"REVIEW ON MODERN AND AYURVEDIC ASPECTS OF NADI PARIKSHA"

Dr. Jaikrishna S. Chhangani

Associate professor, Department of Rognidan & Vikriti Vigyana,
Shri Ayurved Mahavidyalaya, Nagpur.

ABSTRACT:

The importance of Nadi Parikshas is well known and Ayurvedic doctors use them to measure various physical and mental ailments of the patient as well as Tridoshas. In traditional texts, Nadi Parikshas discuss the subject in detail with short passages. Recently, pulse wave propagation has attracted scientific attention as it is considered a favorable indicator of heart disease. However, researchers have not investigated the relationship between pulse wave measurement and Nadi Parikshas. In this review, we discuss the traditional methods of Nadi Parikshas mentioned in Ayurvedic scriptures, as well as the latest advances in pulse wave measurement. According to classical literature, pulse quality

and characteristics such as pulse strength (gati), pulse rate (vega), pulse stability (sthiratva) and arterial stiffness (kathinya) play an important role in Nadi Pariksha. In this study, these features were analyzed and compared with traditional pulse wave parameters (e.g., pulse wave velocity, pulse wave frequency variability and arterial stiffness).

KEY WORDS:- Nadi pariksha, Tridosha, Clinical Diagnosis, Traditional Practices, Arterial stiffness.

Corresponding Details:
Dr. Jaikrishna S. Chhangani
Department of Rognidan & Vikriti Vigyana,
Shri Ayurved Mahavidyalaya, Dhanvantari Marg,
Near Krida Square, Hanuman Nagar,
Nagpur- 440024
Mobile No. 8087833997
E-Mail: jaichhangani1@gmail.com

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INTRODUCTION

Ayurveda is known for Nadi Pariksha, and classical texts emphasise its importance in the assessment of the Tridoshas that form the basis of the diagnosis and prognosis of diseases [1]. The texts provide a precise description of the dosha dominance, which is discernible at specific locations on the radial artery. Thus, Vata dosha is felt at the base of the thumb and can be felt with the index finger; next to it is Pitta dosha, which can be felt with the middle finger; and Kapha dosha, which can be felt with the ring finger. According to Ayurveda, a balanced tridosha represents health, while a dosha that is impaired leads to disease. According to Yoga Ratnakara, all diseases can be diagnosed on the basis of Nadi, which is compared to the Veena string that plays all the Ragas, showing the importance of Nadi Pariksha with different pulse speeds, stability, and gati.

Assessing the irritated doshas and their fluctuations with Nadi Pariksha is an art and a science in itself. Traditional Ayurvedic practitioners are experts in pulse-based diagnosis, and they have effectively diagnosed illnesses by simply placing a finger on the radial artery. Though Ayurveda has vast experience in pulse-based diagnosis, it is subjective in nature and highly dependent on the skill of the physician. Recently, there has been growing interest in research into detecting pulses at the tridosha sites and scientifically analysing the pulse waveforms within the Ayurvedic framework. The pulse patterns of Vata, Pitta, and Kapha doshas were studied in detail by Upadhyaya in his clinical and experimental studies of Nadi Pariksha using the Dajon Sphygmomanometer [2]. This was a detailed study that included a systematic review of Ayurvedic literature, hemodynamics, and statistical analysis of the pulse patterns representing Vata, Pitta, and Kapha doshas in normal and diseased individuals. The mean pulse frequency and mean pulse pressure were examined for the doshas Vata, Pitta, and Kapha, and the significance of the pulse parameters frequency, rhythm, volume, force, tension, arterial stiffness, and stiffness were analysed from an Ayurvedic perspective. Similarly, the physiological significance of the pulse parameters in Vasant, namely Gati (movement), Vega (frequency), Bala (force), Tala (rhythm), Akruti (volume and tension), Tapamana (temperature), and Kathinya (consistency of the vessel walls), was analysed for the doshas Vata, Pitta, and Kapha [3]. These early studies emphasised the importance of pulse parameters in analysing the tridoshas in a scientific way rather than through qualitative analysis. In this review, the focus is on the pulse measurement sites used in tridosha analysis, and the nature and properties of the nadis as described in the Ayurvedic classics are discussed. The physiological significance of the nadi properties was analysed, and they were compared with modern pulse parameters. These include pulse wave velocity, arterial stiffness, and pulse rate variability. Recent advances in pulse wave analysis were highlighted, and the relevance of pulse wave analysis techniques for Nadi Pariksha was underlined. The review surveyed the various heart rate monitors used in current studies and their application in Tridosha analysis.

DISCUSSION

➢ **The traditional practice of Nadi Pariksha is:**

It was done manually, and no equipment was available to measure pulses, whereas in modern pulse wave analysis, equipment is used in both clinical and research applications. The review was discussed. The role of modern equipment in the study of traditional pulse parameters was unknown. Ayurvedic texts included Sharangadhara Samhita, Yoga Ratnakara, Basavarajeeyam, and Bhavaprakasha.

The qualities or characteristics of the nadis are important in assessing the doshas as part of the nadi parikshas. Classical literature emphasises the importance of Gati, a unique quality of the pulse, as part of the nadi parikshas, and literature states that Gati plays an important role in diagnosing diseases [1]. Modern medicine does not have a corresponding term for Gati, but a closely corresponding term in modern medicine that can be associated with Gati is pulsation. Apart from gati (pulse movement), there are many other properties of the pulse that are highlighted in the text. According to Ashtanga Hridayam, the 20 qualities, or gunas, play an important role in the diagnosis of diseases, especially in the assessment of the doshas: Guru (heavy), Manda (slow), Hima (cold), Snigdha (ointment), Shlakshna (smooth), Sandhra (firm), Mridu (soft), Sthira (stable), Sukshma (fine), Vishada (not slimy), and their antonyms Laghu (light), Tikshna (fast, quick), Ushna (hot), Ruksha (dry), Khara (grainy), Drava (liquid), Kathina (hard), Chala (easy to move), Sthula (big), Pichhila (slimy) [4].

Pulse characteristics also need to be understood in terms of these properties, and a review of the classical literature reveals that the literature used manda (slow), vega (fast), sthira (stable), chapala (unstable), kathina (hard), sukshma (subtle), and picchila (slimy) to describe pulse characteristics [1]. This requires a reexamination of pulse characteristics as defined in the classical literature to understand the physiological meaning of pulse and to identify modern pulse parameters that can be mapped to traditional pulse characteristics. The properties manda (slow), vega (fast), sthira (stable), kathina (unstable), and kathina (hard) are important in the study because they are measurable and can be assigned to modern pulse parameters. The terms Manda (slow) and Vega (fast) correspond to the speed or rapidity of the pulse, and in the Sharangadhara Samita, while describing the Nadi-Pariksha Vidhi, the term Vega is used for an increase in the pulse rate, while Kshina and Manda are used for a decrease in the pulse rate [1]. The term Vega is closely associated with the speed or rapidity of the pulse and may be associated with modern pulse parameters such as pulse frequency and pulse wave velocity.

The stability of the pulse is extensively discussed in the texts while describing the Nadi-Pariksha, and the texts use the terms Sthir (stable) and Chapal (unstable) while describing the stability of the pulse [1]. Stability is called

Sthiratva in the Doshadi Vij Nanya Adhyah (Sutrasthana) of the Ashtanga Hridayam while describing the Prakruta Dosha Karma [4]. Although the term sthiratva is not used in the text to describe the nadi parikshas, the term can be used to describe the stability of the pulse and is closely related to modern parametric variations in pulse frequency. Since a steady pulse is more rhythmic in nature, the term Tala, which corresponds to rhythm, can also be used to describe pulse stability, and Vasant uses the term Tala in Secrets of the Pulse [3]. In this review, the term Sthiratva is used to describe pulse stability, which is used in most classical texts.

The text uses the term Kathiinya to describe arterial stiffness.In Dviteeya Prakarana of Basavarajeeyam, the term Kathinya is used while describing the manifestations of Mrityu Nadi, and in Triteeya Prakarana of Basavarajeeyam, the term Kathinya is used to describe the nature of Kapha. The term Kathin (stiff), represented as Kathinya, corresponds to arterial stiffness and may be closely related to the modern pulse parameter of arterial stiffness. Vasant [3] used the term "consistency of blood vessel walls" to describe Kathinya, while Upadhyaya [2] used the term "condition of blood vessel walls" for it. In this review, the term "stiffness of arteries" is used to describe Kathinya, which is associated with arterial stiffness and is measurable and of research importance. In summary, Gati (pulse movement), Vega (pulse velocity), Sthiratva (pulse stability), and Kathinya (arterial stiffness) have been identified as measurable properties of nadis, which may be closely related to the modern pulse parameters pulse movement, pulse wave velocity, pulse variability, and arterial stiffness. In this review, we have discussed the properties of nadis according to modern pulse parameters to highlight the physiological importance of nadi parikshas.

1. Gati (Pulse Movement)

Gati, a special diagnostic method in Ayurveda that compares the pulse movements of animals, birds, and reptiles, can make a comprehensive assessment of dosha dominance. Literature describes the Vata pulse as Sarpa Gati, which curves like the energy of a snake (Sarpa) or leech (Jalauka). Curved zigzag movement is the meaning of vata stroke, and in BasaVarajeeyam, vata stroke is defined as vakra, meaning curved movement. While Bhavaprakasha does not compare Gati to the movement of animals or birds, Basavarajeyam describes it as similar to Vakra. Manduka Gati, the name for the Pitta pulse, compares it to a frog's leap and provides an explanation. The Kapha pulse, known as Hamsa Gati, resembles the slow movement of a swan.

2. Pulse Movement

The modern practice of measuring Gati has been around for thousands of years, but it's crucial to measure and understand the quality of ATI in the context of available scientific evidence. As part of the clinical research and testing of Nadi Pariksha, Padhyaya discussed the physiological significance of atiin in terms of frequency, luminescence, and haracteristics of the pulse. hysiological significance of Gati in terms of of frequency, volume, and and characteristics of the pulse. According to him, a vata pulse rIf the frequency has low, oisy, and stable characteristics, it resembles a ttapulse, while a low frequency with Vata and Pitta olume resembles a Kapha ulse[2]. Joshi conducted another study using an omputermodel to detect adipatterns in both healthy and seasick individuals, yielding promising results[5]. While these studies have demonstrated the significance of Gati's body, further validation is necessary to determine Gati's physical importance, its role in all doshas, and the various aspects of pain. Although these early studies have demonstrated the importance of Gati's body, proper validation is needed to establish the physical significance of Gati, its nature in all tridoshas, and various aspects of pain. Since it is clear from the literature that Gati plays an important role in the assessment of doshas, it is very important that current research in Ayurveda focus on the sober identification of Gati.

3. Vega (Pulse Rate)

Another aspect of Ayurveda that is crucial for understanding the various physiological, psychological, and pathological states of humans is the pulse rate. According to Sarangadhara and Bhavaprakasha [1], passion and anger increase the nadis, while sadness and fear increase the nadis. According to Sarangadhara, when the digestive system is active, nadis are fast, and when the digestive system is weak, nadis are slow. Traditionally, Ayurvedic practitioners used nadis to measure pulse rate, but now, with the introduction of biomedical devices, measuring pulse rate has become easy and advanced. The pulse serves as a reliable indicator of pulse rate and finds widespread application in medicine. It can provide an initial assessment of health, but further testing is required to diagnose the disease. Pulse-wave propagation is also an important science that can be linked to Vega. We must examine this precaution in the context of Ayurveda.

4. Pulse Wave Velocity

Blood flows faster in the aorta than in peripheral vessels; it varies from meters per second in the aorta to millimeters per second in the peripheral vascular network. The speed of the pulse wave velocity (PWV) and is usually between 5 and 15 m/s. Recently, pulse wave velocity (PWV) has been accepted as an indicator of cardiovascular risk and has been accepted as an indicator of many studies [6]. Longitudinal studies have shown that aortic PWV is a strong predictor of future cardiovascular events and all-cause mortality [7]. Longitudinal studies of aortic and carotid arterial stiffness predict cardiovascular disease.

Studies in patients with hypertension, end-stage renal disease, and geriatric disease confirm the predictive value of aortic PWV, especially in the assessment of heart disease. [8-10]. Research shows that the main benefits in modern medicine are related to the acceleration of blood flow, and the role of PWV in tridosha analysis should be considered in the context of Ayurveda. Pulse wave velocity may not be directly related to Vega as defined in traditional data, but it can be, and measuring pulse wave velocity can be used to identify changes in Dosha. In the classical Ayurveda literature, Dosha dominance is discussed, and it is stated that Kapha dominance occurs in childhood, Pitta dominance occurs in middle age, and Vata dominance occurs in old age. Secondly, according to Ayurveda, Vata means fast, Pitta means medium speed, and Kapha means slow. Pulse wave velocity can be measured using the carotid-femoral technique, has been shown to increase with age, and is an important pulse. wave parameter in studies of energy dominance and electrical distribution. The carotid-femoral system is the gold standard and can be used as the gold standard and can be used as part of Tridosha analysis.

5. Sthiratva (Pulse Stability)

The Ayurvedic scriptures discuss the stability of the heart. Bhasavar Azyyam uses the term sthitva-sthitva to describe the interaction of pulses. If so, it can be fatal and cause premature death. Basavarajeyam and Yoga Ratnakara call this Asadhya Nadi, and according to Bhasavar Azyyam, this is also the meaning of Mrityu Nadi. Pulse stability also depends on the many physiological and psychological states of the person. According to Sarangadhara Samhita, the meridians of healthy people are strong and stable, while the meridians of hungry people are not as strong as those who have just eaten. There is growing research on heart rate variability (PRV) as a surrogate marker of heart rate variability (HRV) [11–13]. Although there are no corresponding points to which PRV can be compared in traditional literature, intersecting meridians are related to PRV because the nature of intersecting meridians are related to PRV because the nature of intersecting meridians is often well understood by observing pulse changes or missing spikes. Changes in pulse frequency are some of the most important explanations for muscle imbalances. Beat-to-beat pulse wave variability using Nadi Tarangini shows differences between different ages and diseases [14]. When analysed with time domain, frequency domain, and non-linear measurements, the arterial beat-to-beat interval (API) has been shown to vary significantly with age and disease [15]. Pulse stability, or rhythm, plays an important role in nadi pariksha, but the text does not give a detailed explanation of its relationship with the text does not give a detailed explanation of its relationship with the tridoshas. As pulse detection becomes more effective, the relationship between pulse rate variability and tridoshas should be investigated.

6. Kathinya (Arterial Stiffness)

Only Basavarajeeyam provides a detailed discussion of the nature of katinya nadi, which closely relates to arterial stiffness. Basavarajeeyam states that Vata Nadi is hard and that Kathol and Kathin can explain the veins, but it does not mention the hardness resulting from Pitta and Kapha doshas. According to Ayurveda, Vata dosha corresponds to the hardness (Kathin) and roughness (Khara) of the veins, and Basavarajeeyam combines Vata Nadi with the series of hardnesses that represent Vata Nadi Veenas. Blood flows faster in hardened arteries than in normal arteries, which means the vata pulse is faster, according to Ayurveda. According to Basavarajeyam, Nadi is Kathin, and if it slowly bends and deviates from its original position, it is considered Mrityu Nadi and is an indication of the patient's early death.

7. Arterial stiffening

Arteriosclerosis occurs when the arteries harden with age. People have recently used pulse wave velocity (PWV) to measure blood flow. I'm waiting for people. The role of arterial pulse wave analysis in cardiovascular risk assessment has been discussed in detail [18]. A longitudinal study by Bou Touyrie provides the first direct evidence that aortic stiffness is an independent predictor of primary events in hypertensive patients [19]; another independent study by Laurent confirmed that aortic stenosis is an independent predictor of death worldwide. Alright. Cardiovascular mortality in hypertensive patients [10] Pulse wave velocity is a measure of arterial stiffness and works well with the Mrityu Nadi definition. We use pulse tracking (PPG) to measure heart rate. The digital volume pulse (DVP) of PPG measures SI, which correlates with the cardiovascular score, underscoring its significance in cardiovascular risk [20]. In our previous study, we found that SI measured in the radial artery using the radial artery using the Nadi Tarangini pulse detector system was more effective in diabetic patients, whereas SI was more effective in lean diabetics. Fasting blood sugar has a positive relationship with [21]. This study showed that SI was higher in Pitta regions than in Vata and Kapha regions. This may be because the average age of diabetics and non-diabetics is around 50, which is Pitta's prime age. Radial arteries and pulses are detected in the Vata, Pitta, and Kapha centers. The advantage of this system is that blood pressure measurements taken from three locations can be analysed simultaneously. Early studies using Nadi Tarangini showed significant differences in the flow of the Vata, Pitta, and Kapha centers. The pressure wave is amplified as it travels from the central nerve to the peripheral nerve due to various reflections from different parts of the peripheral nerve. The reflex zoneis closer to the peripheral nerves than the peripheral nerves than the central nerves. Therefore, arterial stiffness measured in peripheral arteries cannot be used as an indicator of aortic and carotid artery stiffness [16]. Additionally, there are few cardiac studies on the radial artery. Since the radial artery plays an important role in Ayurveda, SI measured in the radial artery can be considered important in Tridosha analysis. Since the importance of arterial stiffness is known from Ayurvedic literature and recent studies, heart diseases should be examined within the framework of Tridosha analysis.

8. PULSE LOCATIONS

Ayurveda gives great importance to measuring the pulse at the radial artery, primarily to determine the doshas, which does not restrict the measurement of the pulse to the radial artery alone but clearly defines that the pulse can be measured at eight points. The classical text Basavar Ajeeyam mentions about eight sites for measuring the nadis, which are two at the radial artery, two at the ankle, two at the neck area, and two at the nasal area. It is also said that knowledge of Vata, Pitta, and Kapha doshas is obtained through radial veins, and therefore Nadi Pariksha based on radial veins is widely used because understanding the tridoshas is very important in decisions regarding the diagnosis and treatment of diseases. Although the radial artery plays an important role in disease diagnosis and treatment, the nadis in the ear and nose area is also considered important in disease diagnosis and prognosis. Fear, sadness, anger, desire, and fever are some of the symptoms felt in the neck nadi, as are diseases of the head, eyes, and ears diagnosed in the nose nadi. The state of life and health, fever, and its relief are recognised by the ankle nadis. Ayurvedic literature suggests that nadi pariksha plays an important role in diagnosing diseases and is not limited to the radial artery but extends to other arteries as well.

According to modern physiology, pulse is palpated in the radial, carotid, femoral, brachial, and sensory arteries, which corresponds to the Ayurvedic description, but the femoral artery is not mentioned in the Ayurveda, and the arteries are not mentioned in the Ayurveda. The nasal region is not given importance in modern physiology. The importance of pulse diagnosis based on the radial artery is well known and widely practiced in Ayurveda, but the nadis elsewhere have not been studied much. On the other hand, the role of the radial artery is very limited in modern medicine, where it is only used to measure pulse rate, while emphasis is placed on the carotid, femoral, brachial, and ankle arteries, which are often used to measure pulse wave velocity.

Pulse Measurement Techniques and Instruments Pulse parameters and their analysis play an important role in the diagnosis of diseases in both Ayurvedic and modern medicine. Pulse measurement techniques and the instruments used for such measurements are of great importance in evidence-based research.

There are several pulse measurement techniques to assess arterial stiffness in the central and peripheral arteries. Pulse wave velocity and stiffness index are measures of arterial stiffness, and techniques have been developed to assess arterial stiffness using pulse wave velocity and stiffness index. The standard techniques for measuring pulse wave velocity are femoral-carotid pulse wave velocity (cfPWV) and ankle-brachial pulse wave velocity (baPWV). The femoral-carotid pulse wave velocity (cfPWV) method uses the carotid and femoral arteries to measure pulse wave velocity, whereas the ankle-brachial pulse wave velocity (baPWV) method uses the brachial and ankle arteries to measure pulse wave velocity. The stiffness index (SI) is measured in the radial artery by the pulse measurement method and equipment.

Carotid-Femoral pulse wave velocity (cfPWV) method

Pulse wave velocity measurement using femoral-carotid pulse wave velocity is the standard technique and is considered a non-invasive, robust, and reproducible method for assessing arterial stiffness [22]. Carotid and femoral pulse wave velocity (cfPWV) has recently attracted significant research interest, and pulse wave velocity measured using the cfPWV technique is considered the gold standard [25]. The cfPWV technique measures the pulse waves in the carotid and femoral arteries and records the distance between them. Pulse wave velocity, a surrogate measure of arterial stiffness, is considered the ratio of the distance between the carotid and femoral arteries to the time required for a pulse to travel from the carotid to the femoral artery [22].

Pulse wave velocity = Carotid to femoral distance/pulse wave transit time

The advantage of cfPWV is that it is the gold standard, but the process of measuring arterial stiffness requires high skill to detect the pulse [26]. The cfPWV technique is a non-invasive, robust, and reproducible method that is widely used in epidemiological studies [22]. Understanding the pulse transit time measurement and the distance between the carotid and femoral arteries is crucial when using cfPWV to assess pulse wave velocity. We measure pulse transit time using the foot-to-foot method, treating the foot as the end of diastole. The distance between the carotid and femoral arteries is physically measured and is considered an estimate of the actual distance travelled by the pulse wave. However, inaccuracies in the measured distance can introduce errors into the absolute value of PWV. Because the actual distance travelled by the pulse is important for PWV, it is recommended to subtract the distance between the carotid and femoral arteries from either the total distance between the carotid and femoral arteries or the distance between the sternal notch and the femoral artery [22].

Carotid and Femoral pulse wave velocity (cfPWV) measuring device

Currently, there are many devices available that can measure pulse wave velocity using cfPWV technology. Complior by Alam Medical, SphygmoCor by Atcor Medical, PulsePen by Dia Tecne, Vasera by Fucuda Denshi Co. Ltd., and Vicorder by Skidmore Medical Ltd. are some of the devices used to measure pulse wave velocity [23]. PWV-based studies commonly use Complior and SphygmoCor [24], and these two devices differ in their methods of calculating pulse transit time and distance between arteries.

The Complior (Alam-Medical, France) utilises a pressure transducer to simultaneously record the carotid and femoral artery pulses. We apply a correlation algorithm between the two simultaneous pulse recordings to determine the pulse transit time. We determine the pulse's travel distance by directly measuring the distance between the carotid and femoral arteries [22, 24].

The SphygmoCor system (Artcor, Sydney, Australia) uses a high-precision application tonometer to record the pulse. First, we take the pulse at the carotid artery while simultaneously recording an ECG, and then we take the femoral pulse while simultaneously recording an ECG. We calculate the pulse transit time by subtracting the interval between the ECG and carotid pulse peaks from the time difference between the ECG and femoral pulse peaks. We calculate the pulse's travel distance by subtracting the distance between the sternal notch and the carotid artery from the distance between the sternal notch and the femoral artery [22, 24].

The PulsePen [23] is another device that uses two methods to measure pulse wave velocity. Similar to the Complior method, the first method simultaneously measures the carotid and femoral pulses using two tonometers. The second method uses only a tonometer to measure the pulse separately from the carotid and femoral arteries and synchronise it with the ECG.

This method is similar to SphygmoCor.

The Vasera [23] uses the cardio-ankle vascular index (CAVI) as an index to measure arterial stiffness, but this device needs further validation.

Similar to Complior, the Vicorder [23] uses an unclear algorithm, necessitating further validation.

The Summary of Expert Consensus Documents on Arterial Stiffness [22] summarizes a wide range of additional devices and methods for assessing arterial stiffness. In addition to standard non-imaging methods, ultrasound and magnetic resonance imaging (MRI) serve as imaging methods for evaluating pulse wave velocity. These methods have the advantage of directly measuring path length, albeit at a high cost [27]. Recently, many devices have appeared on the market, but it is important to verify the scientific validity of such devices before using them in research [23].

Brachial-ankle pulse wave velocity (baPWV) technique

The brachial-ankle pulse wave velocity (baPWV) method is another technique. Japan introduced a technique for measuring pulse wave velocity for the brachial and ankle arteries in 2000 [28]. BaPWV addressed the complexity associated with measuring arterial stiffness using cfPWV technology. BaPWV measures pulse wave velocity by connecting volume plethysmograph sensors to cuffs placed on the brachial and ankle arteries. We calculate pulse wave velocity by dividing the pulse transit time from the brachial artery to the ankle artery by the virtual arterial length between these two arteries [28]. We estimate the virtual arterial length based on the patient's height, which eliminates the need to physically measure the distance between the arteries [29].

Brachial Pulse Wave Velocity Measurement Device (baPWV)

There are not many devices that use baPWV technology to measure pulse wave velocity, but the AT-type PWV/ABI (Colin, Kamaki, Japan) and VP-2000 (Colin, Kamaki, Japan) are commonly used by researchers. Pulse-wave velocity can be utilized. The baPWV measurement device is composed of a volume plethysmograph and oscillometric sensor, an electrocardiogram, and a phonocardiogram. The volume pulse is measured by the volume plethysmograph sensor, the blood pressure is measured by the oscillometric sensor, and the electrocardiogram is used to the phonocardiogram detects heart sounds by synchronizing the pulses of the brachial artery and the ankle artery. By connecting a volume pulse wave sensor to cuffs attached to the upper arm and ankle, baPWV measures pulse wave velocity [30].

Radial artery stiffness index

Arterial stiffness can also be measured in the radial artery, but the mechanisms for measuring stiffness are different in the cfPWV and baPWV techniques. The pulse wave obtained from the radial artery consists of a forward wave and a reflected wave, as shown in Figure 1, with a peak in the forward wave during systole and a peak corresponding to the forward wave during diastole. The time taken from the systolic peak to the diastolic peak depends on the stiffness of the artery and the height of the person. Therefore, the stiffness index (SI) is measured as the ratio of height to the time difference between the systolic and diastolic peaks [31].

The pulse wave measured from the radial artery is closely related to the digital volume pulse measured from the PPG and is related through a transfer function [32]. Hsein-Tsai demonstrated a significant correlation between the stiffness index measured by PPG and the radial artery [31]. Although early studies have shown promising results regarding the radial artery, the significance of arterial stiffness measured at the radial artery has yet to be demonstrated. According to Ayurveda, Kasinha is closely related to arterial stiffness, and there is a need to extend the study of arterial stiffness to Tridosha analysis.

Radial Artery stiffness index

Semiconductor technology and the availability of accurate pulse detection systems for measuring radial artery pulses have led to the revival of traditional Tridosha analysis in a more scientific manner. Nadi Tarangini [33], Nadi Yantra [34], and Nadi Pariksha Yantra [35] are some of the instruments available for simultaneous detection of pulses at Tridosha sites. Nadi Tarangini is a pulse-based sensing system made up of pressure transducers that are arranged in a straight line. It turns pulse pressure into an electrical signal and gives you a pulse wave as a time series [33]. Nadi Tarangini's pulse wave resembles a PPG digital volume pulse with distinct systolic and diastolic peaks. In order to emphasise the physiological significance of Nadi Pariksha, it is necessary to incorporate these methods and devices into Ayurvedic research because pulse measurement is well established and has demonstrated significant results. Under Ayurveda, we can study pulse wave velocity, pulse variability, and arterial stiffness, and further expand our scope to analyse various other parameters that can enhance the value of Nadi Pariksha.

CONCLUSION

Ayurveda has thousands of years of experience with Nadi Pariksha, and classical literature has emphasised the importance of Nadi in the diagnosis and prognosis of diseases. The texts explain the nature of Nadi and its variations in a very qualitative manner through the traditional parameters of Gati, Vega, Sthira, Kapala, and Kasinha. The Traditional parameters are closely related to modern parameters such as pulse wave velocity, pulse variability, and arterial stiffness, which are discussed in detail in this review. To uncover the hidden secrets of Nadi Pariksha, it is important to examine these modern parameters in the context of Ayurveda. There is an urgent need to develop a framework for Nadi Pariksha and extend the recent advances in pulse measurement techniques and equipment to develop a scientific approach for pulse-based diagnosis, which is the need of the time.

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