



Review Article

CONSTRAINTS IN AYURVEDA LEARNING AND REQUIREMENT OF TEACHING MATERIAL REFORMATION

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ABSTRACT

History of Ayurveda is believed as old as on more than 5000 years. But in India (which is origin country of Ayurveda) the Ayurveda has been struggling to prove itself for contributing health services as in main line. Ayurveda is based on and influenced by the Indian philosophies and the big part of study material is either predictable or can be understood on the basis of logical statements given by ancestors. These are certain constraints in learning Ayurveda for producing the Ayurveda scholars/ scientists/ thinkers giving with the evidence based knowledge for putting them into main stream of health care. The nomenclature of body organs are very confused, i.e.: *Mashtishk* (For Brain and Heart), *Shira* (For Arteries / veins), *Nadi* (For Nerves/Arteries). Numbers of Bones as referred in Ayurveda does not match with present human body. Hence, it is second constraint that if a learner of Ayurveda is confused from the beginning of learning in the subject *Sharrera* (Anatomy) then how he will understand the human body? How he will treat the patient medicinally and surgically? Ayurveda refers therapeutic value and pharmacological action of plants, minerals and marine products, logically. But some of information seems larger than life, i.e., *Terminalia chebula* (*Haritaki*) is referred as a best Rejuvenator along with the pharmacological activity purgation, eye-sight enhancing, etc. Above all it is referred 'larger than life' quotation that if one standing under the tree of *Chetaki* type of *Haritaki*, he/she get the purgation immediately. It creates trouble to a teacher during the class room in teaching and for proving such kind of statements.

Keeping these views an attempt has been made to draw attention of policymakers and universities for making necessary reformation in teaching material of Ayurveda, as well as to train teachers for specific Ayurveda teaching methodology.

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INTRODUCTION

History of Ayurveda is believed as old as more than 5000 years. Since it has evolved brilliantly through a large part of its evolution and expressed distilled knowledge with establishing principles, science, and applications. Though nowadays Ayurveda is being globalized but this science has been surviving either by governmental support or individual efforts, in India. There are other facts speaks that its inherent strength and the tenacity of its community-based supporters made it popular. It seems the growth and development of Ayurveda has not been at par with that of other sciences. During the long history of Ayurveda there have been several regimes that encouraged it, but

there were few who are putting question marks on its credibility. Now days the Government of India switchover to its importance and recognized its merits and created an exclusive department.

Various sounds can be heard about the globalization of Ayurveda and mainstreaming of Ayurveda, but when we think of the number of peer-reviewed research Ayurveda journals, the situation is not better.^[1] This is the time when the scholars and practitioners of Ayurveda should organize themselves; create a credible and united platform with the promising efforts they may able to make advancement in Ayurveda.

Constraints in Ayurveda Teaching

First Constraint

Ayurveda literature and texts are written in the Sanskrit language, in a concise manner. Though the translations in almost all languages are available but they do not refer the real meaning. A verse covers very big meaning and knowledge, if one can understand exact and properly then he may be able to precede for further knowledge. Like a verse refers: All creations on our planet is made up of five greater elements [2].

Literary and translated meaning is as followed: *Prithivi* (earth), *Jala* (water), *Agni* (fire), *Vayu* (air) and *Akasha* (ether/space). These are the popular expressions of earth etc. One should not be misconceived with these meanings. These are different entities with similar nomenclature. The earth element represents mass in the material. Water provides the capacity of union or binding of more than one principle. Fire provides heat which remains always in latent form with every material phenomenon. Air provides movements and ether provides space to grow.

Hence, the first requirement for Ayurveda is learning the complete knowledge of Sanskrit language for understanding proper meaning.

Second Constraint

India has a rich and diverse philosophical tradition dating back to the composition of the *Upanishads* in the later Vedic period. According to Radhakrishnan, the oldest of these constitute "the earliest philosophical compositions of the world." [3] The philosophies (orthodox) are *Nyaya*, *Vaisheshika*, *Samkhya*, *Yoga*, *Purva mimamsa* and *Vedanta*. The Heterodox are Jain, Buddhist and materialist (*Charvaka*) [4]. Though, the basic principles of Ayurveda are well defined and time-tested but highly influenced and inspired by the Indian philosophies. As defined by the philosophies that a knowledge can be acquired with help of three parameters of measurements (*Pramana*)-Direct observation (*Pratyaksha*), Inference / Prediction (*Anuman*) and Logical statements of ancestors (*Aptopadesha*). The same theme was adopted in Ayurveda for obtaining the knowledge [5] but with adding a more theme of Planning (*Yukti*). In the beginning an Ayurveda learner learns that there are four measurements / parameters (*Pramana*) for measuring the factors may be used in health care: Direct Observation (*Pratyaksha*), Prediction (*Anuman*), Inference and reasoning (*Yukti*) and logical statement from ancestors (*Aptopadesha*) [6,7]. Further, Ayurveda advocates that what we observe directly/ visible is very less but what we cannot that is very vast (*Prtyaksham Alpam, Apratyaksham Analpam*) [8]. Now days, scientists are also agreed, but in a very vast manner, as up to the universal level for finding the answer "What is Life"? But modern medical science believes on direct observational and evidence based knowledge.

Ayurveda never deals only with the medical science but it deals with the Life science. That is why; first it describes 'What is Life'? According to Indian Philosophies and Ayurveda, the life is not mere a biochemical or biophysical phenomenon but a manifestation of union of soul, mind and body those are integral and interdependent components of life. Action and *Chetana* (closest equivalent is consciousness) are the essential characteristics of life. Soul provides *Chetana* (consciousness) while mind initiates action and these characteristics manifest in body which neither possesses *Chetana* nor an action. [9] According to Ayurveda the literary meaning of Life does not refer the "Age" [10], it refers that prior to treating the human body an intellectual should know what is the origin and end of life?

So, an influence of philosophies may be seen in Ayurveda that the life begins from the entity and ends to the entity. Means what life is given by almighty that continuous journey from the origin will be continued until approaching entity, so whatever age is provided by god into human life, should be used to achieve four major goal - *Dharm* (Following good acts), *Artha* (Earning livelihood), *Kam* (Fulfilling ethically the wishes), *Moksha* (Salvation) [11]. This concept is not emerged so far in medical science. [12]

On the other hand, in present era groups of scientists are trying to find out the answer of this complicated question, with help of the knowledge of ancestors, philosophers, thinkers, scientists and researchers. Various hypotheses and theories are laid down time to time by the scientists, regarding the origin of life, what is life, meaning of life and mystery of life. Some of the earliest western hypotheses and theories of life were materialist, holding that whatever exists is matter, and that life is merely a complex form or arrangement of matter. They argued that everything in the universe is made up of a combination of four eternal "elements" or "roots of all": earth, water, air, and fire. [13]

Every material phenomenon no matter how small it is composed of these above four elements. Smallest particle even in its subatomic form possesses some mass that is because of earth element. It has a tendency to remain united with others that is because of water element. Latent heat with such particle, which comes out during its action is result of fire element. This remains always in motion, which is characteristic of air element. This particle is surrounded by some space which is ether element [14]. The same is referred in *Sankhya* (Indian) philosophy, which is based on the "Atomic" theory for the origin of universe and life. Ayurveda has adopted this theory from *Sankhya* and refers that the all material forms including body is composed of *Panchamahabhutas* (five subtle atomic elements) namely *Prithivi* (earth), *Jala* (water), *Agni* (fire), *Vayu* (air) and *Akasha* (ether/space). [15] These

should not be misconceived with popular expressions of earth etc. These are different entities with similar nomenclature. The earth element represents mass in the material. Water provides the capacity of union or binding of more than one principle. Fire provides heat which remains always in latent form with every material phenomenon. Air provides movements and ether provides space to grow. [16]

Further Ayurveda advocates that a person should follow the ethical guidelines for achieving a complete health and long life, during this age. But, if one ignores, then he may get sick and then the treatment is required [17]. That is why Ayurveda advocates as a first motto: *To keep healthy to a person there is required to follow certain ethical guidelines of healthcare, but, if one ignores it then a person may get sick, hence the treatment is required* [18].

Thus it can be said that the Ayurveda is highly influenced by the Indian Philosophies which is evidence based but most of part is predictable and based on logical statements of ancestors. This theory and modern early hypothesis cannot be observed by direct observation (*Pratyaksha*). It can be understood by using the inference/prediction and logical quotations, referred by ancestors. However, this sector of Ayurveda is most important to understand the realism of the science. As we aware, the entrance qualification of Ayurveda graduates is the science biology group, who do not have background of such kind of knowledge. So second constraint is how to explain the basic principles of Ayurveda which are based on the Indian philosophies references?

There may be use of correlative evidence based reference from the modern science, i.e. – The *Sankhya* Philosophy is very close to modern theory of Atom. So it can be said that the basic principles of Ayurveda is partially can be understood with the help of Indian philosophies and partially may understand with help of correlative modern sciences [19].

Ayurveda is based on three theories – Theory of five greater elements (*Pancha-mahabhoot vada*): To understand the origin of life, [20] Theory of three biological humors in body (*Tridosh vada*) [21], which are considered main causative factors for producing any pathology of diseases, and Theory of seven body tissues (*Sapta dhatu vada*): site of pathogenesis in the body. [22,23] Further, it is referred that the immortal and sacred life science of Ayurveda is consisting of three principles viz., etiology, symptomatology and knowledge of therapeutics as a means to well being par excellence to healthy and diseased which had earlier been understood by lord Brahma (the first preacher of Ayurveda). [24] The Theory of five greater elements (*Pancha-mahabhoot vada*) can be understood by logical statements of ancestors - *Aptopadesh*, the theory of three biological humors in body *Tridosh vada* can be understood by the prediction - *Anumana* and

Aptopadesh. What major constraint face a teacher to explain these theories are explored as bellow.

Tri-dosha theory is the basis of Ayurvedic physiology, pathology and pharmacology. '*Doṣha*' literary means is '*the disturbing factor*'; it plays physiological importance in normal state, but when these are vitiated then it may be cause of diseases. Disease manifests as a result of disturbance in the state of equilibrium of '*Doshas*'. Basically three '*Doshas*'- '*Vata*', '*Pitta*' and '*Kapha*'- are responsible for maintenance of homeostasis in the body. The health is nothing but a state of equilibrium of these '*Tri-doshas*' [25]. The concept of '*Tridosha*' is basically a theory and it is important that no single substance or structure in the body represent a '*Dosha*'.

As mentioned above these '*Dhatu*' are almost equivalent to the tissues. These seven are the (*Rasa*, *Rakta*, *Mamsa*, *Meda*, *Majja*, *Asthi* and *Shukra*). These may correlate with the modern terminology as laid down: Plasma and lymph (*Rasa*), blood cells (*Rakta*), muscular and general connective tissues (*Mamsa*), body-lipids including adipose tissue (*Meda*), tissues resisting easy degradation - like bones (*Asthi*), bone marrow and nervous tissue (*Majja*) and tissues responsible for reproductive functions (*Shukra*) are the basic tissues from which the body is formed [26]. Theory of seven body tissues *Sapta dhatu vada* can be understood by the direct observation – *Pratyaksha* with the application of the General (*Samanya*) and Specific (*Vishesha*) (this is enumerated in *Nyaya* system of Philosophy).

Concept of Agni in Ayurveda

Above all Ayurveda considers the importance of *Jatharagni* (Metabolism) and *Bhutagni* (Intermediary Metabolism). After the digestion in gastro intestinal tract with the *Jatharagni* ingredients of food (*Rasas*) undergo metabolism once again. Each tissue derives its nutrition through the activity of so called '*Dhatvagni*'. Metabolism at tissue level is dependent on these '*Dhatvagnis*'. Some part of the tissue becomes supportive whereas some part becomes waste after the metabolism at this level [27]. This metabolic end-product is called '*Vipaka*' [28]. This indicates that '*Vipaka*' is the end product of the action of '*Bhutagnis*'. [29] This description is also can be understand by the inference because the term *Agni* as referred in Ayurveda is a group of various factors which effect to metabolism and nourishment. In teaching there is need to explain it with help of references from the modern medical science. *Jatharagni* can be understood by the Metabolism and *Bhutagni* with the correlation Intermediary Metabolism.

It can be concluded that the most of content of Ayurveda physiology also needs more observatory explanation. That is why, the diagnosis and treatment of diseases in Ayurveda is little bit complicated because

rate of production is higher than the direct observational procedures. This is second constraint - how to reach to evidence based observations because most of are prediction based?

Third Constraint

There are certain contents in study material either may be controversial or confused, i.e.: KLOM^[30] - Name of a body organ sited in abdominal cavity (*Kostha*)^[31] which cannot be seen in human body, but still it is being taught to the students. The nomenclature of body organs are very confused, i.e.: MASHTISHK^[32] (For Brain and Heart), SHIRA (For Arteries / veins/ Nerves)^[33-35], NADI (For Nerves/Arteries)^[36]. Sushrut refers 300 bones and Charak refers 360 but the numbers of BONES is not matched with the present human body^[37,38]. Existence of IDA, PINGALA nerves (*Nadi*) cannot be observed directly. Therefore, *the third constraint for a Ayurveda learner is confusing from the beginning of learning in the subject Sharrera (Anatomy) then how he can have the faith on creditability of this science?*

Fourth Constraint

Ayurveda refers therapeutic value and pharmacological action of plants, minerals and marine products, logically. But some of information seems missing and some of information seems larger than life, i.e. - *Terminalia chebula* HARITAKI is referred as a best Rejuvenator along with the pharmacological activity purgation, eye-sight enhancing, etc^[39]. Above all it is referred that if ones stand under the tree of HARITAKI, he/she get the purgation immediately^[40].

Let us discuss what is missing?

Though pharmacodynamic properties (What drug does to body) and actions are elaborated in well manner by the name *Rasa* (Taste), *Guna* (Properties), *Veerya* (Potency), *Vipaka* (Metabolism), *Karma* (Action) and *Prabhava* (Effects), but pharmacokinetic information (What body does to the drug) is either in brief or in predictable manner. As an example - The rejuvenation action performs by the HARITAKI by the virtue of the taste RASA and balances the three body humors^[41], so with having capacity of *Tri-doshaghna*, it performs the action of *Rasayana* (rejuvenation). This is the mode of action refers Ayurveda. But on other hand for the purgation activity refers the Ayurveda that it works as an *Anuloman* (Mild purgative which digests the wastes, breaks the wastes and pushed downwards).^[42]

With the help of same drug one can get different therapeutic values. In other words it can be said that the same drug performs different therapeutic value due to its potential through particular pattern of assimilation, distribution and absorption on different sites in the body. This information is found very less in Ayurveda literature, but it is really appreciable that the

therapeutic value as mentioned in Ayurveda is being proved and supported by the various studies. It means, certainly the Ayurveda ancestors were known with a set protocol and methodology for coming up to a decision regarding therapeutic potential of that particular drug. Author is of opine that this content is missing in Ayurveda. May it be, a big loss of Ayurveda literature during mughal emperors (*Burning huge library at Nalanda and Taxila universities, which was continued up to one month*) such type of literature was either burned or ruined. But, if we have the results then we can develop again the protocol and methodology for developing evidence based documents, based on Ayurveda basic principles.

What are the Needs?

- Very first there is urgent need to reform the syllabus and curriculum to make fit for students, scholars and practitioners of Ayurveda to create a credible and united platform with the promising efforts they may able to make advancement in Ayurveda. The controversial and confused contents of study materials should be either deleted or should be included in brief as introductory in the syllabus of undergraduate standard with the comments that it will be taught in higher studies program (M D/M S / PhD), because it is the subject of research.
- Secondary and contemporary need is to train the teachers for explaining the subject contents to the students by giving evidence based knowledge, may be taken from other scientific disciplines for proving and supporting the basic principles of Ayurveda. Ayurveda ancient scholars always refer it^[43]. As an example: the term *Ayu* (Literary meaning Age) denotes to Life in Ayurveda, so Ayurveda considers first to understand that "What is Life"? Medical sciences are limited for providing knowledge for health care, from the birth to death of a human life. Ayurveda begins from the origin of life and considers that this life of human is a part-n-parcel of this long journey, which started from the entity space (*Anant Shoonya*) and will be finished to the same. So, every good and bad deeds effects on our life what we did in past, and what we will do now will effect to next birth. That is why Ayurveda believes in Re-birth^[44] and gives the ethics and guidelines for keeping healthy life (not only for the age of human being)^[45]. Newly emerged science the 'Genomics' may help in this context. Because according to genomics the body genes are responsible for the development of certain type of normal and healthy constituent of body or to develop the abnormalities in the human body^[46]. Ayurveda refers that the *Matrij* and *Pitraj bhava* evolves the natural temperament (*Prakriti*) in the fetus from the time of conceiving^[47], which effects

through whole life / age of a human. May this kind of comparative evidence based teaching help to stand Ayurveda students among the scientific society for proving the basic principles of Ayurveda.

- Third and most important need for Ayurveda today is a culture of research. What we need to evolve is the development of new contemporary trans-disciplinary methodologies, suitable for Ayurveda^[48]. Next, what we lack is the required skills to communicate the advantages of Ayurveda to the common man there is urgent need to reform the curriculum and syllabus, where a graduate or postgraduate may learn a reasonable module on scientific communication and medical writing with the background of Ayurveda basic principles. It is shocking to look at the number of publications from Ayurveda scholars and scientists in peer-reviewed publications. PubMed indexed only about 649 articles from Ayurveda out of a total of almost two and half million articles (2491570) in 2011^[49]. This works out to a nearly 0.026%. It does not mean that no research was done, what little is done is not even published properly and scientifically. As we are aware, many overseas universities link peer-reviewed publications of their faculty with their performance. This is not common in India, and it is also a fact that faculty members in Ayurveda colleges and universities either have little incentive for researches and for publishing it or they do not have even the facility and environment for the same.

Suggestions

- ✓ The learner of Ayurveda should be having the background of Indian philosophies, therefore present entrance qualification of Ayurveda should be reconsidered. Science biology group is not enough. There should be a course of "Life Science or Health Science" from the school education, which should contain the science biology along with the preliminary knowledge of every health sciences.
- ✓ The research methodology subject should be included from the beginning of Ayurveda graduation, which may helpful to discuss and prove the real essence of Ayurveda through researches and studies. It will strengthen Ayurveda with the evidence based and updated knowledge.
- ✓ The supportive information given in other sciences for proving Ayurveda principles and theories may be included for the advancement of Ayurveda.
- ✓ There is an urgent need to update the knowledge of Ayurveda teachers focusing on their teaching techniques and research and evidence based knowledge.
- ✓ The most important need for Ayurveda today is a culture of research. What we need to evolve is the development of new contemporary trans-disciplinary methodologies, suitable for Ayurveda.

CONCLUSION

Various sounds can be heard about the globalization of Ayurveda and mainstreaming of Ayurveda, but in India it is struggling for coming in main stream of human healthcare. Ayurveda education is imparted in India by about 254 colleges; of these 55 are government colleges, whereas the rest are private. There is a need to encourage the best and brightest Ayurveda students for providing the same earlier glory of Ayurveda. Author is of opine that there are certain constraints in teaching of Ayurveda which are blocking the growth of Ayurveda. When we think of present situation then it can be understood that there is a need to reform the Ayurveda education system to make the young minds with proving update knowledge on basic principles on practical and evidence based. This will help them to become better clinicians, researchers, teachers when they will come to the field. An effort has been made to draw attention of policymakers for reforming the Ayurveda education syllabus and pattern, which may prove helpful for giving the glorious status to Ayurveda not only to human health care services but also to live a happy life.

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