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ASSESSMENT OF NADI PARIKSHA AS A DIAGNOSTIC TOOL IN MODERN PERSPECTIVE

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ABSTRACT

Nadi Pariksha is the ancient Ayurvedic technique of diagnosis through the Pulse. *Nadi pariksha* is one of the important Parameter mentioned under *Ashtvidha Rog Pariksha* by *Yogratnakar*. For the first time in India, followers of siddha system like *Kanada* and *Ravana* described in detailed about *Nadi Pariksha*, and later on it was adopted by disciples of Ayurveda like *Sharangdhar*, *Bhavprakash*, *Yogaratnakar*, etc. Due to the commercialization of the conventional diagnostic tools everyone can't afford them while *Nadi Pariksha* is non-invasive and cost free diagnostic technique which can be boon for poor patients to rule out the underlying disease condition. So there is a need of research on the *Nadi Pariksha* to utilize this classical *Pariksha* on standardized parameters and to make it applicable for Patients services and diagnosis of the diseases. In this research work, it has been try to justify the feature of *Nadi Pariksha* in healthy individual as well as in diseased subjects. This paper has been designed to study the scientific validity of *Nadi Pariksha*, using computerized sensing apparatus.

KEYWORDS: *Nadi Pariksha, Rog Pariksha*

INTRODUCTION

Nadi pariksha is being practised as a diagnostic tool by the Ayurvedic physicians since the time immemorial. *Nadi Pariksha* is the ancient Ayurvedic technique of diagnosis through the Pulse. *Nadi pariksha* is one of the important Parameter mentioned under *Ashtvidha Rog Pariksha* by *Yogratnakar*.[1] It can accurately diagnose physical, mental and emotional imbalances as well as diseases. One can determine the healthy and diseased state of the individuals as well as *normalcy or disequilibrium of Dosha, Dhatu, Mala and Agni* which is assessed through the behaviour of different types of Pulses. The information about *Nadi* is available in the form of *Shlokas* in ancient literatures. The information in the *Shlokas regarding Nadi Pariksha is* written in concise manner and decorative language.

Ayurvedic Physicians (*Vaidyas*) described the Pulse as mirror of whole body. *Nadi Pariksha* helps to know the existence of life as well as healthy and diseased state of the individual.[2] It is supposed not to be the original contribution of Indian system of medicine. Perhaps it has been introduced by other contemporary system of medicine to India. For the first time in India, followers of siddha system like *Kanada* and *Ravana* described in detailed about *Nadi Pariksha*, and later on it was adopted by disciples of Ayurveda like *Sharangdhar*, *Bhavprakash*, *Yogaratnakar*, etc.

Pulse is called the mirror or index of heart and it is like a lamp, which throw light on all physiological and pathological conditions encountered in Persons. The arterial pulse is the abrupt expansion of an artery resulting from the sudden ejection of blood into the aorta and its transmission throughout the arterial system.[3] The modern concept of Pulse formation is that the heart is a vital organ and functions as a peristaltic pump. The radial artery exhibits unique feature due to its progressively narrowing and branching to thumb and fingers. Pulse examination builds the good doctor-patient relationship.

Nadi can also help to assess the condition of the person even if the patient is unconscious, mentally retarded, deaf and dumb, insane or infant where history taking is not possible but this method of examination became extinct nowadays.[4] Due to the commercialization of the conventional diagnostic tools everyone can't afford them while *Nadi Pariksha* is non- invasive and cost free diagnostic technique which can be boon for poor patients to rule out the underlying disease condition. So there is a need of research on the *Nadi Pariksha* to utilize this classical *Pariksha* on standardized parameters and to make it applicable for Patients services and diagnosis of the diseases. In this research work, it has been try to justify the feature of *Nadi Pariksha* in healthy individual as well as in diseased subjects. This paper has been

designed to study the scientific validity of *Nadi Pariksha*, using computerized sensing apparatus. It reveals that dominant expression of *Nadi* observed as per dominancy of dosha in healthy as well as diseased individuals. *Nadi pariksha* described in detailed, to understand the healthiness as well as diseased process.

MATERIALS AND METHODS

The Present study was designed with aims and objectives

- To evaluate the *Prakriti* of healthy individuals with help of *Nadi pariksha*.
- To establish *Nadi pariksha* as a diagnostic tool in Present perspective.

The purpose of the study was to make a newer idea about Pulse examination.

❖ PLAN OF THE STUDY

For the study of the Pulse the volunteers were divided into three groups:

- Group A: Study on healthy individuals
- Group B: Study on diseased persons

SELECTION OF HEALTHY VOLUNTEERS

To conduct the study on *Nadi-Pariksha* in healthy volunteers, total 32 individuals of both sexes were selected from *BHU* campus, Varanasi and study was conducted in the Department of Biomedical Engineering, IIT, BHU, Varanasi for classical as well as instrumental study (recording of the Pulse tracings).

They were selected in different range of age groups varying from 16-60 years mostly students, some employees and locals. They were thoroughly examined**.** During history taking they were interrogated for their personal habit that is appetite, food habit, bowel habit, micturition habit, sleep and addiction. The enquiry was also made about their psychological status. They were also assessed for their *Prakriti* on the basis of a special *Prakriti Pariksha* proforma.

SELECTION OF PATIENTS

To conduct the study on *Nadi-Pariksha* in Patients, total 92 individuals of both sexes were registered. Patients of both the sexes were taken for the study in diseases group**.** Each disease *Raktagatavata, Jwara, Sthaulya, Madhumeha* was having 20 cases and rest of the 12 cases of *udar roga*. Instrumental study was carried out in only 25 patients (8 of Raktagatavata, 5 of Jwara, 4 of Sthaulya, 6 Madhumeha and 2 patients of udar roga) which were selected from OPD/IPD of S.S hospital, BHU, Varanasi**.(unavailability of the Nadi instrument at the Rishikul campus, Haridwar)** and rest of the cases were selected from OPD of the department of *Rog Nidan* and *Vikriti vigyan* , Rishikul campus, UAU, Haridwar.

Before taking under study all cases were subjected to detailed history, physical and systemic examination.

- *Ashtavidha*[5] and *Dashvida*[6] *Pariksha* were also done in the Patients.
- The known case of the diseases mentioned above was also included in the study.

TYPE OF STUDY: Open study.

INCLUSIVE CRITERIA

a) FOR HEALTHY VOLUNTEERS

1. Age group: 16-60 years.
2. Sex: individuals of both sexes were registered.
3. Occupation: Majority of the volunteers were students and some hospital employees.
4. Time of Pulse examination: Pulse was examined between 10am to 1pm.
5. Before examination, appetite, bowel habit, any addiction or any drug history were considered.

b) FOR DISEASED VOLUNTEERS

1. Age group: 16-60 years.
2. Sex: individuals of both sexes were registered.
3. Community: individuals of both rural and urban areas were selected for study.
4. Patient suffering from *Raktagatvata* (HTN), *Jwara, Sthaulya, Madhumeha, Udar roga* were included.

DIAGNOSTIC CRITERIA

- In case of *raktagatavata* - measurement of blood pressure was done.
- In case of *Jwara* – Any type of fever irrespective of their cause.
- In case of *Sthaulya* – BMI should be calculated and Patient having increased BMI than normal is included.
- In case of *Madhumeha* – Patients having elevated blood sugar than normal.
- In case of *Udar roga* – Patient having *pratyatam lakshana* of *udar roga* i.e *udar utsedh.*

EXCLUSIVE CRITERIA FOR ALL THE GROUPS

1. Individuals of age less than 16 years and more than 60 years were excluded for the study.
2. Patient suffering from *Raktagatvata* (HTN), *Jwara, Sthaulya, Madhumeha, Udar roga* associated with any other complications were excluded for diseased group.

***Nadi Pareeksha Vidhi* (Method of Nadi Examination)**

Two method were applied– **1.** Manual method- (a) Ancient method, (b) Modern method.

2. Instrumental method

Manual method: Ancient method

The Pulse was examined in left hand of the females and right hand of the males as per ayurvedic classics.[7] First the individual was advised to sit peacefully and comfortably. Next, the forearm was slightly flexed with the little flexion and a little bit medial rotation of the

wrist with fingers dispersed and extended then the three fingers (index, middle and ring finger) of the physician gently touches the skin over the radial artery. *Hastagata Jeevnadi* i.e. radial pulse was selected for ancient method of *Nadi Pariksha*. The index finger is comfortably placed nearest the thumb and the other two fingers are placed next to it.[8] The *Pariksha* should be done three times with a few second gaps in between.

Instrumental method

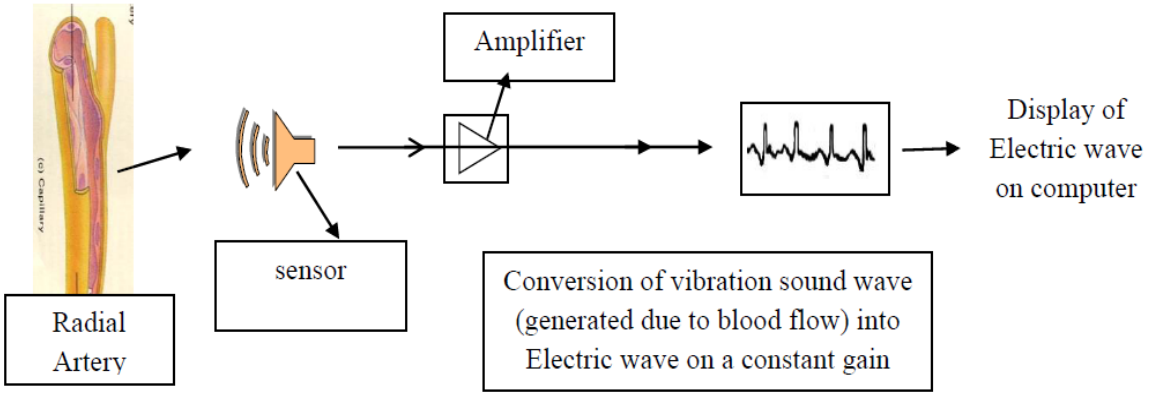
The instrument used for experiment is a "computerized sensing apparatus" (trade name- ADI instrument) which is having advanced teaching bundles.

The basic mechanism of this instrument is conversion of mechanical wave (Generated on Arterial wall due to movement of blood stream) into electrical wave, which is displayed on computer screen and recorded for further study.

This instrument has 2 types of sensors

1. Single sensor
2. Triple sensor

Function of both the sensors is to pick up mechanical wave, which are in the form of vibration sounds. They are converted into electrical wave by sensor and displayed on computer screen Plathysmograph.



Method of Pulse tracing by computerized sensing instrument

First of all radial pulse was examined on the basis of ancient parameter. After that a point was made on the radial artery according to site of *dosha* (Beneath index, middle, and ring fingers). To rule of motion artifact, the sensor was tied up with wrist with the help of a strip and the motion of wrist of the person/patient was also restricted. After keeping in mind that, no artifact was take place during examination, first the triple sensor was put down on the *vata*, *pitta* and *kapha sthana* on *jeevnadi* and the displayed graph was printed out. After that single sensor was placed at the prominent site of the *dosha* which was felt during manual pulse examination and also in the tracing of the triple sensor.

In this way, we have obtained total two graphs of a patient/person, one by triple sensor and one by single sensor. Further they were studied. Prominent site of *dosha* was studied with the help of graph obtained by triple sensor and *gati* of the dosha was studied with the help of single sensor.

Steps taken for Pulse tracing

1. Examination of Pulse by ancient method.
2. Formation of three points on radial artery at the site of *vata*, *pitta* and *kapha sthana*.
3. Ruling out artifact of sensors.
4. The triple sensor was put down on the *vata, pitta* and *kapha sthana* on *jeevnadi*.
5. A computerized graphical tracing of pulse is taken out.
6. Now Single sensor was placed at the prominent site of the *dosha* which was felt during manual pulse examination and also in the tracing of the triple sensor.
7. Tracing of this graph was also taken out.

OBSERVATIONS AND RESULTS IN HEALTHY INDIVIDUALS

1. Distribution according to *Prakriti*

Prakriti	**No. of individuals**	**Percentage**
Vataja	03	9.37%
Pittaja	06	18.75%
Kaphaja	05	15.6%
Vata paittik	04	12.5%
Vata kaphaja	02	6.25%
Pitta kaphaja	11	34.37%
Samdoshaja	-	-
Total	32	100%

Among the 32 individuals, Most of the individuals were *Pitta kaphaja* (34.37%) followed by *Pittaja* (18.75%), *Kaphaja* (15.6%), *Vata Paittik* (12.5%), *Vataja* (9.37%), *Vata kaphaja* (6.25%) respectively.

2. Subjective Prominant feeling of Pulse at *Jeevnadi* according to *Dosha Sthana.*

	No. of individuals	Percentage
Prominant feeling of Pulse at *Vata sthana* at *Jeevnadi* (radial artery)	07	21.87%
Prominant feeling of Pulse at *Pitta sthana* at *Jeevnadi* (radial artery)	18	56.25%
Prominant feeling of Pulse at Kapha sthana on	07	21.87%
Total	32	100%

Among the 32 individuals, most of the individuals were having prominent feeling of Pulse at *Pitta sthana* i.e 56.25% rest were having prominent feeling of pulse at *Vata sthana* and *Kapha sthana* i.e 21.87% respectively.

3. Subjective Prominent feeling of Pulse at *Jeevnadi* according to *Gati.*

Gati	No. of individuals	Percentage
Jaluka / sarp gati	07	21.8%
Manduka	20	62.5%
Hans / paravat gati	05	15.6%
Total	32	100%

Most of the individuals were having *Manduka gati* of the *Nadi* (62.5%) and other were having *Jaluka or Sarp gati*(21.8%) and *Hans gati*(15.6%) respectively.

OBJECTIVE ASSESSMENT

4. Pulse rate

Pulse Rate (beats/min)	No. of individuals	Percentage
60-72	04	12.5%
73-85	20	62.5%
86-100	08	25%
Total	32	100%

62.5% of individuals were having Pulse rate in the range of 73-85/min, 25% were having 86- 100/min and rest of persons having 60-72/min range of Pulse rate.

5. Rhythm

Rhythm	No. of individuals	Percentage
Regular	32	100%
Irregular	00	-
Total	32	100%

100% of the individuals were having regular Pulse rhythm.

6. Volume of the Pulse.

Volume	No. of individuals	Percentage
High	03	9.3%
Medium	26	81.25%
Low	03	9.3%
Total	32	100%

81.25% individuals having medium volume Pulse and other were having high volume Pulse and low volume Pulse consisting 9.3% each.

INSTRUMENTAL STUDY

7. Comparison between different Pulses.

PARAMETERS OF NADI	*VATAJA* Mean ± S.D	*PAITIK* Mean ± S.D	*KAPHAJA* Mean ± S.D
Amplitude of the Pulse wave (mv)	0.714 ± 0.296	2.522 ± 0.427	1.342 ± 0.282
Sustaining period of the Pulse wave (sec)	0.157 ± 0.050	0.181 ± 0.035	0.294 ± 0.041
Time interval between two Pulse waves (sec)	0.166 ± 0.043	0.180 ± 0.038	0.283 ± 0.044

8. Configuration of different type of Pulse.

Character	***Vatik* Pulse**	***Paittik* Pulse**	***Kaphaja* Pulse**
Summit	Conical	Bifid	Camel hump
Size of percussion wave	Smallest	Largest	Medium
Dicrotic notch	Absent/ negligible	Prominent	Absent

IN DISEASED PERSONS SUBJECTIVE ASSESSMENT

9. Subjective Prominant feeling of Pulse at *Jeevnadi* according to *Dosha sthan:*

	Raktagata Vata	***Jwara***	***Sthaulya***	***Madhumeha***	***Udar roga***
Predominant feeling of Pulse at Vata sthana on Jeevnadi (radial artery)	14	02	01	04	04
Predominant feeling pulse at Pitta sthana on Jeevnadi (radial artery)	04	18	05	02	06
Predominant feeling pulse at Kapha sthana on Jeevnadi (radial artery)	02	-	14	14	02
Total	20	20	20	20	12

10. Subjective Prominant feeling of Pulse at *Jeevnadi* according to *Gati.*

GATI	***Raktagata Vata***	***Jwara***	***Sthaulya***	***Madhumeha***	***Udar roga***
Jaluka / sarp gati	04	03	02	13	05
Manduka	16	17	02	02	04
Hans / Paravat gati	-	-	16	05	03
TOTAL	20	20	20	20	12

OBJECTIVE ASSESSMENT

11. Pulse rate

PULSE RATE (beats/min)	***Raktagata Vata***	***Jwara***	***Sthaulya***	***Madhumeha***	***Udar roga***
60-72	-	01	08	01	06
73-85	03	03	06	13	04
86-100	12	06	06	06	02
>100	05	10	-	-	-
Total	20	20	20	20	12

12. Rhythm

RHYTHM	***Raktagata Vata***	***Jwara***	***Sthaulya***	***Madhumeha***	***Udar roga***
Regular	20	20	20	20	12
Irregular		-	-	-	-
Total	20	20	20	20	12

13. Volume of the Pulse

VOLUME	***Raktagata Vata***	***Jwara***	***Sthaulya***	***Madhumeha***	***Udar roga***
High	14	12	07	02	-
Medium	06	08	10	10	05
Low	-	-	03	08	07
Total	20	20	20	20	12

INSTRUMENTAL STUDY

14. Parameters of *Nadi*

PARAMETERS OF *NADI*	***Raktagatavata***	***Jwara***	***Sthaulya***	***Madhu-meha***	***Udar roga***
Amplitude of the Pulse wave(mv)	4.96 $\pm$ 1.01	3.84 $\pm$ 0.384	0.75 $\pm$ 0.19	2.72 $\pm$ 0.89	1.6 $\pm$ 0.28
Sustaining period of the Pulse wave(sec)	0.21 $\pm$ 0.045	0.36 $\pm$ 0.06	0.38 $\pm$ 0.05	0.43 $\pm$ 0.10	0.3 $\pm$ 0.03
Time interval b/w two Pulse waves (sec)	0.18 $\pm$ 0.04	0.33 $\pm$ 0.05	0.41 $\pm$ 0.03	0.41 $\pm$ 0.06	0.25 $\pm$ **0.01**

RESULTS

15. Intergroup comparison in Patients of *Raktagatavata.*

Comparison	*Raktagatavata*	*Vataja Nadi* (Healthy volunteers)	Inter group comparison on mean difference (unpaired 't' test)	Remarks
Amplitude (mv)	4.96 ± 1.01	0.714 ± 0.296	t =9.223 P = <0.001	HS
Sustaining period (sec)	0.21 ± 0.045	0.157 ± 0.050	t =2.088 P =0.08	NS
Time interval b/w two Pulse waves (sec)	0.18 ± 0.04	0.166 ± 0.043	t =1.271 P =0.251	NS

Comparison	*Raktagatavata*	*Pittaja Nadi* (Healthy volunteers)	Inter group comparison on mean difference (unpaired 't' test)	Remarks
Amplitude (mv)	4.96 ± 1.01	2.522 ± 0.427	t =6.387 P = <0.001	HS
Sustaining period (sec)	0.21 ± 0.045	0.181 ± 0.035	t =0.882 P =0.412	NS
Time interval b/w two Pulse waves (sec)	0.18 ± 0.04	0.180 ± 0.038	t =1.004 P =0.354	NS

16. Intergroup comparison in Patients of *Jwara.*

Comparison	*Jwara*	*Pittaja Nadi* (Healthy volunteers)	Inter group comparison on mean difference (unpaired 't' test)	Remarks
Amplitude (mv)	3.84 ± 0.384	2.522 ± 0.427	t =7.33 P = <0.001	HS
Sustaining period (sec)	0.36 ± 0.06	0.181 ± 0.035	t =10.99 P =< 0.001	HS
Time interval b/w two Pulse waves (sec)	0.33 ± 0.05	0.180 ± 0.038	t =10.28 P =< 0.001	HS

17. Intergroup comparison in Patients of *Sthaulya.*

Comparison	*Sthaulya*	*Kaphaja Nadi* (Healthy volunteers)	Inter group comparison on mean difference (unpaired 't' test)	Remarks
Amplitude (mv)	0.75 ± 0.19	1.342 ± 0.282	t =4.371 P = 0.02	S
Sustaining period (sec)	0.38 ± 0.05	0.294 ± 0.041	t =4.200 P =0.025	S
Time interval b/w two Pulse waves	0.41 ± 0.03	0.283 ± 0.044	t =2.78 P =0.069	NS

18. Intergroup comparison in Patients of *Madhumeha.*

Comparison	*Madhumeha*	*Kaphaja Nadi* (Healthy volunteers)	Inter group comparison on mean difference (unpaired 't' test)	Remarks
Amplitude (mv)	2.72 ± 0.89	1.342 ± 0.282	t =4.01 P = 0.010	S
Sustaining period (sec)	0.43 ± 0.10	0.294 ± 0.041	t =4.66 P =0.006	S
Time interval b/w two Pulse waves (sec)	0.41 ± 0.06	0.283 ± 0.044	t =4.29 P =0.008	S

Comparison	*Madhumeha*	*Vataja Nadi* (Healthy volunteers)	Inter group comparison on mean difference (unpaired 't' test)	Remarks
Amplitude (mv)	2.72 ± 0.89	0.714 ± 0.296	t =5.44 P = 0.003	S
Sustaining period (sec)	0.43 ± 0.10	0.157 ± 0.050	t =5.48 P =0.003	S
Time interval b/w two Pulse waves (sec)	0.41 ± 0.06	0.166 ± 0.043	t =7.23 P =<0.001	HS

DISCUSSION

Discussion part of the study deals with the possible reasoning based on the specific logic to explain the interpretation of the findings and correlates them with their causes. Hence, discussion forms one of the most crucial parts of any scientific research work.

Vatik Nadi is correlated with Movement of *snake and leech.*[9] Both these animals make lateral curvature during movement. They do not make upward curvature very much. Ultimately during movement the rate is high (in snake) and low (in leech) and upward movement is low (in both). On the basis of this a pulse of high rate with low amplitude or a pulse of low rate with low amplitude may be compared with movement of snake and leech alternately, hence with *Vatik* Pulse.

Similarly the *Paittik* Pulse is compared with the movement of crow and Frog.[10] Both these animal make high speed as well as make high amplitude, during their jumping movement. That is why a pulse having high rate as well as high amplitude is compared with *Paittik* pulse.

*Like*wise a *Kaphaja Nadi* is compared with the movement of swan, and pigeon.[11] If the movement of pigeon and swan is observed, they put their leg one by one, that is; alternately and by doing this type of movement their upward movement is medium and rate is low. Hence by comparing their movement with Pulse, we should say that the pulse with low rate and medium amplitude seems to be a *Kaphaja* type of Pulse.

QUALITATIVE ASSESSMENT OF PULSE- SUBJECTIVE ASSESSMENT

On qualitative assessment of *Nadi* according to *Dosha sthana* at *Jeevnadi*, expression of Pulse were found predominately at *Pitta sthana* in maximum volunteers (56%) followed by *Vata sthana* and *Kapha sthana* i.e 21.87% respectively. *Gati* (character of Pulse) were also found as *Manduka Gati* in maximum individuals (62%) followed by *Jaluka* or *Sarp gati* (21.8%) and *Hans gati* (15.6%) respectively.

The possible reason behind this finding may be that, maximum persons were belonging to *Madhyam vaya* (Middle Age) which is the age of predominance of *Pitta*. The *Nadi Pariksha* of all the volunteers was done between the 10am to 1 pm that also corresponds with the predominant time of *Pitta*.

QUANTITATIVE ASSESSMENT OF PULSE - OBJECTIVE ASSESSMENT

In 62.5% of the volunteers, the Pulse rate was found to be in the range of 73 – 85/min and 25% were having 86-100/min and rest of persons having 60-72/min range of Pulse rate.100% of the volunteers were having regular Pulse rhythm. 81% of the volunteers were having medium volume of the Pulse.

In *Vatik* type of the Pulse, due to increased heart rate and stroke volume, the Pulse rate was found to be rapid with low volume, the Rhythm was regular. The pulsation under the index finger was of shorter duration.

In *Paittik* type of the Pulse, the Pulse rate was found to be slower than *Vatik* Pulses. The rhythm was regular with high amplitude. This indicate moderately rapid and steep rise of percussion wave. The Pulse has the sustaining nature in comparison to *Vatik* Pulse.

In *Kaphaja* type of the Pulse, the Pulse rate was found to be slowest and the rhythm was regular. The Pulse wave felt under the finger was of longer duration and of sustaining nature because of relative increase in maximum ejection period.

INSTRUMENTAL STUDY

The Findings of the graphs obtained during the study of *Nadi* in healthy volunteers shows that the amplitude of the each Pulse was maximum in *Paittik* Pulse (2.522mv) followed by *Kaphaja* Pulse (1.342mv) and *Vatika* Pulse (0.714mv). The maximum amplitude of the Pulse wave in *Paittik*a Pulse denotes high cardiac output states and maximum Pulse pressure.

The sustaining period of the Pulse wave was maximum in *Kaphaja* Pulse (0.294sec) followed by *Paittik* Pulse (0.180sec) and *Vatika* Pulse (0.166sec). The maximum sustaining period of the Pulse wave denotes the maximum sustaining of *kaphaja* percussion wave due to slow resting cardiac output.

The time interval between two Pulse waves in *Kaphaja* Pulse is maximum (0.283sec) followed by *Paittik* Pulse (0.180sec) and *Vatika* Pulse (0.166sec) respectively. The interval gives clue about the Pulse rate. More is the interval between two Pulse waves less will be the Pulse rate.

In case of Raktagatavata

QUALITATIVE ASSESSMENT OF PULSE- SUBJECTIVE ASSESSMENT

On qualitative assessment of *Nadi* according to *Dosha sthana* at *Jeevnadi*, expression of the Pulse found predominately at *Vata sthana* in maximum patients (70%) followed by *Pitta sthana* (20%).

Gati were observed as *Manduka gati* in most of the patients (80%) followed by *Sarp gati* (20%). This may be because *Kapha* and *Pitta* plays important role in the aetiopathogenesis of the disease. The *Vata* always gets vitiated by *avarana* of *Murta* entities i.e *Kapha, Pitta, Rakta* etc in *Avarana Samprapti* of *Raktagatavata* these entities hinder the pathway of *Vata* by aggravating themselves in the body.

QUANTITATIVE ASSESSMENT OF PULSE - OBJECTIVE ASSESSMENT

In 60% of the Patients, the Pulse rate was found to be in the range of 85-100/min and 25% were having Pulse rate more than 100/min. 100% of the patients were having regular Pulse rhythm. 70% of the patients were having high volume of the Pulse.

INSTRUMENTAL STUDY

The Findings of the graphs obtained during the study of *Nadi* in the patients of *Raktagatavata* shows that the amplitude of the Pulse was raised (4.96mv) as compared to the healthy individuals of *Vatik* (0.714mv) and *Paittik* Pulse (2.522mv) which was found as highly significant (P<0.001).

The sustaining period of the Pulse in the patients of *Raktagatavata* (0.21sec) was raised as compared to *Vatika* (0.157sec) and *Paittik Nadi* (0.181sec) of healthy individuals but the results were found not significant (P>0.05).

The time interval between two Pulse waves in the patients of *Raktagatavata* (0.18sec) was raised as compared to *Vatika* (0.166sec) and *Paittik Nadi* (0.180sec) of healthy individuals but the results were found not significant (P>0.05).

In case of *Jwara*

QUALITATIVE ASSESSMENT OF PULSE- SUBJECTIVE ASSESSMENT

When the *Nadi* was examined according to *Dosha sthana* at *Jeevnadi*, expression of Pulse were found predominately at *Pitta sthana* in maximum patients (90%).

In 85% of patients *Gati* were also observed as *Manduka gati.* This is because ushnata in the jwara was due to aggravated *Pitta dosha*[12]

QUANTITATIVE ASSESSMENT OF PULSE - OBJECTIVE ASSESSMENT

In 50% of the Patients, the Pulse rate was found to be more than 100/min and 30% were having Pulse rate in the range 85-100/min followed by 73-85/min range of Pulse rate. This is because with every 1˚ rise in temperature, the Pulse rate will be increase 10 beats/min.[13]

100% of the patients were having regular Pulse rhythm. 60% of the patients were having high volume of the Pulse.

INSTRUMENTAL STUDY

The Findings of the graphs obtained during the study of *Nadi* in the patients of *Jwara* shows that the amplitude of the Pulse was raised (3.84mv) as compared to the healthy individuals of *Paittik* Pulse (2.522mv) which was found as highly significant (P<0.001).

The sustaining period of the Pulse in the patients of *Jwara* (0.36sec) was raised as compared to *Paittik Nadi* (0.181sec) of healthy individuals and the results were found highly significant (P<0.001).

The time interval between two Pulse waves in the patients of *Jwara* (0.33sec) was raised as compared to *Paittik Nadi* (0.180sec) of healthy individuals and the results were found highly significant (P<0.001).

In case of *Sthaulya*

QUALITATIVE ASSESSMENT OF PULSE- SUBJECTIVE ASSESSMENT

When the *Nadi* was examined according to *Dosha sthana* at *Jeevnadi*, expression of Pulse were found predominately at *Kapha sthana* in maximum patients (70%) followed by *Pitta sthana* in 25% Patients.

In 85% of patients *Gati* was also observed as *Hans gati* followed by *Manduka* and *Jaluka gati*. This may be due to dominancy of *Kapha dosha* in these subjects.

QUANTITATIVE ASSESSMENT OF PULSE - OBJECTIVE ASSESSMENT

In 40% of the Patients, the Pulse rate was found in the range of 60-72/min and other group were having Pulse rate in the range 85-100/min and 73-85/min having 30% each.

100% of the patients were having regular Pulse rhythm. 50% of the patients were having medium volume of the Pulse.

INSTRUMENTAL STUDY

The Findings of the graphs obtained during the study of Nadi in the patients of *Sthaulya* shows that the amplitude of the Pulse was decreased at *Kapha sthana* (0.75mv) as compared to the healthy individuals of *Kaphaja* Pulse (1.342mv) which was found as statistically significant (P<0.05).

The Sustaining period of the Pulse in the patients of *Sthaulya* (0.38sec) was raised as compared to *Kaphaja*

nadi (0.294sec) of healthy individuals which was found as statistically significant (P<0.05).

The time interval between two Pulse waves in the patients of *Sthaulya* (0.41sec) was raised as compared to *Kaphaja* Nadi (0.283sec) of healthy individuals and the results were found not significant (P>0.05).

In case of *Madhumeha*

QUALITATIVE ASSESSMENT OF PULSE-
SUBJECTIVE ASSESSMENT
On qualitative assessment of *Nadi* in the Patients of *Madhumeha*, expression of the Pulse was found predominately at *Kapha sthana* in maximum patients (70%) followed by *Vata sthana* (20%) at *Jeevnadi*.

In 65% of the patients, *Gati* were observed as *Jaluka gati* in most of the patients.

QUANTITATIVE ASSESSMENT OF PULSE -
OBJECTIVE ASSESSMENT
In 65% of the Patients, the Pulse rate was found in the range of 73-85/min followed by Pulse rate in the range 86 -100/min i.e 30%.

100% of the patients were having regular Pulse rhythm. 50% of the patients were having medium volume of the Pulse.

INSTRUMENTAL STUDY
The Findings of the graphs obtained during the study of Nadi in the patients of *Madhumeha* shows that the amplitude of the Pulse (2.72mv) was raised as compared to the healthy individuals of *Vatik* (0.714mv) and *Kaphaja* Pulse (1.342mv) which was found as statistically significant (P<0.05).

The sustaining period of the Pulse in the patients of *Madhumeha* (0.43sec) was raised as compared to *Vatik* (0.157sec) and *Kaphaja* nadi (0.294sec) of healthy individuals which was found as statistically significant (P<0.05).

The time interval between two Pulse waves in the patients of *Madhumeha* (0.18sec) was raised as compared to *Vatik* Pulse (0.166sec) and lowered in comparison with *Kaphaja Nadi* (0.294sec) of healthy individuals which was found as statistically significant(P<0.05).

In case of *Udar Roga*
QUALITATIVE ASSESSMENT OF PULSE-
SUBJECTIVE ASSESSMENT
On qualitative assessment of *Nadi* in the Patients of Udar roga, expression of Pulse were found predominately at *Pitta sthana* in maximum patients (50%) followed by *Vata sthana* (33.3%) according to *Dosha sthana* at *Jeevnadi*.
In 41% of the patients, *Gati* were observed as *Jaluka gati* in most of the patients.

QUANTITATIVE ASSESSMENT OF PULSE -
OBJECTIVE ASSESSMENT
In 50% of the Patients, the Pulse rate was found in the range of 60-72/min followed by Pulse rate in the range 73 -85/min i.e 33.3% 100% of the patients were having regular Pulse rhythm. 58.3% of the patients were having low volume of the Pulse.

INSTRUMENTAL STUDY
Since the instrumental study was carried out only on two patients of *Udar Roga* that is why no definite interpretation was done.

CONCLUSION
The Present study was a preliminary effort to assess the utility of *Nadi Parikṣha* as a diagnostic tool in modern perspective. On the assessing the Pulse manually as well as with the help of instrument it was found that this technique may be utilize as a diagnostic tool.

- The conclusion of the study is that there is variation in Pulses according to age, time of day, seasonal variation, related to meal and mental status of the individuals.
- In the healthy group, the mean of the amplitude of the wave maximum in *Paittik* Pulse. The sustaining period and the time interval between two Pulse waves maximum in *Kaphaja* Pulse.
- Whereas in diseased group parameters (amplitude, sustaining Period, time interval between two Pulse wave) according to different Doshas was observed in much more variation as compared to healthy individuals.

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