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Review on diseases diagnosing by using Nadi Parikshan

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Abstract - *Ayurveda is one of the most comprehensive systems in the world. Nadi priksha is the important technique to identify the cause of disease. The diseases can be detected by sensing various features of the pulses. Diagnosis through pulse requires highly expert technical hands to establish accurate correlation between pulsation and disease type. On the basis of this traditional technique new techniques are developing with the help of various sensor and signal conditioning system. These types of systems are standby system for the new doctors and also help full in the rural areas. This paper discus the different techniques to identify the diseases with the help of sensors.*

Key Words: Nadi Pariksha, Pulse,Tri Dosha, sensor, Vata, Pitta, Kapha etc.

1. INTRODUCTION

Nadi pareeksha is one of the ancient diagnostic procedure which lies under Ashtavidha pareeksha used since the ages back . The main diagnostic procedure under Ayurveda are Darshana Sparshana and pareeksha .Nadi Pareeksha is one of the tool for the Rogi Rog Pareekshan [1]. Nadi means Pulse and means Pareekshan Examination, so Nadi Pareekshan is taken as "Pulse Examination" which is used as one of tool in emergency and clinical conditions. It has its own individual identity in the field of medical science. Nadi pareeksha is the science of meditation as meditation inproves the sensitivity and sharpens the memory .it helps the physician to stay calm and alert. Acharya Sharangdhara was the first to describe about Nadi pareeksha . Acharya indroduced techniques to diagnose the prakruti in prakruta or vikruta forms[1]

The science of Ayurveda is based on Tridosha. Tridosha defines the three fundamental energies or principles which govern the function of our bodies on the physical and emotional level[2]. The three energies are known a vata, pitta, and kapha. Each individual has a unique balance of all three of these energies. These three forces within the body are detected using the standard method of feeling a pulse waveform obtained on a wrist with the index, middle & ring fingers respectively. The backbone of Ayurveda depends on the method of reading these three waveforms and discrepancies in them. Any change in the nature of signal felt is a means of diagnosis of disease. The different waveforms obtained from vata,pitta and kapha pulses have shape similar to that of movement of cobra, frog and swan respectively as shown in Fig. 1 below.

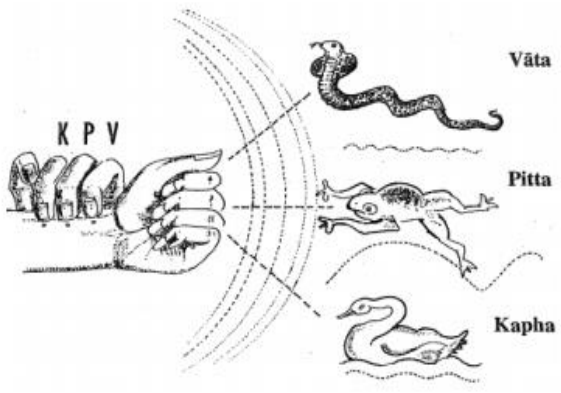

Fig. 1 Shapes of waveform of vata, pitta and kapha pulses[5]

A physician should gently palpate pulse of patient with the three fingers of the physician of the right hand, namely index finger, middle finger and right finger in central area located at the base of the thumb. vata on the index finger, pitta on the middle finger and kapha on the ring finger[5]. Generally left hand pulse for females and right hand pulse for males is palpated [5]

But diagnosis through pulse requires highly expert technical hands to establish accurate correlation between pulsation and disease type. The diagnosis of disease totally depends on vata, pitta, and kapha's pulses. So now a day by using the sensors these pulses is extracted after that processed and identifying the disease. The next sections will comprise a brief review of various researchers' techniques for developing the diseases diagnosis.

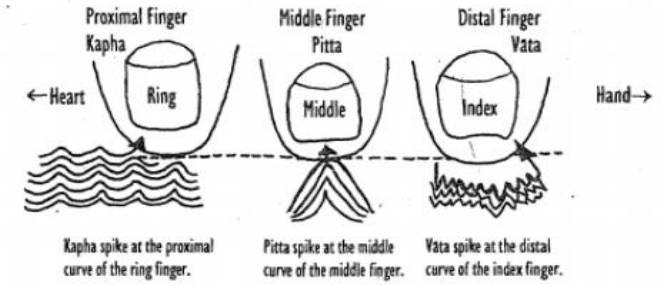

Fig. 2 Location of fingers on wrist to feel vata, pitta and kapha pulses [5]

2. RELATED WORK

In [6], the author proposes a system of NADI PARIKSHAN and analysis of radial pulse. They developed the equipment by using three piezoelectric sensors (one each for the Vata, Pitta and Kapha points on radial artery). The radial pulses data collected are analyzed on the basis of relative amplitudes of the three point pulses as well as in frequency and time domains. They performed an analysis and useful for identifying the dominant Dosha and they classify them using fuzzy classifier [7].

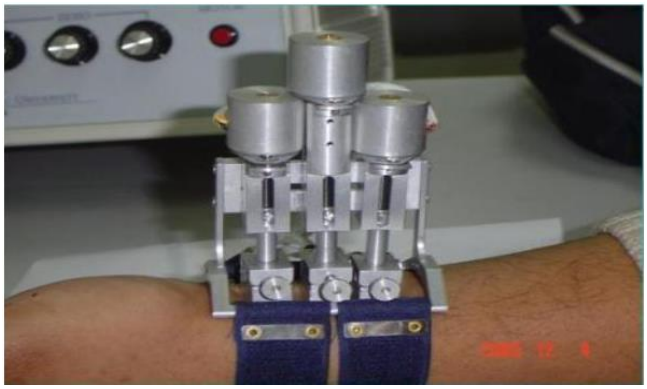

Fig 3 shows the setup of reading the (Vata, Pitta and Kapha)[6]

The main drawback of this system is piezoelectric sensors. If due to external environment or small change in pressure it provides large variations.

The author has developed a pulse based diagnostic system. They have designed equipment which consists of strain gauge, a transmitter cum amplifier and a digitizer for quantifying analog signal. The system acquires the data with 16-bit accuracy. The acquired data interfaced through data acquisition card NI USB-6210 (National Instruments, TX, USA) to the PC. They used data acquisition software Lab VIEW (National Instruments, TX, USA), which controls the digitization. In this system they classify diagnosing chronic diseases like obesity, asthma, diabetes and hepititisus [8]

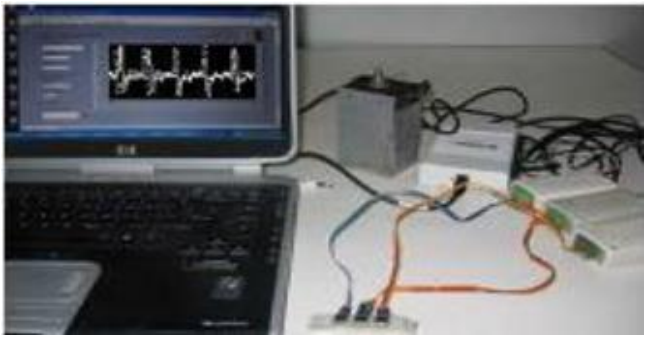

Fig. 4 Set-up of Nadi Tarangini [8]

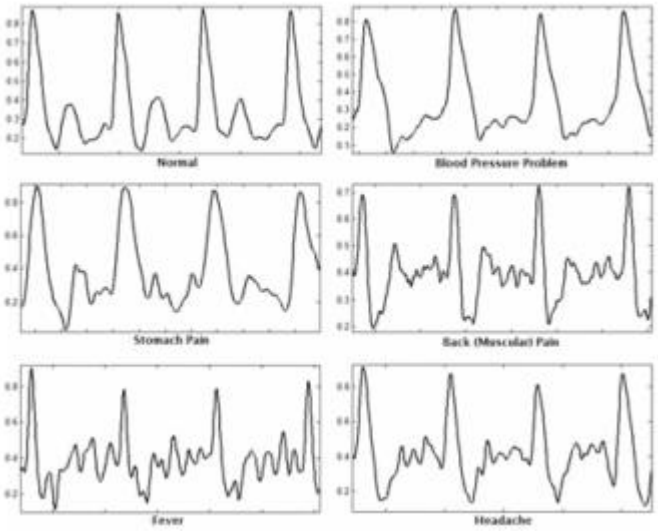

Fig. 5 pulses from Nadi Tarangini [8]

The main drawback of this system is that there is no mechanism to generate external pressure on the radial artery.

In [9], author presented the modern simulated approach for design and development of a portable device for Nadi Pariksha or pulse signal analysis. The system has designed with standard database of simulated signals with known disorders. This approach is designed for simulating a database of sensors data acquired by positioning sensors on radial artery in order to get three pulse signals Vata, Pitta and Kapha. The simulated pulse signals are conditioned by using suitable filter to remove unwanted noise induced due to interaction. In this paper author gives the simulated waves. They applied various filtering technique for removing the noise from output signal of the sensors. The simulated waveforms are shown below.

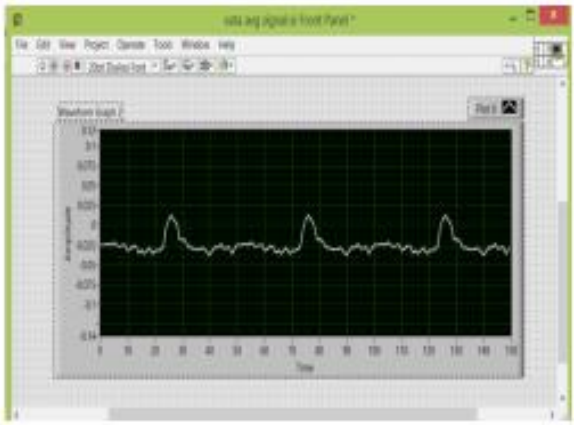

Fig. 6. Vata Simulated Signal

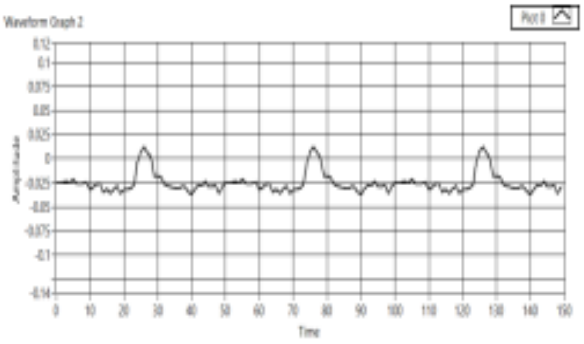

Fig. 7. Simplified Vata Signal

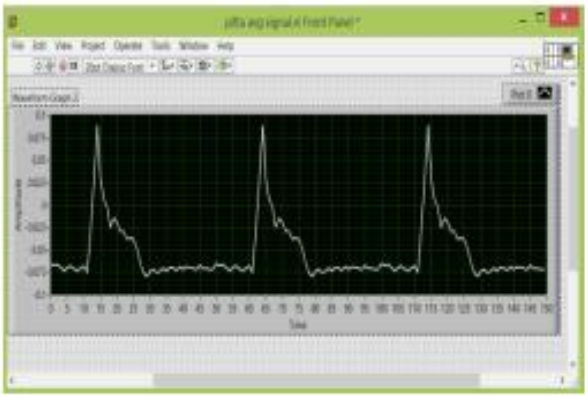

Figure 8. Pitta simulated signal

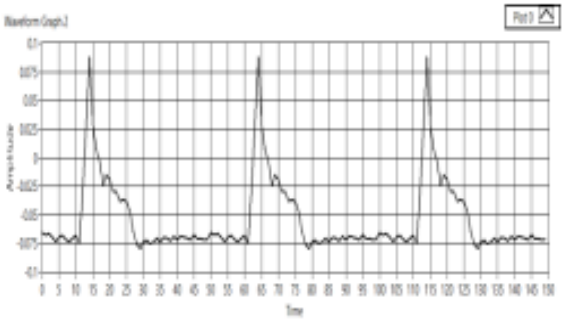

Fig. 9. Simplified Pitta signal

Fig. 10. Kapha simulated signal

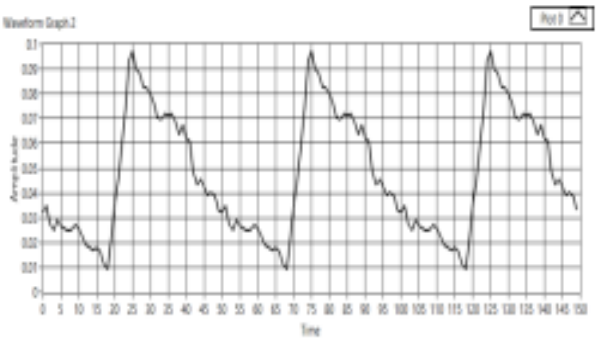

Fig.11. Simplified Kapha signal

In [10], author captured human wrist pulses using three pressure sensors as shown in Fig.12, which works on the piezoelectric principle.

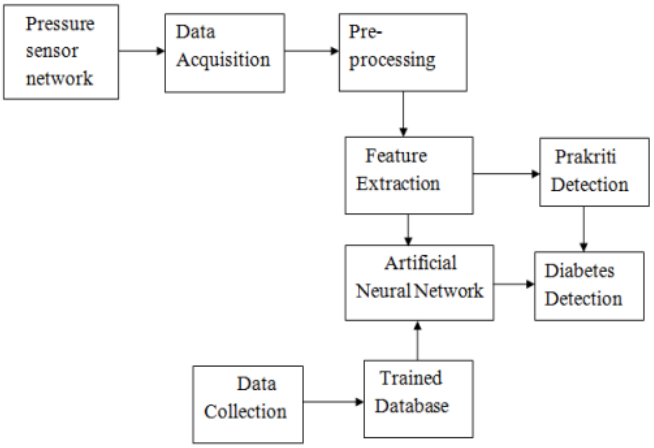

Fig. 12 Block Diagram of System[10]

The nadi pulses are sensed by the fingertip, which actually measure the pressure exerted by the artery. The electrical signal proportional to the pressure obtained from sensing element is then amplified and filtered using series of amplifiers. After amplification, data is acquired using NI USB-6210 multifunction data acquisition card having an interface with the personal computer. By using this system diabetic can detect. In this technique also sensor's signal is not noise free and system is bulky[10].

3. CONCLUSIONS

Thus it can be concluded that diagnosis of most of the diseases can be done using a suitable sensor based system which works on the principle of Ayurveda. Also, the diagnosis of a disease depends on certain specific parameters like blood viscosity, blood volume, etc. can be analyzed better by a specific kind of sensor. If the new technologies are used means high quality sensors which gives the noise free amplified signal and also the Raspberry pi module is used then the processing speed may increases

and system will be less bulky, easily transferable and handy. If it will properly applied for the detection of various diseases like sugar, Blood Pressure, etc. detection with accuracy then the result is the people who are suffering through these diseases can be cured in earlier stages.

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