A STUDY ON
KUDAL KIRUMI

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INTRODUCTION

The science of medicine must have originated with primitive and foremost means as it is of fundamental importance to his happiness, well being and survival and then must have developed all along, even since the dawn of civilization.

Siddha is perhaps the earliest medical science that laid stress on positive health, a harmonious blending of physical, mental, social, moral and spiritual welfare of an individual.

Birth without any deformity and life without disease is a boon to human kind. It reminds of the proverb “sound mind in a sound body” so there are two classes of disease, physical and mental, and each arise from the other. Mental disorders arise from physical and vice versa.

Medicine as every one knows is not merely a science but an art. It certainly deals with difficult process of life (ie) combating ailments and maintaining physical, mental and moral health. Society. The siddhars were the saints who have controlled the inner aspect of mind mainly the evil. They followed the principles to attain the purity through mind and action.

The siddha system is based upon the panchapoothic and mukkutram theory Panchapootham and mukkutram comes under 96 thathuvas, which are the basic principles of siddha medicine. According to siddha science the universe and the body are composed by panchabootham and to say in short.
Siddhars treated the body as well as mind and have also formulated the ways for the prevention of the diseases. The ancient siddha physicians were aware of the aetiology thridosha, pathology and symptoms of the disease with all its complaints and have tried various medicines with the diet restriction.

In this study an attempt has been made to trace out various aspect of disease such as aetiological factors risk factors, predisposing factors, clinical features, pathophysiology, pathogenesis of the disease and the investigation available in the siddha as well as modern system of medicine.

With these applied factors, literature dealing with Naakku puchi Noi and Masaraipuzhu Noi” has been collected and tried in the clinical side.

The contaminated food, lack of personal hygiene and poor environmental sanitation all together contributes for the occurrence of the above disease. Naakku puchi noi and masaraipuzhu noi is commonest disease in children. Intestinal infestation with the different types of worms are very common. The author have selected Naakku puchi noi (Ascaris Lumbricoides) and masaraipuzhu noi (Giardiasis) for the clinical study according to the description found in various siddha medical literatures. The author has chosen to evaluate and assess clinically the
therapeutic effect of a few anthelmintic drugs mentioned in siddha materia medica.

In siddha literature there are various medical preparations containing various raw drugs which are more effective clinically in curing the Naakku puchi noi and masaraipuzhu noi. Siddha literature developed their own way of diagnosing the disease by envagi thervugal. If the disease is unattended contended or not properly treated according to the aetiology, sign and symptoms, may cause death in many lives.

So according to the ancient Siddhar’s concept of Nakku Puchi Noi and Masraraipuruzhu Noi clinical study was taken up.
AIM AND OBJECTIVES

AIM:

Kudal Kirumi (Worm infestations) is prevalent world wide and more in regions with poor standards of personal and food hygiene and inadequate sanitation.

It is said that 40% of world’s population are affected. In tropics especially children are more prone to infestation due to over crowding and lack of knowledge.

The principle aim of study of Kudal Kirumi with clinical study is to collect and review the views and ideas of the ancient Siddhars about this disease, having this basic aim in mind the following aim have been drawn.
OBJECTIVE:

➢ To make a clinical study on the basis of Siddha Literature.

➢ To utilize the diagnostic methods mentioned by the Siddhars.

➢ To make a comparative study on Naakkupuchi Noi and Masarai Puzhu Noi regarding their incidence & their effects on age, sex, occupation, etc.

➢ To know the extent of correlation of aetiology, signs and symptoms of Naakkupuchi Noi with Ascariasis and Masarai Puzhu Noi with Giardiasis.

➢ To use modern parameters in the investigation of the disease that enhances to observe the progress of the patient.

➢ To have clinical trial on Kudal Kirumi with Vidangathi Chooranam.

➢ To do the Pharmacological and Bio-chemical analysis of the drug.

➢ To high light the factors like diet, land climate condition and mainly the hygienic measures in the incidence Naakkupuchi Noi & Masarai Puzhu Noi.

➢ To make an awareness about the disease and counselling to the patients about the hygienic life.
REVIEW OF LITERATURE

SIDDHA ASPECTS

கல கிளப்பிகள்

முனிச்:

கலிந் விக்கி அறை கிளப்பிகள் வல்லாழக்கன் நம்பிக்கவை, துறை முட்டை அண்டலறு கிளப்பிகள், சம்பத்தில் அருப்பு, மார்கள் குறா பொர்னாக்கல் காண்கும் விளங்கு.

சொறும் வயன் முறு:

அருட்டிகட்டம் தீர்மானங்கள் முடுப்பிகள்தை பன்னிரண்டு அறிக அறை காண்கள். தொட்டுமுடன் வலும் காண்டு பொர்னாக்கல் பஞ்சத்திலின் பயிள்வசனம் கொண்டு வழியாக்கப்படும், மிகுதியான விளங்கியவை, ஆனால் வழியாக்கப்பட்டு, தொட்டுமுடன் வலும், காற்றிலின், பொட்டிகள் நுழையவுடன் வாழ்ந்தொளி, பொட்டியான, அருகில் காற்றிலின், பொட்டிகள் பொர்னாக்கல் காலந்தொளி, கருப்பஸ் நோய்களினால் பயிர்கை நேரோக்கும் பொட்டியான, அருகில் குறா பொட்டியான நோய்கள் காண்க விளங்கியவை.

கல் புகழ்கள் வல்லாழக்கன் நிகர்:

கல் புகழ்கள் அகரம்கண்ணன், புகழ்கண்ணன் வல்லாழக்கன் காண்க விளங்கியவை.

அகரம்கண்ணன்:

எள்ளியல் பார்வியகத்துக்கண், குழுவும் புக்கி பொட்டியான பொல்கள், துவக்க புத்தானாக்கம், குறா விளக்கியான, பொட்டியான விளக்கியான, (தெர்கண் புத்தான).
உலகாண்மைகளினை, நவார்த்தமத்தில் நான் பலர் கிளர்ச்சியில் விளங்கும் போது, 
கிளர்ச்சிக் கழியில் கிளர்ச்சியில் அலாவர். சில புத்தகங்கள் பதிவிற்கு 
அலாவர் வந்துவர். மேலும், பிரித்தானிய, சேர்மதான, கொங்க, தென் பிற்பகுதியில் 
இருப்பதில் 2-ம் இருபத்தைக் காட்டுவது.

புத்தகராஜ்யம்:

தினம் 21ஆம் ஆண்டுகளும், அமைச்சரங்கள் கருத்துருக்கள் சேர்த்து 
அமர்ந்து. முதலில் கிளர்ச்சிக் கழியில் பலியும் தொடர்ச்சிக் காலரிசைகள் 
இருந்தும்.

வகை கிளர்ச்சிக் கழியக் கலைநடைகள்:

தினசரி ஆயுதத்தில் காம் போன கிளர்ச்சிக் காலரிசை. எம்பை ரூபம், 
செய்யளற்ற காம் வா, தாக்குதல் புத் குற்றக் கோட்டு, திரிய, அரசன் புத்த பிலையில் 
அரிப், தமது, தம, மூன்றுமுன்றாகத், செய்தியுறுத்து, வங்கியத்து, தமிழ் 
அரிய கிளர்ச்சிக் காலரிசை.
குடும்பங்களில் செழிய, காய்கள், அள்ளி, மரப்பூரியாம், கலா, பூச்சிகள், குறிப்பிட்டு உண்டாக்கலாம் நீரால் விளக்க செய்யும் குழல்விதிகள் உருவாக்கும்.

இந்த புத்துநின்றை குடும்பங்கள்:

பின்னர்க்கப் பிட்சலில் நான்கு துணைப்பிரிவுகள் 27 வகையான பெரியக்கடிகள் உண்டு. துணைப்பிரிவுகள் சிரை குழல்விதிகள், சுமார் மலர் பொருளற்றக் காப்பும், வெளியாகம் மலர் பொருளற்றக் காப்பும்.

➤ பின்னர்க்கப் பிட்சலில் பாக்கும் 88-89.

முதல்பிரிவியான வகைகளின் குறிப்பிட்டு பின்னர்க்கப் பிட்சலியானது:

1. குறுக்குப்பூரியாம் (Roundworm Ascariss)
2. கிளைப்பூரியாம் (Maggot)
3. கிளைவிக்கோப்பூரியாம் (small parasites in the intestine oxyuriasis)
4. பார்பபூரியாம்
5. டூர்கோப்பூரியாம். (Treadworm – Enterobius vermicularis)

இரண்டாமாவது பிரிவியான வகைகளின் குறிப்பிட்டு:

1. கிரின் பூரியாம்
2. துணையாற்றுக்கோப்பூரியாம் (Hook worm – Ancylostoma duodenal)
3. கராண்டார்க்கோப்பூரியாம் (Filaria)
4. அயந்தார்க்கோப்பூரியாம் (Germ, microbe)
5. மொசன்கோப்பூரியாம் (Thread Worm)
6. வெள்ளைக் பூரியாம் (Red Worm)
7. மோசன் பூரியாம் (Worms of rectum oxyuris vermicularis)
8. மாப்பூரியாம் (Round Worm)
9. Micro Zoom
10. Invisible worm
11. Water worm
12. Yellow organism
13. Black Colored worm
14. Flagellated Germ
15. Intestinal Worm
16. Liver Flukes
17. Germ Responsible for kanam
18. Germs in the stomach
குடோரம் உயர்வயில்லாதவர்கள் பிறகு விற்பிப்புக்கு குறைந்த பயன்படுத்த, பிற்கு பானைத் தோற்றம் வாயிலாற்றியும், கூறு நீள்கிணி, அத்தோற்றியும், காயின்றியும், கூறுகத்தியும், தவங்க முயற்சியும் உயர்வயில்லாதவர்களுக்கு குறைந்த பயன்படுத்த, காயின்றியும், கூறுகத்தியும், தவங்க முயற்சியும் உயர்வயில்லாதவர்களுக்கு குறைந்த பயன்படுத்த.

2. குடோரம் பிறகு விற்பிப்புக்கு குறைந்த இனத்துக்கு விற்பிப்பு அதிகாரிகளிடம், பானைத் தோற்றம் வாயிலாற்றியும், கூறுகத்தியும், காயின்றியும், தவங்க முயற்சியும் உயர்வயில்லாதவர்களுக்கு குறைந்த பயன்படுத்த.

பார்வையும் உயர்வயில்லாதவர்களுக்கு பிறகு விற்பிப்புக்கு குறைந்த பயன்படுத்த, பானைத் தோற்றம் இனத்துக்கு விற்பிப்பு அதிகாரிகளிடம், பானைத் தோற்றம் வாயிலாற்றியும், கூறுகத்தியும் உயர்வயில்லாதவர்களுக்கு குறைந்த பயன்படுத்த, காயின்றியும், தவங்க முயற்சியும் உயர்வயில்லாதவர்களுக்கு குறைந்த பயன்படுத்த.

உயர்வயில்லாதவர்களிடம் (Round worm-Ascarasis)

உயர்வயில்லாதவர்கள் உயர்வயில்லாதவர்களிடம் விற்பிப்பு அதிகாரிகளிடம் விற்பிப்பு அதிகாரிகளிடம் விற்பிப்பு அதிகாரிகளிடம் விற்பிப்பு அதிகாரிகளிடம் விற்பிப்பு அதிகாரிகளிடம் விற்பிப்பு அதிகாரிகளிடம் விற்பிப்பு அதிகாரிகளிடம் விற்பிப்பு அதிகாரிகளிடம்
அப்பால்களால். ஆணத்துவார்கள் தொடர்ந்து அடைய அப்பால்
விளையாடிகிறது. பின்னர் வட்டக்கதாரா வட்டகையில் மாணவரை
அழகாக்காண்டும், பின்னர் வட்டகையில் பின்னர் குரை நெடுங்ககை
கற்றுநோக்கியுள்ள விளைவாகிவிடும், மாணவர் 2 மணி காலம்
முன்பும் பின்னர் விளையாடிகள் முன்பும், ஆணத்துவார்கள்,
மாணவர் நெடுங்ககையில், அடைய அப்பால், மாணவர் வழி, இது வழி 2 மணி காலம்.

அவ்வாறு பின்னர் விளையாடிகள் முன்பும், ஆணத்துவார்கள்,
மாணவர் நெடுங்ககையில், அடைய அப்பால், மாணவர் வழி, இது வழி 2 மணி காலம்.

இதை வெளிப்படுத்தியுள்ள பிரதானாக்கம் மாணவரின்
விளையாடிகள் விளையாடிகள் மாணவரின் விளையாடிகளின் 2 மணி காலம்.

பிரதானாக்கி அளிக்கவும் விளையாடிகளின் பிரதானாக்கி
விளையாடிகளின் விளையாடிகள் மாணவரின் விளையாடிகளின்
விளையாடிகள் விளையாடிகளின் விளையாடிகளின் 2 மணி காலம்.

அவ்வாறு விளையாடிகள் மாணவரின்
விளையாடிகளின் 2 மணி காலம்.

பிரதானாக்கி அளிக்கவும்:

"சுந்தரப்பதிவு பந்தலைச் சந்தது பந்தலை
சந்தது பந்தலைச் சந்தது பந்தலை
சந்தது பந்தலை பந்தலை சந்தது
சந்தது பந்தலைச் சந்தது பந்தலை"

பதிவு

மாணவர் புத்தாண்டான், மாணவர் புத்தாண்டான், குறும்பு, அடைய அப்பால்
விளையாடிகள் விளையாடிகள் விளையாடிகள் விளையாடிகள் 2 மணி காலம் சந்தது
சந்தது பந்தலைச் சந்தது

- பாலம்பரம் பக்தம் 377.
தொகுதியான பொருளிலிருந்து குறைந்ததாகத் தீர்மை காண்க, மக்களிடம் காற்று மறைந்து, ஆர்வக்கிளை மறைந்து தீர்மை காண்டு. குறுக்கு கிளை பிள்ளை அரசன். தீர்மை பில்லை நீளமுடியவில்லை, எனையங்க புத்தாண்டு இருக்கிறது, அந்த புத்தாண்டு கிளை, அல்லு, மறைந்து, முற்பிள்ளை, மற்றும் கோட்டை கிளையிலும், மேற்கு நோக்கிய புதியை காரணமாக வருவது.

T.V. சார்பிலையின் போட்டியில் அறிவிக்கு பதிவு. 1450, 1451, 1452.

"தொகுதியான பொருளிலிருந்து குறைந்ததாகத் தீர்மை காண்க, மக்களிடம் காற்று மறைந்து, ஆர்வக்கிளை மறைந்து தீர்மை காண்டு. குறுக்கு கிளை பிள்ளை அரசன். தீர்மை பில்லை அரசனை குடியிருந்து முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோக்கிய பகுதியை தேடு, முன்னாண்டு பார்வுக்கு காட்டு நோத்து.
மார்த்தான்:

மனிதக் கடவுளை மற்றும் பாலராதாரம் பற்றிய குறிப்பிட்டல்

- குறிப்பிட்டுள்ள வரலாறு விளக்கமான 250.
Curable Symptoms in Naakku Puchi:

"குறிப்பிட்டிக்குப் போக்குக்கனின் கங்காத்
பெருமையிட்டிருந்து விளக்க பெரும் கங்காத்
சுடுப்பிற்கு குறிப்பிட்டிருந்து புதியின்
தின்னையானும் விளக்கு திரும்பித்தின்
கவியம் மீண்டும் சுடுப்பிற்கு விளக்கு
சுடுப்பிற்கு குறிப்பிட்டிருந்து கங்காத்
சுடுப்பிற்கு விளக்கு திரும்பித்தின்
- குறிப்பிட்டிக்கு

Symptoms of enlarged stomach and bloated umbilicus, fever with nausea and vomiting can be easily cured with medicine of the Naakku Puchi. If left untreated it may lead to further complications like bloated stomach, itching all over the body, piles etc.,
Incurable symptoms in Naakku Puchi

“புல்வார்க்கு குறிக்கப் புகாய் விழுப்புரம்
வாங் தன்மை வயன்கும் ஒட்டங்கம் காற்றிகள்
பிளருமுறையும் பிரபுரேற்கும்
அந்தந் பொருட்கள் அடைந்து பாதிக்கும்
புயற்கள் விளக்கம் புதுங்கு நீர்மிடும்
வட்டு வானிகம் விளக்கம் நீர்மிடும்
சேர்க்கின் பொருட்கள் வேலு குற்றும
தின்கால விகிதம் விளக்கம் அற்று
புயற்கள் வாங்கினர் புருந்து
நோயில்கள் வோக்கு விளக்கம் அற்று”

In Naakku Puchi the worms more towards the pharynx and throat block them and prevent vomiting. On entering the nostrils and lungs block them and prevent respiratory function and ultimately reach an incurable stage and causes death of the patients.

Increase of mukkutrangal, salivation, vomiting of worms, chest pain, shivering, unbearable stomach pain are the symptoms which indicate that the disease of Naakupuchi Noi cannot be cured.
MUKKUTRA THEORY:

Whatever may be the cause attributed to the occurrence of Naakku Puchi Noi or any other diseases, the Siddha concept is that the manifestation of the disease is the result of disturbed Vatham, Pitham and Kabam dhosas.

Apart from other factors taste of the food have great inference over the physiological activities of the thiridhosas because the taste thiridhosas are formed by the different combination of five elements.

i.e. Pancha Bootham.
The combination of five elements in thiridhosas is as follows

Vali + Vinn – Vatham

Thee – Pitham

Neer + Mann – Kabam

MUUKUTRA VERUPADUGAL (PATHOGENESIS)

In Siddha system, the manifestations of all disease are the result of derangement of thiridhosas i.e. Vatham, Pitham and Kabam.

CLASSIFICATION OF VATHAM, PITHAM, & KABAM:

The description in anatomical and physiological Vatham has been made in ten forms with various functions where as Pitham and Kabam have been classified in five forms and have different functions.

VATHAM:

LOCATION OF VATHAM IN BODY

Piranan (Uyirkaal):

This control knowledge, mind & five objects of senses, responsible for breathing & digestion.

Abanan (Keezh nokkuakaal)

Responsible for all downward movements such as passing urine, stools, sperm, including menstrual flow. Gets the ingested food extracts to their respective places.
Uthanan (Mel nokkukaal)

Helps in transport of the ingested food to different parts of the gut. Responsible for all upward visceral movements such as vomiting, eructation etc.

Viyanan (Paravukaal)

Viyanan spreads all over the body in all nerve endings and causes contraction and relaxation of muscles. This is also responsible for movement of all parts of the body.

Samanan (Nadukaal)

This is the neutralizing force for the above four vayus & aids for proper digestion.

Naagan

Responsible for higher intellectual functions like learning, thinking, singing etc. opening and closing of the eyelids.

Koorman

Responsible for vision and yawning. Lacrimal secretion is also attributed to koorman. Helps in bodybuilding.

Kirukaran

Responsible for salivation, nasal secretion, appetite and also for concentration of mind.

Devathathan

Responsible for laziness, sleeping and anger.
Dhananjeyan

Produces bloating of the body after death. It escapes on the third day after death by bursting the cranial sutures.

PITHAM

Location Of Pitham In The Body

Pitham is located in Pranavayu, Pinkalai, bladder, Moolakkini, heart, Umbilical region, abdomen, stomach, sweat, saliva, blood, eyes and skin.

THE VARIETIES OF PITHAM

Anala Pitham

This is responsible for the change of liquid state into solid state of food substances and helps for proper digestion.

Ranjagam

Converts the food extracts into blood. Gives red colour to blood.

Sathagam

This is responsible for coordination and proper functioning of the other types of Pitham causing determination and memory.

Aalosagam

This is responsible for vision.

Prasagam

Gives complexion and colour to skin.
KABAM:

Location Of Kabam In The Body

Kabam is located in Samanavayu, Sperm, Head, Tongue, Uvula, Fat, Bone marrow, Blood, Nose, Chest, Nerve, Bone, Brain, Eyes and joints.

THE VARIETIES OF KABAM

Avalambagam

Aids for proper function of other four types of Kabam. It is present in the lungs and controls the respiration.

Kilethagam

Makes the food moist and soft to help digestion.

Pothagam

Responsible for identifying taste in the tongue.

Tharpagam

Present in the head and responsible for the coolness of eyes.

Santhigam

Responsible for the lubrication and free movements of the joints.

Situated in the joints.
DERANGEMENT OF THIRIDHOSA IN KUDAL KIRUMI

VATHAM

Piranash

It was normal in both diseases.

Abanan

In Naakkupuchi Noi worms pass through the motion. In Masaraipuzhu Noi diarrhoea is the prominent symptom.

Viyanan

In Naakkupuchi Noi viyanan was affected. So, the body weight was reduced in children.

Uthanash

In Naakkupuchi Noi and in some cases of Masaraipuzhu Noi nausea and Vomiting is present.

Samanan

In Naakkupuchi Noi as well as in Masaraipuzhu Noi samanan was affected and causes loss of appetite.

Naagan

It was normal in Naakkupuchi Noi and in Masaraipuzhu Noi.

Koorman

It was normal in both diseases
Kirukaran

In both the Naakkupuchi Noi and Masaraipuzhu Noi kirukaran was affected and causes loss of appetite.

Devathathan

It was normal in both diseases

PITHAM

Anala Pitham

In Naakkupuchi Noi and in Masaraipuzhu Noi there was loss of appetite due to derangement of analam.

Pirasagam

In Naakkupuchi Noi paleness of skin was observed

Saathagam

It was normal in both diseases

Alosagam

It was normal in both diseases

Ranjagam

Those who were affected by Naakkupuchi Noi paleness of the body were seen.

Kabam

Avalambagam

It was normal in both diseases
Kilethagam

In Naakkupuchi Noi and in Masaraipuzhu Noi loss of appetite, indigestion was seen.

Pothagam

It was normal in both diseases

Tharpagam

It was normal in both diseases

Santhigam

It was normal in both diseases

EZHU UDAL THATHUKKAL (SEVEN PHYSICAL CONSTITUENTS)

The physical body is constituted by the seven physical constituents. Each has its own specific structures and functions.

Saaram

It is the final product of the digestive process, which strengthens the body and mind and nourishes the blood.

Senneer

The saaram after absorption is converted into senneer. It is responsible for knowledge, strength, boldness and healthy complexion. Imparts colour to body and nourishes the muscles.
**Oon**

It gives structure and shape to the body and is responsible for the movement of the body. Give plumpness. Derangement of oon produces the symptoms of emaciation.

**Kozhuppu**

Lubricates the organs and thus facilitates their functions. Maintains oily matter of the body. It was affected by Naakkupuchi Noi.

**Enbu**

Forms the basic skeletal structure of the body. Responsible for locomotion and protection of vital organs.

**Moolai**

Present inside the core of the bone, which strengthens and maintains the normal conditions of the bone.

**Sukkilam (Or) Suronitham**

Responsible for the propagation of species

**Paruva kaalam (season)**

The whole year is constituted by the seasons. They are known as

- **Kar Kaalam**  - (Avani and Purattasi)  - Aug’ and Sep’
- **Koothir kaalam**  - (Iyppasi and Karthigai)  - Oct’ and Nov’
- **Munpani Kaalam**  - (Markazhi and Thai)  - Dec’ and Jan’
- **Pinpani kaalam**  - (Maasi and Panguni)  - Feb’ and Mar’
- **Elavenil Kaalam**  - (Chithirai and Vaigasi)  - Ar’ and May’
- **Mudhuvenil Kaalam**  - (Aani and Aadi)  - June and July
In every season changes will occur in the land, water plants, animals and human beings, which will modify the physiology and make them susceptible to certain specific diseases which are common in that season.

Kabam gets Thannilai valarchi in pinpani kaalam and vetrunilai valarchi in Elavenil kaalam. Pitham gets Thannilai Valarchi in Kaar Kaalam and Vetrunillai Valarchi in koothir kaalam. Vatham gets thannilai valarchi in Mudhuvenil and Vetrunilai Valarchi in Kaar Kaalam.

**Piniyari muraimai (diagnosis)**

- This is done by
  - Poriyalarithal
  - Pulanalarithal
  - Vinadhal
  - Envagai Thervugal

**Poriyalarithal**

Physician pori and pulan are used as the tools for examining the pori, pulan of the patient. Port is the five organs of perception. They are nose, tongue, eyes, ears and skin. Poriyalarithal is examining the pori of the patient by the physician.

- Smell
- Taste
- Vision
- Sensation
- Sound
Vinadhal

By interrogation, the physician knows about the patient’s name, age, occupation, native place, socio-economic status, family history, diet, habits, prone for any allergens, period of suffering his complaints, history of previous episode, frequency of attacks by change of season, relevant history of treatment and habits etc.

ENVAGAI THERVUGAL:

Envagai thervugal is the specialty of siddha diagnosis. These are the instruments for the physician to diagnose disease. This is described as follows,

"கரவடிகு கார்மிணி குண்டக பாரற்குக்கோணம்
கரவடிகு பாரற்குக்கோணம் பாரற்கு பாரற்கு
கரவடிகு கார்மிணி குண்டக குண்டகத்துக்கோணம்
சுற்றுகடைடா பிரிகும் புகழப்புக் குறுக்கோணம்
சுற்றுகடைடா பிரிகும் புகலையமைக்கு நோய்
சுற்றுகடைடா பிரிகும் புகலையமைக்கு நோய்
சுற்றுகடைடா பிரிகும் புகலையமைக்கு நோய்
சுற்றுகடைடா பிரிகும் புகலையமைக்கு நோய்

- குருவியநசர் ராம்
“நாடி எவற்றிருக்குமாய் காண தன்மையுற்று
மலிகு தீர்க்கீற்று குறிக்கொள்ளு
சாலு பிரிவார் குறிக்கையருகம் இருந்து அதில்லை நோய்க்கை.”
- அத்தியிறார்

In Agathiyar vaidya vallathi – 600, Envagai thervugal have been mentioned as ‘Asttavitha Paritchai’

"நாடி எவற்றிருக்குமாய் காண தன்மையுற்று
மலிகு தீர்க்கீற்று குறிக்கொள்ளு
பத்தோர் மக்களினதல் பாக்கு குறிப்பிட்டு பாகு
சாத்தேசர் வர்த்தகமை தீர்க்கீற்று பாகு
அமரசால் கார்பாதியா இன்றுக்கு பாகு
சைக்கானம் என்றுக்கு பாகு கார்பாதியாக
சாத்தேசர் வர்த்தகமை கார்பாதியா இன்றுக்கு கார்பாதை கார்பாதை
-அத்தியிறார் சமாதி்மை முன்வரி - 600

ENVAGAI THERVUGAL

1. Naa  
2. Niram  
3. Mozhi  
4. Vizhi  
5. Sparisam  
6. Malam  
7. Moothiram  
8. Naadi

Naadi

The examination of Naadi was used in diagnosis, prognosis of the disease. Anyhow in general the changes in thiridhosa are best diagnosed by feeling the Naadi. Vatha Naadi was seen in Kirumi.
Naa (Tongue)

The tongue may be whitish and coated in Naakku Puchi Noi.

Niram

The colour of the patient’s conjunctiva and tongue may be pale.

Mozhi

It was normal in both diseases
Vizhi

The colour of conjunctiva was pale in colour.

Malam

The motion of the patient was examined for its colour, presence of worms that indicate the dhosas.

Moothiram

The urine of patient was detected by its colour and compomsition.

The urine was detected through both Neerkuri and Neikkuri.

Sparism

It was normal in both diseases

Neerkuri and neikkuri:

Based upon the clinical features of a diseases and Naadhi, the diagnosis is further confirmed by the support of Neerkuri and Neikkuri test.

Collection of Urine for the determination of Neerkuri and Neikkuri.

"அனுந்தவ தவிர்கத்தம ஆனுறுவங்காலம்
அன்மேறவந்த அனுந்தவ தவிர்கத்தம
tவீரவலாத்தி கால்நிலை கலவேற்கு
நான்கு கால்நிலை கருத்தியல்
நிறுவுதல் திருநிலை கால்நிலை குறிக்கு
குறிக்கு நுண்ணுமதி திருநிலை குறிக்கு

- நியாயப்பகுதி நியாயப்பகுதி பகுதி (புதுப்பகுதி)
The patient must take only well cooked food in the previous day, the intake must be proportionate to the degree of his appetite. Food intake should be taken, at appropriate time.

He must have sound sleep on the previous night. The next day, the urine is collected in a glass container and closed immediately to prevent contact with external atmosphere. This specimen must be examined, within 1½ hour. This procedure should be followed strictly in order to get accurate reading in Neerkkuri and Neikkuri.

**Neikkuri**

Urine has the following features

1. Niram
2. Edai
3. Manam
4. Nurai
5. Enjal

"மாறா நில் ககல் மட்டும் தெளிவாக கழிவித்தது
காற்றில் மூழ்கி பரவும் பொழுப்பியே"

- கூடண்ட கால் கூடண்ட பொழும் கால் (பக்தம்பாற்ற போட்டியோ)

**Neikkuri**

The diagnosis and prognosis of dhosic derangement of the disease are studied on the basis of the behaviour of a drop of gingely oil on the surface of the Urine in a wide vessel in the sunlight.
Methods for the determination of Thiri dhosa derangement by adding a drop of oil in to the urine as follows.

"நீர்வேல் ஒலி எடுக்கும் நிரலான விளக்கம்
சுரப்புக்கள் பத்தல் பார்க்கவும் விளக்கம்
நீர்வேல் சிம்பின் பால் காணலே
சிறிது சுரப்புகள் பார்க்கும் விளக்கம்
சுரப்பு பாதுகை பார்க்கும் விளக்கம்"

- சிங்களே சிங்களே சிங்களே (புகைப் பாகம்)

**The Process Of Oil Indication**

The urine specimen collected in the above stated procedure is analyzed as follows.

The specimen is kept open in a glass dish, well exposed to sunlight but it should not be disturbed by the movement of wind.

Then add one drop of gingely oil by a glass rod. Observe keenly the position of spreading of the oil drop.

"அருவையான நீர்வேல்:வெள் வாழ்வு”
"அதிரையான பால அ.:வெள் வாழ்வு”
"உலகில் எளியது பார்க்கின்றான வாழ்வு”

- சிங்களே சிங்களே சிங்களே புகைப் பாகம் (புகைப் பாகம்)

If the drop spreads like a snake it indicates the Vatham disease. If it spreads like ring or pearl it indicates the Pitha and Kaba disease respectively.
Treatment

Treatment was based upon accurate recognition of etiology, diagnosis of the disease.

In this disease the unhygienic habits, unsanitary surrounding, improperly cooked food, lower the resistance of the individual resulting in upsetting the function of Vatham. The deranged vatham causes dysfunction of Kukkianal, which permits the multiplication of the intestinal worms in the Aamasayam.

Dietetic

"மகுண்டு டெக்லா, குளைய மகுண்டு“

“செருமணிக்குரு தோட்டி மூச்சுக்குரியில் ஆரம் பெரும்பலாயம் புதிதக்காணே“.

Good diet is the most important factor to maintain the body.
MODERN ASPECTS

ASCARIASIS

Definition

An infection of the intestinal tract caused by the adult Ascaris Lumbricoides and clinically manifested by vague symptoms of nausea, abdominal pain and cough. The living worms are passed in the stool or through vomit occasionally, they may produce intestinal obstruction or may migrate into the peritoneal cavity.

Causative Organism : Ascaris Lumbricoides

Sub Family : Ascariodea

G.K. : Ascaris – An intestinal Worm.

It is commonly known as **Round Worm**. It was discovered by Linnaeus in 1758. Its life cycle was worked out as late in 1916.

Geographical distribution

Ascaris Lumbricoides (round worm) is the one of the most common and wide spread human infestations. Possibly one in four of the world population is infected. It occurs in Asia, Central and South America, Europe, Africa and North America.

It is common in humid areas.

In Central and South America the entire rate of infection is 45% Africa, 95% In Europe and the Southern USA.
**Habitat**

The adult worms are found in the intestine of man, mainly in jejunum and upper part of ileum.

**Incidence**

The incidence of Ascariasis is very high in rural areas with poor sanitation (80% or more). It is more frequent in children and often limited to some families.

**Morphology**

**Adult worm**

It resembles an ordinary earthworm and is the largest intestinal nematode infesting man, when fresh from the intestine. It is light brown or pink in colour but it gradually changes to white. In shape it is rounded and tapers at both ends, the anterior end being thinner than the posterior the mouth opens at the anterior end and possesses three finely toothed lips one dorsal and two ventral. The digestive and reproductive organs float inside the body cavity contains an irritating fluid. The irritant action is due to the presence of a substance ascaron orascarase which is probably of the nature of primary albumoses. Allergic manifestation seen in infected individuals and amongst Laboratory workers dissecting the worms are due to this ascaron. The life span of the adult worm in the human host is less than a year.
**Male**

It measures about 15cm to 24cm in length with a maximum diameter of 3 to 4mm. The tail end of each male is turned ventrally in the form of hook having a conical tip.

The genital pores open into the cloaca from which two curved copulatory spicules are produced. The anus opens with the ejaculatory duct into the cloaca.

**Female**

It is longer and stouter than the male and measures 25 to 40 cm in length with a maximum diameter of 5mm. The posterior extremity is neither curved nor pointed but is conical and straight. The anus is subterminal and opens directly on the ventral aspect in the form of transverse slit. The Vulvar in opening at the junction of the worms is narrower and is called the vulvar waist. The egg laying capacity of a mature female ascaris has been found to be enormous liberating about 2,00,000 eggs daily.

**Eggs**

The eggs liberated by a fertilized female pass out of the human host with the faeces.
The characteristics of fertilized egg

1. Round or oval in shape, 60-70 mm in length by 40-50mm in breadth.
2. Always bile stained and brownish (golden brown) in colour.
3. Surrounded by a thick smooth translucent shell with an outer aluminous coat which is thrown into rugosities or mammillation. This outer coat is sometimes lost.
4. Contains a very large conspicuous unsegmental granular embryo.
5. Floats in saturated solution of common salt.

Incubational Period

The incubation period from infection of the swallowed eggs to the first appearance of the eggs in stool is 60-70 days. In larvae Ascariasis pulmonary symptoms occur within 4-16 days.

Life Cycle

The adult worm lives in the intestine of human being. No intermediate is necessary to complete the life cycle. Human being is the only known definite host for A. Lumbricoides, continuance of the species is maintained by transference from one individual to another. Various stages in the life cycle is described below.
Stages of Life Cycle

1. Eggs in faeces
2. Developments in soil
3. Infection by ingestion
4. Migration through the lungs
5. Re-entry to alimentary canal.
6. Maturation of worms

Stage – I

Eggs in Faeces

The fertilized eggs containing the unsegmented ovum, passed with faeces. They are not infective to man when freshly passed.

Stage II

Development in Soil

A Rhabditiform larva is developed from the unsegmented ovum within the egg shell in 10-40 days time depending on the atmosphere, temperature and humidity. This takes place in the soil. The ripe egg containing the coiled up embryo is infective to human being.

Stage III

Infection by ingestion liberation of larvae

Man acquires infection by the ingested food, vegetable or drinks with the embryoynated eggs, that passes down the duodenum where the digestive secretions weakens the egg shell and stimulate the enclosed
larvae into activity. Splitting of egg shell occurs and rhabditiform larvae measuring $250 \mu$ in length by $14 \mu$ diameter in the upper part of the small intestine.

Stage IV

Migration through the lungs

Newly hatched larvae

\[ \downarrow \]

Mucous membrane of the small intestine carried by portal circulation.

\[ \downarrow \]

Liver (Reside there for 3-4 days)

\[ \downarrow \]

Via Rt. Heart

\[ \downarrow \]

Pulmonary circulation.

\[ \downarrow \]

In Lungs they grow almost 10 times and moult twice on day 5 and 10.

This blood bath is necessary for development breaking through the capillary wall they reach the lung alveoli. Time taken for such migration is 10-15 days.
Stage – V

**Re-entry into the stomach and small intestine**

Lung alveoli

\[ \downarrow \]

Larvae crawl up

Bronchi and trachea

\[ \downarrow \]

Larynx and pharyx → esophagus → stomach.

Swallowed into

It localises in the upper part of the small intestine. Another moulting takes place on any day between 25th - 29th.

Stage – VI

**Sexual maturity and egg liberation**

The larvae on reaching their habitat grow into adult worm and become sexually mature in about 6-10 weeks. The gravid female, begin to discharge egg in the stool within two months from the time of infection. Again the cycle is repeated.

**Mode of Infection**

Infection is effected by swallowing ripe eggs of Ascaris with raw vegetables from infected soil. The drinking of water from Ascaris infected sources, where soil pollutions are common, the eggs may be directly conveyed to the mouth with dirty fingers. Infection may also
occur by inhalation of desicate eggs from the dust reaching the pharynx and swallowed.

**Immunology**

A partial immunity may be acquired by man induced by the migrating larvae. Antigens are liberated during the molting periods of the larvae and produce protective antibodies which lower the worms burden and play a part in the immune response. A severe allergic reaction occur when the larvae reach the small intestine for the second time. Eosinophilic count is increased at time of tissue invasion. Specific antibodies can be demonstrated in Ascaris infection, Hypersensitivity to ascaris is determined by skin test.

**Pathology**

The important pathological features are listed below:

1. In uncomplicated intestinal Ascariasis, no pathologic changes are found.
2. Infarct or gangrene may develop due to intestinal obstruction, voluvlus or local circulatory disturbances.
3. At sites of ectopic Ascariasis there is acute or chronic, inflammation with infiltration of eosinophils, histiocytes and nuclear cells.
4. Around ova in tissue, granuloma formation may occur.
5. Adult worms in tissue sections can be identified based on their typical polymarian musculature.

6. Larvae in tissue sections can be identified by their bilateral alae, intestine and two excretory columns.

Clinical Features

The Ascaris infections produce various clinical manifestations, which may be divided into two groups.

1. Those produced by the migrating larvae
2. Those produced by the adult worm.

Symptoms produced by migrating larvae

I. Larvae in lungs (Loeffler’s Syndrome)

In heavy infection typical symptoms of pneumonia or asthma such as fever, cough and dyspnea may appear. The sputum which is often blood tinged may contain Ascaris larvae. Urticarial rash and eosinophilia are seen such cases.

II. Intestinal sign and symptoms

The Ascaris larvae reach your throat, where you cough them up and then swallow them, then enter the intestine. Where they mature and mate.

Mild sign and symptoms

- Vague abdominal pain
- Nausea and vomiting
- Diarrhoea or bloody stools.
Heavy sign and symptoms

- Severe abdominal pain
- Fatigue
- Vomiting
- Weight loss
- A worm in vomit or stools
- A worm emerging from nose or moths.

**Larvae in general circulation**

Ascaris larvae passes beyond the pulmonary capillaries and reach the general circulation, they may reach different organs of the body via the brain, eye, spinal cord, heart, kidneys etc., where they produce unusual clinical symptoms such as meningitis, retinitis and palpebral edema etc.,

**Symptoms due to Adult worm**

Affected children may suffer from physical and mental retardation. The parasitism of Ascaris is so vulnerable, when the host is deprived of nutrition. Death may occur in poorly nourished, who develop convulsions.

**Larvae in circulation**

**May settle in**

- Brain
- Heart
- Spinal Cord
- Kidneys.
Due to Adult Worm

By spoliative action.

- Robbing the host nutrition
- Hypovitaminosis A
- Malnutrition.

Toxic Action

- Fever, Urticaria
- Edema of face
- Conjunctivitis
- Irritation of upper respiratory tract.
- Meningitis.
- Rashes
- Paraplegia.

Mechanical Effects

- Intussusceptions
- Intestinal obstruction
- Intestinal perforation.

General Symptoms

The adult worm in the small intestine produces general discomforts such as nausea, vomiting, colic pain, indigestion, anorexia, pyrexia, nose pricking large amount of intestinal gas and disturbed sleep with grinding teeth. Occasionally there may be convulsions, meningitis or hemiplegia.
Ectopic Ascariasis (Wander lust)

The worms frequently migrate and enter the stomach and may pass up through the esophagus at night coming out through the mouth and the nose at times. Ascaris may enter into the respiratory passage causing suffocation and death.

The migrative ascaris may even enter the lumen of an appendix causing appendicitis, obstructive jaundice, acute bleeding. Pancreatitis have been reported when worms enter the biliary passage. At time it penetrates high up in liver causing abscess and hepatobiliary disturbances.

Risk factors

1. Poor sanitation and the use of human faeces as fertilizer, human faeces are allowed to mix with local soil. The eggs become infective and are capable of infecting people who eat products grown in contaminated soil or otherwise ingest the eggs.

2. Warm climate:

Ascaris worms thrive in milder climates.

Complication

1. Nutritional deficiency

2. Intestinal blockage and perforation

3. Allergic reaction.
Differential Diagnosis

1. Asthma
2. Allergic bronchopulmonary aspergillosis
3. Acute eosinophilic pneumonia
4. Hook Worm

Laboratory diagnosis

The laboratory diagnosis can be made by direct and indirect evidence.

Direct Evidence

Finding of adult worm in the stool

Above two months after ingestion of Ascaris eggs, the ascaris worms mature and lay thousands of eggs a day, which travel through digestive system and eventually may pass out spontaneously in stool or per anus. Even though if there is no administration of a specific Anthelminitics, may lead to the expulsion of worms. When passed in the faeces particularly after treatment, the parasites get paralyzed and get propelled by mode of peristalsis.

X – ray Diagnosis

The presence of Ascaris Lumbricoides has been demonstrated by radiography with barium emulsion, which being ingested by the worm within 4 to 6 hours casts an opaque shadow. (string like shadow)
Finding of Eggs

In the Stool

As the Ascaris eggs are passed in the stool in enormous numbers it should be easy to detect the infected persons by direct microscopical examination of a saline emulsion of the stool. Concentration by floatation methods may be employed for the detection of eggs in the stool. The unfertilized eggs do not float in salt solution. If the patient harbours a solitary male, eggs may not be found in stool.

The Bile

Microscopical examination of the bile stain obtained by duodenal incubation may reveal Ascaris eggs.

Indirect Evidence

a) Blood Examination

Eosinophilia is present only at the early stage of invasion but it present in the intestinal phase, suggests associated strongyloidiasis or toxocariasis.

b) Dermal Reaction

“Scratch test” with powered Ascaris Antigens has often been found to be positive but the results are variable.

c) Serodiagnosis

Serological tests like “ELISA, IHA” and microprecipitation on larvae are currently available.
GIARDIASIS

“Giardiasis is an infection of the small bowel by a single celled organism.

Causative Organism : Giardiasis Intestinalis

Giardia intestinalis is also known as Giardia lamblia, Giardia duodenalis, Lamblia intestinalis.

Discovery

It was seen by Leeuwenhoeck in 1681 while examining his own stool. Lamb (1859) Alexeify (1914) are also associated with the discovery.

Geographic Distribution

Worldwise, it occurs in all age groups though incidence appears to be higher in children.

Habitat

Duodenum and the upper part of jejunum in man.

Duration

The incubation period for Giardrasis is 1 to 3 weeks after exposure to the parasite.

Morphology

It exists 2 forms : Trophozite and cyst.
**Trophozoite**

This is the vegetative (actually feeding) stage, which is responsible for the colonization of the parasite in the human beings. In this stage, the organism resembles a longitudinally cut pear measuring about 10-20 µm in length, 6-15 µm in width and 1-3 µm in thickness. The dorsal surface is convex and the ventral surface concave. There is an ovoid adhesive disc in the anterior ventral surface. The dorsal surface provides an area for diffusion of nutrients. The anterior end is rounded and the posterior end tapers to a point. It is bilaterally symmetrical and all the organs of the body are symmetrical. Thus there are 2 oxostyles 2 nuclei and 4 pairs of flagellae. The parasite gives a typical monkey – face appearance on microscopic examination. Trophozoites multiply in the intestine by binary fission.

**Cyst**

When the environmental conditions are unfavourable, the trophozoites convert themselves into more resistant cyst stage. The cysts are oval, measuring 8-14 µm in length and 6-10 µm in width. They contain 4 nuclei, which are usually positioned near one end or lie in pairs at opposite poles.

The remains of the flagellae and margins of the sucking disc may be seen inside the cytoplasm. The cysts are passed in the faeces.
These cysts survive best in wet conditions. These can withstand standard concentrations of chlorine used routinely in water purification systems.

**Source Of Infection**

Mainly human; probably beavers and other wild and domestic animals. Cysts are the infective stages to man. They are transmitted through a water source. Cysts have been shown to remain viable in water for upto 3 months. As few as 10 cysts can effectively establish an infection in human volunteers, hence there is high degree of infectivity associated with this parasite.

**Life cycle**

The infective stage is cyst, which in introduced in human body by oral route through water, food, hands or other body contact. Acidic environment of the stomach initiates excystation, which is completed in duodenum, and the new trophozoties make their home among the intestinal villi. Each cyst divides to form 2 trophozoites, which obtain nourishment by diffusion through the cell wall. Once the trophozoite is established. It multiplies by binary fission every five hours rapidly increasing in number. It can also localize in the biliary tract.
Causes of Giardiasis

1. Contaminated water supplies: Giardia is one of the most common cause of water borne diarrhoea out breaks.

2. Contaminated Food: Food that may have been washed in contaminated water. Exposed to manure or prepared by an infected person can transmit the disease.

3. Person to person contact: Infection may be caused by poor hygiene and most commonly occurs in daycare centre. Nursing home and homosexual males, family members daycare workers.

Clinical Features

Giardiasis presents itself in a variety of ways ranging from totally asymptomatic to a malabsorption syndrome. The symptoms produced in acute or chronic giardiasis are listed below.

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Acute</th>
<th>Chronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Diarrhoea (foul smelling)</td>
<td>Recurrent diarrhoea</td>
</tr>
<tr>
<td>2.</td>
<td>Greasy stools</td>
<td>Periodic constipation</td>
</tr>
<tr>
<td>3</td>
<td>Weight loss</td>
<td>Abdominal distension</td>
</tr>
<tr>
<td>4</td>
<td>Abdominal cramps</td>
<td>Fatigue</td>
</tr>
<tr>
<td>5</td>
<td>Anorexia, Vomiting</td>
<td>Nausea</td>
</tr>
<tr>
<td>6</td>
<td>Headache</td>
<td>Substernal burning</td>
</tr>
<tr>
<td>8</td>
<td>Low grade fever</td>
<td>Urticaria</td>
</tr>
<tr>
<td>7</td>
<td>Chills</td>
<td>Erythema nodosum</td>
</tr>
<tr>
<td>9</td>
<td>Mucus in stools</td>
<td>Malabsorption syndrome</td>
</tr>
</tbody>
</table>
**Epidemiology**

Giardiasis is endemic worldwide with highest prevalence in the tropics and subtropics. Water is probably the most common medium of transmission. Water contamination can be caused by leakage of sewage, failure of water purification systems, persons or animal reservoir hosts such as beavers. Food borne outbreaks are rare. Person – to – person transmission has been reported in homosexuals and day care centers. Localized epidemics frequently occur in children’s institutions. Several large water –borne epidemics have occurred.

**Pathology**

In mild infections no histological changes are seen. In severe cases following changes have been recorded.

a) Intestinal biopsy shows atrophy of villi, nodular lymphatic hyperplasia, and an increase in the number of intraepithelial lymphocytes and cellular infiltration of the lamina propria. These changers are non-specific.

b) Carbohydrate malabsorption.

c) Decreased excretion of pancreatic trypsin in paediatric patients.

d) Deficiency of secretary IgA.
Susceptibility to Giardia infection

Some categories of people are more susceptible to infection with Giardia.

They are,

a) Children

b) Individuals with impaired Immune response.

c) Individuals with achlorhydria or hypochlorhydria.

For development of resistance to Giardia infection – T-cell function is necessary. The development of asymptomatic carrier stage posses a constant threat for disease transmission.

Complication of Giardiasis

➢ Diarrhoea

➢ Liver Granuloma

➢ Malabsorption syndrome

➢ Reiters syndrome

➢ Reactive arthropathy.

Diagnosis

Demonstration Of Cyst In The Stool

Demonstration of the cysts of G. lamblia in the stool sample is the majority of diagnosis. If bowel movement is increased, trophozoites can be detected in the stool occasionally. Giardia cyst may be present in the
stool intermittently thus three stool examinations at an interval of 4-5 weeks are recommended to make the diagnosis.

False negative results in stool examination are due to many reasons such as:

a) Periodic absence of cysts in stool.

b) Parasite is detected only after the prepatent period is completed.

c) Many medicines and radio-opaque materials can mask the organism in the stool.

d) All concentration techniques can kill-the trophozoites.

e) Delayed examination of stool can result in lysis of trophozoites.

   ➢ Demonstration of trophozoite in Duodenal aspirate.

   ➢ Intestinal Biopsy.

   ➢ Detection of Antigen.

   ➢ Detection of antibodies.

**Demonstration of Trophozoite in Duodenal aspirate**

In case of high index of suspicion in-spite of three stool examinations failing to detect any cyst of this parasite, specimen of duodenal contents can be obtained using an enterotest, which employs a string containing gelatin capsule. Examination of duodenal contents may show typical falling – leaf motility of the trophozoites which is diagnostic. The parasite is attached so securely to the mucosa by means
of the sucking disc; a series of 5-6 stool samples may be examined without recovering the organisms.

**Intestinal biopsy**

Though the parasite can be demonstrated in intestinal biopsy. This procedure should be attempted unless it is strongly indicated clinically, by abnormal radiological findings or abnormal results in lactose tolerance test.

**Detection of antigen**

ELISA and CIEP tests have been used for the detection of Giardia antigens in faeces, but it is not yet established for the purpose of diagnosis. ELISA has been found to be as sensitive as microscopic wet examination. A fluorescent method with monoclonal antibodies has proven to be extremely sensitive and specific.

**Detection of antibodies**

ELISA and indirect immunofluorescence tests have shown good promise for the detection of antibodies in the serum. However, these are not available at present for routine examination.
I. Personal Protection

a) Food

Ground or fresh vegetables used for making salads should be thoroughly cleaned and preferable peeled before use. Pork, beef and fish should be cooked well to destroy the infective forms of the parasite embedded in the flesh.

b) Water

The drinking water should be boiled and filtered to prevent infection through ingestion of infected Cyclops especially in areas with high endemicity of these infections.

c) Skin

The children should be encouraged to wear shoes while playing in the field, which are likely to be contaminated with infected faeces. They should not run bare feet in the open field.

Diminishing the reservoir of infection

The water used for drinking should be protected from contamination from excreta and other contaminants. Men should not be allowed to bath in the wells used for drinking water. Larvicidal and molluscidal drugs should be used to destroy the infective forms of helminthes in water.
Health Education

a) Personal Hygiene

1. The habit of washing hands after detection and before taking food should be encouraged.
2. Nails should be cut and cleaned daily with soap and brush.
3. The children should be prevented from scratching perianal region. Irritation and itching should be relieved by the use of antipruritic cream.

b) Publicity

The information on the mode of infection with the helminthes, methods of prevention and treatment should be widely disseminated.

c) Prophylaxis

1. Proper disposal of human stools.
2. Treatment of the affected individuals.
3. Education of children on sanitation and personal hygiene.

Prevention And Control

- Effective elimination of faecal contamination.
- Avoid contaminated water.
- Health education at individuals as well as community level.
- Avoid foods washed in contaminated water (or) that cannot be cooked or peeled.
- All water must be boiled, filtered.
➢ Wash hands thoroughly with soap and warm water.

➢ Wash hands after changing a baby’s diaper.

➢ Identifying the source of infection in an outbreak situation.

➢ It is important to remember that cysts in the water can be inactivated by boiling the water or treating the water supply with hypochlorite or iodine (2-4 drops per litre of water) for about an hour. The concentration of chlorine employed in routine for chlorination of water. However, fails to kill the cysts of Giardia lamblia.

➢ The use of night soil (human faeces) for fertilization of crops should be recognized as a potential hazard, so proper disposal is must.

**Self care at Home**

**Management of Diarrhoea**

➢ Fluids such as sports drinks diluted fruit juices, flat soda, soups etc.,

➢ Should be taken in small amount frequently throughout the days.

➢ Avoid fluids containing caffeine.

➢ After 12 hours, the diet can be advanced to bland foods such as potatoes, noodles, rice toast, cereal, crackers, and boiled vegetables. Avoid spicy, greasy and fried foods.

➢ After stools become formed return to a regular diet. Avoid milk for several weeks.
MATERIALS AND METHODS

In this dissertation work the patients suffering often from Naakkupuchi Noi & Masarai Puzhu Noi were admitted in the Postgraduate Kuzhanthai Maruthuvam inpatient ward of Govt. Siddha Medical College Hospital, Palayamkottai. Those who fulfilled the criteria for Naakku Puchi Noi & Masarai Puzhu Noi according to the pathophysiology of Siddha reviews and Modern reviews were selected.

All those cases were clinically diagnosed by Siddha methodology of Poriyalarithal, Pulanalarithal, Vinaathal, Envagai thervugal, Neerkuri, Neikkuri and also with modern laboratory findings. Clinical investigations were fully done before and after treatment. Male & Female children were taken into account for the study. In both the systems of medicine Viz. Siddha and modern Paediatric Professors, Professor of Pharmacology and professor of Bio-chemistry opinion were obtained. A detailed proforma was formed and was approved by both the departments of Siddha and modern pediatric.
**Methods:**

The patients who fulfilled all the following criteria were selected for this study.

1. Age 12 & below 12 years.

2. Those who fulfilled the diagnostic criteria for NaakkuPuchi Noi and Masarai Puzhu Noi as per Siddha & Modern system of medicine.

3. Using the criteria, 20 patients were selected for treatment.

All well framed proforma, which contains the proper particulars both in the siddha and modern highlights. In the proforma patient’s name, age, sex information, socio-economical status of the parents, educational status of the parents as well as the patient’s complaints and duration, present history, previous history, history of pica, history of infections.

Siddha & Modern systems criteria for the diagnosis of **NaakkuPuchi Noi:**

1. Loss of appetite.

2. Pain in abdomen

3. Teeth grinding during sleep

4. Abdominal distension with nausea, vomiting, cough, dyspnoea, fever.

5. Itching, Emaciation, Growth retardation.

6. Disturbed sleep
Siddha & Modern system’s criteria for the diagnosis of **Masaraipuzhu Noi**

1. Sudden onset of explosive watery foul smelling diarrhoea.
2. Abdominal distension
3. Flatulence
4. Nausea
5. Anorexia
6. Epigastric cramps.

The laboratory investigations have been done in the laboratory of Govt. Siddha Medical College, Palayamkottai.

**Clinical Examination:**

All the cases were subjected to the following investigations.

1. Neerkuri, Neikkuri
2. Complete blood analysis – TC, DC, ESR & Hb.

**Method of treatment:**

Siddha system of medicine is based on Mukkutra theory and hence the treatment is mainly aimed to bring down the thiridhosa to its equilibrium state and thereby restoring the physiological condition of thiridhosa.

The medicine chosen for this study was **Vidangathi Chooranam** with hot water od., for 3 days therapy at night after the food.
The dose is adjusted according to the age of the patient & the severity of the disease.

**Stools Examination:**

In Naked eye examination, the following are noticed.

- Quantity
- Colour
- Consistency
- Odour
- Blood & Mucous
- Parasites

Saline preparation method is used to detect the organisms in the faeces.

**Procedure**

A bit of faecal matter is taken on the end of narrow stick and a thin emulsion in drop of saline is prepared on the slide. A cover slip is placed and the smear is examined to detect the motility of organisms.

**Ova and Cyst**

Concentration method to detect ova and cyst in the faeces.

**Procedure**

1ml of faeces is taken in a flat-bottomed vertical edged container of 15-20ml capacity with a diameter of not more than 1½ inches.
A few ml of saline is added and an even emulsion is prepared. Gradually more saline is added till the receptacle is full of a glass slide is then placed across the mouth of the receptacle. That the center is in contact with the fluid. The preparation is kept for 20-30 minutes. (Eggs take 20-30), minutes to come to the surface of the fluid). The glass slide is quickly lifted up and smoothly twined to avoid spilling of the liquid. The slide is then examined under the microscope for detection of the eggs.

**Study of Anthelmintic effect**

All the patients with signs and symptoms of Kudal Kirumi are confirmed by both Siddha and modern parameters and were given with dissertation medicine.

Observation & daily progress were recorded to have an idea about the presence of anyone of the complaints of Kudal Kirumi. Severity of the disease and effects of the drug were noted & assessed. Routine blood investigations were done. Stool examinations were also observed at the time of admission and at the time of discharge.
LINE OF TREATMENT OF NAAKKA PUCHI NOI AND MASARAI PUZHU NOI

When treating for removal of the diseases, the following principle must be noted.

"நர்மங்கள் நர்மங்களின் கால அதிகாரிகள்
மலர்பூத் மலர்பூது நலும்"

And the Siddha treatment is fully based on the herbals.

"செம்பருள், கொழுப்பருள், மரையாக்கை நீண்டு நீண்டு
புது நீங்குவது பாரை" 

Siddha Maruthuvam says begin treatment with mooligai medicine first. If the prognosis with the drug is poor then slowly use parpam and chenduram.

1. First bring out the thiridhosha to it’s normal physiological activities. Anthelmintic are to be administered.

2. After neutralizing the thiridhosha appetizer drugs are given to increase the appetite.

3. For improving the blood, iron preparation are used

4. Removal of the causative factors.

5. Dietetic treatment is so equal as to medicine.

Medicine are advised to be in the form of Kudineer, Chooranam. Pills, Lehyams Parpam, Chenduram etc. The author selected vidangation chooranam.
In addition to Naakku Puchi Noi and Masarai Puzhu Noi symptoms like loss of appetite, Pain in abdomen, Teeth grinding during sleep, Abdominal distension with nausea, vomiting, cough, dyspnoea fever, itching, Disturbed sleep, Epigastric cramps, flatulence, diarrhea.

Treatment

Treatment is to be based upon accurate reconsideration of aetiology, diagnosis and prognosis of the disease. The proper treatment is based upon proper diagnosis. Particularly with a view to the thiridhosha pathology. Before the treatment is given to the patient we have to ascertain whether the disease is curable or rarely curable or incurable.

Before starting the actual treatment the presence or absence of toxin in the body produced due to derangement of thirithathus is noted. This is explained in Siddhar as follows.

"இப்பிரசனையில் அரைத்து குழும்
அம்மந்த்தராய் வின்று குழும் - குரு
அண்மந்த்தராய் குழு குழும்"

In this disease the in hygienic habits, in sanitary surrounding, Improperly cooked food. Lower the resistance of the individual resulting in upsetting the function of vatha the deranged Vatha cases dysfunction of kukkianal which permits the multiplication of the Intestinal worms in the Aamasayam.
RESULT AND OBSERVATION

For the clinical study 20 cases were selected and treated in the Inpatient ward, P.G. IV Kuzhanthai Maruthuvam Department G.S.M.C hospital, Palayamkottai, Results were observed with respect to the following criteria.

- Incidence
- Sex Reference
- Age Reference
- Religion Reference
- Socioeconomic Status in the Patient Reference
- Diet Reference
- Thinai
- Paruva Kaalam
- Mode of onset Reference
- Clinical features during admission
- Thiridhosa theory
- Ezhu Udarkattugal Reference
- Envagai thervugal reference
- Neerkuri Neikkuri reference
- Aetiology reference
- Results after treatment reference

The observations recorded with the above said criteria were given in the tabular form.
Table – 1

Incidence

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Infestation</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Ascariasis</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>2.</td>
<td>Giaradiasis</td>
<td>14</td>
<td>70%</td>
</tr>
</tbody>
</table>

Among 20 In-Patients the incidence of Ascariasis was found in all 6 cases (30%). The incidence of Giaradiasis was found in all 14 cases.
### Table – 2

**Sex Reference**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Sex</th>
<th>Ascariasis</th>
<th></th>
<th>Giardiasis</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of Cases</td>
<td>Percentage</td>
<td>No. of Cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>1.</td>
<td>Male Children</td>
<td>4</td>
<td>20</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>Female Children</td>
<td>2</td>
<td>10</td>
<td>8</td>
<td>40</td>
</tr>
</tbody>
</table>

Regarding Ascariasis, among 6, 4 were male children (20%), 2 were female children (10%). Regarding Giardiasis among 14, 6 were male children (30%), 8 were female children (40%).

![Sex Reference Diagram](image)
### Table - 3
#### Age Reference

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Age</th>
<th>Paruvam</th>
<th>Ascariasis</th>
<th>Giardiasis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>No. of Cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>1</td>
<td>1-6 months</td>
<td>Kaappu</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>6-12 months</td>
<td>Senkeerai</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>1-1½ years</td>
<td>Thaala</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>1½-2 years</td>
<td>Sappani</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>2-2½ years</td>
<td>Muththa</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>2½-3 years</td>
<td>Varugai</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>3-3½ years</td>
<td>Ambuli</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>3½-4 years</td>
<td>Chitril</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>4-4½ years</td>
<td>Siruparai</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
### Table

<table>
<thead>
<tr>
<th></th>
<th>Age Group</th>
<th>Location</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>4½-5 years</td>
<td>Siruthaer Paruvam</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>5-6 years</td>
<td>Paeathai (Male)</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pillai (Female)</td>
<td>1</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>6-12 years</td>
<td>Pethumbai (Female)</td>
<td>2</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Siru Paruvam (Male)</td>
<td>3</td>
<td>15</td>
<td>5</td>
</tr>
</tbody>
</table>

Regarding Ascariasis, among 6, 1 patient was in Ambuli Paruvam (5%), 1 patient was in Pillai Paruvam (5%), 2 patients were in Pethumbai Paruvam (10%), 3 Patients were in Siru Paruvam (15%). Regarding Giardiasis among 14 patients, 1 patient were in Ambuli Paruvam, 2 patients were in Chitril Paruvam (10%), 2 patients were in Peathai Paruvam (10%), 3 Patients were in Pethumbai Paruvam (15%), 5 patients in Siru Paruvam (25%).
Table – 4
Religion Reference

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Religion</th>
<th>Ascariasis</th>
<th>Giardiasis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of Cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>1</td>
<td>Hindu</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Christian</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Muslim</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Regarding Ascariasis, among 6, 4 patients were Hindus (20%), 2 patients were Christian (10%). Regarding Giardiasis, among 14, 12 patients were Hindus (60%), 2 patients were Christians (10%).
Table – 5

Socio Economic Status of the Patients

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Socio Economic Status</th>
<th>Ascariasis</th>
<th></th>
<th>Giardiasis</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of Cases</td>
<td>Percentage</td>
<td>No. of Cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>1.</td>
<td>Poor</td>
<td>6</td>
<td>30</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>Middle</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Rich</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Regarding Ascariasis and Giardiasis all 20 Patients were from poor Socio-Economic Status.

Socio Economic Status of the Patients

[Graph showing distribution of socio-economic status for Ascariasis and Giardiasis]
Table – 6

Diet Reference

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Diet Habit</th>
<th>Ascariasis</th>
<th>Giardiasis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of Cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>1</td>
<td>Vegetarian</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Mixed diet</td>
<td>5</td>
<td>25</td>
</tr>
</tbody>
</table>

Regarding Ascariasis, among 6, 1 patient was a vegetarian (5%), 5 patients were taking mixed diet (25%). Regarding Giardiasis, among 14, 2 patients were vegetarian (20%), and 12 patients were taking mixed diet (60%).
Table – 7

Thinai

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Thinai</th>
<th>Ascariasis</th>
<th>Giardiasis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of Cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>1</td>
<td>Kurinji</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Mullai</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Marutham</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>Neithal</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Paalai</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Cent Percent of cases were from Marutha Nilam (20).
Table – 8

Paruva Kaalam

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Paruva Kaalam</th>
<th>Ascariasis</th>
<th>Giardiasis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of Cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>1</td>
<td>Kaar Kaalam (Avani &amp; Puratasi)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Koothir Kaalam (Iyppasi &amp; Karthigai)</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Munpani Kaalam (Markazhi &amp; Thai)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Pinpani Kaalam (Maasi &amp; Panguni)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Elavenil Kaalam (Chithirai &amp; Vaikasi)</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>Muthuvenil Kaalam (Pani &amp; Addi)</td>
<td>4</td>
<td>20</td>
</tr>
</tbody>
</table>

Regarding Ascariasis among 6, 1 patient had been admitted in Kaar Kaalam (5%), 1 patient had been admitted in Elavenil Kaalam (5%), 4 patients had been admitted in Muthuvenil Kaalam (20%).

Regarding Giardiasis among 14, a patients had been admitted in Kaar Kaalam (45%), 1 patient had been admitted in Koothir Kaalam (5%). 4 patients had been admitted in Muthuvenil Kaalam (20%).
### Table - 9

**Mode of Onset**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Mode of Onset</th>
<th>Ascariasis</th>
<th>Giardiasis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of Cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>1</td>
<td>Acute</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>Chronic</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Regarding Ascariasis and Giardiasis all 20 patients had acute on set of diseases.

![Mode of Onset Diagram](image)
### Table – 10

**Clinical Features During Admission**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Clinical Features</th>
<th>Ascariasis</th>
<th>Giardiasis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Cases</td>
<td>Percentage</td>
<td>No. of Cases</td>
</tr>
<tr>
<td>1</td>
<td>Pain in Abdomen</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>Nausea</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Loss of appetite</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>Vomiting</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Distended Abdomen</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Skin Rashes</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Disturbed Sleep</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>8</td>
<td>Pallor of the body</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>Loss of body weight</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>Diarrhoea</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Worms in Faeces</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>Cough &amp; Wheezing</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Regarding Ascariasis among 6.**

- Pain in Abdomen was present in all 6 cases (30%).
- Loss of appetite was present in all 6 cases (30%).
- Disturbed sleep was present in all 6 cases (30%).
- Nausea was present in 2 cases (10%)
- Vomiting was present in 1 case (5%)
- Pallor of the body was present in 2 cases (10%)
- Loss of body weight was present in 2 cases (10%).
- Worms in the faeces was present in 2 cases (10%).

Regarding Giardiasis, among 14 cases,

- Nausea was present in 4 cases (20%)
- Pain in abdomen was present in all 14 cases (70%)
- Vomiting was present in 2 cases (10%).
- Loss of appetite was present in all 14 cases (70%).
- Diarrhoea was present in all 14 cases (70%).
Table – 11

Thridhosa Reference.

Taste showing the derangement of Vatham

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Classification of Vatham</th>
<th>Ascariasis</th>
<th></th>
<th>Giardiasis</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of Cases</td>
<td>Percentage</td>
<td>No. of Cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>1</td>
<td>Piranan</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Abanan</td>
<td>-</td>
<td>-</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>3</td>
<td>Viyanan</td>
<td>6</td>
<td>30</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>4</td>
<td>Uthanan</td>
<td>5</td>
<td>25</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>5</td>
<td>Samanan</td>
<td>6</td>
<td>30</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>6</td>
<td>Nagan</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Koorman</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Kirukaran</td>
<td>6</td>
<td>30</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>9</td>
<td>Devathathan</td>
<td>6</td>
<td>30</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Thananjayan</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Regarding Ascariasis, among 6 patients:

Derangement of Uthanan was observed in 5 cases (25%).

Derangement of Viyanan, Samanan, Kirukaran was observed in all 6 cases (30%).

Derangement of Devathathan was observed in all 6 cases (30%).
Regarding Giardiasis among 14 patients

Derangement of Abanan, Viyanan, Samanan, Kirukaran was observed in all 14 cases (70%).

Derangement of Uthanana was observed in 10 cases (50%).

Table – 12

Showing the Derangement of Pitham

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Classification of Pitham</th>
<th>Ascariasis</th>
<th>Giardiasis</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>No. of Cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>1</td>
<td>Anila Pitham</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>Ranjagam</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Sathagam</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>Prasagam</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Aalosagam</td>
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</tr>
</tbody>
</table>

Regarding Ascariasis, among 6 patients,

Derangement of Anila Pitham, Sathagam was observed in all 6 cases (30%).

Derangement of Ranjagam, Prasagam was observed in 2 cases (10%).

Regarding Giardiasis, among 14 patients,

Derangement of Anila Pitham, Sathagam was observed in all 14 cases (70%).
Table – 13

Showing the Derangement of Kabam

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Classification of Kabam</th>
<th>Ascariasis</th>
<th>Giardiasis</th>
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<td></td>
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<td>No. of Cases</td>
<td>Percentage</td>
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<td>30</td>
</tr>
<tr>
<td>2</td>
<td>Kilethagam</td>
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<td>30</td>
</tr>
<tr>
<td>3</td>
<td>Pothagam</td>
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<td>Tharpagam</td>
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<td>5</td>
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Regarding Ascariasis among 6 patients,

Derangement of Avalambagam, Kilethagam was observed in all 6 cases (30%).

Regarding Giardiasis, among 14 patients.

Derangement of Avalambagam, Kilethagam was observed in all 14 cases (70%).
Table – 14

Ezhu Udarkattugal References

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Udarkattugal</th>
<th>Ascariasis</th>
<th>Giardiasis</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>No. of Cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>1</td>
<td>Saaram</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>Seneer</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Oon</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Kozhuppu</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Enbu</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Moolai</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Sukkilam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Suronitham</td>
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<td>-</td>
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</tbody>
</table>

Regarding Ascariasis, among 6 patients.

- Saaram was affected in all 6 cases (30%).
- Seneer was affected in 2 cases (10%)
- Oon was affected in all 2 cases (10%).
- Kozhuppu was affected in 2 cases (10%).

Regarding Giardiasis, among 14 patients,

- Saaram was affected in all 14 cases (70%).
### Table – 13

#### Envagai Thervugal Reference

<table>
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<th>S. No.</th>
<th>Envagai Thervugal</th>
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<th>Giardiasis</th>
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<td>2</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Niram</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Mozhi</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Vizhi</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Malam</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>6</td>
<td>Moothiram</td>
<td>-</td>
<td>-</td>
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<tr>
<td>7</td>
<td>Saaram</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Naadi (Vatha Kalappu)</td>
<td>6</td>
<td>30</td>
</tr>
</tbody>
</table>

Regarding Ascariasis, among 6 patients Naa, Niram, Vizhi was affected in 2 cases (10%).

Malam was affected in all 6 cases (30%).

Regarding Giardiasis, among 14 patients.

Malam was affected in all 14 cases.

Vatha Kalappu Naadi has found in all 20 cases (100%).
### Table – 14

#### Neerkuri Neikkuri – Reference

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<th>Giardiasis</th>
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<td></td>
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<td>Percentage</td>
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<td>Neerkuri “Vaikkol Niram”</td>
<td>6</td>
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<tr>
<td>2</td>
<td>Neikuri “Muththothu Niral”</td>
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<td>30</td>
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</table>

The colour of urine in all cases was “Vaikkol niram” (100%). In all cases (100%) the urine represented kaba neer (Muththothu Niral)

### Table – 15

#### Aetiology Reference

<table>
<thead>
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<th>S. No.</th>
<th>Aetiological Factors</th>
<th>Ascariasis</th>
<th>Giardiasis</th>
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<td>Percentage</td>
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<td>1</td>
<td>Picca</td>
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<td>10</td>
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<td>2</td>
<td>Poor dietary habits</td>
<td>4</td>
<td>20</td>
</tr>
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<td>3</td>
<td>Drinking unserilised water drawn from polluted sources</td>
<td>6</td>
<td>30</td>
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</table>
Regarding – Ascariasis, among 6 patients, poor dietary habits was the aetiological factor in 4 cases (20%)

Drinking unsterilised water drawn from polluted sources was the aetiological factor in all 6 cases (30%) picca was the aetiological factor in 2 cases (10%).

regarding Giardiasis, among 14 patients, poor dietary habits was the aetiological factor in 8 cases (40%)

Drinking unspecialized water drawn from polluted sources was the aetiological factor in all 14 cases (70%)

Picca was the aetiological factor in 3 cases (15%)
### Table – 16

#### Results After Treatment

<table>
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<th>S. No.</th>
<th>Results</th>
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<th></th>
<th>Giardiasis</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td>No. of Cases</td>
<td>Percentage</td>
<td>No. of Cases</td>
<td>Percentage</td>
</tr>
<tr>
<td>1</td>
<td>Good relief</td>
<td>4</td>
<td>20</td>
<td>12</td>
<td>60</td>
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<tr>
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<td>Moderate relief</td>
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<td>10</td>
<td>2</td>
<td>10</td>
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<td>3</td>
<td>Mild relief</td>
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### IN-PATIENT CASE REPORT OF TWENTY CASES FOR THE DISEASE OF KUDAL KIRUMI

<table>
<thead>
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<th>Sl.No</th>
<th>IP.No</th>
<th>Name</th>
<th>Age / Sex</th>
<th>Duration of illness</th>
<th>Sign and Symptoms</th>
<th>Admission Date</th>
<th>Discharge Date</th>
<th>No.of days Treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1357</td>
<td>Venugopal</td>
<td>7 MC</td>
<td>15 days</td>
<td>Pain in abdomen, loss of appetite, nausea, disturbed sleep</td>
<td>25-5-2008</td>
<td>2-6-2008</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>1494</td>
<td>Saravan perumal</td>
<td>3 MC</td>
<td>10 days</td>
<td>Pain in abdomen, loss of appetite, vomiting, disturbed sleep</td>
<td>10-06-2008</td>
<td>16-6-2008</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>1535</td>
<td>Vinesh</td>
<td>6 MC</td>
<td>20 days</td>
<td>Loss of appetite, pain in abdomen, pallor of the body, loss of body weight, disturbed sleep, worms in faeces</td>
<td>14-6-2008</td>
<td>16-6-2008</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>1495</td>
<td>Sakthi Eswaran</td>
<td>8 MC</td>
<td>7 days</td>
<td>Nausea, pain in abdomen loss of appetite, diarrhoea</td>
<td>12-6-2008</td>
<td>16-6-2008</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>1673</td>
<td>Vedhan</td>
<td>8 MC</td>
<td>25 days</td>
<td>Pain in abdomen, loss of appetite, disturbed sleep</td>
<td>26-8-2008</td>
<td>3-6-2008</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>1702</td>
<td>Mariammal</td>
<td>4 FC</td>
<td>8 days</td>
<td>Pain in abdomen, loss of appetite, disturbed sleep</td>
<td>30-6-2008</td>
<td>4-7-2008</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>1891</td>
<td>Radha</td>
<td>5 FC</td>
<td>15 days</td>
<td>Pain in abdomen, loss of appetite, diarrhoea, nausea</td>
<td>19-7-2008</td>
<td>21-7-2008</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>1875</td>
<td>Johnsirani</td>
<td>11 FC</td>
<td>10 days</td>
<td>Pain in abdomen, loss of appetite, disturbed sleep, worms in faeces, Loss of body weight, pallor of the body</td>
<td>18-7-2008</td>
<td>22-7-2008</td>
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<tr>
<td>9</td>
<td>1920</td>
<td>Enbamani</td>
<td>5 MC</td>
<td>1 MONTH</td>
<td>Pain in abdomen, loss of appetite, vomiting, diarrhoea</td>
<td>21-7-2008</td>
<td>28-7-2008</td>
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<tr>
<td>10</td>
<td>1844</td>
<td>Vidhiya</td>
<td>10 FC</td>
<td>5 days</td>
<td>Loss of appetite, pain in abdomen, diarrhoea</td>
<td>16-8-2008</td>
<td>18-8-2008</td>
<td>3</td>
</tr>
</tbody>
</table>
### IN-PATIENT CASE REPORT OF TWENTY CASES FOR THE DISEASE OF KUDAL KIRUMI

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>IP.No</th>
<th>Name</th>
<th>Age / Sex</th>
<th>Duration of illness</th>
<th>Sign and Symptoms</th>
<th>Admission Date</th>
<th>Discharge Date</th>
<th>No. of days Treated</th>
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<tbody>
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<td>2074</td>
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<td>12FC</td>
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<td>Pain in abdomen, loss of appetite, Diarrhoea, vomiting</td>
<td>11-8-2008</td>
<td>13-8-2008</td>
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<td>12</td>
<td>2131</td>
<td>Muthu</td>
<td>8MC</td>
<td>10 days</td>
<td>Loss of appetite, Diarrhoea, pain in abdomen</td>
<td>16-8-2008</td>
<td>20-6-2008</td>
<td>5</td>
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<td>2206</td>
<td>Raja</td>
<td>12 MC</td>
<td>9 days</td>
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<td>22-8-2008</td>
<td>24-8-2008</td>
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<td>14</td>
<td>2247</td>
<td>Selva Balan</td>
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<td>15 days</td>
<td>Nausea, pain in abdomen loss of appetite, Diarrhoea</td>
<td>25-8-2008</td>
<td>29-8-2008</td>
<td>4</td>
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<tr>
<td>15</td>
<td>2365</td>
<td>Siva</td>
<td>8 MC</td>
<td>8 days</td>
<td>Pain in abdomen, diarrhoea, loss of appetite</td>
<td>6-9-2008</td>
<td>8/9/2008</td>
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</tr>
<tr>
<td>16</td>
<td>2409</td>
<td>Mathi</td>
<td>7 FC</td>
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<td>Pain in abdomen, diarrhoea, loss of appetite</td>
<td>12-9-2008</td>
<td>18-9-2008</td>
<td>7</td>
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<tr>
<td>17</td>
<td>2491</td>
<td>Priyangadevi</td>
<td>4 FC</td>
<td>7 days</td>
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<td>20-9-2008</td>
<td>22-9-2008</td>
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<td>4/10/2008</td>
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<td>19</td>
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<td>Pavithra</td>
<td>6 FC</td>
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<td>10/10/2008</td>
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<td>Age</td>
<td>Sex</td>
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<td>Blood Test After treatment</td>
<td>Stools Examination</td>
<td>Urine Examination</td>
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TC – Total Count, DC – Differencial Count, P – Present, AO – Acaria Ova, GC – Giardia Cyst, Alb – Albumin, Dep - Deposite
DISCUSSION

Helminthic infestations contribute significantly to global burden of disease in children especially in the tropical and subtropical regions. Most of the helminths parasitise the living organism.

Most helminths are potentially Pathogenic to human beings, if these are present in sufficient number. These may cause disease in children by the following mechanisms.

I. By depriving the nutrients of the host.

II. By sucking the blood from host.

III. By interfering with the body functions mechanically.

Ascariasis is the most common worm infestation of the humans, infecting nearly one – fourth of the world’s Population Giardia lamblia is also important protozoan enteropathogen of humans.

Incidence

Among 20 in – patients the incidence of Ascariasis was found in 6 cases (30%), and the incidence of Giardiasis was found in 14 cases (70%). So, the study reveals that the incidence is more in Giardiasis than in Ascariasis.

Sex Reference

Regarding Ascariasis, among 6.4 were Male children, 2 were Female Children, regarding Giardiasis, among 14.8 were Male Children. 6 were Female Children.
Age Reference

Regarding Ascariasis, among 6, 1 patient was in Amubuli Paruvam (5%), 2 patients were in Pethumbai Paruvam (10%) 3 patients were in Siru Paruvam (10%). Regarding Giardiasis among 14 Cases, 1 patient was in Ambuli paruvam (5%) 3 patients were in Chitril Paruvam (10%) 2 patients were in peathai paruvam (10%) 1 patient was in pillai Paruvam (5%). 3 Patients were in Pethumbai paruvam (15%), 6 Patients were in Siru paruvam (30%).

Religion Reference

Regarding Ascariasis, Among 6, 4 patients were Hindus (20%) 2 patients were Christians (10%) Regarding Giardiasis among 14, 12 patients were Hindus (60%) and 2 patients were Christians (20%).

Socio-Economic status of the patients

Regarding Ascariasis and Giardiasis all 20 patients were from poor socio-economic status. This study reveals that the patients belonging to poor socio-economic status are affected commonly due to unhygienic conditions.

Diet Reference

Regarding Ascariasis, among 6, 1 patient was vegetarian (5%) 5 patients were mixed diet consumers (25%). Regarding Giardiasis, among 14, 2 patients were Vegetarian (10%) and 12 patients were mixed diet (60%) consumers.
Paruva Kaalam

Regarding Ascariasis, among 6,1 patient had been admitted in Koothir Kaalam (5%) 1 patient had been admitted in Elavenil kaalam (5%) 4 patients had been admitted in muthuvenil Kaalam (20%) Regarding Giardiasis, among 14,9 patients had been admitted in Kaar Kaalam (45%), 1 patient had been admitted in Koothir Kaalam (5%) 4 patients had been admitted in Muthuvenil Kaalam (20%).

Thinai

Cent percent of cases were from Marutha Nilam. Marutha nilam is the area where the severity of disease is less, but this incidence may be due to the alteration of food habits and their activities.

Mode of onset

Regarding Ascariasis and Giardiasis all 20 patients had acute onset.

Clinical features during admission

Regarding Ascariasis, among 20, nausea was present in 2 cases (10%) vomiting was present in 1 person (5%) pain in abdomen was present in all 6 cases (30%), loss of appetite was present in 6 cases (30%), disturbed sleep was present in 6 cases (30%) pallor of the body was present in 2 cases (10%) loss of weight was present in 2 cases (10%) worms in the feces was present in 2 cases (10%). Regarding Giardiasis among 14, pain in abdomen was present in all 14 cases (70%) Nausea was presents in 4 person (20%) loss of appetite was presents all 14 cases
(70%) vomiting was present in 2 patients (10%) Diarrhoea was present in all 14 Cases (70%).

**Thiridhosa reference**

**Derangement of Vatham**

Regarding Ascariasis, among 6 patient, derangement of Uthanan was observed in 5 cases (25%) derangement of viyanan, samanan, kirukaran & devathathan was observed in all 6 cases (30%).

Regarding Giardiasis, among 14 derangement of uthnan was observed in 10 cases (50%), derangement of abanan, viyana, samanan and kirukaran was observed in all 14 cases (70%).

**Derangement of Pitham**

Regarding Ascariasis, among 6 patients, derangement of Anila – Pitham and sathagam was observed in all 6 cases (30%) Derangement of ranjagam and Prasagam was observed in 2 cases (10%) Regarding Giardiasis, among 14 patients, derangement of anila – pitham and sathagam was observed in all 14 cases (70%)

**Derangement of Kabam**

Regarding Ascarisasis, among 6 patients, derangement of Avalambagam and Kilethagam was observed in all 6 cases (30%). Regarding Giardiasis, among 14 patients derangement of avalambagam and kilethagam was observed in all 14 cases (70%).
Enbu Udarkattugal Reference

Regarding Asccariasis, among 6, saaram was affected in all 6 cases (30%), senneer oon and kozhuppu was affected in 2 cases (10%).

Regarding Giardiasis among 14 patients saaram was affected all 14 cases (70%)

Envagai Thervugal Reference

Regarding Ascariasis, among 6, Na a, Niram and Vizhi was affected in 2 cases (10%), Malam was affected in all 6 cases (30%).

Regarding Giardiasis Malam was affected in all 14 cases (70%).

Neerkuri, Neikkuri Reference

The colour of Urine in all cases in Vaikkol niram (100%). In all cases (100%) the Urine represented the Kaba neer (Muth thothu nitral).

Aetiology Reference

Among 6 cases with Ascariasis, Picca was the aetiological factor in 2 case (10%). Poor dietary habits was the aetiological factor in 4 cases (20%), drinking unsterilized water drawn from polluted sources was the aetiological factor in all 6 cases (30%).

Among 14 cases with Giardiasis, Picca was the aetiological factor in 3 cases (15%) poor dietary habits was the aetiological factor in 8 cases (40%), drinking unsterilized water drawn from polluted sources was the aetiological factor in all 14 cases (70%). This study reveals that poor dietary habit was the main aetiology for the worm infestation.
Reference to Results

In case of Ascariasis, good response of this trial drug was observed in 4 cases (20%), moderate response was observed in 2 cases (10%).

In case of Giardiasis, good response of this trial drug was observed in 12 cases (60%) moderate response was observed in 2 cases (10%).

This study reveals that with the treatment of trail drug maximum number of cases showed good results.

The trail medicine for the treatment of “Kudal Kirumi” was Vidangathi Chooranam. Out of the 20 patients treated with Vidangathi Chooranam good result was found in 80% of cases, moderate result was found in 20% of cases, based on the evidence of motion examination at the time of admission and discharge. The Vidangathi Chooranam has got more effective anthelmintic action on Naakkupuchi Noi and Masaraipuzhu Noi

Pharmacological studies were carried out in the department of Pharmacology, Government Siddha Medical College, Palayamkottai. The internal Medicine Vidangathi Chooranam had Very good anti Spasmodic action good laxative action and very good antihistamine action.

Bio-chemical analysis was carried out in the Department of Bio- Chemistry Government Siddha Medical College, Palay.
Treatment

Out of 20 patients treated with Vidangathi Chooranam, 80% of cases had cured and 20% of cases had moderate relief. Based on the laboratory investigation at the time of admission and discharge, the Vidangathi Chooranam has got more effective anthelmintic action for Naakkupuchi Noi and Masaraipuzhu Noi.
SUMMARY

Infection is most prevalent in tropical and subtropical climates due to lack of sanitary facilities or the use of human faeces as fertilizer (night soil). Infection may also be acquired through ingestion of contaminated fruits and vegetables. Most infected individuals are asymptomatic due to low worm load. Clinical manifestations occur due to intestinal complications.

Twenty patients from both sexes of different age groups were selected and a careful detailed history was elicited and diagnosis was made on both the siddha and modern methodology. Among 20 persons 12 were male and 8 were female.

The patients were treated with “Vidangathi Chooranam” internally in the in-patient ward of postgraduate Kuzhanthai marathuvam department.

Modern investigation also be done. Some of the patients varied in sex, age & in all other respect such as socio-economic status. I took a statistics with the aid of details mentioned in the case sheet.

The detailed clinical analysis of the trail drug is done in the Bio-Chemical laboratory in Government siddha medical college, Palayamkottai.

The pharmacological analysis of trial drug was done in the dept. of pharmacology in Government Siddha Medical College, Palayamkottai.
The drug Vidangathi Chooranam is having good laxative action, very good anti spasmodic action and good antihistamine action.

During the course of treatment no signs of complications were reported & recorded.

On the basis of clinical results achieved with the evidences of faeces examination at the time of admission and discharge the Vidangathi Chooranam’ was proved to be more effective in anthelmintic action for Ascariasis and for Giardiasis, where more than 80% of the cases were completely relieved.
CONCLUSION

In this clinical study results were found to be satisfactory. Almost the clinical feature of Naakku Puchi correlates with Ascariasis and Masaraipuzhu noi with Giardiasis.

The results revealed that the predisposing factors for Naakku Puchi Noi and Masaraipuzhu Noi were contaminated food, unhygienic habits, lack of environmental sanitation and poor socioeconomic condition of the affected person.

The trail drug Vidangathi chooranam was effective and given good results in the present research finding show that 80% cases how been completed cured and 20% cases showed moterate relief study.

The preparation and administration of the trail drug was very simple economically cheap, easily available.

Clinically the drugs are free from adverse effects.

So it is concluded that the drug Vidangathi Chooranam was very effective in the treatment of Naakku Puchi Noi and Masaraipuzhu Noi.
ANNEXURE I

PREPARATION AND PROPERTIES OF TRIAL DRUGS

PREPARATION

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<td>S</td>
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<tr>
<td>G</td>
<td>50 grams</td>
</tr>
<tr>
<td>T</td>
<td>50 grams</td>
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<tr>
<td>J</td>
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PROPERTIES

A: 1 gram (must be kept in a refrigerator at 4 degrees)
தற்காலிகள் கற்றிப் பயணம்

பொழுதுகாணலாம்.

பாரசீகமாக ஒருளமைப்பாட்டுகள்.

பண்டை குறிப்பிட்டு

லிருந்து முழுந்து ஆண்டமாக நீக்க வேண்டும் நூற்றண்டு குறிப்பிட்டு 2 பாதுகாக்க ஒருங்கிணைக் குறிப்பிட்டு.

குறிப்பிட்டு:

லிருந்து குறியீட்டுகள் ½ நூற்றண்டு வரையாக அடர்த்திக்கும் வேண்டும்.

குறிக்கோணம்:

தசையார்களால் சாண்டப்போன பாதுகாக்க அங்கத்து முன்னர் முற்பட்டு குறிப்பிட்டு.

முன்கூற்றுக்காணை:

முன்றோடு பாதுகாக முற்பட்டு முன்னர் முற்பட்டு குறிப்பிட்டு.

இருக்கினப்

தசையார்களால் சாண்டப்போன நூற்றண்டு வரையாக அங்கத்து முற்பட்டு முற்பட்டு குறிப்பிட்டு.

சங்குரிப்

தசையார்களால் சாண்டப்போன பிரிரகு பிரிவு ஏற்படாமல் முற்பட்டு முற்பட்டு முற்பட்டு குறிப்பிட்டு.
PROPERTIES OF TRIAL DRUGS:

**Botanical Name:** Ferula Asafoetida

**Family:** Apiaceae

**Parts used:** Aromatic gum resin.
Action

- Antispasmodic
- Laxative
- Anthelmintic
- Carminative

Chemical Constituents:

- Organic sulphur compound
- Ferulic acid, malic acid
- Acetic acid, formic acid
- Valeric acid, umbelli feron.

Botanical Name: Embelia ribes
Family: Myrsinaceae
Parts used: Fruit, seeds
Action

Anthelmintic - புதுக்காரணிகை
Carminative - உயன்பெயர் பாதுகாப்பு
Stomachic - பாதுகாப்பு பாதுகாப்பு
Astringent - கல்லூர்

Chemical Constituents:

Embelin, Quercitol
Volatile and fixed Oil
Coloceting matter  tannin
Crystalline, Viddningin.
कுष्टिकाय

रसायनम

अयस्त्र, अम्लम, अम्लक, अस्मात्र, करुणा, गन्धी, स्नायु, सीमारु, तन्त्रम, वरिष्ठम, लघुदानं, विचित्रम, चिन्तकम, विन्यासम, चिन्हम, विविधम, विविधसम, विविधस्वरूप, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधস্বরূপম, वি঵িধস্বরূপম, विविधস्वরূপম, विविधस्वরूपम, विविधস्वরূপম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वরূপম, विविधस्वरূपম, विविधस्वरূপম, विविधস্বরূপম, विविधस्वरূपम, विविधस्वरূपम, विविधस्वरূपम, विविधस्वरূपম, विविधस्वरূपम, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वরূपম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपम, विविधस्वरূपম, विविधস্বরূপম, विविधस्वরূपম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূপম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपম, विविधস्वরূপম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपম, विविधস্বরূপম, विविधस्वरূपम, विविधस्वरূपम, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपম, विविधস্঵রূপম, विविधস्वरূपম, विविधस्वरূपম, विविधस्वरূপম, विविधस्वरূपম, विविधস्वরূपম, विविधস्वरূपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरूपम, विविधस्वरূপম, विविधস্঵রূপম, विविधस्वरूपम, विविधस्वरূपম, विविधस्वरূपম, विविधস्वरূপम, विविधस्वरূपম, विविधस्वरূপम, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपम, विविधस्वरূपम, विविधस्वरূपम, विविधस्वरূपम, विविधस्वरূपম, विविधस्वরূपম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपম, विविधস্঵রূপম, विविधस्वरূপम, विविधस्वरূপম, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपম, विविधস्वরূपম, विविधस्वरূपम, विविधस्वरূपম, विविधस्वरূपम, विविधस्वरূपম, विविधस्वरূपम, विविधस्वरূपম, विविधस्वरূपম, विविधस्वरূपम, विविधस्वरূपম, विविधस्वरূপম, विवि
Action:

Stomachic - பரிசு இராச்சியம்

Laxative - மெல் மிளக்கத்தி

Purgative - மூன்றாந்திப்பாக்கத்

Chemical Constituents

Tannic acid, Gallic acid

Mucilage, Chebulinic acid

Botanical Name : Piper longum

Family : Piperaceae

Parts used : Immature berries.
Action:

- Carminative
- Sedative
- Genercal tonic
- Haematinic
- Anthelmintic

Chemical Constituents:

- Resine, Volatile oil, Starch, Gum
- Fatty oil, inorganic matter and piperine, pipalaine.

Botanical Name: Butea Monosperma

Family: Fabaceae

Parts used: Seed
Chemical Constituents:

Kino oil present in the seeds. Palasonin is the anathelmatic principle present in seeds.

Action:

Laxative - ലാക്സാറ്റ
Anthelmintic - അന്ഥെൽമിൻറിക

English Name:

Sodium chloride
பாதுகாப்பான்:

- எண்மையான காற்று பரிசெ சுருக்கியமை

புளோம்பாலியில் பார்க்கும் முறையில் பயிற்சி பார்க்கும்

Caption:

- செல்லும் காவல் - கீழ் காவல்

எலுமரியால் காவல் குறுக்கு, அதுடன், பிற்கு மாற்றும் எசுப்பன் வைனுடன்

சுண்ணிக்கு குறுக்கு, மாதுகாக்கப்படும் போது,

திட்டம்

English Name : Sodium Chloride impura, Rock salt

சார்ந்தபின்:

எலுமரி, என்புல், எலுமரியைப் பயிற்சி பார்க்கும், எலுமரி, எலுமரியைப்

பாதுகாப்பான்:

“அணுக்கும் மத்திய குறுக்குக்கு குறுக்கு

தோசணம் நசி புவியுடன் விளக்கும் விளக்கு

குறுக்கு விளக்கும் குறுக்கு விளக்கு

வேளுக்கு விளக்கும் விளக்கு”

- குறுக்கு காவல் - கீழ் காவல்

பாதுகாப்பான்:

திட்டமையற்றதாக குறுக்கு குறுக்கு, அதுடன், என்புல், எலுமரி, எலுமரியை,

எலுமரியை, எலுமரியை, என்புல், எலுமரியை போன்றன.”

Action:

Antiseptic - கீழ் பார்க்கும்

Antiperiodic - கீழ் பார்க்கும்

Anthelmintic - புவியுடன்

Purgative - போன்றன்
ANNEXURE II

BIO – CHEMICAL ANALYSIS

BIO – CHEMICAL ANALYSIS OF VIDANGATHI

CHORANAM

PREPARATION OF THE EXTRACT

5gms of the drug was weighed accurately and placed in a 250ml clean beaker. Then 50ml distilled water is added and dissolved well. Then it is boiled well for about 10 minutes. It was cooled and filtered in a 100ml volumetric flask and then it is made up to 100ml with distilled water. This fluid is taken for analysis

Qualitative Analysis

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Experiment</th>
<th>Observation</th>
<th>Inference</th>
</tr>
</thead>
</table>
| 1.    | **Test for calcium**  
2ml of the above prepared extract is taken in a clean test tube. To this add 2 ml of 4% ammonium oxalate solution. | A white precipitate is formed. | Indicates the presence of calcium. |
| 2.    | **Test for sulphate:**  
2ml of the extract is added to 5% barium chloride solution. | No white precipitate is formed. | Absence of sulphate. |
<table>
<thead>
<tr>
<th></th>
<th>Test for chloride</th>
<th>The extract is treated with silver nitrate solution.</th>
<th>A white precipitate is formed.</th>
<th>Indicates the presence of chloride.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>Test for carbonate</td>
<td>The substance is treated with concentrated HCl.</td>
<td>No brisk effervescence is formed.</td>
<td>Absence of carbonate.</td>
</tr>
<tr>
<td>4.</td>
<td>Test for Starch</td>
<td>The extract is added with weak iodine solution.</td>
<td>Blue colour is formed</td>
<td>Indicates the presence of starch.</td>
</tr>
<tr>
<td>5.</td>
<td>Test for Iron Ferric</td>
<td>The extract is treated with concentrated glacial acetic acid and potassium ferro cyanide.</td>
<td>No blue colour is formed.</td>
<td>Absence of ferric iron.</td>
</tr>
<tr>
<td>6.</td>
<td>Test of iron:</td>
<td><strong>Ferrous:</strong> The extract is treated with concentrated Nitric acid and ammonium thyo cyanate.</td>
<td>Blood red colour is formed.</td>
<td>Indicates the presence of ferrous iron.</td>
</tr>
<tr>
<td></td>
<td><strong>Test for phosphate</strong></td>
<td>No yellow precipitate is formed.</td>
<td>Absence of phosphate.</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>------------------------</td>
<td>----------------------------------</td>
<td>-----------------------</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>The extract is treated with ammonium molybdate and concentrated nitric acid.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th><strong>Test for albumin</strong></th>
<th>No yellow precipitate is formed.</th>
<th>Absence of albumin.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td>The extract is treated with Esbach’s reagent.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th><strong>Test for Tannic acid</strong></th>
<th>Blue black precipitate is formed.</th>
<th>Indicates the presence of Tannic acid.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.</td>
<td>The extract is treated with ferric chloride reagent.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th><strong>Test for unsaturation</strong></th>
<th>It gets decolourised.</th>
<th>Indicates the Presence of unsaturated compound.</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.</td>
<td>Potassium permanganate solution is added to the extract.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th><strong>Test for the reducing sugar</strong></th>
<th>No Colour change occurs.</th>
<th>Absence of reducing sugar.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.</td>
<td>5ml of benedict’s qualitative solution is taken in a test tube and allowed to boil for 2 mts and added 8-10 drops of the extract and again boil it for 2 mts.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
13. **Test for amino acid:**

One or two drops of the extract is placed on a filter paper and dried it well. After drying, 1% ninhydrin is sprayed over the same and dried it well. Violet colour is formed. Indicates the Presence of Amino acid.

**Inference**

The given sample of “VIDANGATHI CHOORANAM” contains Ferrous iron, Tannic acid, Reducing Sugar, Amino acid, and unsaturated compound.
ANNEXURE III

PHARMOCOLOGICAL ANALYSIS

LAXATIVE ACTION OF VIDANGATHI CHOORANAM

Aim

To study the laxative effect of the test drug.

Method

charcoal meal method.

Procedure

6 rats were selected and divided into three groups. Each group was having 2 rats, and they were fasted for 48 hours. One group of rats was orally administer with vidangathi chooranam in a dose of 200mg/100gm body weight in 1 ml. the second group of rats received 1ml of distilled water. 1 hour later each animals of both groups was given 0.5ml of an aczonus solution, and 10% charcoal by stomach tube. 1 hour after administration of the charcoal meal, the animals were sacrificed with chloroform. The small intestine from pyloric up to caecum was removed and the distance traveled by charcoal was measured by measuring the distance traveled from the pylorus. The mean distance traveled by the carbon particles to the total length of the intestine was measured in the control and the drug treated group. The results are tabulated and compared.
### Study of Laxative Action by Charcoal Meal method

Using the drug of Vidangathi Chooranam

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of Drugs / Groups</th>
<th>Dose / 100 gram body weight</th>
<th>Total Length of the intestine</th>
<th>Charcoal meal traveled up to</th>
<th>% of charcoal Travelled</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control water</td>
<td>2 ml</td>
<td>60cm</td>
<td>60cm</td>
<td>100</td>
<td>Good</td>
</tr>
<tr>
<td>2</td>
<td>Vidangathi Chooranam + hot water</td>
<td>100 mg</td>
<td>60cm</td>
<td>57 cm</td>
<td>95</td>
<td>Good</td>
</tr>
</tbody>
</table>

**Inference:**

Test drug has got good laxative effect.
ANTI – SPASMODIC EFFECT OF VIDANGATHI CHOORANAM

Preparation of the test drug

100g of Vidangathi Chooranam is mixed with 10ml of water. The filtrate was used for the experiment.

Method

A rabbit weighing about one kg was sacrificed by a blow on the head. The abdomen was suddenly opened and ileocaecal junction was found. A small piece of ilea portion was cut, removed and placed in dish containing a worm aerated Tyrode solution. The lumen of the ileum was gently rinsed out by pushing Tyrode solution in to it. Three can length segment was cut from this part of ileum and tied with thread on both ends without closing the lumen and the tissue is mounted in the organ bath containing Tyrode solution maintained at 37°C and bubbled with air by an oxygen tube.

Drug was given to study of the inhibitory effect of acetyl chlorine (1mg / ml) inducing contraction.

Inference

The test drug has very good anti-spasmodic effect.
ANTI – HISTAMINIC STUDY OF
VIDANGATHI CHOORANAM

Aim:

To study the Anti – histaminic effect of Vidangathi chooranam.

Preparation of the test drug:

1gm of Vidangathi Chooranam was boiled with 20ml of water for 15 mins. 2ml of decoction was taken as the test drug.

Procedure:

A guinea pig weighed about 350gm was starved for 48 hours. It was sacrificed by a blow on the head and external jugular vein was allowed to bleed. The abdomen was then cut and ileum was cut out and placed in a tray which contained warm tyrode solution (37°C) and continuously aerated. The contents of the lumen of the ileum were washed and utmost care was taken to avoid any damage to the gut muscle. An ileum segment having a length of about 3cm was taken and tied in both ends with thread. One end was tied in a ‘j’ tube and the other end was tied in a frontal lever. The tissue was put in an organ bath and the effect of drug on histamine induced contractions was recorded.

Inference:

The drug Vidangathi Chooranam has significant Anti-histamine action.
## ANNEXURE IV

**CASE SHEET PROFORMA – KUDAL KIRUMI**

**GOVERNMENT SIDDHA MEDICAL COLLEGE AND HOSPITAL**

**Post Graduate Research Centre**

**Branch IV – Kuzhandai Maruthuvam**

**Palayamkottai – 627 002.**

<table>
<thead>
<tr>
<th>Name of the Medical unit:</th>
<th>Nationality :</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.P. No.</td>
<td>Religion :</td>
</tr>
<tr>
<td>Bed. No.</td>
<td>Date of Admission :</td>
</tr>
<tr>
<td>Name</td>
<td>Date of Discharge :</td>
</tr>
<tr>
<td>Age/ Sex</td>
<td>Duration of treatment :</td>
</tr>
<tr>
<td>Occupation (Parents)</td>
<td>Diagnosis :</td>
</tr>
<tr>
<td>Income (parents)</td>
<td>Medical Officer :</td>
</tr>
<tr>
<td>Informant</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td></td>
</tr>
</tbody>
</table>

Complaints and duration :

History of present illness :

History of past illness :

Antenatal History :

Birth and Neonatal History :

Dietetic and Nutritional History :

Developmental History :

Family History :

Social History :

Immunization History :
General Examination

1. Consciousness : 
2. Decubitus : 
3. Anaemia : 
4. Jaundice : 
5. Cyanosis : 
6. Clubbing : 
7. Pedal oedema : 
8. Lymphadenopathy : 
9. Nourishment : 
10. Skin changes : 

Vital Signs

1. Pulse
   - Rate : 
   - Rhythm : 
   - Volume : 
   - Character : 

2. B.P. : 
3. R.R. : 
4. Temperature :
**Anthropometry**

1. Wt – Weight : 
2. Ht – Height : 
3. Mid arm circumference : 
4. Head circumference : 
5. Chest : 
6. Skin fold thickness : 

**Siddha System - Clinical Examination:**

**Poripulangal**

Mei : 
Vai : 
Khan : 
Mookku : 
Sevi : 

**Kanmendriyam – Kanmavidayam**

Kai : 
Kall : 
Vaai : 
Eruvaai : 
Karuvaai : 

119
Gunam

Sathuvam : 
Rajo : 
Thamo : 

Nilam

Kurinchi : 
Mullai : 
Marutham : 
Neithal : 
Palai : 

Paruva Kaalam

Kar : 
Koothir : 
Munpani : 
Pinpani : 
Elavenil : 
Muthuvenil : 

Uthayam – Athakayam

Puyam : 
Chayam : 
Kaal : 
Paatham : 

120
Pira Uruppugalin Nilai

Moolai : 
Iruthayam :
Puppusam :
Kalleeral :
Manneeral :
Kudal :
Siruneeragam :
Kuri :

Mummalam

Viyarvai :
Malam :
Moothiram :

Mukkutra Udal

Vaatha thegi :
Piththa thegi :
Kabha thegi :
Kalappu thegi :

Udal Kattugal

Saaram :
Senneer :
Oon :

121
Kozhuppu  
Enbu  
Moolai  
Sukkilam/Suronitham  

Envagai Thervugal
Naadi  
Sparisam  
Naa  
Niram  
Mozhi  
Vizhi  
Malam  
Moothiram  

Vaatham
Piranan  
Abaanan  
Uthaanan  
Viyaanan  
Samaanan  
Naagan  
Koorman  
Kirugaran
Devathathan  :
Dhananjeyan  :

**Pitham**
Anilam  :
Ranjagam  :
Sathagam  :
Alosagam  :
Pirasagam  :

**Kabam**
Avalambagam  :
Kiletham  :
Pothagam  :
Tharpagam  :
Santhigam  :

**Neerkuri**
Niram  :
Manam  :
Nurai  :
Edai  :
Enjel  :

**Neikuri**  :
Malakuri

Niram : 
Nurai : 
Elagal : 
Erugal : 

Examination of other systems

CNS : 
CVS : 
RS : 
Abdomen : 

Lab Investigations

1. Blood

TC : 
DC : 
Hb : 
ESR : 
HIV : 
VDRL : 
Sugar : 
Urea : 
Cholesterol : 
IgE : 
2. Urine

Albumin : 
Sugar : 
Deposit : 

3. Motion

Ova : 
Cyst : 
Occult Blood : 
Pus Cells : 

X-Ray

Chest P.A View : 
Abdomen : 

DIFFERNTIAL DIAGNOSIS :

PROGNOSIS :

MARUTHUVAMURAI :

DAILY PROGRESS :

ADVICE :
## Admission – Discharge Sheet

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<td>Income (Parents)</td>
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### Patients Condition on Admission:

**Motion:**

- Ova: 
- Cyst: 

**Blood:**

- TC: 
- DC: 
- ESR: 
- HB:
Urine:

   Albumin : 

   Sugar : 

   Deposit :

Patient Condition at the time of Discharge:

Motion:

   Ova :

   Cyst :

Blood:

   TC :

   DC :

   ESR :

   HB :

Urine:

   Albumin :

   Sugar :

   Deposit :

Signs and Symptoms during Admission.

Signs and Symptoms at the time of discharge.

Place :

Date : Signature of the Medical Officer,
GLOSSARY

IP  -  In-Patient
OP  -  Out-Patient
TC  -  Total White blood Corpuscle
DC  -  Differential Count
P   -  Polymorphs
L   -  Lymphocytes
E   -  Eosinophils
B   -  Basophils
M   -  MOnocytes
ESR -  Erythrocyte Sedimentation Rate
MC  -  Male Child
FC  -  Female Child
Sec -  Seconds
Mts -  Minutes
Hr  -  Hour
BIBLIOGRAPHY

- Balavagadam
- Pillaippini Maruthuvam
- Pararasa Sekaram
- Siddha Maruthuvanga Surukkam
- Siddha Maruthuvam
- Siddha Maruthuva Noi Naadal Noi Muthal Naadal
- Noiella Neri
- Gunapadam Mooligai Vaguppu
- Agathiyar Vaidhya Vallathi – 600
- Athma Rakshmirtham
- Jeeva Rakshmirtham
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- Tamil Siddha Culprit
- Roga Nirnaya Saaram
- Wealth of India
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➢ Textbook of Medical of Paerasitology – C.K.Jeyaram Painkar

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➢ Essential of Paerasitology by genrald D.Schmidt.

➢ Dr.K.D.Chattarjee’s Paerasitology

➢ Achar’s text book of paediatrics


➢ Anubhoga Vaithiya Thega Ragasiyam.
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TC - Total Count, DC - Differential Count, P – Present, AO – Ascaria Ova, GC – Giardia Cyst Alb-Albumin, Dep - Deposit
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