

# A Survey on Nadi Pareeksha for Early Detection of Several Diseases & Computational Models using Nadi Patterns

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**Abstract—** Ayurveda, which literally means the ‘Science of Life,’ has bestowed the miraculous science upon us of diagnosing the imbalances within our body, without the use of any instruments except fingers. Perception of the patterns of *nadis* is an important method of diagnostics in Ayurveda. Various types of diseases can be detected in early stages by using this nadi pareeksha which is also called as Pulse diagnosis. This paper surveys on various diseases that can be detected by the pulse diagnosis or nadi pareeksha and provides the information about how nadi pareeksha can be useful for the generation of computational patterns for various diseases which is useful for the early detection of several diseases.

**Keywords—** Nadi, Pulse diagnosis

## I. INTRODUCTION

Nadi Pareeksha is an ancient ayurvedic technique of diagnosis through the pulse. It can accurately diagnose both physical and mental diseases as well as imbalances. The term nadi refers to the pulse, nerves, veins, arteries, and some sort of channel passage of physiological and biological signals .It is comprehensive and reaches the root cause of health issues, not merely addressing the symptoms. Nadi Pareeksha forewarns you about potential health risks. It gives you an insight on how to optimize your health in accordance with the elements which are predominant in your body. It provides you with a personalized and individual prognosis which is detailed and accurate. Several chronic diseases like diabetes, infertility, obesity, hypertension, paralysis, mental disorders, severe joint pains and skin diseases can be detected by using this nadi pareeksha.

Doctors can point out the problems only after seeing the scans, x-ray or physical examination, but here the pulse points say it all. We can detect energy blockages through pulse points and that’s how one can know what the problem is. The best time to check the pulse is in the early morning, physiologically the least active time of the day. Three fingers are used to check pulse points, the middle, index, and ring, with the index finger placed closest to the wrist crease. At first, the three positions are palpated simultaneously, initially, lightly, then with medium pressure, and finally more strongly. After this, each position is checked separately. Different systems are used whereby the pulse at each position is identified with certain organs. When the pulse is taken, attention is given to the frequency, amplitude and quality of the pulse. A normal pulse is

distinct, discernible to the fingertip upon medium pressure, and can still be palpated with the application of heavy pressure.

The various kinds of nadi’s, such as vata nadi, pitta nadi, kapha nadi, etc., which are named depending on the functionalities and behavior. Earlier, the experts (vaidyas) of Ayurveda were capable of diagnosing several physical and mental ailments only with the sense of nadi at the required pressure points of body without the help of any of the sophisticated equipments like stethoscope, sphygmograph, polygraph, or any other instrument or tests. But now even the modern vaidyas are showing interest to learn and to do the early detection of diseases using Nadi Pareeksha.

## II. THE FEATURES AND WORKING OF NADI PAREEKSHA

As reported in authentic references [1], By using the different patterns of nadis, Nadi pareeksha measures the parameters like the commonly observed respiratory rate, pulse rate, rhythm, and pressure of blood flow, electrocardiogram (ECG), echocardiogram, etc., or the special experimentally investigated parameters like elasticity and rigidity of arteries, muscle tension, bioelectrical potentials,. In this paper[1], Computational modeling of the nadi patterns is designed using quantitative estimates [2] of the three vital components (tridosha). Prakrati nidana--the basis of diagnosis and treatment -- describes one's natural constitution (prakrati) in terms of three basic tridosha: namely, vata, pitta, and kapha. Experts describe vata as the energy of movement, pitta as the energy of digestion or metabolism, and kapha as the energy of lubrication and structure. Each person has a particular combination of vata, pitta, and kapha, which determines his or her normal constitution.

An individual's combination of tridosha should remain constant throughout his or her life. For a normal healthy case, if there is any imbalance in the natural level of any of the three doshas risks a health disorder or disease. If the deficiency or excess of one or more doshas is larger, the greater would be the chances and/or extent of the disease or disorder associated with that dosha. Identification of the imbalance, if any, in the tridosha forms the basis of prognosis and diagnosis in Ayurveda. At some points, three distinct types of patterns are observed that correspond to the level and tendency of vata, pitta, and kapha respectively. The most commonly observed nadi is the *divanadi* (radialartery) for which the sensation of the three distinct

patterns is said to be like that of--snake's curved scrawling for high level of vata which is experienced by the index finger placed at the knot below the wrist; frog's jumping for high pitta which is sensed by the middle finger at a point just adjacent to the fourth finger; a pigeon's or swan's smooth and slow movement for risen kapha which is experienced by the ring finger placed closed to the middle finger. The variation in the levels of tridosha causes changes in the frequency, rhythm, shape, regularity, thickness, etc., in the waveforms, and hence, in the overall patterns of the nadis at different points as per the effect of these variations upon the mind-body system of a person

### III .THE COMPUTATIONAL MODEL USING NADI PATTERNS

A quantitative measure of the tridosha level (for *vaat*, *pitat*, and *kapha*) can be obtained by applying an algorithmic heuristic approach to the exhaustive list of qualitative features/factors that are commonly used by Ayurvedic doctors for identification of *prakrati*. The vector of these obtained features or parameters is denoted by X. A knowledge based concept of worth coefficients and fuzzy multi-attribute decision functions are used for regression modeling of the *tridosha* (or the *prakrati-characterization*) vector Y upon X. This provides computationally simple formulae for estimation of Y for any given or observed X. Statistical validation tests show accuracy of this unique measure with confidence level above 89%.

Using the above estimate of Y -- ( $Y_v, Y_p, Y_k$ ); where  $Y_v, Y_p, Y_k$  denote respectively the levels of *vata*, *pitta*, and *kapha* by using several simulation that runs different kinds of waveforms are generated[1].

Computations of nadi-patterns by models that were presented in [1] would make possible 'seeing' the nadis even in the absence of an expert vaidya. The computational model gives the measurements accurately with desired level of sensitivity of variation in the parameters.

### IV. NADI PARIKSHA USING DEVICES

Three point pulse examination system i.e Nadi Pareekshan Device is developed by using three pressure sensors (one each for the vata, Pitta and Kapha points on radial artery). This device is utilized for collecting the radial pulse data of a large number of subjects which is collected and analyzed based on relative amplitudes of the three point pulses as well as in frequency and time domains. The sensors are placed on wrist using Velcrow tape. The Three sensors are further connected to three identical data acquisition channels through coaxial cables. The pulse data acquired is displayed on the PC screen on three different channels.

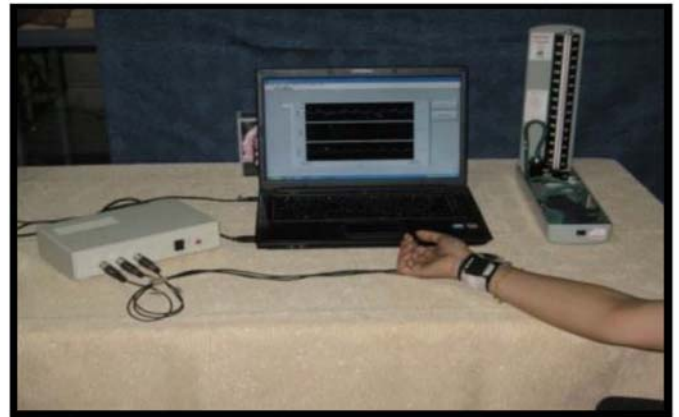


Figure showing Nadi pariksha using device

### V.CONCLUSION

Large number of radial pulse data is collected using Nadi Parikshan devices, which are useful for the analysis of various diseases that are to be detected in early stages. Feasibility is seen for using relative amplitudes of waveforms for identifying the dominant dosha for the subjects. Nadi vaidya or pareeksha gives a new direction for the doctors for the detection of diseases in early stages. If it is properly applied for the detection of various diseases like sugar and cancer detection accuracy improves and as a result most of the people who are suffering from these diseases can be cured in earlier stages.

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