

# Anumana Pramana and Its Scope as a Diagnostic and Research Tool

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## ABSTRACT

Knowledge and wisdom is the foundation as well the chief lookouts in any branch of study. In *Ayurveda*, four types of *Pramana* accomplish to ascertain known and unknown phenomena in both human and universe. Of them, methodology of inference viz. *Anumana-Pramana* is fundamental to diagnosis and research owing to its comprehensive design involving observations, analysis, rationale and consideration of established facts.

Drawing references from *Bruhat-Trayi* and *Laghu-Trayi*, the paper discusses significance of *Anumana-Pramana* in interpreting subtle phenomenon like functioning of *Tridosha* in health and disease, role of unseen karmic effects on disease-occurrence and palliation, concept of rebirth etc to applied concepts like physiology, pathogenesis, diagnosis, prognosis and selection of treatment. In this regard the paper also discusses extension of this methodology in the diagnosis and treatment of unknown diseases.

An extended scope of its application in scientific research is also explored by designing a research tool with *Anumana Pramana* as a methodology, *Karya-Karana Siddhanta* as an analytical tool and features of *Dashavidha-Parikshya-Bhavaas* a research protocol. The tool can serve to reconstitute research ideologies through the technique and technicalities of *Ayurveda* hence expanding the sphere of operation of the methodology's current frame.

**Key-words:** *Anumana Pramana*, Diagnosis, Research, Inference, Logical Reasoning, *Dasha vidha parikshya bhava*.

### Key Messages:

- 1) *Anumana Pramana* - an indispensable methodology of data collection and analysis adopted in the system of *Ayurveda* and its relevancy is inevitable in clinical medicine.
- 2) With the methodology primarily utilized for diagnosis and subsequent treatment administration, its scope can be extended to the field of research as well.
- 3) The relevancy and applicability of the methodology of inference irrespective of the field of operation owes it to the principles of the cause & effect theory.
- 4) Besides *Ayurveda*, the significance of the methodology of inference is agreed, accepted, and implemented in the conventional medicine too especially in the field of research.
- 5) With limitations to observation, sensory examination and objective examination, Inference plays a ground-breaking methodology serving to get a broader vision of the biological phenomenon.

## INTRODUCTION

Of all creation, life is transient while knowledge is eternal. Though the sense organs, mind and intellect are instrumental in acknowledging an observation, a scientific methodology is essential for

processing and deciphering such sensorial stimulus into knowledge. These methodologies termed as *Pramana* in *ayurveda* translates as - that which serves to attain factual knowledge. The term factual knowledge is emphasized as these

methodologies at any given time leads its seeker to knowledge that is factual and not otherwise<sup>1</sup>. Such knowledge attained through *Pramana* are deemed as absolute and justifiable in all 3 phases of time (past, present, future).<sup>1</sup>

*Pramana* are basically four in number viz., *aptopadesha* (scriptural testimonies), *pratyaksha* (sensorial perception), *Anumana* (inference) and *yukti* (logical reasoning).<sup>2</sup> However, for a *Vaidya*(*Ayurveda* practitioner) with a background of testimonies, *Pramana* is of two types i.e. *pratyaksha*-sensorial perception and *Anumana*- non-sensorial perception.<sup>3</sup> Of them, although *Pratyaksha Pramana* is experiential, nonetheless, the wise considers the methodology of inference i.e. non-sensorial perception as a gateway for infinite knowledge.<sup>4</sup>

True knowledge is absolute, omnipresent and not time-bound but many a time is imperceptible, hidden or unknown due to illusion of the mind or primitiveness of sense organs. It is in such cases that *Anumana Pramana* guides its seeker towards knowledge that is unseen and beyond human reception. Ironically inferences are arrived at through a comprehensive methodological process that shall also involve direct or sensorial perception and logical reasoning.

## MATERIALS AND METHODS

This paper has drawn its inputs, intentions and interpretations primarily from the texts of *caraka samhita* and *tarka sangraha*. References are also obtained from *sushruta samhita*, *ashtanga sangraha*, *ashtanga hrudaya*, *madhava nidana* etc. Besides, the subject matter roots its foundations to authenticated principles like the *loka-purusha samya siddhanta* and *karya-karana siddhanta*. The article also cites references of modern perspectives of research as per the guidelines of the WHO, its methodology and protocol and how the same parallels with the ideologies mentioned in *ayurveda*. Centralized on the above theme, the paper discusses how the

ideologies put forth in the paper can drive the science and its practitioners to a much broader field of implications and applications with regard to the methodology of inference.

## REVIEW OF LITERATURE

### Concept of Anumana Pramana:

Etymologically speaking, “*Anumana*” a compound word where *anu* means later and *mana* as knowledge<sup>5</sup> implies that the knowledge is obtained not at the very instant of sight but later. That is to say, in many instances, the “reality” becomes unperceivable either as a consequence of the *pratyaksha badhakara bhava* (~factors that hinder sensorial perception like *ativiprakarsha* (far), *atisannikarsha* (proximity), *avarana* (hidden), *karanadaurbalya* (weakness of sense organs), *manoanavasthana* (instability of mind), *samanaabhibhava* (similarity), *abhihara* (masked), *atibhavad* (overlap), *atisaukshmyat (minute)*)<sup>6</sup> or simply due to absence of the perceiver at the location (*paksha*) of the incident. In such instances, the inference is drawn on the principle of knowing the whole by knowing its parts, i.e. inference from the domain-in-doubt perceived at the first instant is sought through analysis or inspection of the existing exhibited features.<sup>7</sup> Thereafter, the methodology utilizes logical reasoning to establish its inferences.<sup>4,8</sup> However, this logical reasoning is acquired only through *vyapti gnana*<sup>9</sup> i.e. (knowledge from established-facts) that is parallel to interpreting the inference of the domain-in-doubt. These collections of established facts are sourced either from previously examined facts – sensorial perception (*pratyaksha*) or from documented facts – scriptural testimonies (*aptopadesha*). Hence an unknown occurrence inferred through corresponding, relevant, logical and existing facts suggest that rationality plays a chief role in inferences.

Example: The good old example, “*yatra yatra dhumaha tatra tatra vahnihi*”, declares that a sign of smoke which is the

domain-in-doubt implies its relevance to an open fire, although the fire may not be perceptible at the given time. This inference is made based on the established-fact (*vyapti*) known to exist between fire and smoke as observed in a “kitchen”.

Speaking of similar instances concerning biological phenomenon-

Eg 1) Invulnerability to diseases implies its cause to an individual’s immunity strength bestowed by the imperceptible *ojas* (essence of all the 7 tissue elements of the body).<sup>10,11</sup>

Eg 2) *samanavayu* is inferred as the stimulator of *agni*<sup>12</sup> with the prior knowledge of air as the cause for ignition in the ecosystem.

A unique feature of this *Pramana* in particular is that the methodology helps to acknowledge information in all the three phases of time<sup>13</sup> i.e. past, present and future. Retrieval of information in all above dimensions of time owes it to the principle of *karya-karana siddhanta* (cause and effect principle) on which the methodology is based upon.

Eg: *karyat karana* (inference of the past i.e. inference of the cause from the effect that is exhibited)–

inference of the act of intercourse on seeing a pregnant woman.

*karanat karya* (inference of the future i.e. inference of the effect from the cause that is exhibited)–

inference of the forthcoming rain with the advent of clouds.

*samanyato drushtam* (inference of the present / inference of both cause and effect

at the same time) – inference of fire from the evidence of smoke.

Likewise, the following examples below speak of similar instances in concern with the inference of biological phenomenon in all the three phases of time -

Effect: Inference of a suppressed immunity in known cases of aids

Cause: Ingesting of mud as a cause for anaemia

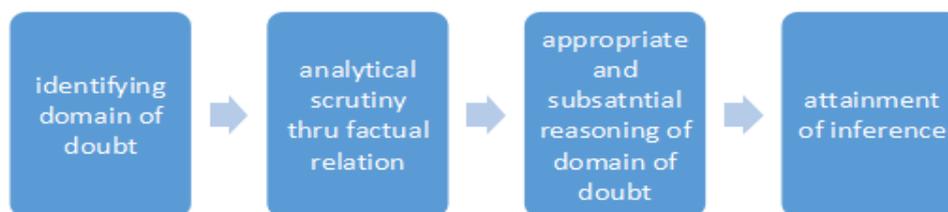
Co-existing Cause-effect relation: Increased salt consumption as causing hypertension

### Dimensions of Anumana Pramana:

As stated earlier, *Anumana Pramana* utilises multiple sub-methodologies in order to draw an inference. For this reason, one encounters various classical definitions of *Anumana Pramana*, however assuming the fact that the inferential methodology is a comprehensive one. The multiple facets thus defining inference goes as below:

- an **analytical study of the visible domain/perceptible feature**. (*linga paramarsha*)<sup>5</sup>
- founding through a **previously established universal fact** (*vyapti gnana*).<sup>14</sup>
- Inferential judgment basing upon **pre-existing knowledge** attained from sensorial perception (*pratyaksha*) or from scriptural sources (*agama*).<sup>5</sup>
- **Logical reasoning** (*tarka yukti*) as a tool for passing an inferential judgement<sup>8</sup>.

The below flow chart is thus the diagrammatic representation of the methodology of attaining inference.



### Application of Anumana Pramana in Ayurveda:

*Anumana Pramana* plays a critical role in *ayurveda* since the latter deals with entities that are subtle and invisible like the *dosha*,

*dhatu*, *ojas*, *marma* etc. Hence its role is undoubted in the field of diagnostics and in inferring the nuances of the body functioning. Inferential methodology is well implicated in the field of Disease diagnosis

along with subsequent treatment planning and prognosis.

### Diagnosis:

Diagnosis is basically an inferential phenomenon that is sourced upon - *nidana* which includes - *hetu, purvarupa, rupa,*

*upasahaya-anupashaya* and *samprapti*<sup>15</sup> and including other details pertaining to - *hetu, dosha, dushya, prakruthi, desha, kala, bala, visesha linga*<sup>16</sup>.

The following table lists out similar such examples:-

**Table 1 -Table citing inference obtained from knowledge of *linga***

<i>Linga</i> (sign)	Loss of consciousness with loathsome activities <sup>17</sup>	Hair fall
<i>Paksha</i> (site)	site of memory, Upper & lower limbs <sup>17</sup>	Head
<i>Vyapti</i> (fact)	<i>Smruti buddhi satva samplavanam</i> (derangement of memory&intelligence) <sup>18</sup>	<i>keshadoshaha</i> <i>asthipradoShajaha</i> (derangement in bones) <sup>19</sup>
<i>Lingi</i> (hidden substratum)	<i>Mano vikara – apasmara</i> (memory impairment) <sup>17</sup>	<i>Asthi vikara</i> <sup>19</sup> (bone disorder)

Besides *nidana panchaka*, inference duly comes to play in instances of differential diagnosis post scrutinizing and logically determining the significance of above mentioned factors.

**Table 2 Table showing role of logical analysis & reasoning in inference.**

<i>Linga</i>	Impotency	Impotency
<i>Paksha</i>	<i>Shukra dhatu</i> (seminal tissue)	<i>Rasa dhatu</i> (lymphatic tissue)
<i>Lingi</i>	<i>Shukra dushti janita klaibyam</i> <sup>20</sup>	<i>Rasa dushti janita klaibyam</i> <sup>22</sup>
<i>Vyapti/Yukti</i>	Caused due to sperm or genital organ deformities <sup>21</sup>	caused due to decrease of the nutrient elements i.e. <i>rasa</i> in the body <sup>23</sup>

### Significance of inference in consequent treatment planning:

**Table 3 Table showing significance of reasoning in treatment planning**

<i>Nidana panchaka</i>	Features	Diagnosis	Significance of Reasoning in treatment
<i>Nidana</i>	1. <i>Mrud bakshana</i> <sup>24</sup> 2. <i>Adhika lavana abyasa</i> <sup>25</sup> 3. <i>Asina sukham swapna sukha -abhyasa</i> <sup>26</sup>	<i>Mrud bakshana</i> <i>pandu</i> <i>Palitya</i> <i>Prameha</i>	Non avoidance of mud, salt and sedentary life style resp.
<i>Purvarupa</i>	1.Frequent dreams of empty water reservoirs <sup>27</sup> 2. <i>Jrumbha</i> <i>Netra daha</i> <i>Anna aruchi</i> <sup>28</sup> 3. <i>Vitbandha</i> <sup>29</sup>	<i>Rajayakshma</i> <i>Vataja Jwara</i> <i>Pittaja Jwara</i> <i>Kaphaja Jwara</i> <i>Atisara</i>	brumhana, dosha pratyanka chikitsa, ama pachana
<i>Samprapti</i>	Increase in head ache during the course of the day <sup>30</sup> 2. obstruction of <i>pranavaha, annavaha</i> and <i>udakavaha srotas</i> <sup>31</sup> 3. <i>atipravrutthi of rakta through the bahya srotas</i> <sup>32</sup>	<i>Suryavarta</i> <i>Hikka</i> <i>Raktapitta</i>	Nidana viparita chikitsa Anuloma chikitsa, pratiloma chikitsa
<i>Upashaya –</i>	1.Management with <i>rakta mokshanadue</i> to non subsidence of pain with alternative use of <i>snigdha</i> and <i>ruksha upachara</i> <sup>33</sup> 2.Vomiting <sup>34</sup> 3. <i>Sheeta upasevana</i> <sup>35</sup>	<i>Vatarakta</i> <i>Annadrava shula</i> <i>Santamaka shwasa</i>	Raktamokshana Dosha nirharana Viparitarthakari chikitsa
<i>Anupashaya</i>	1. <i>Snigdha upachara in sakti</i> <sup>36</sup> 2. <i>shodhana</i> <sup>37</sup> 3. <i>maithunam</i> <sup>38</sup>	<i>Urustambha</i> <i>Amavasta</i> <i>Visha roga</i>	Rukshana Dipana-pachana Bala samrakshana
<i>Sapeksha nidana</i>	1.red-coloured urine without the premonitory symptoms of <i>prameha</i> <sup>39</sup> 2.dry cough followed by cough with blood <sup>40</sup> 3.quick skin manifestation <sup>41</sup>	<i>Raktapitta</i> <i>Kshataja kasa</i> <i>Visarpa</i>	Stambhana Kshatakshina chikitsa Avidahi krama

As discussed, apart from the exhibiting signs and features other factors like causative factors, palliative factor, aggravating factor and differential diagnosis are also to be considered while diagnosing a disease. Thus this kind of a comprehensive

understanding of a disease presentation with a sound reasoning is required in order to determine to accuracy not only the disease and its nature but also its appropriate management. This is because, *Chikitsa* in *ayurveda* is a broader term not restricting to

a single implication. Treatment is understood as curing the disease to establishing equilibrium of the body and mind, avoidance of causative factors, breaking the pathogenesis, eliminating the vitiated components, withdrawing from negative emotions etc. Based on the disease and the subject afflicted, the physician is supposed to deliver the appropriate line of management which in turn can be judged based on the methodology of inference. On that note, the following table below is the inferential implication for treatment planning based on the diagnostic tools of *ayurveda*.

### Diagnostic utility in relation to the three phases of time:

As mentioned earlier, the methodology serves to understand the human physiology and pathology in all the 3 phases of time. Thus besides diagnosis, this methodology serves to detect risk factors, predict oncoming disease and ascertain appropriate management and prevention according to need.

#### *Purvavat Anumana:*

Eg: 1. inference of the incurability of *Arsha* with the manifestation of mass in the internal sphincter right from the time of birth (congenital hemorrhoids)<sup>42</sup>

2. Occurrence of natural calamities as a consequence to vitiation in air, water, land and climate indicates *janapadodhwamsa* i.e. a future epidemic outbreak<sup>43</sup>

3. Affliction with *punaravarta jwara* can be priorly inferred in a *rogi* who again resorts to disease-causing factors immediately post recovery from an attack of fever<sup>44</sup>

#### *Sheshavat Anumana:*

Eg: 1. Inference of *balavan daiva karma* (~misdeeds of the past life) in the manifestation of *shvitra* which is not cured by appropriate treatment.<sup>45</sup>

2. Some diseases like *atisara* can manifest in accordance to the *prakruthi* of the individual, like *vataja atisara* in *vata prakruti*, *pitta* in *pitta prakruti* and so on. Hence prognosis and mode of treatment has to be selected appropriately.<sup>46</sup>

3. As chronic emaciation triggers manifestation of every type of *gulma*, its triggering factor has to be identified and avoided for complete recovery from the disease<sup>47</sup>. For instance, affliction by chronic disease, excessive physical strain like lifting of heavy weight etc.

#### *samanyato drushtam :*

Eg: 1. inference of instantaneous aggravation of *tamaka shwasa* on lying down flat on the bed.<sup>48</sup>

2. In cases presenting with *rakta gulma*, management should be carried out only after the passage of 9 months due to the easy curability of the disease.<sup>49</sup>

3. infestation with *krimi* in neglected skin conditions lead to the eating up of structures like skin, flesh, blood, bones etc.<sup>50</sup>

### Prognosis:

Disease prognosis is essentially inferential and is based on a cumulative understanding of the manifested symptoms and signs. It depends on variables like age, sex, onset, body constitution, season, environment etc. Hence the inclusion of few or more variables in relation to the disease and the individual serves to determine severity in the prognosis. *Ayurveda* classifies prognosis into 2 as treatable and untreatable which are further inclusive of 2 divisions each respectively viz. easily treatable and treatable with difficulty, life-time manageable and incurable<sup>51,52</sup>.

#### *Sadhya-*

Eg: complaint of *kasa* with expectoration associated with heaviness of head, in the summer season in a person of *pitta vata prakruti*.

#### *Kruchra sadhya -*

Eg: *kaphaja arsha* in the *guda pradesha* in a *garbhini*.

#### *Yapya -*

Eg: *gambhira vatarakta* that has transgressed the *medo dhatu* presenting with deformities in the finger joints<sup>53</sup>

#### *Asadhya -*

Eg: *visarpa* presenting with features like extreme pain and difficulty in awakening the person fallen asleep.<sup>54</sup>

## DISCUSSION

### Scope of Anumana Pramanain ayurveda:

A comprehensive perspective of man's bio-system operations is the essential understanding of the same in its two extremes of - Physicality & non-physicality. While diagnosis and treatment administration are the clinical inferences concerning physical living system, *Anumana Pramana* nevertheless comprehends human beyond its physical framework thereby perceiving him subtly and comprehensively. The methodology's reach from gross physical-realm to beyond-physical realms thus makes it plausible to infer bio-phenomenon contributing to one's bio-system's operations at both gross and subtle levels. The following discussion deals with scope of inference in interpreting the physio-pathologies through data recorded in scriptures and from sensorial observations. This section also discusses the perspective of research that can be comprehended in the latter's methodology.

**Agama ashraya:** this section deals with inferences which is beyond sensorial reception and established in ayurveda scriptures such as karma i.e. influences of one's actions in one's present and past life; *atman* i.e. soul and *punar janma* i.e. the theory of rebirth and other such trivial yet inevitable bio-phenomenon which plays an active role in interpreting ill-health:

Measurement of life span through assessment of *arishtha lakshanas* exhibited in an individual:

The science that deals with *ayu* (~life span) in its entirety, i.e. *ayu* with regard to *hita*, *ahita*, *sukha*, *dukha*; and the *manam* of *ayu* is defined as *ayurveda*<sup>55</sup>. In relation to the present context, life span of an individual is an inferential phenomenon. Not accounting the external factors that can effect on life span (which includes epidemics, unrighteous deeds, karmic effects of previous birth etc), certain presentations called *arishtha lakshanas*<sup>56</sup> (i.e. fatal signs exhibited by an individual suffering from a disease that are irresponsive to treatment)

can estimate the remaining life span of the concerned individual.

Egs: The patient who perceives suddenly smells that are desirable or undesirable in the body without an apparent cause does not survive till the end of the year.<sup>52</sup>

### Rogavishesha vijaniya

Any Disease is attributed to the imbalance caused in the *dosha*<sup>57</sup>. However as *dosha* are subtle functioning units their vitiation and the resultant pathogenesis are to be inferred through their actions and effects on the body.

Egs: *vayu* which is in equilibrium is the steered of all physiological activities while vitiated is responsible for premature expulsion of foetus, irregularities in the foetus, delayed labour.<sup>58</sup>

### Aatma & Punarjanma

The human body is said to be composed of six elements viz. *akash*, *vayu*, *agni*, *jala*, *pruthvi* and *aatma*<sup>59</sup>. While all the 5 former elements are material entities, *aatma* or the soul is formless and shapeless. Consciousness of the physical body owes its existence to the presence of *aatma*<sup>60</sup>. Hence the entity becomes only inferable but never perceivable. Thus signs such as Respiration, consciousness, desire, hatred, happiness, grief, ego, intelligence etc serve to infer the presence of the latter in a living being.<sup>61,60</sup>

Similarly, the concept of rebirth which is based on the theory of *karma* is also an inferential phenomenon<sup>62</sup> as it is stated that - The fruit of one's actions is necessarily experienced by its doer alone and not by any other.<sup>62</sup> By the above statements one can infer that the physical framework, differences, abilities and life experiences of every individual varies from person to person which in turn is predetermined by one's past deeds.

### Karmaja vyadhi and karma phala

Likewise *karmaja vyadhi* or diseases that are not agreeable and responsive to treatment modalities are to be inferred as an impact of one's misdeeds either in the present or the past life.<sup>63</sup>

Eg: *shwitra*<sup>64</sup>

**Pratyaksha ashraya:** this section deals with inferences that are established from sensorial perceptions and from research evidences that contribute in understanding human physiology.

With advancements in technology, although radio-imaging give us the picture of the insides of the living system yet there exists a huge limitation in visualizing very many biological-components and their functioning. This limitation was however overcome in *Ayurveda* through the ideology of *Loka-Purusha Samya Siddhanta* where the bio-system operations are understood through the phenomenon occurring in the external universe. Being originated from the same parental matter viz. 5 elements of nature, this *siddhantha*<sup>65</sup> identifies universe and man as siblings in the sense of their physical make-up and functioning Thus enabling to ascertain physiology and treat pathologies of human through the gateway of his universe.

Egs: Just like the blooming and withering phenomenon of a flower, the uterus also narrows and inflates in relation to the ovulatory cycle<sup>66</sup>

It was not until the recent times that conventional medicine had conceived the doctrine of signatures or teleological nutritional targeting which relates its basis with the *loka purusha samya siddhantha*. This doctrine discussed the similarities between man and the plant kingdom and its role in treatment. Although claimed to be an ancient methodology it was revived during the 16th century. According to this doctrine every plant represents a finely honed response to environmental stress – the same stress that human contend with in order to stay healthy. The wide array of chemical compounds in the plant as well as its shape, colour, and environmental niche all represent adaptations to stress. The philosopher Rodolf Stiener pointed out that the same forces that cause disease in human frame cause the contortions of the plant, thus, the contortions or shapes or colours not to mention the environmental niche in which the plant lives are signatures picturing

the stresses and diseases to which the plant can prove to be remedial.<sup>67</sup>

e.g. Walnut which is in the shape of the brain develops around 3 dozen neurotransmitters in the brain<sup>68</sup>

Another aspect to sensorial inferences is through the medium of evidence-based researches. As in the sense of *Pramana*, Research is also defined as quest for knowledge through diligent search or investigation or experimentation aimed at the discovery and interpretation of new knowledge.<sup>69</sup>

It is interesting to note that, the WHO also identifies inference as one of its strategies in research<sup>70</sup>. Apart from already documented biological facts, research studies from time to time are re-discovering numerous phenomena and are adding up to the existing ocean of knowledge. Like a vicious circle the outcomes of research studies which are nothing but inferences serve as resources (*vyapti gnana*) in turn enabling an appreciable escalation of scientific treasures. In addition to the expansions and advancements in science from previously conducted studies, continual research is also instrumental in conceiving newer facts. In this manner the tool of inference has been generating endless wisdom for centuries.

Below is given an instance where one source of knowledge is instrumental in drawing an inference and whereby these inferences serve again as potential resources for drawing many more inferences.

Eg: *tridosha* which are the basic functional entities constitute *prakruti* or physical constitution of the body Based on their measure of distribution. Since these entities are only inferable, the various *prakruti* they manifest are therefore inferred again based on the measure of exhibition of the characteristic features of their respective *dosha lakshana*. However a recent study has been undertaken in order to identify the different *prakruti* divisions on the basis of molecular studies.<sup>71</sup>

Eg 2: *kokilaksha* and *shatavari* has been mentioned as one among the drugs that

augment the production of breast milk.<sup>72,73</sup> this data is thus testified and re-evaluated for its properties through conducting clinical trials on the above drugs.<sup>74, 75</sup> A significant research outcome leads to a subsequent study that is undertaken to compare the efficacy between the two clinically proven drugs in relation to the target action.<sup>76</sup> In this manner, the available testimonies along with clinical scientific studies serve as reliable data for updating the science and discovering newer facts.

### Diagnosis of unknown diseases:

This section deals with the scope of inferential-methodology in comprehending an unknown disease. Although the text lists out 80 *vata vikara*, 40 *pitta vikara* and 20 *kapha vikara*, they are not to be taken literal rather are illustrated as a foundational guideline for understanding diseases<sup>77</sup>. This is the reason *Acharya* states that diseases are innumerable<sup>78</sup> and thus naming every disease is impractical<sup>79</sup>. Nonetheless, faulty trends and altered habits pose threats for rousing new diseases from time to time. Although newer diseases evolve with newer pathological phenomenon, inferential

reasoning serves as a tool for analyzing and interpreting the disease nature and management.

Diagnosis of unknown diseases are instructed to be inferred based on three factors viz. *vikara prakruti* (*dosha* involved), *adhishtana* (site of manifestation), *samutthana vishesha* (disease-causing factor)<sup>80</sup>. An example is cited in the chapter of *kushta* which mentions that although listed as seven, *kushta* can be of innumerable types. The nature of the unknown diseases with regard to *kushta* has to be diagnosed based on the attributes afflicted in each *dosa*, site of disease, and symptom, colour, appearance and prognostic features<sup>81</sup>. Hence appropriate treatment is administered based on identifying the chief *dosha* and the subsidiary details in the pathogenesis<sup>82</sup>. Eg: If the features like *shula*, *shyava*, *aukshya* and *daha* are manifested then it has to be regarded as *vata-pittaja kushta* and so on. The table below lists the features of the *kushta* based on the type of *dosha* involved that can be extended to emerging skin conditions of unknown cause and treatment.<sup>83</sup>

Table 4 Table citing the features to be considered for the treatment of *kushta* of unknown origin

Vata	Pitta	Kapha
Dryness	Burning sensation	Whitish discolouration
Pricking pain	redness	coldness
wasting	discharge	itching
Excruciating pain	Pus formation	Firm
contractures	Foul smell	elevated
roughness	slimy	infestations
Bleackish blue discolouration	Loss of affected site	sticky

### Scope of Anumana Pramana as a Research Methodology:

Research methodology is defined as a systemic way to solve a problem. Essentially the procedures by which researchers go about their work of describing and explaining and predicting phenomena are called research methodology<sup>84</sup>. The *ayurveda* parallel, *Pariksha Pramana* which is of 4 types is the means that serves to solve a problem. Of them all, *Anumana Pramana* can be conceived as that investigative methodology which utilizes resources of knowledge, analytical measures

and logical reasoning in solving a domain of doubt and in this way corresponds to the processes of research methodology in conventional medicine. It was through these methodologies, repeated observations, experimentation and documentations that upgraded the *ayurvedic* science for ages.

As discussed earlier, scriptures, scientific facts and sensorial observations are the sources from where *Anumana Pramana* draws its data. With regard to critical analysis which is the key element, *Anumana Pramana* attempts to exploit a phenomenon on the lines of the cause and

effect doctrine (*karya-karana siddhanta*). Amongst other strategies, conventional researches also acknowledge the doctrine of the cause and effect relationship and rely on resources of knowledge when undertaking a study.<sup>85</sup> This doctrine which is expounded by the *sankhya darshana* is based on the fact any phenomenon/activity involves a *karana* and *karya* i.e. cause and an effect where *karya* refers to that effect accomplished on causing transformation in the *karana*. in the context of *ayurveda*, the *dasha vidha parikshya bhavas* too, which is about the factors to be examined before performing any intended medical action - is also based on this concept of *karya-karana siddhanta*. For that matter, *ayurveda shastra* has itself been scripted with a *karya* or intended effect i.e. *dhatu samya* with its 6 *karanas* suggesting *karya* and *karana* as subject of primary concern in diagnosis and subsequent treatment-administration. The table below details the nature of these *bhava* and their relation with each other in its original context and with its extended application to understand the same in the context of conducting a research. Only the mere presence of the 3 *Karana bhavas* is like a dormant volcano which cannot produce an effect on its own singly however will yield into an effect only post causing provocation in the *karya-yoni~transformation-intended-cause*. This provocation which is termed as *pravruthi* or action is initiated post acknowledging the appropriateness in the latter's potentials and stance as favourable to the intended effect. This methodological and systematic approach (termed as *upaya*) uptaken is essential to ensure accomplishment of the **specific intention** through the transformation that is necessitated. In simple terms, while *Pravruthi* relates to initiating

the dynamics that subsequently leads into the intended-effect, *upaya* is the potential generated for executing the above initiation. Besides acknowledging the concerned dynamics and potential, the executor should also be parallelly aware of those factors that can invariably manipulate the resulting-effect viz site of action i.e. *desha* and phase of time i.e. *kala*. On the basis of the above theory, the domain of doubt (*hetu*) is subjected to further analysis based on a given source of information (*linga*) which serves as the *karana*. In this context, *dasha vidha parikshya bhava* (the ten investigative factors) originally the foundational factors to accomplish a clinical endeavor can also be equated with research as the latter are also clinical endeavors that evaluate treatment goals. In this purview, *the dasha vidha parikshya bhava*<sup>86</sup> can aptly serve as a research protocol to conduct research studies in compliance with the language and system of *ayurveda*, with *karya-karana siddhanta* as an analytical tool and *Anumana Pramana* as the research methodology. The purpose of this interpretation is to generate a research protocol to widen the forgotten gates of research especially in the system of *ayurveda* and give a novel research perspective in the lines of *ayurveda* and for conducting of the same. Although this would be a basic approach undertaken yet this reinstatement being very much developed from the foundations of the *ayurveda* science may open ways for better understanding and expounding the concept of research in *ayurveda*. The following table is the proposed research protocol which gives the list of the investigative factors, their intention, and extended implication in research.<sup>87</sup>

**Table 5 Table citing the interpretation of *dasha vidha parikshya bhava* as an *ayurveda* research protocol**

<i>Parikshya bhava</i>	Intention	Expansion of the factor by <i>chakrapani</i>	Implication in research
<i>Kaarana</i> - instrumental cause	The doer who engages in the action	<i>Karana rupam</i> ~ Causal form <i>Nimitta karana</i> ~ Instrumental cause <i>svatantra karana</i> ~ independent cause <i>Karana preraaka</i> ~ momentum-triggering cause	Researcher/Investigator
<i>Karana</i> -	Instruments through which the	<i>Karana rupam</i>	Medicines, Study instruments-

non-inherent cause	doer executes his actions in view of causing the intended effect	<i>Asamavayi karana</i> ~ non-inherent cause <i>Paratantra karana</i> ~ dependent cause <i>Achetana</i> ~ non-existensial cause <i>Karana preraka</i> ~ momentum-triggering cause	questionnaires, mechanical tools, assessment scales, statistical tools etc, Resources of knowledge - literature reviews, new research studies, treatment module
<i>Yoni</i> (inherent cause)	That factor whose transformation leads to the intended-effect(karya)	<i>Karana rupam</i> <i>Samavayi karana</i> ~ inherent cause	Research problem/question
<i>Karya</i> (intended-effect)	That factor whose accomplishment is systematically effected thru the actions of the doer	<i>Karya</i>	Aim & Objective of research, Stating of researh hypothesis
<i>Phala</i> (immediate output)	Utility desired from accomplishing the intended-effect	<i>Karya rupam</i> ~ resultant form <i>Tadava phala</i> ~ instant after-effect	Establishing a thesis statement by stating null/alternative hypothesis, Scientific conclusion
<i>Anubandha</i> (sequels)	Good & bad effects necessarily associating the doer post accomplishing intended-effect	<i>Karya rupam</i> <i>Paschat phala</i> ~ delayed after-effect	Publication, Literature addition, References& citations, Statistical data for future researches, Relevance of the problem to national or local health activities
<i>Desha</i> (spatial influence)	Spatial dimension that serves as Favourable/unfavorable to the <i>karya</i> :	<i>Agantu kArana</i> ~ extrinsic causal factor <i>Adhistanata</i> to <i>karya</i> : <i>anuguna/ananuguna</i> ~ spatial dimension relatable as in favour or otherwise to the intended effect	Research setting, Sampling, Use of controls, Consideration of influence of variables of environment & influence of biological variables in every subject
<i>Kala</i> (time influence)	Time-led-transformation that affects the <i>karya</i> :	<i>Agantu karana</i> <i>anuguna/ananuguna</i> to <i>karya</i>	Time dimensions in research, Variables in the beneficiary espl with regard to age, season, disease onset, chronicity or acuteness of disease etc.
<i>Pravruthi</i>	That action which draws towards the <i>karya</i> /effect-oreinted	<i>Karya rupa</i> <i>Kriya</i> (field action) that establishes <i>karya</i>	Research proper - Hypothesis testing
<i>Upaya</i>	Acknowledging the appropriateness in the potentials and orientations in <i>karana</i> as favourable to <i>karya</i>	<i>Karana rupam</i> <i>Abhividhanam</i> ~systematic programming thru- <i>Guna yogitwa</i> ~ assessing potentials of 3 <i>karanas</i> as favourable to <i>karya</i> <i>Karma anuguna</i> ~ acknowledging the orientations of <i>karana</i> in favour of <i>karya</i> . <i>Karyabhinirvartaka</i> ~bring about <i>karya, phala&amp;anubandha</i> . <i>Karyakaraka/karyagatam</i> ~ executor <i>Paratantra karana</i>	Research design & methodology, Data collection, Statistical analysis

## CONCLUSION

Ambiguity and uncertainty is not to be regarded as ignorance, as inquiry into the same can lead to the door of wisdom. Although the term *Anumana* is translated as ambiguity, *Anumana* as a *Pramana* is the steer that navigates to certainty. While Knowledge is an eternal and expansive truth it may not be comprehensible at all times due to the limitations in acknowledging the same. Thus *Pramana* were designed to perceive, interpret and decipher knowledge and amongst which *Anumana Pramana* serves to decode information that is beyond human perception. In that sense, *Anumana Pramana* is the methodological skill of rediscovering. *Anumana Pramana* is the basis for obtaining the knowledge of subtle,

unknown, hidden, imperceptible entities and also favors in the accomplishment of knowledge with regard to the three phases of time. Inferential knowledge is the judgment that can be arrived at through the medium of a pre-existing scientific conception and thus works on the principle of the cause and effect. It is regarded as one among the chief methodology to gain knowledge or information in both *ayurveda* and conventional sciences. In the perspective of *ayurveda*, Observation skills, analytical scrutiny, evidences of observed or documented facts and logical reasoning are the basic elements that serve in the accomplishment of inferential knowledge.

Application of this *Pramana* appreciates both physiological as well as the

pathological phenomena occurring inside the body. The significance of *Anumana Pramana* in *ayurveda* has been detailed out in many contexts such as inference of the biophysical elements to bio-abstract elements, inference of signs of fatality, phenomenon of rebirth, law of karma and its role in causing *karmaja vyadhi* etc. Needless to say, it serves as an accurate tool in the diagnosis, prognosis of a disease and a critical tool to precisely appreciate the varied clinical presentations occurring in a single disease in addition to the appreciation of a single disease in varied samples. Thus a management strategy on the basis of a thorough evaluation by the above means is the wheel to professional success.

Besides the clinical scenario, the paper has also tried to describe the role of *Anumana Pramana* in the aspects of a research endeavor as both the fields contribute in knowledge advancement in a systematic manner. The methodology of *Anumana Pramana* along with the methods mentioned under the *dasha vidha parikshaya bhava* can serve as an ideal research protocol in the language and methodology agreeable by the *ayurveda* science which thereby can lay a strong foundation in the execution of *ayurveda* research studies. Further it is also to be comprehended that although *ayurveda* and conventional medicine work on parallel principles their opinion of inference in research endeavors seem to be comparable with each other.

Knowledge although an all-pervading entity can present itself in various motifs. Knowledge is an eternal entity since the more is acknowledged the more it leads to a search. Hence without the application of these *Pramana* (tools) by the *pramata* (desirer of knowledge), knowledge will continue to remain virtual.

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