, primarily affected pitham components are

Anar Pitham
Ranjaga pitham
Saathagam

Anar pitham:

This gives appetite and helps for digestion. In seya kamaalai, loss of appetite is present when it is affected.

Ranjaga pitham:

It gives colour to the blood. In seya kamaalai, pallor of conjunctiva and skin are present when it is affected.
Saathaga pitham:
It controls the entire body functions responsible for the activities of the body. In seya kamaalai, inability to do the works properly and sluggishness are present when it is affected.

Prasagam:
It gives complexion to the skin. In seya kamaalai, altered skin lusture is present when it is affected.

12. c. KABAM
Kabam is constituted by Appu and Pirithivi boothams. It is responsible for Coordination and defense mechanism of the body. Kabam is located in Samaanavayu, Semen, Suzhumunai, Blood, Bone marrow, Nose, Chest, Nerve, Bone, Brain, Eyes, and Joints. In seya kamaalai, primarily affected Kabams are,

Avalambagam
Kiletham

Avalambagam:
It controls heart, lungs and supports other forms of kabam. In seya kamaalai, dyspnoea is present when it is affected.

Kilethagam:
It makes the food wet and helps for digestion. In seya kamaalai, indigestion is present when it is affected.

13. DERANGED UDAL THATHUKKAL
Saaram – Fatigue, dyspnoea and tiredness are present
Senneer – Pallor of skin and conjunctiva are present
Oon – Puffiness of the face is present
Suronitham – Menorrhagia or amenorrhoea is present
14. KOSAM (BODY SYSTEMS)
(a) Anamaya kosam – Affected
Anamayakosam is affected because 7 Udal thathukkal forming the Kosam are affected.

(b) Pranamayakosam – Affected
It is affected because Kanmaindhiriyangal forming this kosam are affected.

(c) Manomayakosam - Affected
It is affected because patient will be depressed due to illness.

(d) Vignanamayakosam - Affected
It is affected because Gnanaindhiriyangal forming this kosam are affected.

(e) Aanandhamayakosam –Affected
It is because patient will be unhappy due to illness.

15. MANIKADAI NOOL
avelength
"தான் பாதித்து பாதித்து காத்திருக்கிறது
உண்மையில் உண்மையில் பெருக்கிறது
தான் தான் செய்யும் செய்யும் செய்யும்"

duration
"தான் காத்திருக்கிறது
உண்மையில் பெருக்கிறது
தான் தான் செய்யும்
அதை காத்திருக்கி காத்திருக்கி செய்யும் பெருக்கிறது"
7. DIFFERENTIAL DIAGNOSIS

1. DISCUSSION OF DIFFERENTIAL DIAGNOSIS BETWEEN SEYA KAMAALAI AND MANJAL KAMAALAI

According to the text Yugimuni Vaithiya Kaaviyam, the symptoms of Seya kamaalai are given as puffiness of face, pallor of eyes, dyspnoea on exertion, palpitation, thirst, poor appetite, pallor of the body and giddiness.

As per the text Yugimuni Vaithiya kaaviyam, the clinical features of Manjal kamaalai are yellowish discoloration of the eyes and face, poor appetite, thirst, depression and yellowish micturition.
### SIMILARITIES

<table>
<thead>
<tr>
<th>Poor appetite</th>
<th>Poor appetite</th>
</tr>
</thead>
<tbody>
<tr>
<td>अचानक गरमी</td>
<td>2-यंगवाला कामालाई</td>
</tr>
<tr>
<td>यहाँ वारिया</td>
<td>2-यंगवाला कामालाई</td>
</tr>
</tbody>
</table>

### DISSIMILARITIES

<table>
<thead>
<tr>
<th>EXCLUSIVE SYMPTOMS OF SEYA KAMAALAI</th>
<th>EXCLUSIVE SYMPTOMS OF MANJAL KAMAALAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>कांप्तव गतिविधि</td>
<td>कांप्तव गतिविधि</td>
</tr>
<tr>
<td>Pallor of eyes</td>
<td>Pallor of eyes</td>
</tr>
<tr>
<td>राहुल धातु गतिविधि</td>
<td>राहुल धातु गतिविधि</td>
</tr>
<tr>
<td>Puffiness of face</td>
<td>Puffiness of face</td>
</tr>
<tr>
<td>कांप्तव गतिविधि</td>
<td>कांप्तव गतिविधि</td>
</tr>
<tr>
<td>Menorrhagia</td>
<td>Menorrhagia</td>
</tr>
<tr>
<td>अचानक गरमी</td>
<td>अचानक गरमी</td>
</tr>
<tr>
<td>Palpitation</td>
<td>Palpitation</td>
</tr>
<tr>
<td>यहाँ वारिया</td>
<td>यहाँ वारिया</td>
</tr>
<tr>
<td>Dyspnoea on exertion</td>
<td>Dyspnoea on exertion</td>
</tr>
<tr>
<td>यहाँ वारिया</td>
<td>यहाँ वारिया</td>
</tr>
<tr>
<td>Giddiness</td>
<td>Giddiness</td>
</tr>
<tr>
<td>यहाँ वारिया</td>
<td>यहाँ वारिया</td>
</tr>
<tr>
<td>Pallor of the body</td>
<td>Pallor of the body</td>
</tr>
<tr>
<td>Yellowish discolouration of the eyes, face and all over the body</td>
<td>Yellowish discolouration of the eyes, face and all over the body</td>
</tr>
<tr>
<td>Depression</td>
<td>Depression</td>
</tr>
<tr>
<td>Yellowish micturition</td>
<td>Yellowish micturition</td>
</tr>
</tbody>
</table>
1. DISCUSSION OF DIFFERENTIAL DIAGNOSIS BETWEEN SEYA KAMAALAI AND VATHA PAANDU

According to the text Yugimuni Vaithiya kaaviyam, the symptoms of Seya kamaalai are given as puffiness of face, pallor of eyes, dyspnoea on exertion, palpitation, thirst, poor appetite, pallor of the body and giddiness.

The symptoms of Vatha Paandu are lower abdominal pain, thirst, loss of appetite, dryness of the skin and visible veins due to pallor of the skin, redness of the eyes, constipation, headache, anasarca and pallor of the skin.
### SIMILARITIES

| Dyspnoea |  
|-----------------|-----------------|
| उल्लोल्सम् | यात्रु ब्यापसः |
| Fatigue |  
| क्षय शक्तिः | अति शक्तिः |
| Pallor of the skin |  
| पीले रंगम् | गीलेन मंगलम् |
| Poor appetite |  
| अलसाः सिकावर् | बीणु मिवा |

### DISSIMILARITIES

<table>
<thead>
<tr>
<th>EXCLUSIVE SYMPTOMS OF SEYA KAMAALAI</th>
<th>EXCLUSIVE SYMPTOMS OF VATHA PAANDU</th>
</tr>
</thead>
<tbody>
<tr>
<td>केल्ला नीलाकंठि</td>
<td>केल्ला पुरुषः पदमभूतः कर्तनः</td>
</tr>
<tr>
<td>Pallor of eyes</td>
<td>Lower abdominal pain</td>
</tr>
<tr>
<td>Puffiness Of Face</td>
<td>तड़कः</td>
</tr>
<tr>
<td>Menorrhagia</td>
<td>Tremor</td>
</tr>
<tr>
<td>Palpitation</td>
<td>रेड्डीश आयसः</td>
</tr>
<tr>
<td>Constipation</td>
<td></td>
</tr>
</tbody>
</table>
DISCUSSION OF DIFFERENTIAL DIAGNOSIS BETWEEN SEYA KAMAALAI AND PITHA PAANDU

Yellowish colouration and pallor of the skin, diminished vision, thirst, fainting, pungent taste like pepper, chest pain, dyspnoea, giddiness and bitter taste.
### SIMILARITIES

<table>
<thead>
<tr>
<th>வெற்றி காரணங்கள்</th>
<th>பொது பாலனவை</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyspnoea</td>
<td>பெருந்துக் குறைவு பாலனம்</td>
</tr>
<tr>
<td>Fatigue</td>
<td>குழியாட்டு குறைவு</td>
</tr>
<tr>
<td>Pallor of the body</td>
<td>முந்தனப் பலராகம்</td>
</tr>
<tr>
<td>Thirst</td>
<td>கருநிலாட்</td>
</tr>
</tbody>
</table>

### DISSIMILARITIES

<table>
<thead>
<tr>
<th>EXCLUSIVE SYMPTOMS OF SEYA KAMAALAI</th>
<th>EXCLUSIVE SYMPTOMS OF PITHA PAANDU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallor of eyes</td>
<td>Dull vision</td>
</tr>
<tr>
<td>Puffiness Of Face</td>
<td>பெசியாற்றும் நோய்க்குறைவு</td>
</tr>
<tr>
<td>Menorrhagia</td>
<td>Angina</td>
</tr>
<tr>
<td>Poor Appetite</td>
<td>Altered taste</td>
</tr>
<tr>
<td>Palpitation</td>
<td>Coma</td>
</tr>
<tr>
<td></td>
<td>குளைக் குறைவு மற்றும் கருநிலாட்</td>
</tr>
</tbody>
</table>
DISCUSSION OF DIFFERENTIAL DIAGNOSIS BETWEEN SEYA KAMAALAI AND SETHTHUMA KAMAALAI


discussion

"..."
<table>
<thead>
<tr>
<th>DISSIMILARITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EXCLUSIVE SYMPTOMS OF</strong></td>
</tr>
<tr>
<td><strong>SEYA KAMAALAI</strong></td>
</tr>
<tr>
<td>Puffiness Of Face</td>
</tr>
<tr>
<td>Poor Appetite</td>
</tr>
<tr>
<td>Palpitation</td>
</tr>
<tr>
<td>Dyspnoea on exetion</td>
</tr>
<tr>
<td>Giddiness</td>
</tr>
<tr>
<td>Pallor of the body</td>
</tr>
<tr>
<td><strong>EXCLUSIVE SYMPTOMS OF</strong></td>
</tr>
<tr>
<td><strong>SETHTHUMA KAMAALAI</strong></td>
</tr>
<tr>
<td>cough</td>
</tr>
<tr>
<td>Body becomes oedematous and become weak</td>
</tr>
<tr>
<td>Darkish complexion of face</td>
</tr>
</tbody>
</table>
8. MODERN ASPECTS

BLOOD:

DEFINITION:

Blood is a complex fluid which circulates rapidly in closed system of blood vessels.

The blood is the most precious fluid in the body. It is also considered as fluid of growth, fluid of health. Blood is one of the extracellular body fluids, which circulate in a closed system of blood vessels. The constant nature of the blood is one of the important haemostatic conditions of the body.

Blood contains iron in the form of Haemoglobin and also as cytochromes etc. Any form of iron deficiency cause anaemia.

FORMATION OF BLOOD:

Blood is a specialized fluid connective tissue, which acts as a major transport system within the body. The formation of the cells of blood begins very early in embryonic life (before someites have appeared) and continues throughout life. Blood formation is specially rapid in the embryo to provide for increase in blood volume with the growth of the embryo.

In the third week of embryonic life, formation of blood vessels and blood cells is first seen in the wall of the yolk sac, around the allantoic diverticulum and in the connecting stalk. In these situations, clusters of mesodermal cells aggregate to form blood islands.

These mesodermal cells are then converted to precursor cells (haemangioblasts) which give rise to blood vessels and blood cells. Cells, which are present in the centre of the blood island, form the precursors of all blood cells (haematopoietic stem cells). Cells at the periphery of the island form the precursors of blood vessels (angioblasts).
Blood cells arising in the blood islands of the yolk sac are temporary. They are soon replaced by permanent stem cells, which arise from the mesoderm surrounding the developing aorta. These stem cells first form colonies in the liver. In the late embryonic period the formation of blood starts in the liver, which remains an important site of blood cells formation till the sixth month of intrauterine life.

Almost near the middle of prenatal life, definitive haematopoietic stem cells from the liver migrate to colonize the bone marrow. At the time of the birth, blood formation is mainly in the bone marrow. Here totipotent haemal stem cells give rise to pleuripotent lymphoid stem cells and pleuripotent haemal stem cells. These stem cells form colony forming units. Cells of one particular colony forming unit are committed to differentiate only into one line of blood cells, i.e. erythrocytes, megakaryocytes, granulocytes, monocytes, macrophages and lymphocytes.

In the case of erythrocytes stem cells divide so rapidly that they seem to burst. They are therefore called burst forming units (BFU). Their daughter cells then form colony forming units. In the adult, the main sites of blood formation are bone marrow, lymph nodes, thymus and spleen.

As stated above the precursors of the various types of blood cells are generally regarded as being of mesodermal in origin. However, blood forming cells differentiating in relation to the wall of the yolk sac and probably in the liver, may be endodermal in origin.
PROPERTIES OF BLOOD:

1. Colour - Blood is an opaque fluid and it is red in colour.

2. Volume - The Volume of blood in a normal adult is 5 litres.

3. Reaction and pH - Blood is slightly alkaline and its pH is 7.4.

4. Specific gravity
   - The specific gravity of total blood - 1.052 – 1.061
   - The specific gravity of blood cells - 1.092 – 1.101
   - The specific gravity of plasma - 1.022 - 1.026

5. Viscosity - Blood is five times more viscous than water.
COMPOSITION OF BLOOD:

Blood consist of a solid portion and a fluid portion. The solid portion constitutes the blood cells namely RBC, WBC, and platelets and the fluid portion is plasma. The cells form 45% and the plasma forms 55% of the total volume of the blood.

FUNCTIONS OF BLOOD

Nutrient Function:

Nutritive substances like glucose, amino acids, lipids and vitamins derived from digested food are absorbed from gastro intestinal tract and carried by blood to different parts of the body for growth and production of energy.

Respiratory Function:

Transport of respiratory gases is done by the blood. Blood conveys oxygen from the alveoli of lungs to the tissues for the oxidation of food and production of energy. The carbon-di-oxide formed in the tissues as a result of this process is carried to the lungs, where it is exhaled.
Transport of hormones and enzymes:

The hormones and some of the enzymes are carried by blood to different parts of the body from the source of secretion.

Excretory Function:

Waste products formed during various metabolic reactions in the tissues are removed by the blood and carried to the excretory organs like kidney, skin, liver etc.,

Regulation of body temperature:

Because of high specific heat of blood, it is responsible for maintaining the thermoregulatory mechanism in the body i.e., the balance between heat loss and heat gain in the body.

Regulation of acid – base balance:

The plasma proteins and haemoglobin acts as buffer and helps in the regulation of acid-base balance.

Regulation of water balance:

Blood maintains the water content of the tissues and helps in the regulation of fluid in different compartments of the body.

Regulation of osmotic pressure:

The plasma proteins play the major role in regulating the osmotic pressure of tissue fluids.

Defensive Function:

Blood has WBCs, Gamma globulins which have phagocytic action. They also transport protective substances such has anti-bodies, anti-toxins and lysins.

Storage Function:

Water and some important substances like protein, glucose, sodium and potassium are constantly required by the tissue. Blood serves as a readymade source for these substances and these substances are taken from the blood during conditions like starvation, fluid loss, and electrolyte loss.
THE RED BLOOD CELLS OR ERYTHROCYTES:

The erythrocytes of most of the higher animals including man are circular, non-nucleated, biconcave discs.

Diameter : 7.2 µ (6.9 – 7.4 µ).
Thickness : At the periphery 2.2 µ and at the center 1 µ thickness.
Shape : Dumb bell
Surface Area : 120 square µ
Volume : 85 – 90 Cubic µ

RED BLOOD CELLS

PROPERTIES OF RBC:

Rouleaux formation:

When blood is taken out, the red blood cells pile up one above another like the pile of coins. This property of red blood cell is called rouleaux formation.

Specific Gravity:

The specific gravity of red blood cell is 1.092 to 1.101.
**Packed Cell volume:**

When the blood is collected in a centrifuge tube along with proper anticoagulant and centrifuged for a period of 30 minutes at a speed of 3000 rpm the red blood cells settle at the bottom of the tube leaving the clear plasma at the top. The red blood cells form 45% of the total blood. This is called *the packed cell volume or hematocrit.*

**Suspension Stability:**

During circulation the red blood cells remain suspended uniformly in the blood. This property is called the suspension stability.

**ERYTHROPOIESIS**

Erythropoiesis is the process by which the origin, development and maturation of erythrocytes occur. In the bone marrow, there are cells called uncommitted pluripotent hemopoietic stem cells because these cells are not designed to form a particular type of blood cell. When these cells are designed to form a particular type, the stem cells are called committed pluripotent hemopoietic stem cells.

The different committed stem cells will produce colonies of specific types of blood cells. Then a committed stem cell that produces colony forming unit blast (CFU-B) and then erythrocytes are produced from these CFU – B and are called colony forming unit – erythrocytes (CFU-E).

Growth and reproduction of the different stem cells are controlled by multiple proteins called growth inducers. Another set of proteins are called differentiation inducers whose function is differentiation of the cells.

**SITES OF ERYTHROPOIESIS**

In the early few weeks of embryonic life - yolk sac
During the middle trimester of gestation - Liver, Spleen, lymphoid organ
Later part of gestation and after birth - Red bone marrow and liver
Up to the age of 5 - Red bone marrow of all the bones
After the age of 5 to adult - Red bone marrow of long bones and flat bones
STAGES OF ERYTHROPOIESIS

Stage I – Pro erythroblast (Megaloblast)
This early cell is large (15-20) µ. The cytoplasm is basophilic staining with a deep violet blue and there is a pale-staining crescent near the nucleus and the cell contains no haemoglobin. The nucleus is about 12µ and occupies about three quarters of the cell volume and the chromatin forms a fine stippled reticulum.

Stage II – Early Normoblast (Early erythroblast)
This cell is smaller than pro erythroblast diameter 15µ. It shows active mitosis. The nucleoli have disappeared. Condensation of chromatin network occurs. The cytoplasm is basophilic. So this cell is also called basophilic erythroblast.

Stage III – Intermediate Normoblast (Late erythroblast)
This cell is smaller (10-15) µ and shows active mitosis. Nucleus is still present. Chromatin network shows further condensation. Haemoglobin begins to appear and its eosinophilic staining give the cytoplasm a polychromatic appearance.

Stage IV – Late Normoblast (Normoblast)
Mitosis has now ceased and the diameter of the cell is 8 – 10 µ. The nucleus becomes very smaller and the condensed chromatin assumes a “cart wheel” appearance or ink spot and finally becomes deeply stained in a uniform manner. Quantity of haemoglobin increases. Cytoplasm becomes almost acidophilic. So the cell is called Orthochromic erythroblast. In this cell, the nucleus disintegrates and disappears. The process is called pyknosis.

Stage V – Reticulocyte
It is slightly larger than matured red blood cells. Cytoplasm contains reticular network. It is basophilic in nature. During this stage, the cells enter the blood through the capillary membrane by means of a process called diapedesis.
MATURED ERYTHROCYTE

Reticular network disappears. Matured red blood cell is biconcave; smaller in size; diameter of 7.2 microns. It is with haemoglobin and without nucleus.

It takes 5 days for the development of reticulocyte from proerythroblast. The reticulocyte takes two more days to become matured red blood cells.

CHANGES DURING ERYTHROPOIESIS:

Four important stages occurring are,

- Reduction in size of the cell
- Disappearance of nucleoli and nucleus
- Appearance of Haemoglobin
- Change in the staining properties of the cytoplasm

REGULATION OF ERYTHROPOIESIS:

1. Tissue oxygenation is the basic regulator of red blood cell production. Any condition that causes the quantity of oxygen transported to the tissues to decrease (Hypoxia) ordinarily increases the rate of red blood cell production. Hypoxia occurs in conditions like very high altitudes, anaemia, prolonged cardiac failure, cyanotic heart disease and lung disease.

2. Erythropoietin is a circulatory hormone, formed mainly in kidneys, increase mainly during hypoxia. It stimulates the production of proerythroblast from hemopoietic cells in the bone marrow.

3. Epinephrine, norepinephrine and several of the prostaglandins stimulate erythropoietic production.
LIFE SPAN AND FATE OF RED BLOOD CELLS:

Average life span of red blood cell is about 120 days. The senile red blood cells are destroyed in reticulo endothelial system.

When the cells become older, the cell membrane become more and more fragile. The diameter of the capillaries is less or equal to that of red blood cells. The younger red blood cells can pass through the capillaries easily, however the older cells become fragile. So these cells are destroyed while trying to squeeze through the capillaries. The destruction occurs mostly in the capillaries of spleen because the splenic capillaries have a thin lumen. So the spleen is usually called ‘grave yard’ of red blood cells. Daily 10% of red blood cells, which are senile, get destroyed in normal young healthy adults.

HAEMOGLOBIN

Haemoglobin is a conjugated protein consisting of iron containing pigment protein called \textit{Haem} (4%) and a protein of the histone class called \textit{globin} (96%). Haem is an iron containing porphyrin known as iron protoporphyrin IX (metallo porphyrin). Therefore haemoglobin is an iron + porphyrin + globin compound.

Four haem molecules are attached to the globin molecules to form one molecule of haemoglobin. The molecular weight of haemoglobin is 68,000. This high molecular weight and consequently great size of the molecules are the cause of the colloidal nature when they are dispersed in water. It is a chromoprotein, forming 95% of dry weight of red blood cell and 30 to 34 % of wet weight.

NORMAL VALUES:

- Adult male: 14-18 grams
- Adult female: 11-15 grams

VARIETIES OF HAEMOGLOBIN:

Haemoglobin is of two types namely.

1. Adult haemoglobin – HbA
2. Fetal haemoglobin – HbF
FORMATION OF HAEMOGLOBIN:

1. 2 Succinyl co-A + 2 glycine → 4 Pyrrole
2. 4 Pyrrole → Protoporphyrin IX
3. Protoporphyrin IX Fe^{++} → Haeme
4. Haeme + polypeptide → Haemoglobin chain (Alpha or Beta)
5. 2Alpha + 2 Beta chains → Haemoglobin A

PROPERTIES OF HAEMOGLOBIN:

Buffering Capacity:

Haemoglobin is an effective buffer. Its isoelectric point is 6.8. The buffering capacity of haemoglobin is due to the presence of large number of histidine residues in the globin fraction. It is estimated that a molecule of haemoglobin has 35 histidine residues
Transport of oxygen:

The physiological importance of haemoglobin is due to its capacity to combine reversibly with oxygen. It combines with haemoglobin to form oxyhaemoglobin readily, at high pressure as existing in the lungs. Oxyhaemoglobin readily dissociates, at low partial pressure as prevailing in the tissues. This property of haemoglobin provides an effective and excellent system for the transport of oxygen from the atmosphere (lungs) to the cells of the body.

Haem-Haem interaction:

The haem groups in haemoglobin combine with oxygen in such a way that each haem group combine with one molecule of oxygen.

Combination with Carbon monoxide:

Haemoglobin combines with carbon monoxide to form carboxy haemoglobin with an affinity, two hundred times more than with oxygen.
Formation of carbamino compound:
A small amount of CO₂ carried in the blood is in combination with the free amino acids of the proteins of haemoglobin to form carbamino compounds.

Oxidation-Reduction properties of haemoglobin:
Under normal conditions, iron exists in ferrous form in the haemoglobin. It can be converted to ferric form by oxidation with ferricyanide and this result in the formation of Methemoglobin.

Action of weak acids and alkalis:
Weak acids and alkalis act on haemoglobin by separating the haem from globin. In the presence of oxygen, haem gets oxidized to haematin in which iron is in the ferric form. Haematin can combine with the chloride ion to form haematin chloride, which is also known as haemin.

With strong acids:
A more vigorous change takes place with strong acids. In addition to the separation of globin from haemoglobin, the iron from the haem is removed, resulting in the formation of an iron-free derivative.

METABOLISM OF HAEMOGLOBIN:

I. SYNTHESIS OF HAEMOGLOBIN:
In adult’s synthesis of haemoglobin takes place in the red bone marrow from 3 sources namely, protoporphyrin, Iron and globin. Certain co-factors are required to facilitate the synthesis.

1. Vitamin B₁₂ (extrinsic factor)
2. Intrinsic factor
3. Folic acid group of vitamins
4. Copper

Synthesis of haemoglobin and maturation of the erythrocytes proceeds simultaneously. The immature erythrocyte contains free porphyrin. As the cells mature the porphyrin content decrease and is replaced by haemoglobin. Thus the circulating red blood cells, which are rich in haemoglobin contain only traces of porphyrin.
II. CATABOLISM OF HAEMOGLOBIN:

Erythrocytes at the end of their life span of 120 days are broken down. Simultaneously the haemoglobin is degraded. Daily about 8gms of haemoglobin are broken down in the body and this corresponds to the formation of about 300 mg of bile pigments per day. The normal sites of haemoglobin degradation are mainly the reticuloendothelial cells of the spleen, bone marrow and liver. The globin which is the protein portion may be reutilized as such or may break down further into its constituent amino acids and enter to be amino acid “pool” for reutilization. The haem portion breaks down resulting in the formation of bile pigments.

Packed cell volume:

Packed cell volume (PCV) is the haematocrit value expressed as the percentage of cellular elements with that of whole blood.

BLOOD INDICES:

Blood indices are specifically meant for erythrocytes. The number, shape, volume and colour of the red blood cells indicate the quality of blood. So these features are named as blood indices.

IMPORTANTANCE OF BLOOD INDICES:

Blood indices have got diagnostic value in determining the type of anaemia.

DIFFERENT BLOOD INDICES:

1. Mean corpuscular Volume (MCV)
2. Mean corpuscular haemoglobin (MCH)
3. Mean corpuscular haemoglobin concentration (MCHC)
4. Colour Index (CI)
Mean corpuscular Volume (MCV):
Mean corpuscular Volume is the average volume of single red blood cells and it is expressed in cubic microns (cu.µ).

\[
MCV = \frac{PCV \text{ in } 1000 \text{ ml or } 100 \text{ ml } \times 10}{RBC \text{ count in millions } / \text{cu.mm}}
\]

Mean corpuscular haemoglobin (MCH):
Mean corpuscular haemoglobin is the quantity or amount of haemoglobin present in one red blood cell. It is expressed in micro gram or pico gram (pg).

\[
MCH = \frac{\text{Haemoglobin in grams per } 1000 \text{ ml of blood or } 100 \text{ ml } \times 10}{RBC \text{ count in millions } / \text{cu.mm}}
\]

Mean corpuscular haemoglobin concentration (MCHC):
This is the concentration of haemoglobin in one red blood cell. It is the amount of haemoglobin expressed in relation to volume of one red blood cell. So the unit of expression is percentage.

\[
MCHC = \frac{\text{Haemoglobin in grams per } 1000 \text{ ml of blood } \times 10}{\text{PCV in } 100 \text{ ml of blood}}
\]

Colour Index (CI):
This is the ratio between the percentage of the haemoglobin and the percentage of red blood cells in the blood.

\[
CI = \frac{\text{Haemoglobin} \%}{\text{RBC} \%}
\]

All the above mentioned blood indices are reduced in iron deficiency anaemia.

NORMAL VALUES:
- PCV: Women 35 - 45%; Men 40 - 45%
- MCV: 76-96 fl
- MCH: 27-33 picograms
- MCHC: 31-35 g/dl
- RETICULOCYTES: 1.6%
IRON:

Iron is an essential constituent of haemoglobin, myoglobin, cytochromes and other components of respiratory enzymes like cytochrome oxidase, catalase and peroxidase. The main functions of iron are,

- Transport of oxygen to the tissues.
- Iron is necessary for electron transport chain, oxidative phosphorylation.
- Peroxidase, lysosomal enzyme is required for phagocytosis and killing of bacteria by neutrophils.
- Iron is associated with effective immune competence of the body.

**DAILY IRON REQUIREMENTS IN DIFFERENT AGE GROUPS:**

- Pregnant and lactating female - 40 mg/day
- Females 11 years to 30 years - 18 mg/day
- Adult’s male - 10 mg/day
- Males 11 years to 17 years - 12 mg/day
- Upto 10 years (M/F) - 10 mg/day
- Infant - 1 mg/kg/day from 4 months
IRON SOURCES:

RICH SOURCES:
Muscle meat (Red more than white), Organ meat (Liver, heart, kidney), Beef liver, Red meat not only supplies a good amount of iron it also increases absorption of iron from other food sources

GOOD SOURCE:
Greens, Leafy vegetables, Nuts, Cereals, Wheatgerms, Fish, Shellfish, Poultry, Egg, Apples and dry fruits, Jaggery, Yeast, Molasses, Oysters, Spinach, Banana, Pomegranate

POOR SOURCES:
Wheat and Polished rice

DISTRIBUTION OF IRON IN THE BODY:
Total quantity of iron in the body averages 4 - 5 gm of total body weight.

Iron is distributed in the body as follows;

- Haemoglobin – present in red cells contain most of the body iron (65%)
- Myoglobin – comprises a small amount of iron in the muscles (4%)
- Haem and non-haem enzymes – eg cytochrome catalase, peroxidase, succinic dehydrogenase and flavoproteins constitute a fraction of total body iron (0.5%)
- Transferrin bound iron – circulates in the plasma and constitutes another fraction of total body iron (0.5%). (All these forms of iron are in functional form)
- Ferritin and haemosiderin – are the storage form of excess iron (30%). They are stored in the mononuclear phagocytic cells of the spleen, liver, bone marrow and in parenchymal cells of the liver

IRON METABOLISM:
The iron required for haemoglobin synthesis is derived from two primary sources ingestion of food containing iron and recycling of iron from senescent red cells.
**ABSORPTION:**

Iron is mostly found in food in ferric form. In the acidic medium provided by gastric HCl, the Fe$^{3+}$ is released from food. Ascorbic acid (Vitamin C) and cysteine convert ferric form to ferrous form. This ferrous form is soluble and readily absorbable. Absorption of iron takes place from almost all part of the small intestine mainly from duodenum and proximal jejunum. Iron from diet containing haem is better absorbed than non haem iron.

**FACTORS AFFECTING IRON ABSORPTION:**

- Acidity, ascorbic acid and cysteine enhance iron absorption.
- In Iron deficiency anaemia iron absorption is increased to 2 to 10 times that of normal.
- Small peptides and amino acids favour iron absorption.
- Phytate and oxalate (found in leafy vegetables) interfere with iron absorption.
- Food additives (EDTA) and antacids reduce iron absorption.
- A diet with high phosphate which are found in soft drinks, beer, ice cream, candy bar decreases iron absorption
- Smoking and alcohol interferes with iron absorption.
- Impaired absorption of iron is observed in malabsorption syndrome such as steatorrhoea
- In patients with partial or total surgical removal of stomach, iron absorption is severely impaired

**IRON IN THE MUCOSAL CELLS:**

The iron (Fe$^{2+}$) entering the mucosal cell by absorption is oxidized to ferric form (Fe$^{3+}$) by the enzyme ferroxidase. Fe$^{3+}$ then combines with apoferritin to form ferritin which is the temporary storage form of iron. Form the mucosal cells, iron may enter the blood stream (which mainly depends on the body needs) or lost when the cells are desquamated.
TRANSPORT OF IRON IN THE PLASMA:

The iron liberated from the ferritin of mucosal cells enters the plasma in ferrous state. Here, it is oxidized to ferric form by a copper containing protein, ceruloplasmin which possesses ferroxidase activity. Another cuproprotein ferroxidase- II also helps for the conversion of Fe$^{2+}$ to Fe$^{3+}$.

Ferric iron then binds with a specific iron binding protein, namely transferrin or siderophilin. The plasma transferrin can bind with 400 mg of iron/dl plasma. This is known as total iron binding capacity (TIBC) of plasma.

STORAGE OF IRON:

Storage of excessive iron in the blood is deposited in all cells especially in the liver hepatocytes. The hepatic cells contain large amounts of a protein called apoferritin, which is capable of combining reversibly with iron. Therefore when iron is available in the body fluids in extra quantities, it combines with apoferritin to form ferritin and stored. When iron is in the low level, the ferritin releases the iron. Thus, apoferritin – ferritin system of liver acts as blood iron buffer as well as iron storage medium. Hemosiderin is another iron storage protein and this is insoluble form.

EXCRETION:

The body is unable to regulate its iron content by excretion alone. The amount of iron lost per day is 0.5 – 1.0 mg which is independent of iron intake. This loss is nearly twice more (i.e. 1 – 2 mg per day) in menstruating women. Iron is lost from the body as a result of desquamation of epithelial cells from the gastro intestinal tract, sweat, and loss via hair and nail. Iron excreted in the faeces mainly consists of unabsorbed iron and desquamated mucosal cells.

REGULATION OF TOTAL BODY IRON:

Absorption and excretion of iron are maintained almost equally under normal physiological conditions. When the iron storage is saturated in the body, it automatically reduces the further absorption of iron from the gastrointestinal tract by feedback mechanism. The factors which reduce absorption of iron are,
Stoppage of apotransferrin formation in the liver, so that the iron could not be absorbed from the intestine

Reduction in the release of iron from the transferrin so that transferrin is completely saturated with iron and further absorption is prevented. This type of regulation is known as feedback mechanism

ANAEMIA

DEFINITION:
Anaemia is defined as a reduction of the red blood cell volume or haemoglobin concentration below the range of values occurring in healthy persons.

WHO criteria for diagnosis of Anaemia

<table>
<thead>
<tr>
<th>Category</th>
<th>Haemoglobin Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult women</td>
<td>11-15gms%</td>
</tr>
<tr>
<td>Adult men</td>
<td>14-18gms%</td>
</tr>
<tr>
<td>Children 6 years-14 years</td>
<td>Less than 12gms%</td>
</tr>
<tr>
<td>Children 6 months -6 years</td>
<td>Less than 11gms%</td>
</tr>
</tbody>
</table>

GRADING OF ANAEMIA:
WHO grades anaemia according to haemoglobin level as follows;

<table>
<thead>
<tr>
<th>Haemoglobin Level</th>
<th>Grading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hb between 10 gm and cut off point for age</td>
<td>Mild</td>
</tr>
<tr>
<td>Hb between 7 to 10 gm</td>
<td>Moderate</td>
</tr>
<tr>
<td>Hb under 7 gm</td>
<td>Severe</td>
</tr>
<tr>
<td>Hb under 5 gm</td>
<td>Very Severe</td>
</tr>
</tbody>
</table>

CLASSIFICATION:
A. BASED ON PRODUCTION/DESTRUCTION OF RBC
- Decreased or ineffective production of red blood cells or haemoglobin.
- Increased destruction or loss of red blood cells.
1) ANAEMIA RESULTING PRIMARILY FROM INADEQUATE PRODUCTION:

i. Marrow failure
   - Aplastic anaemia: Congenital, Acquired.
   - Decreased number of red blood cell precursor: Congenital, Acquired.
   - Marrow replacement: Malignancies, Osteopetrosis, Storage disorders.

ii. Deficiency of Specific Factors
   a. Megaloblastic anaemia:
      - Folic acid deficiency or malabsorption.
      - $B_{12}$ deficiency or malabsorption.

   b. Microcytic anaemia:
      - Iron deficiency
      - Copper deficiency
      - Lead poisoning

iii. Impaired Erythropoietin Production

   - Chronic renal disease.
   - Hypothyroidism, Hypopituitarism.
   - Chronic inflammation, infection.
   - Malignancy.
   - Protein malnutrition
2) ANAEMIA RESULTING PRIMARILY FROM RAPID DESTRUCTION:

I. Blood Loss: Acute haemorrhage, chronic haemorrhage.

II. Haemolytic Anaemia

a. Intrinsic Defects [Intrinsic abnormalities]
   - Membrane Defects: Hereditary spherocytosis, Elliptocytosis.
   - Enzyme Defects:
     1. Enzyme of glycolytic pathway
     2. Enzyme of the pentose phosphate pathway
   - Defects in synthesis of haemoglobin: Hb S, C, D, E

b. Extrinsic abnormalities
   - Immunologic disorders
     1. Rh iso immunization
     2. A (or) B iso immunization
     3. Other minor Blood group incompatibilities
   - Active antibody formation

A. Morphological classification:

B. Based on the red cell size, haemoglobin content and red cell indices anaemia are classified as follows

Microcytic Hypochromic anaemia
   - Iron deficiency
   - Thalassemia
   - Haemoglobinopathies
   - Haemolytic anaemia.

Normocytic normochromic anaemia
   - Aplastic anaemia
Macrocytic normochromic anaemia

- Folate and vitamin B₁₂ deficiency
- Hypothyroidism

Macrocytic hypochromic anaemia

- Combined deficiency of iron and folate or Vitamin B₁₂

Microcytic anaemia:

The size of red cells is smaller than normal and colour index less than one. The mean corpuscular volume is less than its normal range (76-96 cubic microns).

Causes of Microcytic anaemia:

- Inadequate intake of iron, defective absorption of iron, idiopathic hypochromic anaemia, starvation, dietary deficiency, anaemia of milk fed children.
- Excessive need of iron during growth, pregnancy
- Chronic haemorrhages
- Inadequate utilization of haematinics – myxoedema, chronic sepsis, chronic renal diseases.

Macrocytic anaemia:

The red cells are bigger than normal and the colour index is above one. The mean corpuscular volume is more than its normal range (76-96 cubic microns).

Causes of Macrocytic anaemia:

- Deficiency of the Extrinsic factors, Nutritional anaemias, Pellagra.
- Absence of Intrinsic factor, Total gastrectomy
- Cirrhosis of liver
- Megaloblastic anaemia, Hypoblastic anaemia.

Normocytic Anaemia:

The size of the red cells is more or less than the normal size. The colour index is less than the normal range and the mean corpuscular volume is 76 to 96 cubic microns.
Causes of Normocytic anaemia:

- Acute hemorrhage
- Haemolytic anaemias
- Blood destruction by metals, Protozoa, Haemolysis
- Leukemia, Hodgkin’s disease, Drug poisoning

B. Based on Etiopathogenesis:

1. Nutritional Anaemias:
   *Iron deficiency anaemia*, Folic acid, VitaminB12, VitaminC, Pyridoxine, Thyroxine deficiency anaemias.

2. Haemolytic Anaemias:
   - **Congenital** - Thalassemia, Sickle cell anaemia, Hereditary spherocytosis, G-6-PD deficiency
   - **Acquired** - Malaria, Kala azar, Rh or ABO incompatibility

3. Haemorrhagic Anaemias:
   - **Acute** - Trauma, Epistaxis
   - **Chronic** - Hookworm, Scurvy, Chronic dysentery, Oesophageal varices

4. Anaemia due to Bone marrow depression:
   - **Primary** - Hypoplasia or Aplasia, Fanconi’s Anaemia
   - **Secondary** - Infections, Irradiation

5. Anaemia due to Infections:
   - **Acute** - Fulminating osteomyelitis, Septicaemia
   - **Chronic** - Tuberculosis, Rheumatic fever, Sub acute bacterial Endocarditis Wound infections, Congenital syphilis
6. Other Miscellaneous Conditions:
Chronic amoebic dysentery repeated bouts of diarrhoea

CLINICAL FEATURES OF ANAEMIA:

The haemoglobin level at which symptoms and signs of anaemia develops depends upon 4 main factors.

1. The Speed of onset of anaemia:
Rapidly progressive anaemia causes more symptoms than anaemia of slow onset, as there is less time for physiological adaptation.

2. The Severity of Anaemia:
Mild anaemia produces no symptoms or sign, but a rapidly developing severe anaemia (haemoglobin below 6 gm) may produce significant clinical features.

3. The age of the patient:
The young patient due to good cardiovascular compensation tolerate anaemia quite well as compared to the elderly

4. The haemoglobin dissociation:
In anaemia, the affinity of haemoglobin for oxygen is depressed. As a result oxy haemoglobin is dissociated more readily to release free oxygen for cellular use.

PATHOLOGICAL RED BLOOD CELLS IN ANAEMIA:

In anaemia, many kinds of abnormal red cells including nucleated forms are seen in the circulation. These abnormal cells are,
I. Anisocytosis (Variation in size of RBC)

a. Macrocytosis:
   The size of the cell is 9 to 12 microns. This occurs in pernicious anaemia, plumbism, acute anaemia due to severe haemorrhage and erythroblastosis foetalis.

b. Microcytosis:
   The size is less than 6 microns. This occurs in Iron deficiency anaemia chlorosis, chronic bleeding, polycythaemia and anaemias secondary to infections.

c. Normocytosis:
   The red cells are in normal size, found mainly in post haemorrhagic anaemias.

II. Poikilocytosis (Variation in shape of RBC)

a. Ovalocytosis:
   The oval shaped red cells occur in some human families. Such a condition does not cause ill-health, but a minority may manifest haemolytic phenomena.

b. Spherocytosis:
   Spherocytosis may be seen in congenital haemolytic anaemia and in certain other acute haemolytic anaemias. The red cells are very fragile.

c. Sickle cells:
   In arterial blood, the red blood cells are normal in shape, but in venous blood some cells assume the shape of sickle.

III. Polychromatophilia (Irregularity in staining)
   This indicates an increase in immature red cells in circulation and occurs in the following forms

a. Normoblasts:
   Nucleated red cell indicates over activity of bone marrow, commonly seen in severe anaemia.

b. Punctate Basophilia (Basophilic stippling):
   It occurs in lead poisoning and severe anaemia and chronic malaria.

c. Reticulocytes:
   Occurs in acute bleeding and in pernicious anaemia.
IRON DEFICIENCY ANAEMIA (IDA)

Iron deficiency is the most common and widespread nutritional disorder in the world. Iron deficiency is the most common single cause of anemia worldwide, accounting for about half of all anemia cases. The numbers are staggering 2 billion people, over 30% of the world’s population are anaemic.

Its prevalence is higher in the developing countries i.e, 27% in developing countries compared to 6% in developed countries. India is having high prevalence of iron deficiency anaemia of 1 in 77 people.

It is more common in women than men. About 20% of all women of child bearing age have iron-deficiency anemia, compared with only 3% of adult men. The principal cause of iron-deficiency anemia in these countries is blood lost during mensus in premenopausal women and not compensated by intake from food and supplements.

The cause of IDA in India is due to poverty, malnutrition, untreated illness, hook worm infestation, socio-economic problems. Various programmes are launched by Indian government to eradicate iron deficiency anaemia.

National family health survey -3 [NFHS-3] reveals the anaemic percentage in Children 70-80%, Adolescent girls-15.5%, Adolescent boys-14.3%, Adults-24% Women of reproductive age- 47%, Pregnant women-70%.

Under AP&CP [Anemia Prevention &Control Programme] pregnant women are provided with iron& follic acid tablets. CSSM [Child Survival&Safe Motherhood Programme] implemented to eradicate anemia of children. Under NNACP [National Nutritional Anemia Control Program] Children[1-5yr] are provided with 20 mg iron tablet/100mg follic acid tablet and adults are provided with 100mg iron tablet/500mg follic acid tablet, per week. All these programs aimed at achieving HB level to 12gm% by the age of 12yrs by 2012 in India.
Iron deficiency and anaemia reduce the work capacity of individuals and entire populations, bringing serious economic consequences and obstacles to national development.

**Iron Requirements:**
Understanding of iron requirements, intakes and bioavailability is essential to explain the vulnerability of some individuals to develop iron deficiency anaemia. Infant and children should continue to absorb 0.8 to 1.0 mg of iron daily to reach the adult body stores of 4-5 grams.

**Daily requirements:**
- Adult male 0.5-1mg
- Adult female 1-2mg
- Pregnancy of 2\textsuperscript{nd} and 3\textsuperscript{rd} trimester 3-5mg
- Infants 60µg/kg
- Children 25µg/kg

Normal body losses of iron are about 20µg/kg/day and most of these losses occur by the shedding of cells from intestinal mucosa. Daily loss in faeces is 0.6mg and in menstruation is 1.3mg. These losses are small and are relatively constant but may increase many folds in the presence of diarrhoea, dysentery, and parasitic infections.

The store of iron present in all animal cells is deposited mostly in ferritin complexes. In humans each of these are made up of 24 subunit protein molecules of two different types, with each ferritin complex carrying about 4500 iron atoms, as ferrous ions.

Iron deficiency ranges from iron depletion, which produces little physiological damage, to iron-deficiency anemia, which can affect the function of numerous organ systems. Iron depletion causes the amount of stored iron to be reduced, but has no effect on the functional iron. However, a person with no stored iron has no reserves to use if the body enters a state in which it requires more iron than is being absorbed from the diet.
STRUCTURES OF THE RED CORPUSCLES IN IDA:

In iron deficiency anaemia, the red blood corpuscles are decreased or normal in the number and haemoglobin content of the red blood corpuscles is reduced. In the blood smear, the red cells appear pale with a large central pale area and many of the red blood cells appear to be smaller than the normal. This type of anemia is called “Hypochromic and Microcytic anemia”.

ETIOLOGY:

The etiology varies with the age, sex, and country of residence of the patient.

Etiological factors in iron deficiency Anaemia:

- **Increased physiological requirements:**
  - Rapid growth in Infant and preadolescence, Menstruation, Pregnancy.
- **Decreased iron assimilation:**
  - Iron poor diet, Iron malabsorption, Sprue, non tropical sprue, Pica, GI surgery, Chronic diarrhoea, Malnutrition.
- **Blood Loss:**
  - Gastro intestinal bleeding, Peptic ulcer disease, Inflammatory Bowel disease, Meckel’s diverticulum, Drugs-Salicylates, antibiotics etc., Hook worm infestation, Haemoglobinuria, prosthetic heartvalve, Intense exercise, Bleeding diasthesis, Repeated venous sampling.
- **Increased demands:**
  - Prematurity, Adolescence, Pregnancy
- **Iron Poor Diet:**
  - Dietary inadequacy is present in more than 80 percent of cases especially in the poorer groups.
IRON MALABSORPTION:

- Iron malabsorption is an unusual cause of iron deficiency where malnutrition is rampant however both histologic and functional abnormalities of the intestine are common. Defective iron absorption is caused by non-tropical sprue.

- Partial or total gastrectomy impairs iron absorption caused by reduction in gastric acidity and acceleration of the food through the upper portion of the small bowel. The absorption of both haem iron and non-haem is defective.

- Pica or the habitual ingestion of non-food substances is common in children, and pregnant women. It markedly inhibits iron absorption.

- Pancreatic enzymes may contribute to the high incidence of iron deficiency in patients with cystic fibrosis.

GASTRO INTESTINAL BLEEDING:

- In adult men and postmenopausal women and children, occult bleeding from the gastrointestinal tract is the most common cause of iron deficiency.

- Peptic ulcer disease is a well-documented cause of occult blood loss.

- Crohn’s disease and ulcerative colitis also are commonly associated with iron deficiency.

- Corticosteroids, Indomethacin and other non-steroidal anti-inflammatory agents may also induce gastrointestinal tract bleeding.

- Hookworm infestation (Ankylostomiasis) is the most important cause of intestinal blood loss worldwide. The parasites Ankylostoma duodenale and Nectar americanus attach to the proximal portion of the small intestine and suck blood from submucosal vessels.
PATHOGENESIS:

Iron deficiency anaemia develops when the supply of iron to the bone marrow is insufficient for the requirements of haemoglobin synthesis.

It has been pointed out that the body is normally in a state of positive iron balance. When a negative iron balance occurs either due to blood loss, increased requirements or impaired absorption, the deficit is made good by iron mobilized from the tissue stores and an adequate supply of iron for haemoglobin formation is maintained. It is only when the tissue stores are exhausted and the supply of iron to the marrow for haemoglobin synthesis becomes inadequate, hypochromic anaemia develops.

Thus iron deficiency may be regarded as developing in two stages.

➢ The progressive depletion and cultivate exhaustion of the available tissue iron stores.

THE DEVELOPMENT OF ANAEMIA.

Iron deficiency state, which may be divided into three functionally distinct stage of severity
STAGE OF IRON DEFICIENCY ANAEMIA:

STORAGE IRON DEPLETION:
Iron reserve is small or absent and is characterized by reduced serum ferritin or reduced iron concentration in marrow and liver tissue. Haemoglobin serum iron, Transferritin concentration and saturation are within normal limits.

IRON LIMITED ERYTHROPOIESIS:
Haemoglobin (Hb) may still be normal but serum iron is low and TIBC increased with a low serum ferritin and raised free erythrocyte protoporphyrin (FEP).

IRON DEFICIENCY ANAEMIA:
The flow of iron to erythroid marrow is impaired to cause reduction in haemoglobin concentration with a progressive microcytic hypochromic anaemia associated with the reduced serum iron, transferrin saturation and serum ferritin level.

CLINICAL FEATURES:

SYMPTOMS:
Anorexia, Headache, Bodyache, Giddiness, Fatigue, Lassitude, Breathlessness on exertion, Dimness of Vision, Dizziness, Insomnia, Inability to concentrate, Tinnitus, Anginal pain, Paraesthesia in fingers and toes, Palpitation, Insomnia, Anxiety, Constipation, Abdominal distension, Hair loss, Exercise intolerance, Restless leg syndrome, Missed menstrual cycle or oligomenorrhoea and Pica.
**SIGNS:**

Pallor of the skin, mucous membrane, palms, nails and conjunctiva Smooth, pale, glossy tongue, Angular stomatitis, Glossitis and Koilonychia.

**EPITHELIAL TISSUE CHANGES**

Long standing IDA causes epithelial tissue changes in some patients. The changes occur in the nails (koilonychia or spoon shaped nails), tongue (atrophic glossitis), mouth (angular stomatitis) and oesophagus causing dysphagia from development of thin membranous webs at the post cricoid area (Plummer Vinson syndrome).

**ROLE OF IRON DEFICIENCY ANAEMIA IN VARIOUS SYSTEMS:**

**CARDIOVASCULAR SYSTEM:**

Dyspnoea and palpitation are common symptoms while on exertion but in very severe anaemia the patient may get cardiac failure and there may be dyspnoea at rest. Haemic murmurs are commonly heard in anaemic patients. The murmurs are most often mild systolic murmurs heard at the mitral area.

Systolic bruits over the carotid arteries in the neck are sometimes present in anaemia usually they are bilateral and occur in the absence of an aortic systolic bruit and disappear following correction of the anaemia. Jugular venous pressure increases in severe anaemia due to the high pulse pressure, with a capillary pulsation. Oedema of the legs occasionally occurs in ambulant patient with severe anaemia as the result of venous and capillary pressure on exertion and increased capillary permeability.

**CENTRAL NERVOUS SYSTEM:**

Symptoms include faintness, giddiness and headache, roaring and banging in the ears, tinnitus, spots before the eyes, lack of concentration and drowsiness and with severe anaemia clouding of consciousness, numbness, coldness and sometime tingling of the hands and feet.
REPRODUCTIVE SYSTEM:
Menstrual disturbances are commonly found.

RENAL SYSTEM:
Slight proteinuria may be present with severe anaemia. Anaemia may further reduce renal function to the point at which nitrogen retention develops. Correction of anaemia in such patient is usually followed by a fall in blood urea.

GASTRO INTESTINAL SYSTEM:
Anorexia is the commonest symptom, nausea, flatulence and constipation may also occur. Slight to moderate smooth hepatomegaly is common in severe anaemia and when congestive heart failure develops the liver may become tender. In certain cases of iron deficiency anaemia, spleen may be enlarged.

PYREXIA:
Mild pyrexia may occur with severe anaemia but marked fever is due to either the causative disorder or to some complicating factor.

DIETARY IRON:
The dietary iron comes from two sources, Heme and non-heme, the later being the major source of iron in diet and is found in varying degrees in all foods of plant origin. Heme iron is present in meat, fish, and poultry, but the intake of these products is generally low. Heme iron is better absorbed than non-heme iron and is not influenced by dietary factors.

Good sources of iron in the diet includes, pulses, dhals, green leafy vegetables, dates, nuts, jaggery, meat and fish. Administration of 50 mg of vitamin C increases iron absorption by two folds.
COMPLICATIONS IN IRON DEFICIENCY ANAEMIA:

- Iron deficiency anaemia may be the present finding in gastro intestinal cancer.
- In patients with heart disease severe anaemia may precipitate angina pectoris or congestive heart failure.
- Infections are more common in Iron deficiency anaemia, especially those of the respiratory, gastrointestinal and urinary tracts.
- Chronic iron deficiency anaemia reduces the efficiency in work and study.

INVESTIGATIONS REQUIRED FOR IRON DEFICIENCY ANAEMIA:

1. **BLOOD INVESTIGATIONS:**
   
   Haemoglobin, Total Red Blood cell count, Peripheral blood smear, Packed cell volume, Mean corpuscular volume, Mean corpuscular haemoglobin, Mean corpuscular haemoglobin concentration, Total iron binding capacity, Serum iron, Serum Ferritin, Differential count, Erythrocyte sedimentation rate, Serum protein, Serum creatinine.

2. **URINE INVESTIGATIONS:**
   
   Sugar, albumin, Deposits, Red blood cells, Pus cells.

3. **STOOL INVESTIGATIONS:**
   
   Ova, Cyst, Occult blood, Red blood cells, Pus cells.

SPECIAL INVESTIGATIONS OCCASIONALLY REQUIRED:

- X-ray barium meal, X-ray Barium enema, X-ray chest
- Endoscopy, colonoscopy, sigmoidoscopy, gastro duodenoscopy
- Isotope studies
  - Determination of life span of red cells using $^{51}$Cr labeled erythrocytes
  - Determination of absorption, utilization, and disposal of iron using $^{58}$Fe
- Skeletal survey for multiple myeloma and secondary deposits
- Bone marrow examination
- Liver Function Test (LFT)
- Jejunal biopsy, urography, selective angiography
- Ultrasonography
LABORATORY DIAGNOSIS:

In Iron deficiency anaemia the haemoglobin is less than 11 gm in women and less than 14 gm in men. The red cell count in rarely below 2.5 million/cubic millimeter and the red cells are usually microcytic and hypochromic reticulocytes and platelets are normal or increased. The white cell count is normal. Serum ferritin is below 30µg/L in women and below 100µg/L in men. Serum iron is usually below normal range (Normal is 50 - 150µg/dl). Bone marrow haemosiderin is absent. The PCV, MCV, MCH, MCHC are all reduced.

DIFFERENTIAL DIAGNOSIS:

Iron deficiency anaemia must be differentiated from other hypochromic anaemia.

I. Anaemia of infection:

Chronic infections such as rheumatic fever, rheumatoid arthritis, tuberculosis and malaria may have associated mild to moderate anaemia, which is normochromic or slightly hypochromic. Serum iron is low, total iron binding capacity is also decreased. Bone marrow haemosiderin is present.

II. Pyridoxine (Vit B6) Deficiency anaemia:

It is characterized by severe hypochromic microcytic anaemia, and progressive hepatospleenomegaly. There is elevation of serum iron. Marrow shows erythroid hyperplasia with nucleated normoblasts containing iron inclusions, the so-called “sideroblasts” in abundance. There are abnormalities of tryptophan metabolism.

III. Some Haemoglobinopathies:

In haemoglobin abnormalities like thalassemia, the red cells are microcytic and hypochromic. Thalassemia minor is distinguished by normal serum iron, normal total iron binding capacity, decreased mean corpuscular volume, normal serum ferritin and transferrin iron saturation.
IV. Sideroblastic anaemia:

Most of the red cells are hypochromic and microcytic, serum iron is high and iron
deposit in the marrow, liver and spleen are excessive. Many erythrocytes and
erthroblasts contain non haemoglobin iron (ringed sideroblasts) in their mitochondria.
The spleen is usually enlarged.

V. Anaemia of lead poisoning:

Anaemia of lead poisoning is hypochromic and microcytic and may be moderate
to severe. Basophilic stippling of red cells, which helps to differentiate it from iron-
deficiency anaemia, pronounced increase of aminolevulinic acid and coproporphyrin in
the urine is characteristic of lead poisoning. Increased levels of lead in blood are required
for definite diagnosis.

DIAGNOSIS:

Following criteria are essential to diagnose iron deficiency anaemia.

- History of inadequate intake of dietary iron and blood loss if any
- Typical symptoms and signs like easy fatiguability, pallor, pica, koilonychia,
  smooth tongue, cheilosis, numbness, palpitation, dyspnoea and dysphagia associated with
general considerations
- Haemoglobin estimation variably reduced
- Hypochromic and microcytic structure of red blood cells
- Low serum ferritin, low serum iron, increased total iron binding capacity
- Reduced mean corpuscular volume
- Platelet count is either normal or raised
- Blood loss usually occult
- Erythrocyte count may be normal or reduced less than haemoglobin level would suggest
MANAGEMENT:

This can be considered under three headings;

1. Correction of anaemic state: Over all correction of nutrition with articles rich in iron is important. Iron deficiency is corrected by intake of rich iron content diet and administration of medical iron.
2. Replenishment of iron stores.
3. Elimination of the cause.

RESPONSE TO TREATMENT:

1. A positive response to therapy can be defined as a daily increase in haemoglobin concentration of 0.1 gm/dl (0.3 or 1 % increase in haemocrit) from the 4th day onwards, or 0.5 gm/dl for a week.

2. Reticulocytes increase within 3 to 5 days and reach a maximum at 5 to 10 days.

3. Haemoglobin concentration is virtually normal after 2 months of therapy. However food containing iron should be continued for 3 to 6 months to build up iron stores. RBC counts may temporarily rise above normal before haemoglobin response. The red cell indices may remain abnormal for sometime after the normal haemoglobin level has been restored. The microcytic population is gradually replaced by a normocytic population.

4. Pica pagophagia and other nonspecific symptoms disappear within one week of therapy. With the onset of treatment the patients shows rapid subjective improvement with disappearance of fatiguability, numbness, palpititation, lassitude, and impaired cognitive functions. Of the epithelial lesions those affecting tongue and nails are most responsive to treatment. After 1-2 weeks of therapy, small filiform papillae are seen on the tongue. By 3 months the tongue is usually normal and koilonychia usually disappears within 3 -6 months.
PREVENTION OF IRON DEFICIENCY ANAEMIA:

Appropriate nutritional strategies are an important factor in prevention of IDA. The basic approaches to the prevention of IDA include

1. Dietary modification and consumption of larger amounts of habitual foods increases total iron consumption by 25 – 30 %. Processes like germination (Sprouting of green gram) consumption of green leafy vegetables would be additional long-term methods for prevention of IDA.

2. Periodic de-worming with anti-helminthic drugs for hookworm infestation and schistosoma should be considered in endemic areas.

3. Supplementation with medicinal iron is considered necessary to reduce the extent of anaemia in developing countries.

4. Food and salt fortification with iron are evolving rapidly and would be one of the most effective ways to control IDA. Salt fortification with iron content of 1 mg per gram of salt is the most effective preparation.

SELF CARE PROCEDURES FOR IRON DEFICIENCY ANAEMIA:

- Eat more foods that are good source of iron
- Concentrate on green leafy vegetable, red meat, beef liver, poultry, fish, wheat germs, oysters, dried fruit and fortified cereals.
- Boost iron absorption. Foods high in vitamin C like citrus fruits, tomatoes and strawberries help the body absorbing iron from food.
- Red meat not only supplies a good amount of iron, it also increases absorption of iron from other food sources.
- Take an iron supplement, Consult your physician for proper dosage.
- While iron is best absorbed when taken on an empty stomach, it can upset your stomach. Taking iron with meals is less upsetting to the stomach.
- Avoid antacids, phosphates (which are found in soft drinks, beer, ice cream, candy bars, etc) and the food additive EDTA. These block iron absorption.
- Increase dietary fibre to prevent constipation
- Avoid aspirin and products with aspirin
- Eat good sources of folic acid daily. These include vegetables like asparagus, sprouts, spinach and lettuce.
- Black-eyed peas, cantaloupe orange juice, oatmeal, whole grain cereals, wheat germ, liver and other organ meats are excellent sources of folic acid.
- Eat fresh uncooked fruits and vegetables often. Don’t parboil vegetables. Heat destroys folic acid.
9. MATERIALS AND METHODS

9.1 STUDY TYPE
Observational study

9.2. STUDY DESIGN
An analytical open label, single centric study.

9.3. STUDY PLACE
Department of Noi naadal,
Ayothidoss Pandithar Hospital,
National Institute of Siddha,
Tamaram Sanatorium, Chennai-47.

9.4 STUDY PERIOD
- Total period - 1yr
- Recruitment for the study - upto 10 months
- Data entry analysis - 1 month
- Report preparation and submission - 1 month

GANNT CHART: (Study Period - 1 year)

<table>
<thead>
<tr>
<th>ACTIVITIES (Scaled in Months)</th>
<th>1-10th</th>
<th>11th</th>
<th>12th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruitment for the study</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data entry &amp; Analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Report preparation &amp; Submission</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9.5 Sample size

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>40</td>
</tr>
<tr>
<td>Patients</td>
<td>30</td>
</tr>
<tr>
<td>Healthy volunteers</td>
<td>10</td>
</tr>
</tbody>
</table>

9.6. SELECTION CRITERIA

9.6.1. INCLUSION CRITERIA

- Age group: 18-50
- Pallor of eyes
- Breathlessness on exertion
- Palpitation
- Loss of appetite
- Pallor of the skin and mucous membrane
- Giddiness
- Facial edema

9.6.2. EXCLUSION CRITERIA

- Anemia of chronic diseases
- Pitha paandu (Hypothyroidism)
- Vulnerable group (pregnancy, lactation)
- Bleeding disorders
- Post surgery, post trauma
9.7. STUDY ENROLLMENT

- In the study, patients reporting at the OPD & IPD of Ayothidoss Pandithar Siddha Hospital with the clinical symptoms of “seya kamaalai” will be referred to the Research group. Those patients will be screened using the screening proforma (Form-I) and examined clinically for enrolling in the study based on the inclusion and exclusion criteria. Based on the inclusion criteria the patients will be included first and excluded from the study on the same day if they hit the exclusion criteria.

- The patients who are to be enrolled would be informed (Form IV-A) about the study, and the objectives of the study in the language and terms understandable for them.

- After ascertaining the patients’ willingness, a written informed consent would be obtained from them in the consent form (Form IV).

- All these patients will be given unique registration card in which patients’ Registration number of the study, Address, Phone number and Doctors phone number etc. will be given, so as to report to research group easily if any complication arises.

- Complete clinical history, complaints and duration, examination findings all would be recorded in the prescribed proformae in the history and clinical assessment forms separately. Screening Form- I will be filled up; Form I-A, Form –II and Form –III will be used for recording the patient’s history, clinical examination of symptoms and signs and lab investigations respectively

- Ten healthy volunteers from both the sexes will be selected for control group.
9.8. METHODOLOGY

METHODOLOGY

HEALTHY VOLUNTEERS

PATIENT SCREENED
(INCLUSION & EXCLUSION CRITERIA)

BASIC INVESTIGATIONS

SATISFIED

NOT SATISFIED

INFORMED ABOUT THE STUDY
(INFORMATION SHEET)

EXCLUDED FROM THE STUDY

GETTING CONSENT
(CONSENT FORM)

REGISTRATION CARD GIVEN PATIENT
SUBJECTED TO

NORMAL OPD TREATMENT

HISTORY TAKEN

CLINICAL ASSESSMENT

BASIC AND SPECIFIC INVESTIGATIONS
9.9. DATA COLLECTION FORMS:

- Required information will be collected from each patient by using following forms.
  
  **Form –I**  
  Screening and selection Proforma

  **Form –IA**  
  History Proforma on enrollment

  **Form II**  
  Clinical Assessment on enrollment

  **Form –III**  
  Laboratory investigations on enrollment, during the study

  **Form –IV**  
  Consent form (Vernacular and English versions)

  **Form –IV- A**  
  Patient Information Sheet  
  (Vernacular and English versions)

9.10. DATA MANAGEMENT

- After enrolling the patient in the study, a separate file for each patient will be opened and all forms will be filed in the file. Study No. and Patient No. will be entered on the top of file for easy identification and arranged in a separate rack at the concerned OPD unit. Whenever study patient visits OPD during the study period, the respective patient file will be taken and necessary recordings will be made at the assessment form or other suitable form.

- The screening forms will be filed separately.

- The Data recordings will be monitored for completion and adverse event by HOD and any missed data found out during the study, will be collected from the patient, but the time related data will not be recorded retrospectively

- All collected data will be entered using MS access / excel software onto computer.

- Investigators will be trained to enter the patient data and cross checked by Senior Research Officer and HOD.
9.11. STATISTICAL ANALYSIS:

All collected data will be entered into computer using MS access / MS excel software by the investigator. The data will be analysed using STATA software under the guidance of SRO (stat), NIS. The level of significance will be 0.05. Descriptive analysis will be made and necessary tables/graphs generated to understand the profile of the patients included in the study. Then statistical analysis for significance of different diagnostic characteristics will be done. Student ‘t’ test and ‘chi-square’ test are proposed to be performed for quantitative and qualitative data.

9.12. INVESTIGATIONS DURING THE STUDY

The patients will be subjected to basic and specific investigations during the study which include Hb, MCH, MCV, MCHC, PCV, Smear Study, TC, DC, ESR, Blood sugar, RFT, LFT, Lipid profile, in Blood. Albumin, Sugar, Deposits in Urine. Ova, cyst and Occult blood in Motion.

9.13. TREATMENT DURING THE STUDY:

Normal treatment procedure followed in Department of Noi Naadal, NIS will be prescribed to the study patients and the treatment will be provided at free of cost.

9.14. OUTCOME OF STUDY

- Establishing the diagnostic characteristics of “SEYA KAMAALAI” through
  (1). Eight fold examination
  (2). Manikkadainool & Astrology
  (3). Yakkai elakkanam

- Analysis of Sage yugimuni’s symptomatology and categorizing the results with present day modern classification of diseases which may reinforce and augment the understanding and diagnosis of the disease “SEYA KAMAALAI” and its management mentioned in Siddha literature.
9.15. ETHICAL ISSUES:

1. Patients will be examined and screened unbiased manner and will be subjected to the criteria.

2. Informed consent will be obtained from the patient explaining in the understandable language to the patient.

3. The data collected from the patient will be kept confidentially. The patient will be informed about the diagnosis.

4. To prevent any infection, while collecting blood sample from the patient, only disposable syringes, disposable gloves, with proper sterilization of lab equipments will be used.

5. This study involves only the necessary investigations (mentioned in the protocol) and No other investigation would be done.

6. Patients will be subjected to X-ray investigation which does not cause any major hazards and is taken free of cost in National Institute of Siddha

7. Normal treatment procedure followed in NIS will be prescribed to the study patients and the treatment will be provided at free of cost.

8. There will be no infringement on the rights of patient.
10. Observation and Results

9.1. AGE DISTRIBUTION OF STUDY SAMPLE

<table>
<thead>
<tr>
<th>AGE</th>
<th>PATIENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO</td>
</tr>
<tr>
<td>18-20YRS</td>
<td>1</td>
</tr>
<tr>
<td>21-30YRS</td>
<td>4</td>
</tr>
<tr>
<td>31-40YRS</td>
<td>6</td>
</tr>
<tr>
<td>41-50YRS</td>
<td>19</td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
</tr>
</tbody>
</table>

OBSERVATION

Among 30 cases, 3.33% of cases came under 18-20yrs, 13.33% of cases came under 21-30yrs, 20% of cases came under 31-40yrs and 63.33% of cases came under 41-50yrs.
INFERENCES:
This observation reflects the OPD population age group.

HAEMOGLOBIN:

<table>
<thead>
<tr>
<th>S.NO</th>
<th>HAEMOGLOBIN</th>
<th>PATIENTS IN NO</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.0-8.5</td>
<td>12</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>8.6-9.5</td>
<td>12</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>9.6-10.5</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

OBSERVATION:
Out of 30 cases, 40% of cases had 6.0-8.5 g/dL haemoglobin level, 40% of cases had 8.6-9.5 g/dL haemoglobin level, 20% of cases had 9.6-10.5 g/dL haemoglobin level.
INFERENCES:

In this, 40% of cases had 6.0-8.5 haemoglobin level, 40% of cases had 8.6-9.5 haemoglobin level.

9.2. DISTRIBUTION OF GENDER

<table>
<thead>
<tr>
<th>GENDER</th>
<th>NO OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>29</td>
<td>96.67</td>
</tr>
<tr>
<td>Male</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

OBSERVATION:

Out of 30 cases, 3.33% of cases were males, 96.67% of cases were females.
INFERENCE

Generally women are at high risk of iron deficiency as they have a regular blood loss due to menstrual disorders. Pregnant and lactating women are usually affected by iron deficiency anemia due to increased iron requirements.

9.3. FOOD HABITS

<table>
<thead>
<tr>
<th>S.NO</th>
<th>FOOD HABITS</th>
<th>PATIENTS IN NO</th>
<th>PATIENTS IN PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vegetarian</td>
<td>10</td>
<td>33.33</td>
</tr>
<tr>
<td>2</td>
<td>Non-vegetarian</td>
<td>20</td>
<td>83.3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

OBSERVATION:

Out of the 30 cases, 33.33% of cases were Vegetarian, 66.66% of cases were Non Vegetarians.
INFERENCe:

Though Iron from meat, poultry, and fish (i.e., heme iron) is absorbed two to three times more efficiently than iron from plants, most of the subjects in this study were non-vegetarians probably because non-vegetarians are more prevalent in the general population.

9.4. PATIENT’S OCCUPATION:

<table>
<thead>
<tr>
<th>S.NO</th>
<th>OCCUPATIONAL STATUS</th>
<th>PATIENTS IN NO</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>House wives</td>
<td>27</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>Working women</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>3</td>
<td>Students</td>
<td>2</td>
<td>6.66</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

OBSERVATION

Among 30 cases, 90% of cases are Home makers, 3.33% cases are students, 6.66% are working women.
**INFECTION**

As per the data collected from 30 samples, Home makers were affected more (90%) probably due to the fact that most of the home makers are women at reproductive age who has improper feeding habits and gets regular blood loss due to menstruation.

Next to homemakers, Iron deficiency appear to be prevalent among school students (6.66%) as they follow unhealthy feeding habits such as skipping breakfast, eating less vegetables and fruits and more junk foods.

**9.5. ETIOLOGY**

<table>
<thead>
<tr>
<th>ETIOLOGY</th>
<th>NO.OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased intake of salty, astringent tasting foods</td>
<td>10</td>
<td>33.33</td>
</tr>
<tr>
<td>Inadequate diet</td>
<td>26</td>
<td>86.67</td>
</tr>
<tr>
<td>Following menorrhagia, hypertension, piles, blood vomiting ,bloody stools</td>
<td>4</td>
<td>13.33</td>
</tr>
<tr>
<td>Chronic intake of toxic medicines</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Following trauma</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Suffering from worm infection, tuberculosis, dysentery</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Following liver diseases</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tobacco chewing, betal nut chewing, intake of sand and camphor</td>
<td>6</td>
<td>20</td>
</tr>
</tbody>
</table>
OBSERVATION

Out of 30 cases, 86.67% of cases had inadequate diet, 33.33% of cases had history of increased intake of hot, salt, astringent, bitter tasting foods, 20% of cases had Tobacco chewing, betel nut chewing, intake of sand and camphor, 13.33% of cases usually had menorrhagia, hypertension, piles, blood vomiting, bloody stools.

INFERENCE

The above data supports the fact that inadequate diet without proper nutrition was the major cause for iron deficiency anemia globally. Increased intake of hot, salt, astringent etc affecting iron absorption from gut ranks second in causing Seya kamaalai. Tobacco chewing reduces utilization of iron and causes lot of vascular complications leading to Seya kamaalai. Regular blood loss causing significant reduction in hemoglobin content also result in Seya kamaalai.
### 9.6. CLINICAL FEATURES PRESENTED BY THE PATIENTS

<table>
<thead>
<tr>
<th>S.NO</th>
<th>CLINICAL FEATURES</th>
<th>PATIENTS IN NO</th>
<th>PATIENTS PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pallor of eyes</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Dyspnoea on exertion</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>Palpitation</td>
<td>21</td>
<td>70</td>
</tr>
<tr>
<td>4</td>
<td>Loss of appetite</td>
<td>19</td>
<td>63.33</td>
</tr>
<tr>
<td>5</td>
<td>Facial edema</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>6</td>
<td>Dryness of tongue</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>7</td>
<td>Drowsiness</td>
<td>22</td>
<td>73.33</td>
</tr>
<tr>
<td>8</td>
<td>giddiness</td>
<td>21</td>
<td>70</td>
</tr>
</tbody>
</table>

**OBSERVATION**

Among 30 cases, 100% of cases had Pallor of eyes, dyspnoea on exertion, 73.33% of the cases had drowsiness, 70% of the cases had palpitation, 63.33% of the cases had loss of appetite, and 3.33% of the cases had dryness of tongue and facial edema.
**INFERENCE**

Pallor of eyes, dyspnoea on exertion are the classic symptoms of anemia and were expressed in all cases.

Drowsiness and palpitations occur only in very low hemoglobin levels, hence it is manifested in around 70% of individuals.

**9.7. UDAL VANMAI**

<table>
<thead>
<tr>
<th>UDAL VANMAI</th>
<th>PATIENTS</th>
<th>HEALTHY VOLUNTEERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO</td>
<td>%</td>
</tr>
<tr>
<td>Iyalbu (Normal)</td>
<td>8</td>
<td>26.66</td>
</tr>
<tr>
<td>Valivu (Robust)</td>
<td>2</td>
<td>6.66</td>
</tr>
<tr>
<td>Melivu (Lean)</td>
<td>20</td>
<td>83.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

**OBSERVATION:**

Out of 30 cases, 66.66% of cases had Melivu nilai, 26.66% of cases had Iyalbu nilai, 6.66% of cases had Valivu nilai.
INFERENECE:

Chronic iron deficiency results in decline in body growth and general health. Hence most of the cases have a lean body nature and 26.6% have normal body nature and very few have robust nature.

9.8. NILAM

<table>
<thead>
<tr>
<th>S. NO</th>
<th>NILAM</th>
<th>PATIENTS</th>
<th>HEALTHY VOLUNTEERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NO</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Kurunji</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>2</td>
<td>Mullai</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Marutham</td>
<td>16</td>
<td>53.33</td>
</tr>
<tr>
<td>4</td>
<td>Neithal</td>
<td>13</td>
<td>43.33</td>
</tr>
<tr>
<td>5</td>
<td>Palai</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

OBSERVATION

Out of 30 cases, 53.33% cases were living in Marutham nilam, 43.33% cases were living in Neithal nilam, and 3.33% cases were living in Kurunji nilam.
INFEERENCE:
As per the report, most of the cases were from Marutham region and Neithal region. However, as this is a single centered study done only in National Institute of Siddha, prevalence in various regions cannot be inferred properly.

9.9. KAALAM (AGE) DISTRIBUTION

<table>
<thead>
<tr>
<th>S.NO</th>
<th>AGE</th>
<th>PATIENTS IN NO</th>
<th>PATIENTS IN PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vathakaalam (1-33)</td>
<td>12</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>Pitha kaalam (34-66)</td>
<td>18</td>
<td>60</td>
</tr>
<tr>
<td>3</td>
<td>Kaba kaalam (67-100)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

OBSERVATION
Among 30 cases, 60% of cases came under pitha kaalam ie, 34-66yrs, 40% of cases came under vatha kaalam (1-33yrs).
INFERENCES

In the study, majority of the patients fell in Pitha kaalam. This observation supports the Siddha literature, which states that Seya kamaalai is due to vitiated pitha humour.

9.10. NOI UTRA KAALAM

<table>
<thead>
<tr>
<th>S.NO</th>
<th>NOI UTRA KAALAM</th>
<th>PATIENTS IN NO</th>
<th>PATIENTS IN PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kaarkaalam (Rainy season)</td>
<td>10</td>
<td>33.33</td>
</tr>
<tr>
<td>2</td>
<td>Koothirkaalam (Autumn)</td>
<td>7</td>
<td>23.33</td>
</tr>
<tr>
<td>3</td>
<td>Munpanikalam (Early winter)</td>
<td>4</td>
<td>13.33</td>
</tr>
<tr>
<td>4</td>
<td>Pinpanikalam (Late winter)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Ilavenirkaalam (Early summer)</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>6</td>
<td>Muthuveneerkaalam (Late summer)</td>
<td>8</td>
<td>26.67</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
**OBSERVATION**

Among 30 cases, 33.33% of the cases had the onset of disease at kaarkaalam, 26.67% of cases had the onset of disease at muthuvenir kaalam, 23.33% of cases had the onset of disease at koothirkaalam, 13.33% of cases had the onset of disease at munpanikkaalam, and 3.33% of cases had the onset of disease at Ilavenirkaalam.

**INFERENCE**

Majority of cases had their diseases in kaarkaalam and muthuvenir kaalam. Generally our body’s immune levels are low during this time (aathaana kaalam) as per Siddha literatures. So there is high chance of getting various infections, which may underlie the causes for Seya kamaalai.

**9.11. DURATION OF ILLNESS**

<table>
<thead>
<tr>
<th>DURATION</th>
<th>NO.OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 month</td>
<td>4</td>
<td>13.33</td>
</tr>
<tr>
<td>3 month</td>
<td>8</td>
<td>26.67</td>
</tr>
<tr>
<td>6 month</td>
<td>2</td>
<td>6.67</td>
</tr>
<tr>
<td>1 years</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>11/2 years</td>
<td>4</td>
<td>13.33</td>
</tr>
<tr>
<td>2 years</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>2 1/2years</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>3 years</td>
<td>2</td>
<td>6.67</td>
</tr>
<tr>
<td>4 years</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>
OBSERVATION

Out of 30 cases, 26.67% of cases had the disease for 3 months, 13.33% of cases had the disease for 2 months, for 11 months and for 2 years respectively. 10% of cases had the disease for 1 year and 2 year. 6.67% of case had the disease for 6 month and for 3 years, 3.33% of case had the disease for 21 month and for 2 years.

INFERRENCE:

Majority of the cases suffering from this disease had duration of 3 months. Usually duration of illness in anemia depends on its cause, as body restores its normal hb level once the root cause is rectified. If the cause for IDA is due to inadequate diet it can be restored easily by proper diet. But if it is due to any chronic disorder, it may take a long time.
9.12. RASI (ZODIAC SIGN) DISTRIBUTION

<table>
<thead>
<tr>
<th>S. NO</th>
<th>RASI</th>
<th>PATIENTS IN NO</th>
<th>PATIENTS IN PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mesham</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Rishabam</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>3</td>
<td>Mithunam</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>Katakam</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Kanni</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>Simmam</td>
<td>2</td>
<td>6.66</td>
</tr>
<tr>
<td>7</td>
<td>Viruchigam</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>Thulam</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>Dhanusu</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>10</td>
<td>Magaram</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>Kumbam</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>Meenam</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>13</td>
<td>Not known</td>
<td>25</td>
<td>83.33</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

![Graph showing percentage distribution of Rasis](image)

157
OBSERVATION

Among 30 cases 6.67% of cases were documented under simmam, 3.33% of cases were documented under rishabam, simmam, dhanusu, meenam. 83.33% comes under not known category.

INFERENCE

No specific inference could be made.

9.13. MANIKADAI NOOL (WRIST CIRCUMETRIC SIGN)

<table>
<thead>
<tr>
<th>S.NO</th>
<th>MANIKADAI ALAVU (Finger breadths)</th>
<th>PATIENTS</th>
<th>HEALTHY VOLUNTEERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NO</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NO</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>7 ¼</td>
<td>11</td>
<td>36.67</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>18</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>8 ¼</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td>--</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>9 1/2</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>2</td>
<td>6.67</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>100</td>
</tr>
</tbody>
</table>
**OBSERVATION**

Out of the 30 cases, 60% of cases had 8 viralkadai alavu, 36.67% of cases had 7 ¼ viral kadai alavu, 10% of cases had 8 1/4 viralkadai alavu, 3.33% of cases had 9 and 9 ½ viral kadai alavu, 6.67% of cases had 10viralkadai alavu.

**INFERENCE:**

In Manikkadai nool study, a sizable percentage of cases had Manikadai measurements of 8 fbs. In the Agasthiyar soodamani kayiru soothiram a treatise written by Sage Agasthiyar, the wrist circumetric sign for vellupu and pitha miguthi has been given as 91/2 and 71/4.
9.14. UDAL THATHUKKAL

<table>
<thead>
<tr>
<th>S.NO</th>
<th>UDAL THATHUKKAL</th>
<th>PATIENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Saaram</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>Senneer</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>Oon</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>Koluppu</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>Enbu</td>
<td>30</td>
</tr>
<tr>
<td>6</td>
<td>Moolai</td>
<td>30</td>
</tr>
<tr>
<td>7</td>
<td>Sukkilam</td>
<td>30</td>
</tr>
</tbody>
</table>

OBSERVATION

Out of 30 cases, all the cases had deranged all Udal thaathukkal.

INFERENCEx

All the cases had all the 7 udal thaathukkal affected, because when senneer gets affected, it affects all other udal thaathukkal over time.
### 9.15. NAADI (PULSE)

<table>
<thead>
<tr>
<th>NAADI</th>
<th>PATIENTS</th>
<th>HEALTHY VOLUNTEERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO</td>
<td>%</td>
</tr>
<tr>
<td>Naadi nithanam (Pulse appraisal)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vanmai</td>
<td>23</td>
<td>76.67</td>
</tr>
<tr>
<td>Menmai</td>
<td>7</td>
<td>23.33</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Naadi Panbu (Pulse character)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kathithal</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Illaithal</td>
<td>22</td>
<td>73.33</td>
</tr>
<tr>
<td>Kuthithal</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Thullal</td>
<td>2</td>
<td>6.67</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Pulse play (naadi nadai)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pitha vatham</td>
<td>16</td>
<td>53.33</td>
</tr>
<tr>
<td>Vatha pitham</td>
<td>13</td>
<td>43.33</td>
</tr>
<tr>
<td>Kaba pitham</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>
OBSERVATION

Patients:

Out of the 30 cases, 76.67% of cases had Vanmai character, 23.33% cases had Menmai character in Naadi nithanam. Among 30 cases, 73.33% of cases had Illaithal, 10% of cases showed kathithal and kuthithal, 6.67% of the cases Thullal, 73.33% of cases had kuthithal alone in their Naadi panbu. Among 30 cases, 43.33% of cases had the Naadinadai of Vathapitham, 3.33% cases had Kabapitham, 53.33% cases had Naadinadai of Pithavatham.

Healthy volunteers:

Out of the 10 cases, 50% of cases had Vanmai character and 50% of cases had Menmai character in Naadi nithanam. Among 10 cases, 20% of cases showed Illaithal, 40% of cases had kuthithal and 40% of cases had thullal character in their Naadi panbu. Among 10 cases, 80% of cases had the naadinadai of Vatha pitham, and 20% of cases had Kaba pitham.
### 6. NAA

<table>
<thead>
<tr>
<th>NAA</th>
<th>PATIENTS</th>
<th>HEALTHY VOLUNTEERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO</td>
<td>%</td>
</tr>
<tr>
<td>Thanmai (Appearance)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maapadinthiruthal</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Veddippu alone</td>
<td>2</td>
<td>6.67</td>
</tr>
<tr>
<td>Maapadithal&amp; vedippu</td>
<td>2</td>
<td>6.67</td>
</tr>
<tr>
<td>Normal</td>
<td>23</td>
<td>76.67</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Niram (Colour)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>5</td>
<td>16.67</td>
</tr>
<tr>
<td>Manjal</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Velluppu</td>
<td>25</td>
<td>83.33</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Suvai (Taste)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulippu (Sour)</td>
<td>10</td>
<td>33.33</td>
</tr>
<tr>
<td>Kaippu (Bitter)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Inippu (Sweet)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Normal</td>
<td>20</td>
<td>66.67</td>
</tr>
<tr>
<td>Tastelessness</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Vainer ooral (salivation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>21</td>
<td>70</td>
</tr>
<tr>
<td>Increased</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Decreased</td>
<td>9</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>
(NAA - TONGUE)

FINDING: MAAPADITHAL
OP NO: C91707

FINDING: PALLOR
OP NO: C76982

FINDINGS: NORMAL TONGUE OP NO: D005910
OBSERVATION

Among 30 cases, 6.67% of cases had fissure alone in their tongue, 10% of cases had coated tongue alone, 6.67% of cases had both coated tongue and fissure, 76.67% cases had normal tongue. Among 30 cases, 76.67% of cases had normal colour tongue, 16.67% of cases had pale and 83.30% of cases had yellow colour change. Among 30 cases, 33.33% of cases had sour taste in their tongue, 66.66% of the cases had no abnormal taste felt in their tongue. Among 30 cases, 30% of cases had decreased salivation, 70% had normal salivation. 16.67% of cases had decreased salivation, 16.67% cases had increased salivation, and 33.33% had normal salivation.

INFERENCE

In the study majority of cases had pallor of tongue, no abnormal taste in tongue and normal salivation. Pallor of tongue is a sign of anaemia.

In Healthy volunteers, no specific inference could be made out in this study from the examination of tongue (Naa). So in healthy individuals, Kaippu & Pullippu suvai (taste) in tongue can be taken as a sign of Kaba and Pitha humour derangements and necessary precautions can be taken.
### 9.17. NIRAM, MOZHI AND MEIKURI

<table>
<thead>
<tr>
<th>NAME OF THE PARAMETER</th>
<th>THANMAI (CHARACTER)</th>
<th>PATIENTS NO</th>
<th>%</th>
<th>HEALTHY VOLUNTEERS NO</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Niram (complexion)</strong></td>
<td>Karuppu (Dark)</td>
<td>9</td>
<td>30</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Manjal</td>
<td>1</td>
<td>3.33</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Velluppu</td>
<td>2</td>
<td>6.67</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Wheatish</td>
<td>18</td>
<td>60</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
<td><strong>100</strong></td>
<td><strong>10</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td><strong>Mozhi (voice)</strong></td>
<td>Thanindhaoli (Low Pitch)</td>
<td>6</td>
<td>20</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Urathaoli (High Pitch)</td>
<td>6</td>
<td>20</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Samaoli (Normal pitch)</td>
<td>18</td>
<td>60</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
<td><strong>100</strong></td>
<td><strong>10</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td><strong>Meikuri</strong></td>
<td>Veppam (Warmth)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mitha veppam</td>
<td>21</td>
<td>8</td>
<td>8</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Migu veppam</td>
<td>9</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Thatpam</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
<td><strong>10</strong></td>
<td><strong>10</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td></td>
<td>Viyarvai (Sweating)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Normal</td>
<td>29</td>
<td>10</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Increased</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
<td><strong>10</strong></td>
<td><strong>10</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td></td>
<td>Thodu vali (Tenderness)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Absent</td>
<td>29</td>
<td>10</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Present</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
<td><strong>10</strong></td>
<td><strong>10</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Observation:

Among the 30 cases, 30% of cases were of dark complexion, 3.33% of cases had manjal complexion, 6.67% of cases had velluppu udal niram, 60% cases had normal (wheatish) complexion. Among 30 cases, 20% of cases had high pitched voice, 20% of cases had low pitched voice, 60% had normal voice. Among 30 cases, 30% of cases had migu veppam, 70% of cases had mitha veppam. Among 30 cases, 20% of cases had increased (sweating) viyarvai, 80% had normal sweating, Among 30 cases, 3.33% of cases had thoduvali (Tenderness), 96.67% of cases were without thoduvali.

INFERENCEx:

As most of the Indians are wheatish in colour, 60% of patients found to be wheatis. No specific inference could be made out in this study from the examination of niram.

In Healthy volunteers, no specific inference could be made out in this study from the examination of niram, mozhi and meikuri.
### 9.18. VIZHI (EYE)

<table>
<thead>
<tr>
<th>NAME OF THE PARAMETER</th>
<th>THANMAI (CHARACTER)</th>
<th>PATIENTS</th>
<th>HEALTHY VOLUNTEERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO</td>
<td>%</td>
<td>NO</td>
</tr>
<tr>
<td>NIRAM</td>
<td>Karuppu (Muddy)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Manjal (Yellow)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Sivappu (Red)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Vellupu (pallor)</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>No discolouration</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>THANMAI</td>
<td>Peelai serthal only</td>
<td>4</td>
<td>13.33</td>
</tr>
<tr>
<td></td>
<td>Increased kanner only</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Erichal only</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Peelai serthal&amp; kaneer</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Peelai serthal &amp; Erichal</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Erichal &amp; kaneer</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td></td>
<td>All three</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Normal</td>
<td>25</td>
<td>83.33</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>OP NO: C91376</td>
<td>FINDING: PALLOR OF EYES</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>-------------------------</td>
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</tr>
<tr>
<td>OP NO: C86791</td>
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</tr>
<tr>
<td>OP NO: C76982</td>
<td>FINDINGS: PALLOR OF EYES</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
OBSERVATION

Among 30 cases 100% of cases had Vellupu vizhi. Out of 30 cases, 3.33% of cases had both erichal & kanneer, 13.33% of cases had Peelai serthal (mucous excrements) only, 83.33% of cases had normal eye.

INFERENCE

Majority of cases in the study were seen with pallor of eyes.
## 9.19. MALAM

<table>
<thead>
<tr>
<th>MALAM</th>
<th>PATIENTS</th>
<th>HEALTHY VOLUNTEERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO</td>
<td>%</td>
</tr>
<tr>
<td><strong>Thanmai</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sikkal only</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Siruthal only</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Seetham</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>kalichal</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>Vemmai only</td>
<td>2</td>
<td>6.67</td>
</tr>
<tr>
<td>Siruthal,sikkal,vemmai</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td>Normal</td>
<td>19</td>
<td>63.33</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td><strong>Niram (Colour)</strong></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Karuppu (Dark)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Manjal (normal)</td>
<td>28</td>
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</tr>
<tr>
<td>Vellupu (Pallor)</td>
<td>2</td>
<td>6.67</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>
**OBSERVATION**

Among 30 cases, 10% of cases had sikkal (constipation) only, 10% of cases had siruthal only, 3.33% of cases had Seetham (Mucosal mixing of stools), 3.33% of cases had kalichal, 6.67% of cases had vemmai only, 3.33% of cases had all sikkal, siruthal and vemmai together, 63.33% of cases had no thanmai abnormality.

Among 30 cases, 93.33% of cases have manjal (normal) coloured stool, 6.67% of cases have velluppu (pallor) colored stool.

**INFERENCE**

In the study majority of cases had yellow (normal) coloured stools. No specific inference could be made from malam (stool) examination.
9.20. NEER
1. NEERKURI

<table>
<thead>
<tr>
<th>NEERKURI</th>
<th>NO. OF CASES</th>
<th>NO. OF CASES</th>
<th>PERCENTAGE</th>
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<tr>
<td>Niram</td>
<td>pale yellow (ila manjal niram)</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Manam (Smell)</td>
<td>Mild aromatic</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Nurai (Frothy)</td>
<td>Absent</td>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Present</td>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Edai (Density)</td>
<td>Normal</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Enjal (Deposit)</td>
<td>Normal</td>
<td>26</td>
<td>86.67</td>
</tr>
<tr>
<td></td>
<td>Polyuria</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td></td>
<td>Oliquria</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>
OBSERVATION

Among 30 cases, 100% of cases had pale yellow/straw coloured urine, 100% of cases had mild aromatic, 50% of the cases had nurai present, 50% cases had nurai (Froth) absent, 3.33% of cases had polyuria, 10% of cases had oliguria. 86.67% had normal urine alavu. 100% of the patients had increased edai (density)

INFERENC

Almost all the cases and healthy volunteers had normal urine Colour (Ila Manjal Niram) with mild aromatic smell and normal density and normal Enjal. No specific inference could be made out in this study from the examination of Neerkuri.

II.NEIKKURI

<table>
<thead>
<tr>
<th>S. NO</th>
<th>FEATURES OF OIL-ON-URINE SIGN</th>
<th>PATIENTS</th>
<th>HEALTHY VOLUNTEERS</th>
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<tr>
<td></td>
<td></td>
<td>NO</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Muthu</td>
<td>9</td>
<td>29.97</td>
</tr>
<tr>
<td>2</td>
<td>Mellana paraval</td>
<td>20</td>
<td>66.67</td>
</tr>
<tr>
<td>3</td>
<td>Salladaikan</td>
<td>1</td>
<td>3.33</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>
OBSERVATION

Patients:

Among 30 cases, 66.67% of cases had Mellanaparaval (sluggish spreading), 3.33% of the cases had salladaikkan, and 29.97% of cases had Muthu (Pearl beaded).

INFERENCE

Majority of cases had slowly spread nature.
| OP.NO: C83901 | FINDINGS: SHAPE - ROUND  
SPREADING NATURE - MELLENA PARAVAL  
(SLOWLY SPREAD) |
| OP.NO: C91376 | FINDINGS: SHAPE: IRREGULAR  
SPREADING NATURE: VEGAMAI PARAVAL  
(FASTLY SPREAD) |
OP.NO: C76982

FINDINGS: SHAPE : CIRCLE
SPREADING NATURE: MELLENA PARAVAL
(SLOWLY SPREAD)

. 9.21. DERANGED VALI

<table>
<thead>
<tr>
<th>S.NO</th>
<th>VATHAM</th>
<th>PATIENTS</th>
<th>HEALTHY VOLUNTEERS</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NO</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Pranan</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Abanan</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Uthanaman</td>
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<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Viyanan</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>5</td>
<td>Samanana</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>6</td>
<td>Nahan</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>Koorman</td>
<td>10</td>
<td>3.33</td>
</tr>
<tr>
<td>8</td>
<td>Kirukaran</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>9</td>
<td>Devathanan</td>
<td>22</td>
<td>73.33</td>
</tr>
<tr>
<td>10</td>
<td>Dhananjayan</td>
<td>0</td>
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</table>
OBSERVATION

Among 30 cases, 100% cases had deranged Pranan, Viyanan, Samanan and kirukaran, 10% cases had deranged Uthanan, 10% cases had deranged Abanan, Uthanan and Nahàn, 73.33% of cases had deranged Devathathan, and 3.33% of cases had deranged Koorman.

INFERENCE

All the patients inducted in the study had Pranan, viyanan,Udhanan, Samanan Kirukaran and devathathan components of Vatha humour affected.
9.22. DERANGED AZHAL

<table>
<thead>
<tr>
<th>S. NO</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NO</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Analam</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Ranjagam</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>Aalosagam</td>
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<td>6.67</td>
</tr>
<tr>
<td>4</td>
<td>Prasagam</td>
<td>2</td>
<td>6.67</td>
</tr>
<tr>
<td>5</td>
<td>Saathagam</td>
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<td>100</td>
</tr>
</tbody>
</table>

OBSERVATION

Out of 30 cases, 100% had deranged Analam, Ranjanam and Saathagam. 6.67% of cases had deranged Aalosagam, 6.67% of cases had deranged Prasagam.
INFEERENCE

The components of Pitham connected with digestion, activeness, haemopoietic activity are affected. The daily routines are greatly affected in seya kamaalai cases due to deranged Pitha humour, vatha and kaba humour

9.23. DERANGED IYYAM

<table>
<thead>
<tr>
<th>KAPHAM</th>
<th>PATIENTS</th>
<th>HEALTHY VOLUNTEERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO</td>
<td>%</td>
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<tr>
<td>Avalambagam</td>
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<td>60</td>
</tr>
<tr>
<td>Kilethagam</td>
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<td>0</td>
</tr>
<tr>
<td>Pothagam</td>
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<td>0</td>
</tr>
<tr>
<td>Tharpagam</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Santhigam</td>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>
OBSERVATION

Patients:

Out of 30 cases, 60% of the cases had deranged Avalambagam. 10% of the cases had deranged santhigam.

INFERENCE

Avalambagam controls heart, lungs and supports other forms of kabam. In seya kamaalai, dyspnoea is present when it is affected.
## 1. TABLE SHOWING LABORATORY INVESTIGATIONS OF SEYA KAMAALAI PATIENTS

<table>
<thead>
<tr>
<th>S. No</th>
<th>OP/IP No</th>
<th>LAB NO</th>
<th>Age/Se</th>
<th>TC Cells/ cu.m</th>
<th>DC in %</th>
<th>ESR in mm</th>
<th>RB C</th>
<th>Hb Gms %</th>
<th>PCV</th>
<th>MCV</th>
<th>MCH</th>
<th>MCHC</th>
<th>B.T</th>
<th>C.T</th>
<th>BSU/GAR mgs/dl</th>
<th>SGO T &amp; GPT</th>
<th>UR EA</th>
<th>CREATININE</th>
<th>LIPO ID PROFILE</th>
</tr>
</thead>
<tbody>
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<td></td>
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<td>P</td>
<td>L</td>
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<td>½ hr</td>
<td>1 hr</td>
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<td></td>
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</tr>
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<td>422</td>
<td>7</td>
<td>46/f</td>
<td>4000</td>
<td>44</td>
<td>49</td>
<td>7</td>
<td>4</td>
<td>26</td>
<td>3.8</td>
<td>6.4</td>
<td>23.7</td>
<td>61.4</td>
<td>16.6</td>
<td>27.0</td>
<td>2MIN 15 SEC</td>
<td>4MIN 30 SEC</td>
<td>93</td>
</tr>
<tr>
<td>2</td>
<td>C8501</td>
<td>310</td>
<td>0</td>
<td>42/f</td>
<td>6900</td>
<td>64</td>
<td>33</td>
<td>03</td>
<td>8</td>
<td>18</td>
<td>4.0</td>
<td>7.5</td>
<td>25.6</td>
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<td>33</td>
<td>06</td>
<td>12</td>
<td>24</td>
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<td>71.2</td>
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<td>2MIN</td>
<td>4MIN 30 SEC</td>
<td>107</td>
</tr>
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<td>4</td>
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<td>659</td>
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<td>48/f</td>
<td>5838</td>
<td>54</td>
<td>39</td>
<td>5</td>
<td>4</td>
<td>10</td>
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<td>9.2</td>
<td>21.7</td>
<td>65.1</td>
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<td>4MIN 30 SEC</td>
<td>86</td>
</tr>
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<td>51/f</td>
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<td>10</td>
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<td>9.1</td>
<td>71.4</td>
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<td>46</td>
<td>12</td>
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<td>23.5</td>
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<td>4MIN 30 SEC</td>
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</tr>
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<td>29.3</td>
<td>3MIN 15 SEC</td>
<td>4MIN 30 SEC</td>
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</table>
## 2. TABLE SHOWING LABORATORY INVESTIGATIONS OF SEYA KAMAALAI PATIENTS

<table>
<thead>
<tr>
<th>S. No</th>
<th>OP/IP No</th>
<th>LAB No</th>
<th>AGE/SEX</th>
<th>BLOOD</th>
<th>URINE</th>
<th>MOTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td>SMEAR STUDY</td>
<td>BILURUBIN T/P</td>
<td>ALB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RBC</td>
<td>WBC</td>
<td>PLATELETS</td>
</tr>
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<td>C94 635</td>
<td>4227</td>
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<td>hypochromic, microcytic</td>
<td>normal morphology</td>
<td>adequate and evenly distributed</td>
</tr>
<tr>
<td>2</td>
<td>C85 01</td>
<td>3100</td>
<td>42/f</td>
<td>hypochromic, microcytic</td>
<td>normal morphology</td>
<td>adequate and evenly distributed</td>
</tr>
<tr>
<td>3</td>
<td>C61 83</td>
<td>5694</td>
<td>35/f</td>
<td>hypochromic, microcytic</td>
<td>normal morphology</td>
<td>adequate and evenly distributed</td>
</tr>
<tr>
<td>4</td>
<td>B16 709</td>
<td>5838</td>
<td>48/f</td>
<td>hypochromic, microcytic</td>
<td>normal morphology</td>
<td>adequate and evenly distributed</td>
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<td>51/f</td>
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<td>normal morphology</td>
<td>adequate and evenly distributed</td>
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<td>normal morphology</td>
<td>adequate and evenly distributed</td>
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<tr>
<td>7</td>
<td>D00 591 0</td>
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<td>29/f</td>
<td>hypochromic, microcytic</td>
<td>normal morphology</td>
<td>adequate and evenly distributed</td>
</tr>
<tr>
<td>8</td>
<td>B16 709</td>
<td>4496</td>
<td>48/f</td>
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<td>normal morphology</td>
<td>adequate and evenly distributed</td>
</tr>
<tr>
<td>9</td>
<td>C61 86</td>
<td>4485</td>
<td>44/85</td>
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<td>normal morphology</td>
<td>adequate and evenly distributed</td>
</tr>
<tr>
<td>10</td>
<td>C85 01</td>
<td>5838</td>
<td>58/38</td>
<td>hypochromic, microcytic</td>
<td>normal morphology</td>
<td>adequate and evenly distributed</td>
</tr>
</tbody>
</table>
### 3. TABLE SHOWING LABORATORY INVESTIGATIONS OF SEYA KAMAALAI PATIENTS

<table>
<thead>
<tr>
<th>S. No</th>
<th>OP/IP No</th>
<th>L A B N O</th>
<th>Age/Sex</th>
<th>TC Cells/µm³</th>
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<th>ESR in mm</th>
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### 5. TABLE SHOWING LABORATORY INVESTIGATIONS OF SEYA KAMAALAI PATIENTS

| S. No | /IP | L A B N O | Age | Sex | TC Cell/ cu. mm | DC in % | ESR in mm | RBC | Hb gms % | PCV | MCV | MCH | MCHC | B.T | B.SUGAR mgs/dl | SGO & SGP T | UR EA | CR EATI NNE | T.C HO | HD L | LDL | VLD L | TG L |
|-------|-----|----------|-----|-----|-----------------|--------|-----------|------|----------|------|-----|-----|------|-----|----------------|-------------|--------|-----------|-------|------|-----|------|-----|-----|
| 21    | C957755 | 79/39 | 30/F | 550 | 62 33 5 | 7.6 28 3.8 | 25.1 | 58.4 | 17.7 | 30.3 | 2MIN 15 SEC | 93 | 113 | 21/22 | 20 | 0.5 | 223 | 40 | 123 | 27 | 139 |
| 22    | C72582 | 70/88 | 32/F | 580 | 63 33 04 | 10 12 3.7 | 31.8 | 83.9 | 28.8 | 34.3 | 1MIN 4 SEC | 10 | 8 | 130 | 19/20 | 14 | 0.4 | 133 | 32 | 108 | 16 | 82 |
| 23    | C80773 | 87/00 | 40/F | 870 | 67 27 06 | 9.4 4 4.6 | 39.1 | 84.4 | 29.4 | 34.8 | 2MIN 15 SEC | 97 | 110 | 13/14 | 20 | 0.6 | 159 | 32 | 90 | 47 | 238 |
| 24    | C91376 | 68/90 | 37/F | 650 | 50 40 10 | 2 4 4.6 | 8.3 | 28.5 | 61.0 | 17.8 | 29.1 | 1MIN 4 SEC | 94 | 104 | 10/11 | 17 | 0.5 | 128 | 31 | 56 | 10 | 151 |
| 25    | C83901 | 38/84 | 25/F | 630 | 48 48 04 | 12 14 4.6 | 8.4 | 28.8 | 61.4 | 17.9 | 29.2 | 1MIN 15 SEC | 99 | 120 | 17/18 | 18 | 0.5 | 96 | 28 | 64 | 12 | 60 |
| 26    | C92702 | 68/38 | 50/F | 440 | 40 52 07 | 6 12 4.1 | 10.4 | 31.8 | 76.1 | 24.9 | 32.7 | 2MIN 15 SEC | 10 | 110 | 21/22 | 17 | 0.5 | 117 | 30 | 70 | 14 | 74 |
| 27    | 4379   | 68/00 | 50/F | 570 | 45 51 04 | 4 12 3.2 | 8.6 | 28.1 | 66.2 | 16.8 | 29.3 | 2MIN 15 SEC | 71 | 91 | 11/12 | 34 | 0.9 | 162 | 40 | 82 | 23 | 113 |
| 28    | C78468 | 70/76 | 45/f | 760 | 64 30 06 | 32 54 3.3 | 7.2 | 24.0 | 72.1 | 21.6 | 30.0 | 2MIN 15 SEC | 94 | 117 | 12/13 | 20 | 0.6 | 176 | 36 | 46 | 21 | 106 |
| 29    | C45322 | 74/36 | 40/f | 760 | 70 27 03 | 30 62 3.2 | 9.6 | 39.0 | 77.9 | 24.8 | 31.8 | 2MIN 15 SEC | 84 | 105 | 22/24 | 20 | 0.9 | 206 | 44 | 134 | 28 | 140 |
| 30    | C83351 | 42/10 | 46/f | 113 | 66 30 04 | 2 4 4.2 | 9.0 | 38.0 | 68.1 | 21.0 | 31.0 | 2MIN 15 SEC | 11 | 132 | 19/20 | 14 | 0.5 | 129 | 31 | 68 | 21 | 107 |
### 6. TABLE SHOWING LABORATORY INVESTIGATIONS OF SEYA KAMAALAI PATIENTS

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### 7. TABLE SHOWING LABORATORY INVESTIGATIONS-HEALTHY VOLUNTEERS

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<td>19</td>
<td>33/F</td>
<td>7600</td>
<td>62</td>
<td>36</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>26</td>
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<td>12.6</td>
<td>30.6</td>
<td>30 min</td>
<td>10 &amp; 12</td>
<td>1.5</td>
<td>161</td>
<td>35 82 21 107</td>
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<td>3</td>
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<td>19</td>
<td>55/F</td>
<td>9800</td>
<td>65</td>
<td>30</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>13</td>
<td>31.7</td>
<td>89.0</td>
<td>31.2 2 min</td>
<td>16 &amp; 18</td>
<td>1.7</td>
<td>120</td>
<td>30 70 12 63</td>
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<tr>
<td>4</td>
<td>D13393</td>
<td>19</td>
<td>58/F</td>
<td>1000</td>
<td>64</td>
<td>33</td>
<td>3</td>
<td>2</td>
<td>10</td>
<td>4.5</td>
<td>11.2 2 min</td>
<td>29.1 25.3</td>
<td>34.0</td>
<td>4 min 30 sec</td>
<td>20 &amp; 22</td>
<td>1.4</td>
<td>120</td>
<td>30 70 12 62</td>
</tr>
<tr>
<td>5</td>
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<td>44</td>
<td>38/M</td>
<td>7,700</td>
<td>42</td>
<td>53</td>
<td>5</td>
<td>6</td>
<td>12</td>
<td>5</td>
<td>11.5 2 min</td>
<td>24.0 63.0</td>
<td>30.3</td>
<td>4 min 30 sec</td>
<td>26 &amp; 23</td>
<td>2.6</td>
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<td>4</td>
<td>3.6</td>
<td>8</td>
<td>32.5 21.4</td>
<td>28.3</td>
<td>2 min 10 sec</td>
<td>27 &amp; 23</td>
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<td>41</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>13</td>
<td>33.0 27.3 33.6</td>
<td>2 min 3 min</td>
<td>71 81 24 &amp; 20 0.6 176 40 110 26 127</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
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<td>44</td>
<td>50/</td>
<td>6,200</td>
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<td>12</td>
<td>4.5</td>
<td>10.2</td>
<td>24.3</td>
<td>68.8</td>
<td>19.8</td>
<td>28.8</td>
<td>1min</td>
<td>3min</td>
<td>79</td>
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<td>8,000</td>
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<td>2</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>12.3</td>
<td>30.9</td>
<td>80.3</td>
<td>24.9</td>
<td>31.1</td>
<td>2min 30 sec</td>
<td>3 min 30 sec</td>
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### 8. TABLE SHOWING LABORATORY INVESTIGATIONS-HEALTHY VOLUNTEERS

<table>
<thead>
<tr>
<th>S. No</th>
<th>OP/IP No</th>
<th>LAB NO</th>
<th>AG E/S</th>
<th>LAB B NO</th>
<th>SMEAR STUDY</th>
<th>BLOOD</th>
<th>URINE</th>
<th>MOTION</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RBC</td>
<td>WBC</td>
<td>PLATELETS</td>
<td>BILURUBIN</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>normocytic normochromic anaemia</td>
<td>normal morphology</td>
<td>platelets are adequate and evenly distributed</td>
<td>T. B</td>
</tr>
<tr>
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<td>C7222 3</td>
<td>193</td>
<td>9</td>
<td>normocytic normochromic anaemia</td>
<td>normal morphology</td>
<td>platelets are adequate and evenly distributed</td>
<td>0.3</td>
<td>0.1</td>
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<tr>
<td>2</td>
<td>D1578 9</td>
<td>193</td>
<td>3</td>
<td>normocytic normochromic anaemia</td>
<td>normal morphology</td>
<td>platelets are adequate and evenly distributed</td>
<td>0.5</td>
<td>0.2</td>
</tr>
<tr>
<td>3</td>
<td>D1579 7</td>
<td>195</td>
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<td>normocytic normochromic anaemia</td>
<td>normal morphology</td>
<td>platelets are adequate and evenly distributed</td>
<td>0.3</td>
<td>0.1</td>
</tr>
<tr>
<td>4</td>
<td>D1339 3</td>
<td>195</td>
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<td>0.2</td>
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<td>C3344 5</td>
<td>441</td>
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<td>normal morphology</td>
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<td>0.6</td>
<td>0.3</td>
</tr>
<tr>
<td>6</td>
<td>C3379 3</td>
<td>454</td>
<td>37</td>
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<td>normal morphology</td>
<td>platelets are adequate and evenly distributed</td>
<td>0.3</td>
<td>0.2</td>
</tr>
<tr>
<td>7</td>
<td>C3378 2</td>
<td>453</td>
<td>32</td>
<td>normocytic normochromic anaemia</td>
<td>normal morphology</td>
<td>platelets are adequate and evenly distributed</td>
<td>0.9</td>
<td>0.3</td>
</tr>
<tr>
<td>8</td>
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<td>50</td>
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<td>normal morphology</td>
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<td>0.6</td>
<td>0.2</td>
</tr>
<tr>
<td>10</td>
<td>C3379 0</td>
<td>454</td>
<td>25</td>
<td>normocytic normochromic anaemia</td>
<td>normal morphology</td>
<td>platelets are adequate and evenly distributed</td>
<td>0.7</td>
<td>0.2</td>
</tr>
</tbody>
</table>
At the end of the study on Seya kamaalai, the author discusses on significant facts about the disease with relevant justifications from Siddha and Modern literatures based on observations and results.

The retrospective review of the disease Seya kamaalai begins from the correlation with the signs and symptoms of the disease.

Based on the clinical features given by Yugimuni Vaithiya Kaviyam, patients were recruited and were subjected to thorough history taking, clinical examination and laboratory investigations.

In this, 40% of cases had 6.0-8.5 g/dL haemoglobin level, 40% of cases had 8.6-9.5 g/dL haemoglobin level.

In the study, females were more affected than males. Generally women are at high risk of iron deficiency as they have a regular blood loss due to menstrual disorders. Pregnant and lactating women are usually affected by iron deficiency anemia due to increased iron requirements.

Though Iron from meat, poultry, and fish (i.e., heme iron) is absorbed two to three times more efficiently than iron from plants, most of the subjects in this study were non-vegetarians probably because non-vegetarians are more prevalent in the general population.

As per the data collected from 30 samples, Home makers were affected more (90%) probably due to the fact that most of the home makers are women at reproductive age who have improper feeding habits and gets regular blood loss due to menstruation.

Next to homemakers, Seya kamaalai appear to be prevalent among school students (6.66%) as they follow unhealthy feeding habits such as skipping breakfast, eating less vegetables and fruits and more junk foods.
Majority of cases had their diseases started in Kaarkalam & muthuvenirkaalam. The above data supports the fact that inadequate diet without proper nutrition was the major cause for iron deficiency anemia globally. Increased intake of hot, salt, astringent etc affecting iron absorption from gut ranks second in causing IDA. Tobacco chewing reduces utilization of iron and causes lot of vascular complications leading to IDA. Regular blood loss causing significant reduction in hemoglobin content also result in IDA. Pallor of eyes, dyspnoea on exertion are the classic symptom of anemia and expressed in all cases.

Drowsiness and palpitation occur only in very low hemoglobin levels, hence it is manifested in around 70% of individuals.

Chronic iron deficiency results in decline in body growth and general health. Hence most of the cases have a lean body nature and 26.6% have normal body nature and very few have robust nature.

As per the report, most of the cases were from Marutham region and Neithal region. However, as this is a single centered study done only in National Institute of Siddha, prevalence in various regions cannot be inferred properly.

In the study majority of the patients fell in Pitha kaalam. This supports the Siddha literature, which states that Seya kamaalai is due to vitiated pitha humour.

Majority of cases had their diseases in kaarkaalam and muthuvenir kaalam. Generally our body’s immune levels are low during this time (aathaana kaalam) as per siddha literatures. So there is high chance of getting various infections, which may underlie the cause for iron deficiency.

Majority of the cases suffering from this disease had duration of 3 months. Usually duration of illness in anemia depends on its cause, as body restores its normal hb level once the root cause is rectified. If the cause for IDA is due to inadequate diet it can be restored easily by proper diet. But if it is due to any chronic disorder, it may take a long time.
In Manikkadai nool study, a sizable percentage of cases had Manikadai measurements of 8 fbs. In the Agasthiyar soodamani kayiru soothiram a treatise written by Sage Agasthiyar, the wrist circumetric sign for vellupu and pitha miguthi has been given as 91/2 and 71/4.

From the pulse study of Seya kamaalai patients, 43.33% of cases had the Naadinadai of Vathapitham, 3.33% cases had Kabapitham 53.33% cases had Naadinadai of Pithavatham. Whereas in healthy volunteers Naadi was observed to be in physiological state in most of them with respect to body nature, sex and age.

In the study majority of cases had pallor tongue, no abnormal taste lingering in tongue and normal salivation. Pallor tongue is a sign of anaemia.

In Healthy volunteers, no specific inference could be made out in this study from the examination of tongue (Naa).

As most of the Indians are wheatish in colour, 60% of patients found to be wheatish. No specific inference could be made out in this study from the examination of niram. Among 30 cases, 3.33% of cases had thoduvali (Tenderness), 96.67% of cases were without thoduvali.

In Healthy volunteers, no specific inference could be made out in this study from the examination of niram, mozhi and meikuri.

From eye examination, majority of cases in the study were seen with pallor of eyes. This feature which is also mentioned in modern texts under iron deficiency anaemia.

In the study majority of cases had yellow (normal) coloured stools. No specific inference could be made from malam (stool) examination.

Majority of cases had slowly spreading nature neikkuri.

All the patients inducted in the study had Pranan, viyanan,Udhanan, Samanan Kirukaran and devathathan components of Vatha humour affected.

From the study on five types of Pitham, the components of Pitham connected with digestion, activeness, haemopoietic activity are found to be affected. The daily routines are greatly affected.

Of all the 30 cases, all the cases had deranged Avalambagam, Kilethagam and Santhigam.
The symptoms and signs mentioned in Sage Yugimuni literature are in close conformation with that of Iron deficiency anaemia mentioned in modern medical literature.

Study on Manikkadai nool threw up a narrow identifiable range (8fbs) for Seya kamaalai. So with all the symptomatology and the observed results a clinician can diagnose this study clinical entity as Seya kamaalai with confidence.

From the study on Naadi (Pulse), it was found that majority of patients were with Pithavatha Naadi. So presence of Pithavatha naadi in Seya kamaalai patients should be taken as a sign of increased Pitha humour which might lead on to seya kamaalai and drugs for balancing Pitha naadi should be selected.

From the study on Neikkuri (Examination of Urine), though it was found that many (93.33 %) cases of seya kamaalai had slowly spreading nature, it cannot be taken as one of the significant diagnostic tool for diagnosing this disease, because this pattern has also been reported in other diseases in our institute and considered as a non specific pattern. This is because most of them were reproductive age group.

In the study majority of cases had pallor tongue, no abnormal taste in tongue and normal vainer oral. Majority of cases in the study were seen with pallor of eyes.

With the study on Udalthathukkal, it was found that all the cases had all the Udal Thathukkal affected. So drugs that strengthen the Udal thathukkal in general should be prescribed.

The patients with symptoms of Seya kamaalai mentioned by Sage Yugi conformed to majority of symptoms mentioned in the modern literature of iron deficiency anaemia. Thus this study has validated the symptomatology elucidated by Sage Yugi and matched it with that of a disease of iron deficiency anaemia.
All the patients inducted in the study had Pranan, Viyanan, Udhanan, Samanan, Kirukaran and Devathan components of Vatha humour affected. From the study on five types of Pitham, the components of Pitham connected with digestion, activeness, haemopoietic activity are found to be affected. The daily routines are greatly affected.

From the study it is evident that, with Naadi, Manikkadai nool, Neerkkuri, Naa and Udal thathukkal examination, seya kamaalai can be diagnosed easily. The author concludes that these Siddha diagnostic parameters can be successfully implemented by a physician at the clinical level in the diagnosis of Seya kamaalai.
13. BIBLIOGRAPHY

- Yugimuni vaithiya kaviyam
- K.S. Murukesa muthalier-kuzhanthai maruthuvam
- S.P. Ramachandran - Theraiyar vagadam
- Dr. Uthamarayan-Thotra Kirama Araichiyum Siddha Maruthuva Varalarum Fourth edition 2008
- Harsh mohan’s text book of Pathology - Fifth edition
- Davidson’s text book of medicine-Tenth edition
- Harrison’s text book of internal medicine - Sixteenth edition
- Essentials of Medical physiology- K. Sembulingam-Third edition 2005
- Textbook of Medicine-K. V. Krishna Das
- Textbook of Medicine-P.C. Das-5th edition
- Human Embryology-Inderbir Singh- 8th Edition
- The New Harvard Guide to Women's Health - 2004
  Karen J. Carlson, Stephanie A. Eisenstat, Terra Diane Ziporyn
- Mosby's Pocket Dictionary of Medicine, Nursing & Health Professions Mosby - 2009
- Pdq Hematology, William F. Kern - 2002
- De Gruchy's Clinical Haematology in Medical Practice, 5th Ed
- Wintrobe's Clinical Hematology - Volume 2
  John P. Greer, John Foerster, George M. Rodgers – 2008
• Oxford Handbook of Perioperative Practice
  Suzanne Hughes, Andy Mardell - 2009
• Textbook of obstetrics
• Clinical Medicine in Optometric Practice
  Bruce G. Muchnick - 2007 –
• Nutrition for Health and Health Care
  Ellie Whitney, Linda Kelly DeBruyne, Kathryn Pinna - 2010
• Biomedical Sciences: Essential Laboratory Medicine
  Raymond Iles, Suzanne Docherty - 2011 -
• Gynecology: integrating conventional, complementary, and natural .
  Adam Ostrzenski - 2001
• Porth Pathophysiology: Concepts of Altered Health States
  Ruth A. Hannon, Charlotte Pooler, Carol Mattson Porth - 2009
• Textbook of Orthodontics , Singh - 2004
• A handbook of Chinese hematology , Simon Becker - 2000
• Gastroenterology and Hepatology:
  Nicholas J. Talley, Isidore Segal, Martin D. Weltman - 2007
• Essentials of Medical Biochemistry: With Clinical Cases
  N. V. Bhagavan, Chung-Eun Ha - 2011
• Exercise Physiology: Integrating Theory and Application
  William Kraemer, Steven Fleck, Michael Deschenes – 2011
• Straight A's in Pathophysiology
  Rita Breedlove, Lippincott Williams & Wilkins - 2005
Form –I Screening and selection Proforma

Form –IA History Proforma on enrollment

Form II Clinical Assessment on enrollment

Form –III Laboratory investigations on enrollment,
during the study

Form –IV Consent form
   (Vernacular and English versions)

Form -IV- A Patient Information Sheet
   (Vernacular and English versions)
A STUDY ON DIAGNOSTIC METHODOLOGY AND SYMPTOMATOLOGY OF “SEYA KAMAALAI”

FORM I

SCREENING AND SELECTION PROFORMA

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### INCLUSION CRITERIA

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<tr>
<td>Pallor of eyes</td>
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<tr>
<td>Breathlessness on exertion</td>
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</tr>
<tr>
<td>Palpitation</td>
<td></td>
</tr>
<tr>
<td>Loss of appetite</td>
<td></td>
</tr>
<tr>
<td>Giddiness</td>
<td></td>
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<tr>
<td>Facial edema</td>
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<td>Patient willing to give blood sample as mentioned in laboratory proforma</td>
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Patients who fulfill any of the four criteria are included to the study.
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<tr>
<td>- Endocrine disorders</td>
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<td></td>
</tr>
<tr>
<td>- Vulnerable group(pregnancy, lactation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Bleeding disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Post surgery, post trauma</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date:                                        P.G Student                                      Lecturer
DEPARTMENT OF NOI NAADAL
NATIONAL INSTITUTE OF SIDDHA, CHENNAI – 47.
A STUDY ON DIAGNOSTIC METHODOLOGY AND
SYMPTOMATOLOGY OF “SEYA KAMAALAI”

FORM II - HISTORY PROFORMA

1. Sl.No of the case: ________________

2. Name: ____________________________ Height: _____ cms  Weight: _____ Kg

3. Age (years): _______  DOB  
   D  D  M  M  Y  E  A  R

4. Educational Status:
   1) Illiterate  2) Literate  3) Student  4) Graduate/Postgraduate

5. Nature of work:
   1) Sedentary work
   2) Field work with physical labour
   3) Field work Executive

6. Complaints and Duration:
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
7. History of present illness:

______________________________________________________________________

______________________________________________________________________

_______________________________________________________________________

8. History of Past illness:

1. Yes               2. No

Systemic hypertension  
Ischemic heart disease
Dyslipidaemia
Jaundice
Bronchial asthma
Any drug allergy
Any GI surgeries
Any major illnesses
Chronic aspirin ingestion
Haematuria, epistaxis, haemoptysis

9. Habits:

10. Personal history:

Marital status: Married  Unmarried

No. of children: Male: _____ Female: _____
11. Family history:

12. Menstrual history
   Age at menarche _______ years
   Gravidity   □   Parity   □
   The presence or absence of clots
   Duration of the menstrual cycle
   Menorrhagia present   □   absent
   Constancy of cycle duration:   1.Regular   □   2.Irregular   □

13. Obstetric history
   Pregnancies—number and frequency
   Miscarriages
   Abortion

14. GENERAL ETIOLOGY FOR SEYA KAMAALAI:

   1. Increased intake of salty, astringent tasting foods   □   □
   2. inadequate diet   □   □
   3. Following Menorrhagia, hypertension, piles, blood vomiting, bloody stools   □   □
   4. following fever, diarrhea, vomiting, arthritis,   □   □
   5. chronic intake of toxic medicines   □   □
   6. Following Trauma   □   □
   7. Suffering from worm infection, Tuberculosis, dysentry   □   □
   8. Following Liver diseases   □   □
9. Tobacco chewing, betel nut chewing, intake of sand and camphor

15. CLINICAL SYMPTOMS OF SEYA KAAMALAI

<table>
<thead>
<tr>
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<td>Pallor of eyes</td>
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<tr>
<td>Breathlessness on exertion</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Palpitation</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Loss of appetite</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Giddiness</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Facial edema</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Date: 

P.G Student

Lecturer
CLINICAL ASSESSMENT

1. Serial No: _______

2. Name: ________________

3. Date of birth: ____________

4. Age: _______ years

5. Date: ____________

GENERAL EXAMINATION:

1. Pallor:
2. Icterus:
3. Cyanosis:
4. Lymphadenopathy:
5. Pedal edema:
6. Clubbing:
7. Jugular vein pulsation:
8. Temperature (°F):

9. Pulse rate:

10. Heart rate:

11. Respiratory rate:

12. Blood pressure:


14. Weight (kg): BMI ______ (Weight Kg/ Height m²)

**VITAL ORGANS EXAMINATION**

<table>
<thead>
<tr>
<th></th>
<th>1. Normal</th>
<th>2. Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Heart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Lungs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Brain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Liver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Kidney</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Spleen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Stomach</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SYSTEMIC EXAMINATION:

1. Cardio Vascular System
2. Respiratory System
3. Gastrointestinal System
4. Central Nervous System
5. Urogenital System
6. Endocrine System
7. Musculoskeletal System

SIDDHA SYSTEM OF EXAMINATION

[1] ENVAGAI THERVU [EIGHT-FOLD EXAMINATION]

I. NAADI (KAI KURI) (RADIAL PULSE READING)

(a) Naadi Nithanam (Pulse Appraisal)

1. Kalam (Pulse reading season)
   Perumpozhuthu:
   1. Kaarkaalam  (Rainy season)  
   2. Koothirkaalam  (Autumn)  
   3. Munpanikaalam  (Early winter)  
   4. Pinpanikaalam  (Late winter)  

5. Ilavenirkaalam
   (Early summer)

6. Muthuvenirkaalam
   (Late summer)

Sirupozhuthu:

1. . Kaalai
2. Mathiyam
3. . Maalai

4. Erpaadu
5. Iravu
6 Vaikarai

2. Desam (Climate of the patient’s habitat):

1. Kulir
   (Temperate)

2. Veppam
   (Hot)

3. Vayathu (Age):
   1. 1-33yrs
   2. 34-66yrs
   3. 67-100

4. Udal Vanmai (General body condition)

1. Iyyalbu
   (Normal built)

3. Valivu
   (Robust)

4. Melivu
   (Lean)

(b) Naadi Nadai (Pulse Play)

1. Vanmai (Expansile Nature)

1. Vatham Vanmai
   Menmai

2. Pitham Vanmai
   Menmai

3. Kabam Vanmai
   Menmai
2. Panbu (Habit)
   1. Thannadai (Playing in)
   2. Puranadai (Playing out)
   3. Illaitthal (Feeble)
   4. Kathithal (Swelling)
   5. Kuthithal (Jumping)
   6. Thullal (Frisking)
   7. Azhutthal (ducking)
   8. Padutthal (Lying)
   9. Kalatthal (Blending)
   10. Munnokku (Advancing)
   11. Pinnokku (Flinching)
   12. Suzhalal (Revolving)
   13. Pakkamnokku (Swerving)

3. Naadi nadai
   1. Vali
   2. Azhal
   3. Iyyam
   4. Vali Azhal
   5. Azhal Vali
   6. Iyya Vali
   7. Vali Iyyam
   8. Azhal Iyyam
   9. Iyya Azhal

Any Other Findings __________________________
### II. NAA (TONGUE)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maa Padinthiruthal</td>
<td>Absent, Present</td>
</tr>
<tr>
<td>(Coatedness)</td>
<td></td>
</tr>
<tr>
<td>Niram (Colour)</td>
<td>Sivappu (Red),</td>
</tr>
<tr>
<td></td>
<td>Manjal (Yellow),</td>
</tr>
<tr>
<td></td>
<td>Velluppu (Pale),</td>
</tr>
<tr>
<td></td>
<td>Karuppu (Dark),</td>
</tr>
<tr>
<td>Others</td>
<td></td>
</tr>
<tr>
<td>Suvai</td>
<td>Pulippu (Sour),</td>
</tr>
<tr>
<td>(Taste sensation)</td>
<td>Kaippu (Bitter),</td>
</tr>
<tr>
<td></td>
<td>Inippu (Sweet),</td>
</tr>
<tr>
<td>Vedippu</td>
<td>Present, Absent</td>
</tr>
<tr>
<td>(Fissure)</td>
<td></td>
</tr>
<tr>
<td>Vai neer ooral</td>
<td>Normal, Increased, Reduced</td>
</tr>
<tr>
<td>(Salivation)</td>
<td></td>
</tr>
</tbody>
</table>

Any Other Findings

### III. NIRAM (COMPLEXION)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karuppu (Dark-Vatham)</td>
<td></td>
</tr>
<tr>
<td>Manjal (Yellowish-Pitham)</td>
<td></td>
</tr>
<tr>
<td>Velluppu (Fair-Kabam)</td>
<td></td>
</tr>
<tr>
<td>Thontham</td>
<td></td>
</tr>
</tbody>
</table>

Any Other Findings
IV. MOZHI (VOICE)

1. Sama oli  
   (Medium pitched-Vatham) □
2. Urattha oli  
   (High pitched-Pitham) □
3. Thazhantha oli  
   (Low pitched-Kabam) □
4. Thontham □

Any Other Findings __________________________

V. VIZHI (EYES)

1. Niram (Venvizhi)  
   (Discolouration)
   1. Karuppu  
      (Dark) □
   2. Manjal  
      (Yellow) □
   3. Sivappu  
      (Red) □
   4. Velluppu  
      (White) □
   5. No Discoloration □
   6. Thontham □

2. Kanneer  
   (Tears)
   1. Normal □
   2. Increased □
   3. Reduced □

3. Erichchal  
   (Burning sensation)
   1. Present □
   2. Absent □

4. Peelai seruthal  
   (Mucus excrements)
   1. Present □
   2. Absent □

Any Other Findings __________________________
VI. MEI KURI-SPARISAM (PHYSICAL SIGNS)

(Warmth) (Mild -Vatham) (Moderate-Pitham) (Low-Kabam)

2. Viyarvai 1. Normal 2. Increased 3. Reduced

3. Thodu vali 1. Absent 2. Present
(Tenderness)

Any Other Findings ________________________

VII. MALAM (STOOLS)

(Color) (Dark-Vatham) (Yellowish- Pitham)

3. Sivappu 4. Velluppu
(Reddish-Pitham) (Pale-Kabam)

2. Sikkal 1. Present 2. Absent
(Constipation)

(Poorly formed stools)

(Loose watery stools)

5. Seetham 1. Present 2. Absent
(Watery and mucoid excrements)
(Warmth)

7. History of habitual constipation  1. Present □  2. Absent □

8. Passing of  
   a) Mucous  1. Yes □  2. No □
   b) Blood  1. Yes □  2. No □

Any Other Findings _________________

VIII. MOOTHIRAM (URINE)

(a) NEER KURI (PHYSICAL CHARACTERISTICS)

1. Niram (colour)

   Pale yellow □  Milky purulent □  orange □
   Red □  Greenish □  dark brown □
   Bright red □  Black □  Brown red or yellow □
   Colourless □

2. Manam (odour)

   Ammonical : □
   Fruity : □
   Others : __________________________
3. **Edai (Specific gravity)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal (1.010-1.025)</td>
<td></td>
</tr>
<tr>
<td>High Specific gravity (&gt;1.025)</td>
<td></td>
</tr>
<tr>
<td>Low Specific gravity (&lt;1.010)</td>
<td></td>
</tr>
<tr>
<td>Low and fixed Specific gravity (1.010-1.012)</td>
<td></td>
</tr>
</tbody>
</table>

4. **Alavu(volume)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal (1.2-1.5 lt/day)</td>
<td></td>
</tr>
<tr>
<td>Polyuria (&gt;2lt/day)</td>
<td></td>
</tr>
<tr>
<td>Oliguria (&lt;500ml/day)</td>
<td></td>
</tr>
</tbody>
</table>

5. **Nurai(froth)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Froth</td>
<td></td>
</tr>
<tr>
<td>Clear</td>
<td></td>
</tr>
<tr>
<td>Cloudy</td>
<td></td>
</tr>
</tbody>
</table>

6. **Enjal (deposits)**

<table>
<thead>
<tr>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
</tbody>
</table>

Any Other Findings ______________________
(b) NEI KURI (OIL SPREADING SIGN)

TIME:

1. Urine collection:

2. Oil drop:

3. Picture taken: shape

<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 minute</td>
<td>.................</td>
</tr>
<tr>
<td>3 minutes</td>
<td>..................</td>
</tr>
<tr>
<td>5 minutes</td>
<td>..................</td>
</tr>
<tr>
<td>7 minutes</td>
<td>..................</td>
</tr>
<tr>
<td>10 minutes</td>
<td>..................</td>
</tr>
</tbody>
</table>

[2]. MANIKADAI NOOL (WRIST CIRCUMMETRIC SIGN) : Right _____ fbs

Left _____ fbs

[3]. THATHUVA IYALPU:

MANO THATHUVAM

- Sathuva Gunam
- Rajo Gunam
- Thamo Gunam
### 4. YAKKAI (SOMATIC TYPES)

<table>
<thead>
<tr>
<th>Vatha constitution</th>
<th>Pitha constitution</th>
<th>Kaba constitution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lean and lanky built</td>
<td>Thin covering of bones and joints by soft tissue</td>
<td>Plump joints and limbs</td>
</tr>
<tr>
<td>Hefty proximities of limbs</td>
<td>Always found with warmth, sweating and offensive body odour</td>
<td>Broad forehead and chest</td>
</tr>
<tr>
<td>Cracking sound of joints on walking</td>
<td>Wrinkles in the skin</td>
<td>Sparkling eyes with clear sight</td>
</tr>
<tr>
<td>Dark and thicker eye lashes</td>
<td>Red and yellow admixed complexion</td>
<td>Lolling walk</td>
</tr>
<tr>
<td>Dark and light admixed complexion</td>
<td>Easily suffusing eyes due to heat and alcohol</td>
<td>Immense strength despite poor eating</td>
</tr>
<tr>
<td>Split hair</td>
<td>Sparse hair with greying</td>
<td>High tolerance to hunger, thirst and fear</td>
</tr>
<tr>
<td>Clear words</td>
<td>Intolerance to hunger, thirst and heat</td>
<td>Exemplary character with good memory power</td>
</tr>
<tr>
<td>Scant appetite for cold food items</td>
<td>Inclination towards perfumes like sandal</td>
<td>More liking for sweet taste</td>
</tr>
<tr>
<td>Poor strength despite much eating</td>
<td>Slender eye lashes</td>
<td>Husky voice</td>
</tr>
<tr>
<td>Loss of libido</td>
<td>Pimples and moles are plenty</td>
<td></td>
</tr>
<tr>
<td>In generosity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleeping with eyes half closed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**RESULTANT SOMATIC TYPE:** _____________________________
### [5]. IYMPORIGAL /IYMPULANGAL

(Penta sensors and its modalities)

<table>
<thead>
<tr>
<th></th>
<th>1. Normal</th>
<th>2. Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mei (skin)</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Vaai (Mouth/ Tongue)</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Kan (Eyes)</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Mookku (Nose)</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Sevi (Ears)</td>
<td></td>
</tr>
</tbody>
</table>

### [6]. KANMENTHIRIYANGAL /KANMAVIDAYANGAL

(Motor machinery and its execution)

<table>
<thead>
<tr>
<th></th>
<th>1. Normal</th>
<th>2. Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kai (Hands)</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Kaal (Legs)</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Vaai (Mouth)</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Eruvai (Analepy)</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Karuvaai (Birth canal)</td>
<td></td>
</tr>
</tbody>
</table>
### [7] UYIR THATHUKKAL

#### A. VALI

<table>
<thead>
<tr>
<th></th>
<th>1. Normal</th>
<th>2. Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Praanan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Heart centre)</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Abaanan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Matedial of muladhar centre)</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Samaanan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Navel centre)</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Udhaanan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Forehead centre)</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Viyaanan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Throat centre)</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Naahan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Higher intellectual function)</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Koorman</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Air of yawning)</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Kirukaran</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Air of salivation)</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Devathathan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Air of laziness)</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Dhananjeyan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Air that acts on death)</td>
<td></td>
</tr>
</tbody>
</table>
### B. AZHAL

<table>
<thead>
<tr>
<th></th>
<th>1. Normal</th>
<th>2. Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Anala pittham (Gastric juice)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2. Prasaka pittham (Bile)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3. Ranjaka pittham (Haemoglobin)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4. Aalosaka pittham (Aqueous Humour)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5. Saathaka pittham (Life energy)</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

### C. IYYAM

<table>
<thead>
<tr>
<th></th>
<th>1. Normal</th>
<th>2. Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Avalambagam (Serum)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2. Kilethagam (saliva)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3. Pothagam (lymph)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4. Tharpagam (cerebrospinal fluid)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5. Santhigam (Synovial fluid)</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
8] UDAL THATHU KKAL:

A. SAARAM:

<table>
<thead>
<tr>
<th>INCREASED SAARAM (CHYLE)</th>
<th>DECREASED SAARAM (CHYLE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of appetite</td>
<td>Loss of weight</td>
</tr>
<tr>
<td>Excessive salivation</td>
<td>Tiredness</td>
</tr>
<tr>
<td>Loss of perseverance</td>
<td>Dryness of the skin</td>
</tr>
<tr>
<td>Excessive heaviness</td>
<td>Diminished activity of the sense organs</td>
</tr>
<tr>
<td>White musculature</td>
<td></td>
</tr>
<tr>
<td>Cough, dyspnoea, excessive sleep</td>
<td></td>
</tr>
<tr>
<td>Weakness in all joints of the body</td>
<td></td>
</tr>
</tbody>
</table>

Normal ☐ Abnormal ☐

B. CENNEER:

<table>
<thead>
<tr>
<th>INCREASED CENNEER (BLOOD)</th>
<th>DECREASED CENNEER (BLOOD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boils in different parts of the body</td>
<td>Anemia</td>
</tr>
<tr>
<td>Anorexia</td>
<td>Tiredness</td>
</tr>
<tr>
<td>Mental disorder</td>
<td>Neuritis</td>
</tr>
<tr>
<td>Spleenomegaly</td>
<td>Lassitude</td>
</tr>
<tr>
<td>Colic pain</td>
<td></td>
</tr>
<tr>
<td>Increased pressure</td>
<td>Pallor of the body</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Reddish eye and skin</td>
<td></td>
</tr>
<tr>
<td>Jaundice</td>
<td></td>
</tr>
<tr>
<td>Haematuria</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Normal</th>
<th>Abnormal</th>
<th>C.OON:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>INCREASED OON (MUSLE)</th>
<th>DECREASED OON (MUSLE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical lymphadenitis</td>
<td>Impairment of sense organs</td>
</tr>
<tr>
<td>Vernical ulcer</td>
<td>Joint pain</td>
</tr>
<tr>
<td>Tumour in face, abdomen, thigh, genitalia</td>
<td>Jaw, thigh and genitalia gets shortened</td>
</tr>
<tr>
<td>Hyper muscular in the cervical region</td>
<td></td>
</tr>
</tbody>
</table>

| Normal | Abnormal |
D.KOZHUPPU:

<table>
<thead>
<tr>
<th>INCREASED KOZHUPPU (ADIPOSE TISSUE)</th>
<th>DECREASED KOZHUPPU (ADIPOSE TISSUE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical lymph adenitis</td>
<td>Pain in the hip region</td>
</tr>
<tr>
<td>Vernical ulcer</td>
<td>Disease of the spleen</td>
</tr>
<tr>
<td>Tumour in face, abdomen, thigh, genitalia</td>
<td></td>
</tr>
<tr>
<td>Hyper muscular in the cervical region</td>
<td></td>
</tr>
<tr>
<td>Dyspnoea</td>
<td></td>
</tr>
<tr>
<td>Loss of activity</td>
<td></td>
</tr>
</tbody>
</table>

Normal ☐  Abnormal ☐

E.ENBU:

<table>
<thead>
<tr>
<th>INCREASED ENBU (BONE)</th>
<th>DECREASED ENBU (BONE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth in bones and teeth</td>
<td>Bones diseases</td>
</tr>
<tr>
<td></td>
<td>Loosening of teeth</td>
</tr>
<tr>
<td></td>
<td>Nails splitting</td>
</tr>
<tr>
<td></td>
<td>Falling of hair</td>
</tr>
</tbody>
</table>

Normal ☐  Abnormal ☐
F.MOOLAI:

<table>
<thead>
<tr>
<th>Increased Moolai (Bone Marrow)</th>
<th>Decreased Moolai (Bone Marrow)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heaviness of the body</td>
<td>Osteoporosis</td>
</tr>
<tr>
<td>Swollen eyes</td>
<td>Sunken eyes</td>
</tr>
<tr>
<td>Swollen phalanges</td>
<td></td>
</tr>
<tr>
<td>Chubby fingers</td>
<td></td>
</tr>
<tr>
<td>Oliguria</td>
<td></td>
</tr>
<tr>
<td>Non healing ulcer</td>
<td></td>
</tr>
</tbody>
</table>

Normal □ Abnormal □

G.SUKKILAM/SURONITHAM:

<table>
<thead>
<tr>
<th>Increased Sukkilam/Suronitham (Sperm or Ovum)</th>
<th>Decreased Sukkilam/Suronitham (Sperm or Ovum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infatuation and lust towards women / men</td>
<td>Failure in reproduction</td>
</tr>
<tr>
<td>Urinary calculi</td>
<td>Pain in the genitalia</td>
</tr>
</tbody>
</table>

Normal □ Abnormal □
[9] DHASANAADI

1. Normal       2. Affected
1. Idagalai          
2. Pingalai       
3. Suzhumunai     
4. Siguvai        
5. Purudan       
6. Kaanthari     
7. Atthi          
8. Alambudai     
9. Sangini       
10. Kugu         

10. KOSANGAL

1. Normal       2. Affected
1. Annamayakosam 
2. Praanamaya kosam 
3. Manomayakosam 
4. Vignanamayakosam 
5. Anandhamayakosam 


I. Vali Migu Gunam

1. Emaciation

2. Complexion – blackish

3. Desire to take hot food

4. Shivering of body
5. Abdominal distension
6. Constipation
7. Insomnia
8. Weakness
9. Defect of sense organs
10. Giddiness
11. Lack of interest

II. Vali Kurai Gunam

1. Body pain
2. Diminished voice
3. Diminished work
4. Delirium
5. Arivu mangal
6. Features of increased Kapha

III. Pitham Migu Gunam

1. Yellowish discolouration of skin
2. Yellowish discolouration of the eye
3. Yellow coloured urine
4. Yellowishness of faeces
5. Increased appetite
6. Increased thirst
7. Burning sensation over the body
8. Sleep disturbance

IV. Pitham Migu Gunam

1. Indigestion
2. Chillness
3. Discolouration
4. Disranged Kapha

V. Kapham migu gunam

1. Increased salivary secretion
2. Reduced activeness
3. Heaviness of the body
4. Body colour – fair complexion
5. Chillness of the body
6. Reduced appetite
7. Eraippu

8. Increased sleep

**VI. Kapham migu gunam**

1. Giddiness

2. Loss of fluid in the Joints

3. Increased Sweating

4. Palpitations

[12]. **NOIUTRA KALAM**

<table>
<thead>
<tr>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Kaarkaalam</td>
</tr>
<tr>
<td>(Aug15-Oct14)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Koothirkaalam</td>
</tr>
<tr>
<td>(Oct15-Dec14)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Munpanikaalam</td>
</tr>
<tr>
<td>(Dec15-Feb14)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Pinpanikaalam</td>
</tr>
<tr>
<td>(Feb15-Apr14)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Ilavanirkaalam</td>
</tr>
<tr>
<td>(Apr15-June14)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Muthuvenirkaalam</td>
</tr>
<tr>
<td>(June15-Aug14)</td>
</tr>
</tbody>
</table>

[13]. **NOIUTRA NILAM**

<table>
<thead>
<tr>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Kurunji</td>
</tr>
<tr>
<td>(Hilly terrain)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Mullai</td>
</tr>
<tr>
<td>(Forest range)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Marutham</td>
</tr>
<tr>
<td>(Plains)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Neithal</td>
</tr>
<tr>
<td>(Coastal belt)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Paalai</td>
</tr>
<tr>
<td>(Desert)</td>
</tr>
</tbody>
</table>

[14]. Date of Birth
[15]. Time of Birth  AM  PM

[16]. Place of Birth: _________________________

[17]. RASI (ZODIAC SIGN)


[18]. NATCHATHIRAM (BIRTH STARS):

28. Not Known  □

Date:

Signature of Investigator:  Signature of Lecturer:
FORM-III
LABORATORY INVESTIGATIONS

1. O.P No: ________  Lab.No________  Serial No________

2. Name: ________________

3. Date of birth: 
   D  D  M  M  Y  E  A  R

4. Age: _______ years

5. Date of assessment: ____________________

HEMATOLOGY:

Hemoglobin: ..............gm %
Total RBC count: ..............millions cells / cu.mm
Total WBC count: ..............cells / cu.mm

Differential count:
   Polymorphs: ....
   Lymphocytes: ....
   Monocytes: ....
   Basophils: ....
   Eosinophils: ....
Platelet count : .......... lakhs cells / cu.mm

ESR (mm) ½ Hr:

1 Hr:

Red Blood Cell Indices:

Mean Corpuscular Volume
Mean Corpuscular Hemoglobin
Mean Corpuscular Hemoglobin Concentration.

Periperal Blood Smear

Bleeding Time

Clotting Time

**BIO CHEMISTRY**

Sugar (F) : ............mg%
PP : ............mg%

Total cholesterol : .......mg %
HDL : .... mg %
LDL : .........mg %
VLDL : ...... mg%
TGL : ...... mg%

Renal function test:

Urea : ....... mg %
Creatinine : .......mg %

Liver function test:

SGOT : ........IU
SGPT : ........IU

Alkaline phosphatise : ........IU
Serum Total bilirubin----------mgs%
Serum direct bilirubin--------mgs%
Serum indirect bilirubin--------mgs%
Serum Total Protein : ...............gm %
Serum Albumin : ...............gm %
Serum Globulin : ...............gm %

URINE ANALYSIS:
  Neerkuri  
  Neikuri  
  Albumin  
  Sugar (F) 
    (PP)  
  Deposits 

MOTION:
  Ova:
  Cyst:
  Occult blood:

OTHER INVESTIGATIONS:
  Date:

Signature of Investigator:  Signature of Lecturer:
FORM IV
INFORMED WRITTEN CONSENT FORM

I ………………………exercising my free power of choice, hereby give my consent to be included as a subject in the diagnostic trial entitled “A study on SEYA KAMAALAI”. I may be asked to give urine and blood samples during the study.

I have been informed about the study to my satisfaction by the attending investigator about the purpose of this trial, the nature of study and the laboratory investigations. I also give my consent to publish my study results in scientific conferences and reputed scientific journals for the betterment of clinical research.

I am also aware of my right to opt out of the trial at any time during the course of the trial without having to give the reasons for doing so.

NAME OF THE VOLUNTEER : 

SIGNATURE OR THUMB IMPRESSION OF THE VOLUNTEER : 

SIGNATURE OF INVESTIGATOR : 

DATE: SIGNATURE OF LECTURER :
துவிவ திக் முறுக்கு பிரிவும், வசுக்கல்-47.

திறன் நூற்றாண் தலை
“துவிவ குறுக்கு தலை மறு முறுகுக்கு தொளிக்காலத்து பிரிவு நூறு”

பிரிவு தொடர்-32103206 (2011-2013)

வெப்பவெள்ள
அழும்பரசாரா தாக்கிரங்குகப்படுத்துத

தொலைத்தொலை குழுவுள் அணுவிகது முற்பாரசாரா நேராக்கி
பிரிவு மறுகும் தொளிக்காலத்தில் தலை முறிகுத் தோன்றும்.

தினை: காட்சிப்படும்:
மௌர்: வினாத்: 
இருப்பையிற்கு விளக்கம்

தமக்கு, தந்தையூடு குறிப்பிட்டுவாசியான உரையும் விளக்கத்திற்கு இருந்து கையூரியற்ற  "மீண்டும் காமாக நீங்க" எனவும் கலைப்புக்கள் மற்றும் அபிஷேக தொன்றிய உப்பியூடு விளக்கத் தொட்டம் அதிகாரிகளுடன்.

தந்தையூடு குறிப்பிட்டுவாசியான உரையும் விளக்கத்திற்கு மற்றும் பணித்தல் முறையை விளக்குமுன் தந்தையூடு குறிப்பிட்டுவாசியான உரையும் விளக்கத்திற்கு மற்றும் பணித்தல் முறையை விளக்குமுன் தந்தையூடு குறிப்பிட்டுவாசியான உரையும் விளக்கத்திற்கு மற்றும் 

தமக்கு, தந்தையூடு குறிப்பிட்டுவாசியான உரையும் விளக்கத்திற்கு இருந்து கையூரியற்ற  "மீண்டும் காமாக நீங்க" எனவும் கலைப்புக்கள் மற்றும் அபிஷேக தொன்றிய உப்பியூடு விளக்கத் தொட்டம் அதிகாரிகளுடன்.

குறி:

காலைப்புமே:

மேல்:

வொட்டங்கள்:

காலைப்புமே:

தாரிக்கை காலைப்புமே:

கிளை:

மேல்:

குறிப்பிட்டும்:
PURPOSE OF RESEARCH AND BENEFITS:

The diagnostic research study in which your participation is proposed to assess the diagnostic methods in Siddha methodology in “SEYA KAMAALAI” patients. Knowledge gained from this study would be of benefit to patients suffering from such conditions for the diagnosis and prognosis.

STUDY PROCEDURE:

You will be interviewed and examined as OP and IP patients at the study centre. At the first visit the physician will conduct a brief physical examination and assess the condition followed by Envagai thervu and routine blood and urine analysis. After matching the inclusion criteria you will be included in this study and you will be examined on the basis of Envagai thervu.

POSSIBLE RISK:

During this study there may be a minimum pain to you while drawing blood sample.

CONFIDENTIALITY:

Your medical records will be treated with confidentiality and will be revealed only to other doctors / scientists. The results of this study may be published in a scientific journal, but you will not be identified by your name.
YOUR PARTICIPATION AND YOUR RIGHTS:

Your participation in this study is voluntary and you may be withdrawn from this study anytime without having to give reasons for the same. You will be informed about the findings that occur during the study. If you do agree to take part in this study, your health record will need to made available to the investigators. If you don’t wish to participate at any stage, the level of care you receive will in no way to be affected.

The Ethics committee cleared the study for undertaking at OPD and IPD, NIS. Should any question arise with regards to this study you contact following person

Contact : Investigator
Department of Noi Naadal
National Institute of Siddha,
Chennai-600 047.
“பொன் கல்விகள்”- கல்லறை கல்வியுடன் மேலும் நூற்றாண்டாகக் புதித நூற்றாண்டு அறியப்பட்ட

புது நூற்றாண்டு-32103206(2011-2013)

உருவானிலையின் கையல் பதிப்பு

அச்சிட்டு விளக்கம் படுத்தும்:

குறிப்பிட்டு பொன் கல்வி அடுத்து பிறந்த கல்வியியல் புதித நூற்றாண்டு அறியப்பட்ட கல்வியியல் கல்லறைகளை அறிய வேண்டும். உருவானிலை ஆசிரியர்களுக்கு உருவானிலையின் புதித நூற்றாண்டு விளக்கம் பதிப்பு அறியப்பட்டு வைக்கப்படும்.

அப்பார்களுக்கு:

குறிப்பிட்டு உருவானிலையின் புதித நூற்றாண்டு விளக்கம் பதிப்பு வைத்து புதித நூற்றாண்டு விளக்கம் வைத்து உருவானிலையின் நூற்றாண்டு விளக்க வைக்கப்படும்.
சாத்திகள் மதுந்த அவர்கள் அதிகாரமாகப் பெரும், நூற்றாண்டு அடுத்து பின்னர் நிறுவிக்கப்பட்டதாக.

இயற்பியல்பிடி பண்டகிறியில் கின்றது:

இயற்பியல்பிடி காத்திருள் பாதமீதான கீழ் காட்டப்பட்டுள்ளது: முல்லியைக் கால்களில் பெரும் நூற்றாண்டுகளுக்கு காலம் பெரும் நூற்றாண்டுகளில் குறிப்பிட்டுள்ளது. இயற்பியல்பிடியா உருவாகும் காலத்துக்கு காலநிலை நிறுவிக்கப்படும். இயற்பியல்பிடி உட்பகுதியின் கீழ் நிறுவிக்கப்பட்டுள்ளது. இயற்பியல்பிடி பல்வேறு நூற்றாண்டுகளில் முழுக்கறு நூற்றாண்டுகளில் கால்களில் குறிப்பிட்டுள்ளது. முன்னணி நிறுவிக்கப்பட்டுள்ள (Institutional Ethical committee) முன்னக்கால அமையிலை விளைவுக்காரன் தொடராக அதிகாரிகள்.

அப்பதின் புதியத்தை அவர்கள் குறிப்பிட்டு தொடர்ந்து நிற்பர்கள்.

பண்டகிறியாளர்: அப்பாதார்

இயற்பியல் தொடர் துறை

தோற்றான் தொடர் முதுகை சிலியான்,

புதுக்கோட்டை-47.
**DECESSION**

Opinion of the Institutional Ethics Committee – Please Check one

- [ ] Approval

- [ ] Modifications required prior to approval (Please specify one space below)

- [ ] Disapproval

Date of review: 

Signed: [redacted] (Please print name) Dr. V. SUBRAMANIAN

(Please delee as appropriate, Chairperson, Secretary)

Modifications needed

Modification given to candidate

---

The research proponent is hereby informed that the Institutional Ethics Committee will require the following:

1. All adverse drug reactions (ADRs) that are both serious and unexpected to be reported promptly to the IEC within 7 working days
2. The progress report to be submitted to the IEC at least annually
3. Upon completion of the study, a final study status report needs to submitted to the IEC
This Certificate is awarded to

69, Anna Salai, Guindy, Chennai-600 032

The Tamil Nadu Dr. M.G.R. Medical University

From 24th September 2012 to 28th September 2012, the Tamil Nadu Dr. M.G.R. Medical University organized by the Department of Siddha for anush post-graduates & researchers on Research Methodology & Biostatistics for participating as a Resource Person / Delegate in the IX Workshop

Dr. M. S. Sanjeevana

Registrar (PG)

Dr. K. Sivanesan

Dean

M. Senthil

Reader, Dep't of Siddha