Determination of Diagnostic Significance of *Naadi* (Pulse), *Neikuri* (Urine Examination) and *Manikadainool* (Wrist Circumetric Sign) in *Pakkavatham* (Hemiplegia) at Government Siddha Medical College & Hospital, Palayamkottai, Tirunelveli, Tamil Nadu - 627002

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Abstract: <u>*Background:*</u> *The Stroke is a second leading cause of death in worldwide, its mortality rate is 5.5 million and above. This is not only the burden but also, up to 50% of survivors being chronically disabled.* <u>*Aim:*</u> *To determine the diagnostic significance of Naadi, NeikuriandManikadainool in Pakkavatham.* <u>*Study design:*</u> *A Cross Sectional Descriptive Observational Single Centric Study.* <u>*Place and duration of study:*</u> *This study work was carried out in 50 patients at Government Siddha Medical College and Hospital, Palayamkottai, Tirunelveli, Tamil Nadu from April 2019 to September 2019.* <u>*Materials and methods:*</u> *After getting the Ethical clearance from Institutional Ethical Committee50 subjects (30 subjects in Out Patient Department (OPD) and 20 subjects in In Patient Department (IPD) were randomly selected, data were collected by interviewing with a structured questionnaire, pulse and wrist circumference were studied and the samples of urine were collected to the analysis.* <u>*Results:*</u> *The highest incidence of Pakkavatham was observed in 51-60 aged group of 19 male patients.The highest incidence of Pakkavatham was observed in 24 (48%) Hypertensive male patients. Mostly Vathapithaprakruti was predominantly seen in 19 male patients (38%) and 06 female patients (12%). 22 male patients (44%) and 07 female patients (14%) had Vathapithanaadi, 05 male patients (10%) had Vathakapanaadi. During the Neikuri examination majority, 27 male patients (54%) and 07 female patients (14%) had Vathaneikuri. Most of the patients MVV fell within the range of 9-91/2fbs. According to the Naadi and Neikuri correlation Vathais predominant and equalent in both examination.In MKV the significance value was seeninonly 30 patients.*

Keywords: *Pakkavatham,* Hemiplegia, *Naadi,* Pulse*, Neikuri,* Urine examination, *Manikadainool* Wrist circumetric sign

1. Introduction

Hemiplegia (*Pakkavatham*) is the second leading mortality cause in the world and affects the middle to older aged people. It is raising in morbidity or mortality ratio and disability especially in developing countries like India due to the improper diet pattern and life style modifications. [2,8,12,13,14] In Siddha system of medicine *Pakkavatham*is one among the type of eighty *Vatha* diseases. [4,5,10,14] Siddha system has a unique diagnostic method to identify the diseases and their causes. The Siddha diagnosis is based on eight tool (*Envagaithervugal*) examination of pulse, tactile perception, tongue, color, complexion, speech, eyes, stools and urine. [4,10,16] *Manikkadainool* (MKN) is another diagnostic tool which is explained in the *Agasthiyar Soodamani Kajiru Soothiram*.[9,10,11]

This descriptive study was carried in 50 patients with known acute stroke at Government Siddha Medical College and Hospital, Palayamkottai, Tirunelveli, Tamil Nadu. The present study deals with scientific validation of *Neerkuri* (urine examination) and determine the significance of *Naadi, Neikuri* and *Manikadainool* in diagnosis and prognosis of *Pakkavatham.* It will help to understand the importance of *Naadi, Neikuri* and *Manikadainool* for both diagnostic and prognosis of various pathological conditions.

2. Aim

2.1 Primary Objective

To determine the diagnostic significance of *Naadi, Neikuri* and *Manikadainool* in *Pakkavatham.*

2.2 Secondary Objective
2.2.1 To determine the type of pulse in *Pakkavatham.*
2.2.2 To evaluate the Neerkuriin *Pakkavatham.*
2.2.3 To document the diagnostic patterns of Neikkuri in *Pakkavatham.*
2.2.4 To measure the measurement of *Manikadainool* in *Pakkavatham.*
2.2.5 To observe for any significant Neikkuri pattern, pulse or wrist circumetric signwhich may provide a clue in the diagnosis, prognosis or its complications

3. Literature Review

According to *Yugimuni Vaithiya Chinthamani* 800, *Pakkavatham* is a condition with the exaggeration of *Vatham* which spreads all over the body andproduces paralysis the one half of the body, with or without facial involvement. [4,5,10,14]

The Siddha literature holds many valuable diagnostic tools to treatise diseases. In eight tool examinations the "Pulse Diagnosis" is a unique and most important method in Siddha Medicine.The pulse should be examined in the Right hand for male and the left hand for femalerecorded at the radial artery. The diagnosis and prognosis can be assessed clearly through the *Naadi*. Any variation occurs in the three humours is reflected in the *Naadi. Vathanaadi* is felt by tip of index finger, *Piththam* by tip of middle finger and *Kapham* by tip of ring finger. *Naadinadai* are compared with the gait of various animals, reptiles and birds.[1,4,10,16]

Vatha - Movement of Swan and Peacock
Piththam - Movement of Tortoise and Leech
Kapham - Movement of Frog and Serpent

In eight diagnostic tool examination the urine examination has gained importance next to pulse examination. The Sage *Theraiyar* explained how the *Neerkuri* and *Neikuri* can be used for both diagnostic and prognostic purposes in his *Theraiyar Neerkuri Vaithyam*. The urine examination consists of macroscopic observation of *Niram* (color), *Nirai* (density), *Naatram* (odor), *Nurai* (frothy) and *Enjal* (deposits). Apart from this *Neikuri*plays a major role in diagnosis of the disease. Both *Neerkuri* and *Neikkuri* examinations can be used to access the diagnosis and prognosis of various diseases, in early screening and detection.The spreading pattern of oil drop spreads like *Aravu* (snake) indicates *Vatha* disease, spreads like *Aazhi* (ring) indicates *Piththa* disease and spreads like*Muthu* (Pearl) indicates *Kapha* disease.If there is a combined shape like a ring in a snake or snake in the ring, snake and a pearl or a pearl in the ring, it indicates combined derangement of humors. The rapid spread of oil drop; Pearl beaded and Sieve type of spreading pattern indicates incurable state of the disease. [3,4,6,7,10,16]

The wrist circumetricsign (*Manikkadainool)* is explained in Saint *Veadammamuni's Agasthiyar Soodamani Kajiru Soothiram.* As per the procedure it is termed as *ManikadaiNool (Manikadai-* wrist; *Nool-* thread). *ManikkadaiNool (MKN)* is a parameter to diagnose the state of disease by measuring the circumferecord of the wrist by means of a thread and then dividing the measured circumference with the patient's finger.[4,9,10,11]It describes the*Manikadai*values (*MKV*) ranging from 4 to 11.Theprognosis of finger breadths as shown as follow:

11 finger breadth (fbs) - Indicates that the individual is stout and will live a healthy life for many years.
4 - 6finger breadth (fbs) - Indicates bad prognosis and it leads to death.
6 1/4 - 10 finger breadth (fbs) - Indicates different disease conditions.
9 finger breadth (fbs) - Diminished hearing, blurred vision, back pain, numbness in both thigh, unable to walk

The *Silethumavatham* and *Vathasilethumam* are the *Naadi* (Pulses) feeling during *Pakkavatham.*9finger breadths indicate the clinical features of *Pakkavatham.*[4,5,10,15]

4. Materials and Methods

1) Study design **-** A Cross Sectional Descriptive Observational Single Centric Study
2) Study period - Six months from April 2019 - September 2019
3) Study population**-**50 patients with acute*Pakkavatham* in Out Patient Department and In Patient Department of Government Siddha Medical College & Hospital, Palayamkottai, Tirunelveli, Tamil Nadu during the period ofApril 2019 to September 2019.
4) Sampling method - Random Sampling
5) Study procedure
   - Data were collected from patients / by-standers attending to OPD and IPD at Government Siddha Medical College and Hospital, Palayamkottaiby interviewing with a structured questionnaire.
   - After obtaining the written consent of the patient (through consent form in their understandable language) they were enrolled in the study.
   - The observed pulse was entered.
   - The early morning mid-stream urine sample were collected for *Neerkuri*and *Neikuri* and documented the spreading pattern.
   - The measured wrist circumstance was divided to finger breadths.
   - All the data which were collected via questionnaire had entered and analysed with simple statistical method ad SPSS. Collected literature review was evaluated with the results.

5. Results and Discussion

5.1 Distribution of *Pakkavatham* in relation to the age
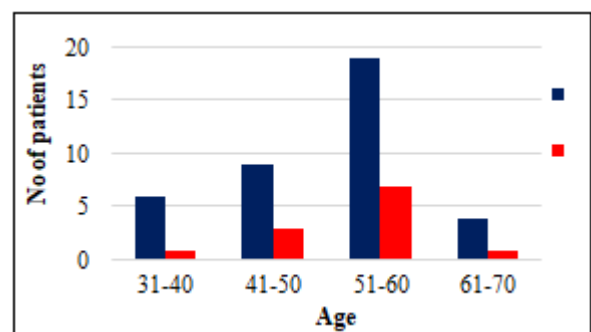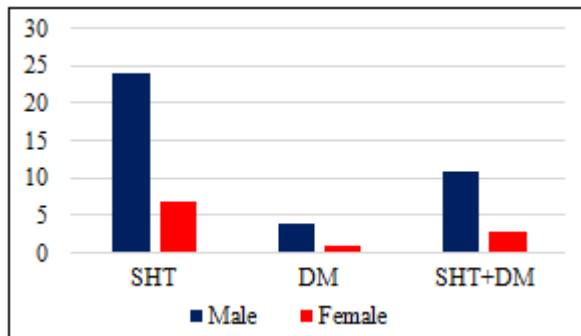

Figure 1: Distribution of *Pakkavatham* in relation to the age

The highest incidence of *Pakkavatham* was observed in 51-60 aged group of 19 male patients. Among the 50 patients 06 male patients (12%) and a female patient (02%) was affected in 31-40 aged group, 09 male patients (18%) and 03 female patients (06%) were affected in 41-50 aged group,19 male patients (38%) and 07 female patients (14%) were affected in 51-60 aged group and04 male patients (08%) and a female patient (02%) was affected by *Pakkavatham* in 61-70 aged group. (Fig no: 1)

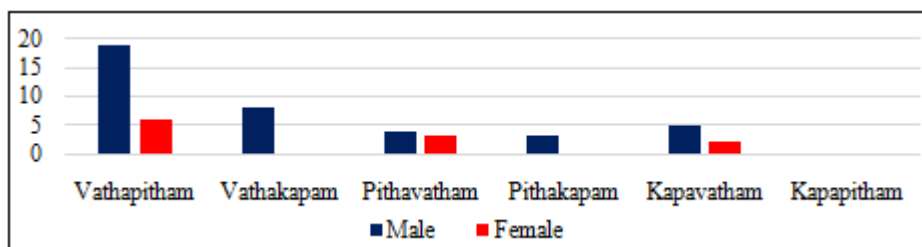## 5.2 Distribution of *Pakkavatham* in relation to the Hypertention and Diabetes Mellitus

Figure 2: Distribution of Pakkavatham in relation to the SHT & DM

The highest incidence of *Pakkavatham* was observed in 24 (48%) Hypertensive male patients. Among the 50 patients 11 male patients (22%) and 03 female patients (06%) had SHT and DM. 04 male patients (08%) one female patient (02%) had DM and 03 female patients (06%) had SHT only.(Fig no:2)

Apart from SHT and DM 04 male patients (12%) and 02 female patients (08%) had fits, 02 female patients (08%) had meningitis, 01male patient (08%) had poliomyelitis and 01 female patient (08%) had pulmonary TB.

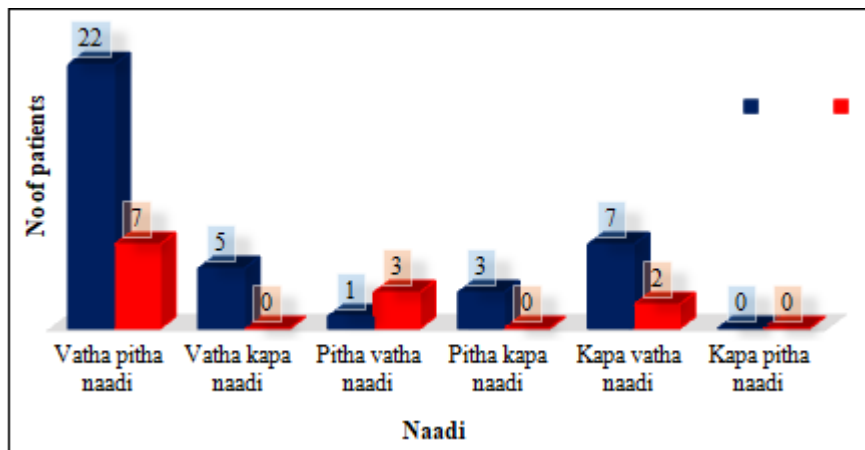## 5.3 Distribution of *Pakkavatham* in relation to the *Prakruti*

Figure 3: Distribution of *Pakkavatham* in relation to the *Prakruti*

Among the 50 patients, 19 male patients (38%) and 06 female patients (12%) had *Vathapithaprakruti*, 08 male patients (16%) had *Vathakapaprakruti*, 04 male patients (08%) and 03 female patients (06%) had *Pithavathaprakruti*, 03 male patients (06%) had *Pithakapaprakruti* and 05 male patients (10%) and 02 patients (04%) had *Kapavathaprakruti*. (Fig no:3)
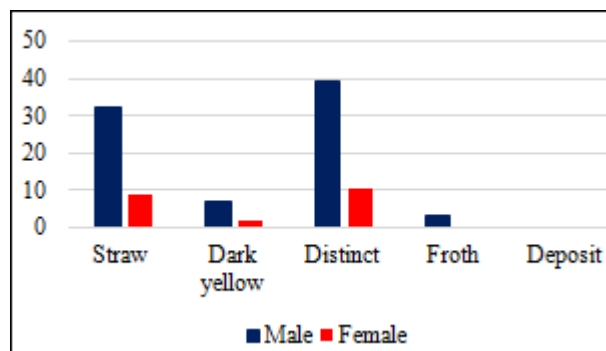
5.4 Distribution of *Pakkavatham* in relation to the *Naadi*

Figure 4: Distribution of *Pakkavatham* in relation to the *naadi*

Among the 50 patients, 22 male patients (44%) and 07 female patients (14%) had *Vathapithanaadi*, 05 male patients (10%) had *Vathakapanaadi*, 01 male patient (02%) and 03 female patients (06%) had *Pithavathanaadi*, 03 male patients (06%) had *Pithakapanaadi* and 07 male patients (14%) and 02 patients (04%) had *Kapavathanaadi*. (Fig no:4)

5.5 Distribution of *Pakkavatham* in relation to the *Neerkuri*

Figure 5: Distribution of *Pakkavatham* in relation to the *Neerkuri*

Among the 50 patients, 32 male patients (64%) and 09female patients (18%) had *straw* colour *urine*, 07 male patients (14%) and 02 patients (04%) had dark yellow urine, 03 male patients (06%) had frothy urine. All 50 patients had distinct odour and no deposits. The volume of urine was seen averagely 1000-1500 ml. (Fig no: 5)

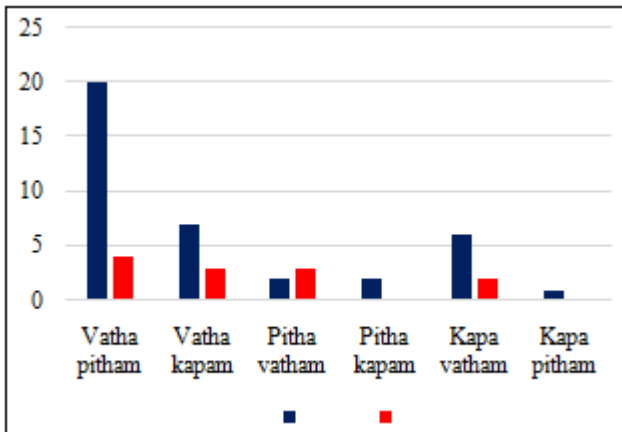**5.6 Distribution of *Pakkavatham* in relation to the *Neikuri***

Figure 6: Distribution of *Pakkavatham* in relation to the *Neikuri*

Among the 50 patients, 20 male patients (40%) and 04female patients (08%) had *Vathapithaneikuri*, 07 male patients (14%) and 03 female patients (06%) had *Vathakaphaneikuri*, 02 male patients (04%) and 03 female patients (06%) had *Pithavathaneikuri*, 02 male patients (04%) had *Pithakaphaneikuri*, 06 male patients (12%) and 02 female patients (04%) had *Kapavatahmneikuri*and one male patient (02%) had *Kaphapithaneikuri*,. (Fig no: 6)

5.7 Correlation of *Naadi* with *Neikuri*in *Pakkavatham*

Type	*Naadi*	*Neikuri*	MSE	SD (Sig. 2-tailed) Pearson correlation
VP	29	24	10.53881714	3.535534
VK	5	10	3.271085447	3.535534
PV	4	5	3.741657387	0.707107
PK	3	2	4.582575695	0.707107
KV	9	8	6.363961031	0.707107
KP	0	1	0.05	0.707107

Figure 7

According to Pearson correlation 0.7 significance seen in *Pithavatham, Pithakapham, Kaphavatham*and *Kaphapitham.* (Fig no: 7)

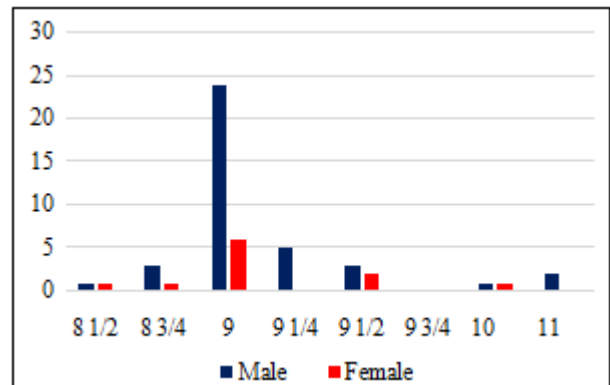**5.8 Distribution of *Pakkavatham* in relation to the *Manikadainool***

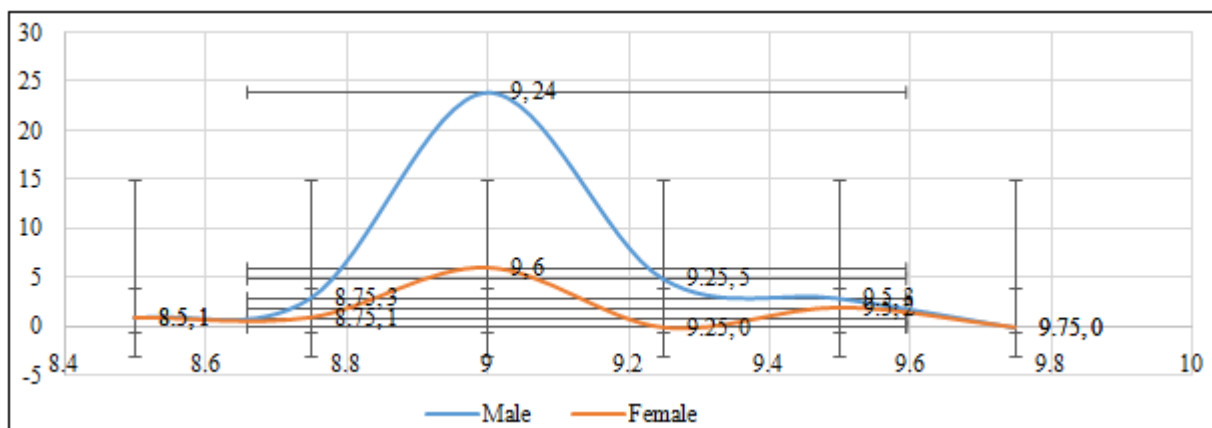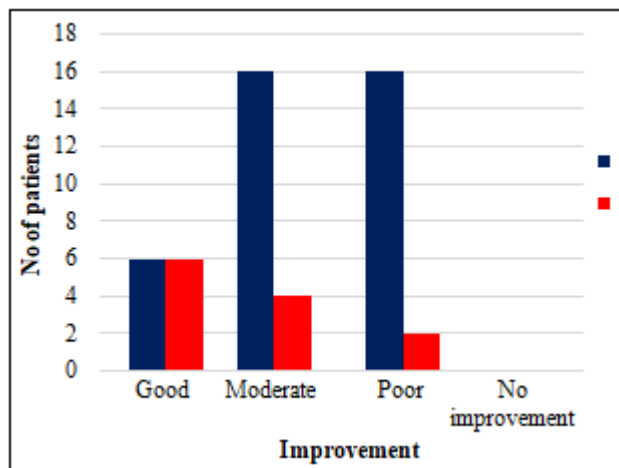**Figure 8:** Distribution of *Pakkavatham* in relation to the *Manikadainool*

Figure 9: Manikadai nool

Most of the patients *MKN* values fell within the range of 9-91/2fbs. Among the 50 patients 24 male (48%) and 06 (12%) female patients had 9 fbs. (Fig no: 8)

**5.9 Distribution of *Pakkavatham* in relation to the improvement**

Figure 10: Distribution of *Pakkavatham* in relation to the improvement

Among the 50 patients 06 male and female patients (12%) had good improvement, 16 male patients (32%) and 04 female patients (08%) had moderate improvement and 16 male patients (32%) and 02 female patients (04%) had mild improvement. (Fig no: 10)

6. Conclusion

The stroke is a public health importance with serious economic and social consequences. Here clinically 50 patients were included in this study (Criteria based). The men mostly affected than the women in the age group of 51-60 years.The highest incidence of *Pakkavatham* was observed in 24 (48%) Hypertensive male patients. Among the 50 patients 11 male patients (22%) and 03 female patients (06%) had SHT and DM. Most of the patients had *Vathapithaprakruti*. 22 male patients (44%) and 07 patients (14%) had *Vathapithanaadi*, 05 male patients (10%) had *Vathakapanaadi*. 27 male patients (54%) and 07 female patients (14%) had *Vathaneikuri*. Most of the patients *MKN* values fell within the range of 9-91/2fbs. According to the *Naadi* and *Neikuri* correlation *Vathai*is predominent in both and main 3 humours were correspondingly affected. According to the *Agasthiyar Soodamani Kajiru Soothiram* 09fbs was the significance of *Pakkavatham* and only 30 patients had the significant value. 06 male and female patients (12%) had good improvement and 16 male patients (32%) and 02 female patients (04%) had mild improvement. According to *YugiVaidhyaChinthamani*is confirmed, the patients had shown good prognosis with *Kaphavathanaadi*.

Annexure
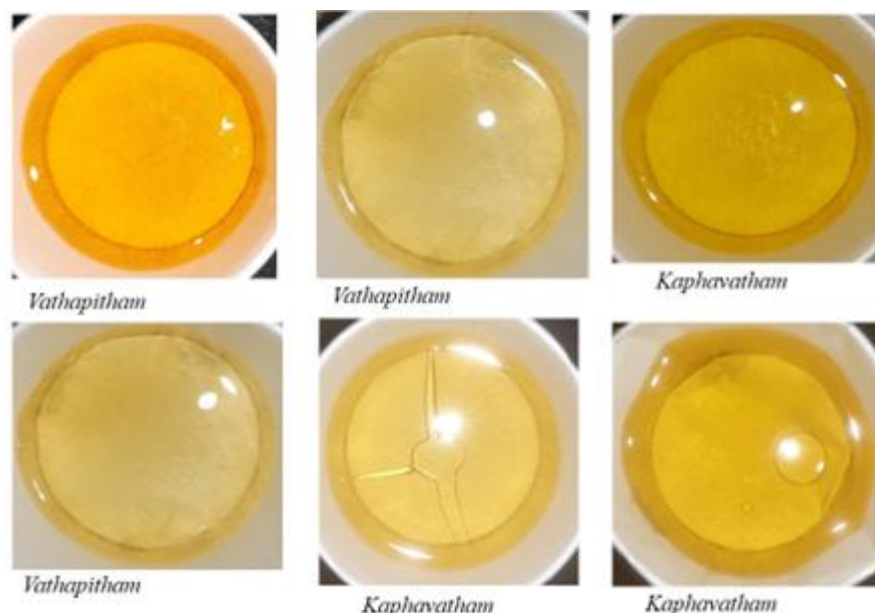
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