

# Education, Practice and Research in Ayurveda

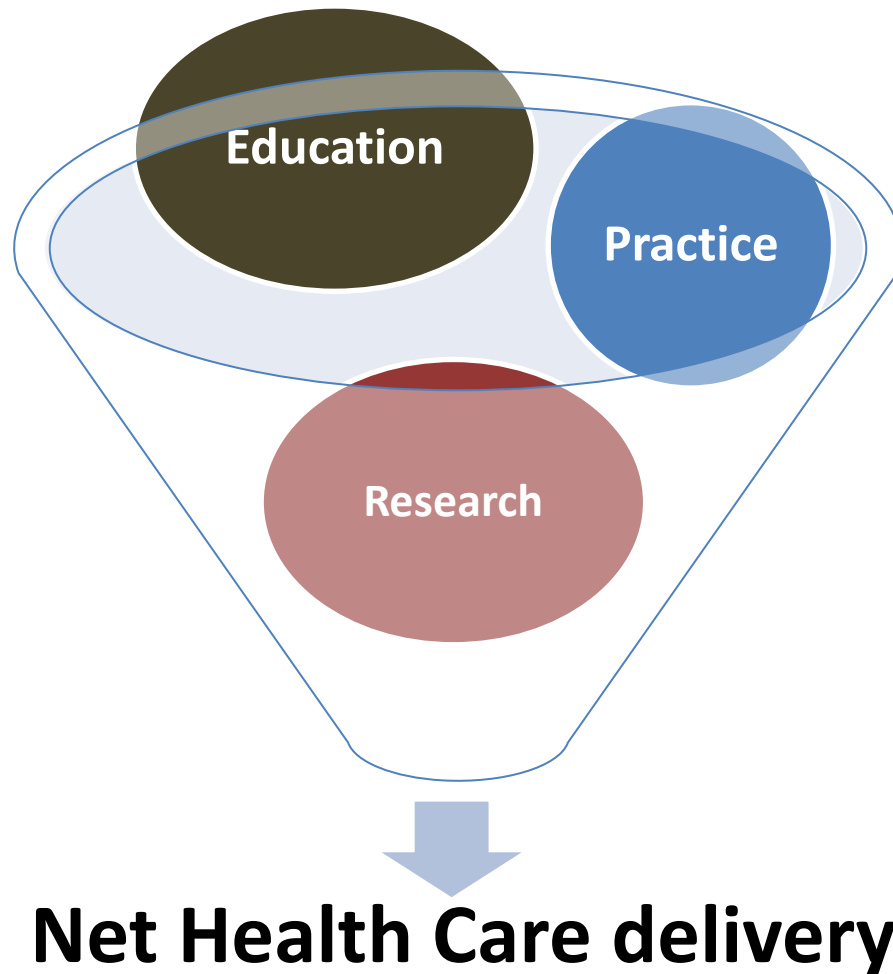
Evolution, Development and Challenges



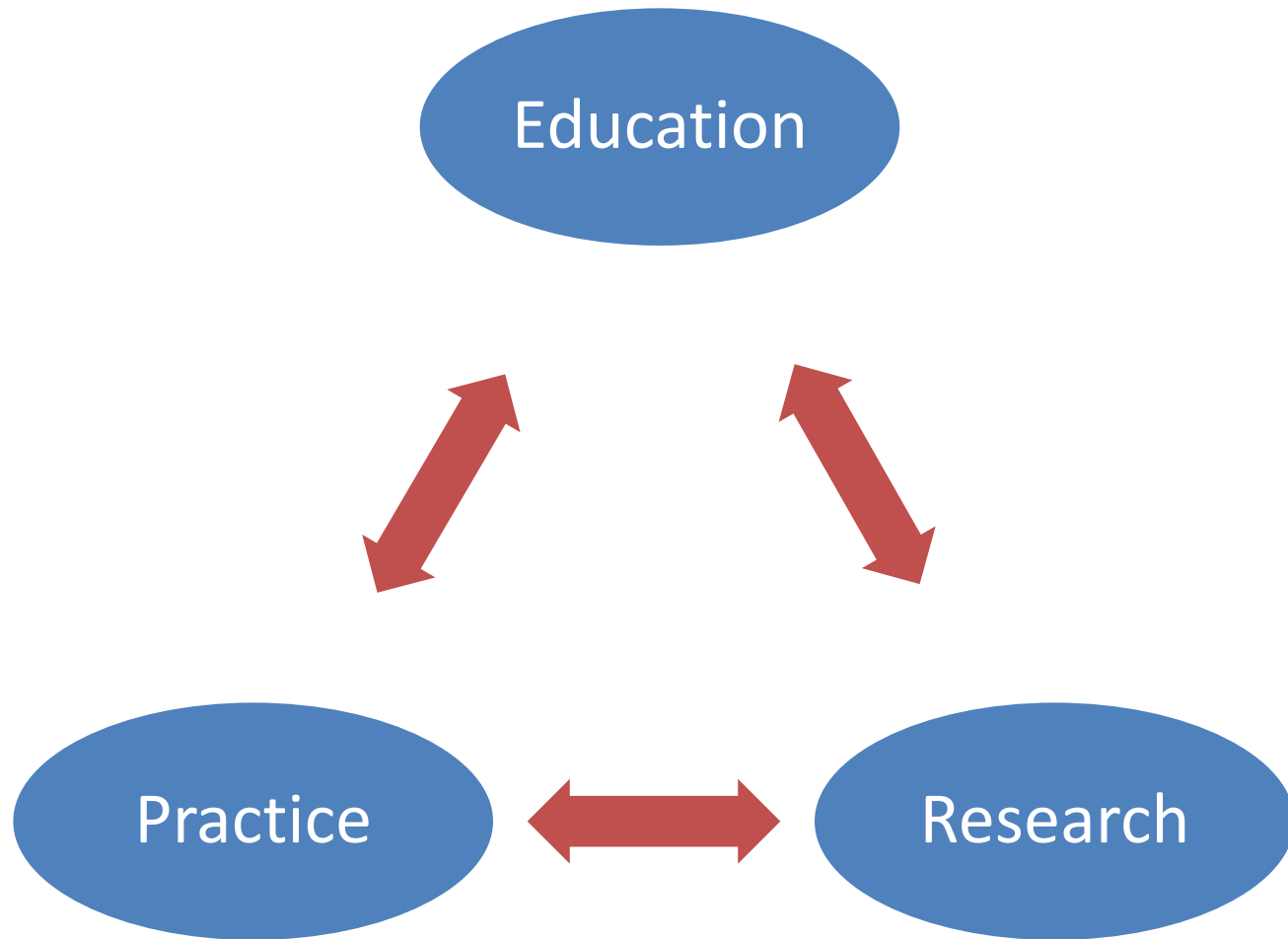
**Dr. Sanjeev Rastogi**

Faculty of Ayurveda,  
Lucknow University, Lucknow  
[rastogisanjeev@rediffmail.com](mailto:rastogisanjeev@rediffmail.com)

# Health Care Matrix



# Reciprocal Evolution of Health Care Science



# Health Science Evolution

Inclusive → Exclusive → Inclusive Approaches

- **Inclusive**

- Historically **all roles** related to health care were played by a single person
- Educator/Physician/ Researcher/Dispensor/
- Early developments of Ayurveda and also of Modern medicine through this way

- **Exclusive**

- Focused approach leading to **specialized roles** within the specified disciplines

- **Inclusive**

- Realization of **lack of interconnectedness** between various disciplines involved in health care
- Progress in individual disciplines not visible in practice( Lack of translational appeal)
- re emergence of the disciplines as **Physician Scientist/ Vaidya Scientist**

# Ayurveda : An Eternal Knowledge About Health Care

सोयमायुर्वेदः **शाश्वतो** निर्दिश्यते, अनादित्वात्, स्वभाव संसिद्ध  
लक्षणत्वात्, भाव स्वभाव नित्यत्वाच्च ( च.सू.३०/२५)

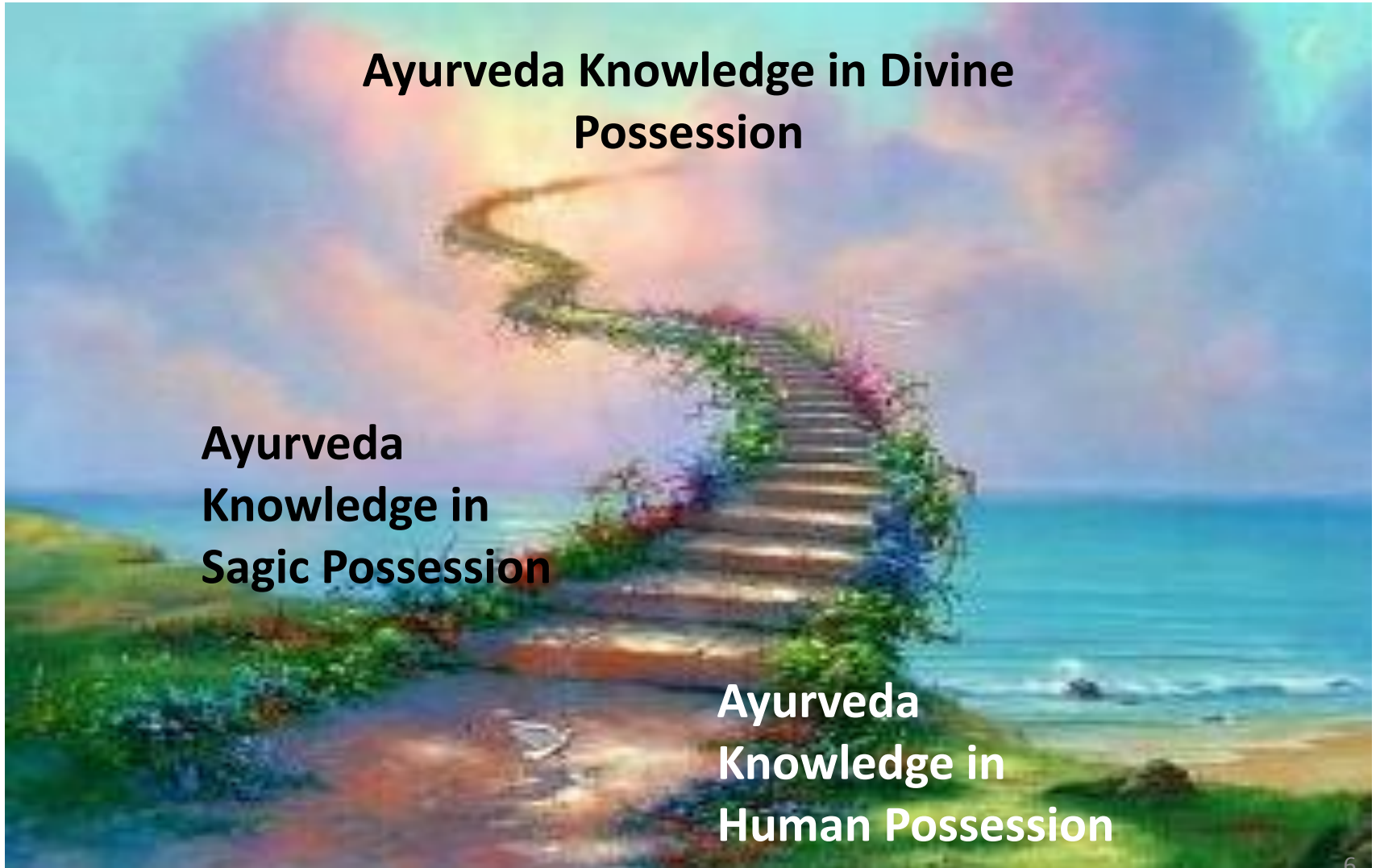
- 1. अनादित्वात् :** It has **no precise point of origin.**
  1. Largely is a science based on health and disease observations made through millennia
  2. Brahma has only **recalled** the knowledge and did not produce it
- 2. स्वभाव संसिद्ध लक्षणत्वात्:** Its fundamentals are **self explanatory** through the observations and applications
  1. सर्वदा सर्व भावानाम सामान्यम वृद्धि कारणम्। (Like increases the like and unlike decreases the like)
- 3. भाव स्वभाव नित्यत्वाच्च:** Its meanings and nature are **universally true** beyond the time and space
  1. What was fundamentally true thousand years back is largely true today also
  2. What is fundamentally true at one part of the world is true in other parts of the world also

# Mythological Descent of Ayurveda

**Ayurveda Knowledge in Divine Possession**

**Ayurveda Knowledge in Sagic Possession**

**Ayurveda Knowledge in Human Possession**



# Learning Transitions in Ayurveda: Informal to Formal Approaches

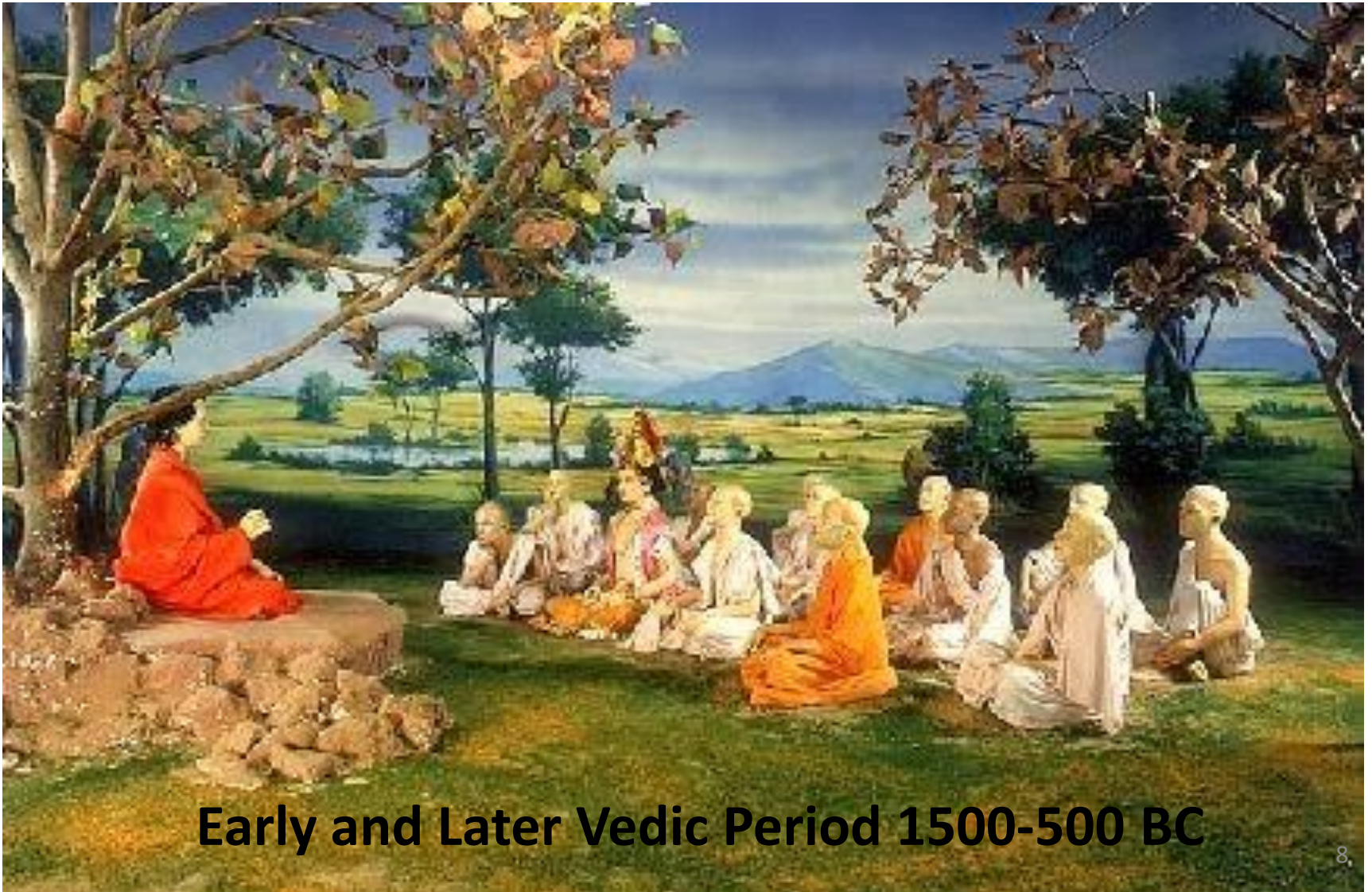
- **Informal Learning**

- Begin through continuous and curious observation of nature and its impact upon human beings
- Observation of nature's healing and disease causing properties
- Remained for large part of evolution till a more formal method of learning was evolved
- Passed on to next generations through oral tradition
- Knowledge limited to some people alone who were truly observant

- **Formal Learning**

- Gradual accumulation of knowledge made it difficult for one to recall and use all the knowledge at one time
- More number of professionals were required to meet the health care needs
- Health care science subsequently established as a distinct discipline of study and career
- Marked with supervised teaching and training for a specified time period

# Gurukula: Vedic Method of Imparting Education



**Early and Later Vedic Period 1500-500 BC**



# Peculiarities of Gurukula Learning

- **A fully residential teaching and training program**
  - Conducted away from home at Ashrama
  - Focused learning initiated at an early age
  - Course completion on the discretion of Guru
- **Practical learning combined with teaching discourses**
  - Learning about the raw materials and their processing
  - Learning about the patient examination
  - Learning about the clinical and therapeutic interventions
- **Interactive opportunities with teacher and peers**
  - Most teachings initiated as **replying** to the questions of students
- **Learning ayurvedic fundamentals by adopting them in life**
  - Life at ashrama driven by ayurvedic principles
- **Stress upon applying ones own skills to solve a clinical riddle**
  - A large praise for becoming **yuktigya** is available every where in Ayurveda
- **Uniform teaching unaffected by class or the social standard of the disciple**
  - Famous **krishna** and **Sudama** story who were students of the same guru

# Symposiums and Assemblies

- Sambhasha and Parishad
  - Meant to reach at **consensus** on complex issues and to remove doubts
    - वैद्य समूहो निःसंशयकरणाम
- Learning from the assembly of learned and seers through **debate and discussions** arising among the experts
  - तद्विदसम्भाषा बुद्धिवर्धनानाम (equally competent/ peers )
- Learning from the **views belonging to other schools of thoughts** not taught in the school of primary learning
  - आचार्यः शास्त्राधिगम हेतूनाम।

# Referrals to Other Schools

- Perfect **professional etiquettes**
  - Professional recognition and respect to all having specialized skills and knowledge
  - Respect despite of difference in opinion and approaches in certain areas
    - eg. Medical school and Surgical school
- Permitting **learning from others** in areas where the learning is not available in the initial school
  - Getting the opinion of other experts
  - Getting the skill based practical learning in specific areas

# Assuring the Quality Driven Education

- **Student's Role in Quality Education**
  - Choose the **appropriate subject** of study on the basis of
    - **Quality and scope** of the subject
    - **Ability** of the student
    - Ultimate **objectives** of the study
  - Choosing the **appropriate school / teacher** for desired study
    - **Qualities of a teacher** which a student should look into while choosing a school to study
- **Teacher's Role in Quality Education**
  - **Qualities of the student** a teacher should look into a student to see if he is eligible for desired education
- **General Code of Conduct related to Quality Education**
  - Code of Conduct **for teachers** upon the acceptance of a student for training
  - Code of conduct **for student** and for **trainee physicians**

# University Based Education in Ancient and Medieval India

- **Takshashila University** Destroyed in 499 AD
  - Worlds oldest university
  - Over 10000 students at a time , 64 disciplines of study
  - Graduates like Chanakya , Panini, Vishnu Sharma, Jivaka, Charaka
- **Nalanda University** Build in 5<sup>th</sup> Cent AD
  - Large library
  - Students from many countries like Korea, Japan, China, Indonesia, Tibet, Persia and Turkey.
- **Vikramashila University** 8<sup>th</sup> Cent AD – 12<sup>th</sup> Cent AD
  - 100 teachers 1000 students
- **Valabhi University** 6<sup>th</sup> Cent in Gujrat
- **Pushpagiri University** 3<sup>rd</sup> Cent AD in Odisa
- **Odantapuri University** 8<sup>th</sup> Cent in Bihar
- **Somapura University** 8<sup>th</sup> Cent AD in Bengal

# Current Ayurveda Education in India

- **Regulation**

- Syllabus , infrastructural and teaching standards
  - by **CCIM** a statutory body established by the act under Govt of India
- Examinations
  - by **respective universities** providing affiliation to the colleges
    - General Universities / Health Universities/ Ayush Universities/ Ayurveda Universities
- Recruitment of human resources
  - by **state / central authorities** under respective ministries

- **Characteristics**

- Uniform teaching and training program through out the country
- Regulated by mandatory norms enacted through various Bills and Acts
- Education disbursement through identified institutions fulfilling the **Minimum Standard Requirements** for graduate and post graduate programs
- Time bound and syllabus based teaching and training
- Compulsory Internship program to give practical learning

# Infrastructure of Ayurvedic Education in India ( as on 1.4.2016)

• UG colleges	279	
– BAMS Seats		15,117
• PG Colleges	112	
– MD/MS Seats		3,029
• Hospitals	2,836	
– Beds		42,755
• Dispensaries	1,527	
• Registered practitioners		4,19,217
• Pharmacy	7,439	
• Paramedical Colleges	??????	
• Paramedic seats		??????

# Current Programs Offered in Ayurveda

- **Conventional Programs**  
Operating through universities/ Organizations)

- **Basic Courses**
  - BAMS
- **Specialty Courses**
  - MD, MS, PhD
- **Intermediary Courses**
  - Certificate Courses- CRAV
  - Membership courses- MRAV
  - Diploma
- **Interdisciplinary Courses**
  - Hospital Management/ Hospital Administration
  - Health Management
  - Public Health
  - Yoga
- **Paramedical Courses**
  - Nursing / Pharmacist / Panchakarma technician/ Masseur

- **Non conventional Programs**  
(Operating through informal sources )

- **Online Courses**
- **Distant learning Programs**
- **Short term training programs**
- **Hands on training workshops**
- **Contact Learning Program**
  
- **Knowledge enhancing programs**
  - Introduction to Ayurveda
  - Diet
  - Healthy living
- **Professional skill improvisation programs**
  - Pancha karma
  - Ksharasutra
- **Vocational programs aiming to provide job opportunities**
  - Pancha karma technician
  - Kshara sutra technician



# Current Education Standards in Ayurveda: All is **Not** Well

- **Quantitative Deficits**
  - Disproportionate distribution of teaching institutions
    - Over **50% colleges** and seats are located in 4 states: **Karnataka Maharashtra, MP and UP** ( **KaMaU** states for Ayurveda )
  - Poor Physician : Population Ratio
    - National average is **31/ one lakh** population ( for Allopathy it is **60/ one lakh**)
    - Highest is about **50/ one lakh** population at Maharashtra and Kerala
    - Many states including the north eastern states have **nil** Ayurvedic physician
- **Qualitative Deficits**
  - **20%** of total registered ayurveda physicians are **Non Institutionally Qualified** (NIQ) with dubious qualifications
  - Institutionally qualified physicians have **large inter institutional quality differences**.
  - Mushrooming of **private institutions** increased the number but diluted the quality
  - Government institutions in states have **not been increased** in past many years
  - Government institution are **no better** in quality
  - Institutions do not show up the '**standard ayurveda care**' in most clinical conditions
  - Young ayurveda graduates are **poorly skilled** in diagnostic and therapeutic techniques and hence do not enter into the private practice
  - **Lack of confidence** in own system brings a desire to take the help of modern medicine in order to ensure the survival

# Growth of Ayurveda Education in Past Two Decades( 1993-2016)

- **Ayurveda growing below** the population growth rate?
  - Hospitals 1.3%
  - Dispensaries 0.6%
  - Registered Practitioners 0.7%
  - Pharmacy 0.2%
- **What in Ayurveda is growing above** the population growth rate ?
  - UG Colleges 4.2%
  - UG seats **5.6%**
  - PG Colleges 5.9%
  - PG seats **9.3%**
  - Beds 2.4%

**Population Growth Rate in India in 2016 was reported to be **1.3%****

1. Mostly in private sector
2. Hospital beds are often non functional

# Specialty Education in Ayurveda

- MD and MS in **22** Subjects
  - About **3500** specialists are produced in a year

**3. Aims and objects.-** The aims of the Post-graduate degree courses shall be to provide orientation of specialties and super-specialties of Ayurveda and to produce experts and specialists who can be competent and efficient teachers, physicians, surgeons, obstetricians and gynecologists (Stri Roga & Prasuti Tantragya), pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

- Orientation of specialty and **super specialty** in Ayurveda
- To produce experts and specialist as competent and efficient **teachers**/ clinicians ( Physicians , Surgeons, Obstetricians)/Researchers/ pharmacy experts and Scholars
- PG Diploma in **16** clinical subjects
  - Aims and Objects- To produce **efficient Ayurveda specialist** in **clinical specialties**

# Where do All the Ayurveda Specialists Go?

- No Ayurveda clinical specialists are traceable at
  - Private practice
  - Ayurveda district hospitals and dispensaries
  - Ayurveda facilities co located at allopathic hospitals/ medical colleges
- Where Do they go?
  - Faculty members in colleges
    - Rapid rise in UG and PG Colleges
    - Possibility of getting engaged in allied disciplines
      - Kaya Chikitsa – Agada tantra/ Nidana/swastha vrutta/ panchakarma
      - Shalya- Shalakya/ Prasuti Stree Roga
  - Medical officers
    - No utilization of particular branch of specialization
  - Research officers at CCRAS
    - No utilization of particular branch of specialization

**Purpose of producing experts remains largely defeated in current job scenario in Ayurveda**

# Faculty Members at Colleges: Are there real clinical experts ?

- Clinical specialists for conditions like Diabetes, Skin diseases, Arthritis , Gastroenterology, Psychiatry, Sexual Disorders , Cancer , Renal diseases are repeatedly enquired by patients at college hospitals
- Unfortunately there are no genuine replies to these enquiries
- For most of such clinical conditions, there are no real experts available at ayurveda teaching hospitals

# Ayurvedic Clinical Practice

- Underutilized Skills of specialists at regular jobs
  - Trained clinical specialists often don't enter into specialty practice and prefer a routine job underutilizing their skills
- Imposter Specialists
  - Private practice being devoid of real specialists becomes a breeding ground of self proclaimed specialists
  - Various branches of practice of medicine have such self proclaimed specialists
    - Diabetes
    - Skin diseases/ Psoriasis
    - Kidney diseases/ Renal Failure
    - Arthritis
    - Cancer
    - Sexual diseases
    - Neurological disorders / epilepsy
    - Gastrointestinal disorders
    - Weight loss and gain therapy
    - Cosmatology

# Questioned Prescription Quality

Contents lists available at ScienceDirect



Journal of Ayurveda and Integrative Medicine

journal homepage: <http://elsevier.com/locate/jaim>



Original Research Article (Clinical)

Looking at prescription quality in Ayurveda: Developing, validating and pilot testing a prescription quality index for Ayurveda

Sanjeev Rastogi

State Ayurvedic College and Hospital, Lucknow 226003, India

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## ABSTRACT

**Background:** Prescription quality can be a direct predictor of the net outcome of a health care delivery effort. Quality of prescription may be considered as a cumulative matrix of multiple components of a prescription on the basis of their relative importance. Prescription quality index is a recognized tool in clinical medicine for multiple purposes including the prediction of health care intervention outcome.

**Objectives:** Considering the importance of prescription quality among every system of medicine, an attempt was made to design a prescription quality index for Ayurveda.

**Materials and methods:** The Prescription Quality Index for Ayurveda was designed through item selection following a thorough literature search and was validated through multiple peer group discussions. Final draft of index containing 38 individual items carrying different scores as per their importance in the prescription was subjected to a pilot test upon 1576 indoor prescriptions generated in 2015 at State Ayurvedic College Hospital, Lucknow.


**Results:** The study revealed large information gaps in the components of the prescription where it was supposed to be noted by the prescribers. These gaps in the Ayurvedic prescriptions were most significant in the areas pertaining to Ayurvedic fundamentals of clinical examination, disease diagnosis and Ayurvedic drug intake methods.

1. Poor prescription quality at teaching institutions
2. No standard format of prescription writing
3. Missing important clinical information form ayurvedic perspectives
4. Not able to be considered as a clinical record document


# Rationality of Prescriptions

1. Irrational prescriptions
2. Overuse of proprietary drugs over the classical drugs
3. Over use of Herbometalic preparations over the herbal alone drugs
4. Over use of pancha karma procedures without due rationality

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Contents lists available at [ScienceDirect](#)



## Journal of Ayurveda and Integrative Medicine

journal homepage: <http://elsevier.com/locate/jaim>

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Original Research Article (Clinical)

### Assessing the Ayurvedic prescribing trends on the basis of WHO drug use indicators

Sanjeev Rastogi  
*State Ayurvedic College and Hospital, Lucknow, India*

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**ABSTRACT**

*Background:* Ayurvedic prescriptions are often challenged for their rationality. Excessive use of proprietary medicines, *rasa* preparations, and *samshodhana* without any justification and deliverable benefits outweighing the other forms of safer, cheaper and less time consuming therapies is putting the Ayurvedic prescribing trends into question. In Ayurvedic practice, prescriptions are often individualized with substantial variability between the choices of drugs. Although being welcomed as an advanced approach of prescription writing by making it tailor made, this method also allows for lapses to creep in thus making it necessary to check common trends of prescribing in Ayurveda and to see whether it raises any caution.

*Objectives:* The objective of this study was to create a check for common trends of prescribing in Ayurveda and to see if such checks raise any caution.

*Materials and methods:* Present study utilizes the WHO drug use indicators as a preliminary tool for analyzing Ayurvedic prescriptions.

*Results:* It was found that with a small modification, this tool can help immensely in screening of Ayurvedic prescriptions.



# Research in Ayurveda: Evolutionary Perspectives

- **Observational Research**
  - Observing the disease causing potential of various etiological factors
  - Observing the healing potential of various natural resources
- **Experimental Research**
  - Surgical explorations on animals and humans
  - Experimentations on different drug routes
    - oral/ rectal/ nasal/ topical
- **Operational Research**
  - Development of procedure protocols/does and donts/ surgical instrumentations/ panchakarma procedures to determine preciseness in delivery
  - Qualitative Research to improve the health care delivery / qualitative aspects of education/ treatment
- **Research in pharmaceuticals**
  - Development of various formulations
  - Development of various drug delivery forms
- **Clinical Research**
  - Clinical Pattern recognition to make a diagnosis
  - Determining the drug doses in various conditions and populations
  - Treatment protocol determination
    - Rasayana duration
    - Panchakarma procedures

# Classical Methods of Acquiring Knowledge in Ayurveda

- प्रत्यक्ष Direct Observation
- अनुमान Inference based upon previous observations
- आप्तोपदेश Universal Facts
- युक्ति Experimentation

# Revolutionary Aspects of Ayurveda Research

- Continuous
- Real life
- Holistic
- Translatable
- Local resource oriented
- This approach of Ayurvedic research of then times was able to produce all time great health care knowledge as is compiled in वृहत्त्रयी and लघुत्रयी

# Ayurvedic Research

Then

**Mind  
the Gap**

**Mind the  
Directions**

And Now

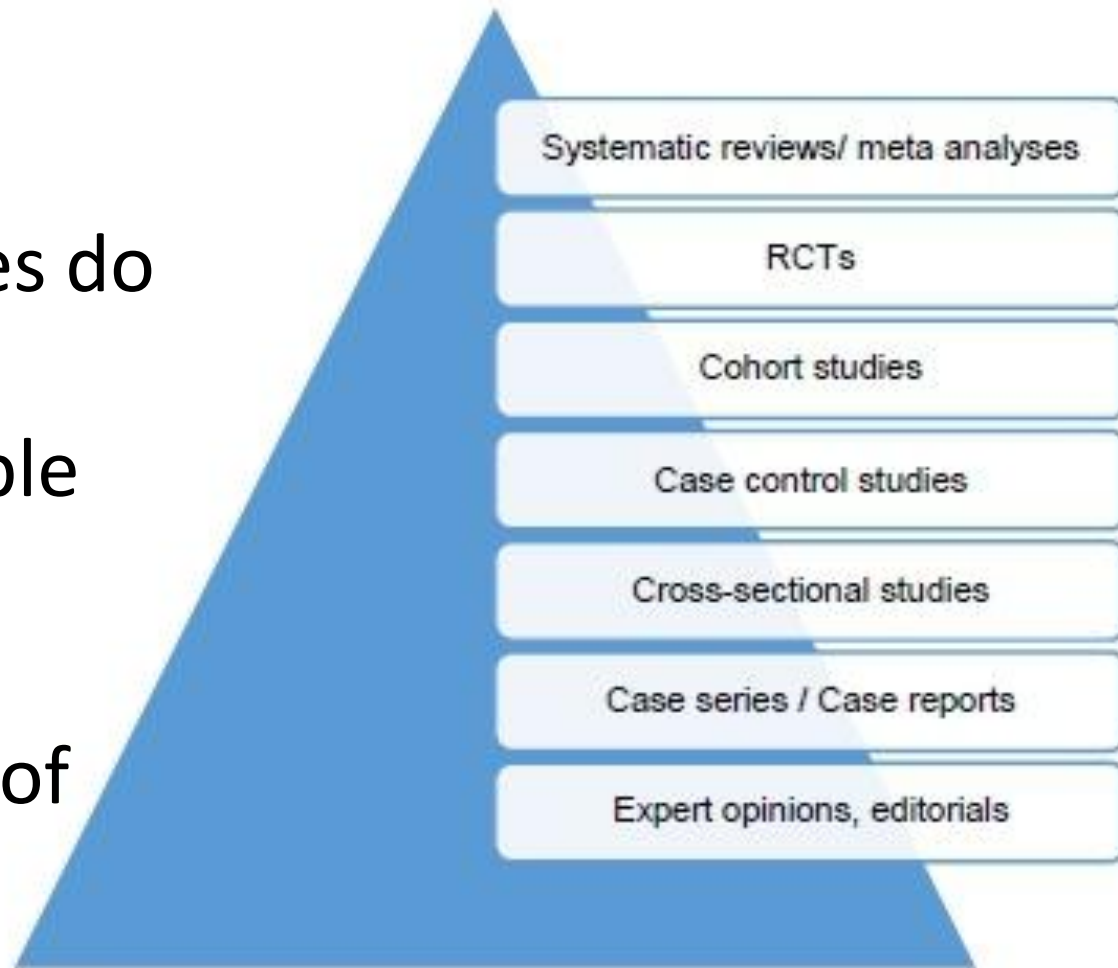


# Contemporary Research in Ayurveda

- Poor in Quality
  - Small sample number, inappropriate randomization, absence of control, poor data analysis
- Poor in Quantity
  - Less number of researchers doing research in Ayurveda
  - Very less number is getting published at quality medical journals comparing to TCM and Yoga
- Inappropriate Focus
  - Clinical trial on old formulations
  - Experimental researches on extracts
  - Minimal researches involving observational studies/ translational studies/ feasibility studies/ cost effectiveness studies/ qualitative studies / fundamental studies/ validation studies
  - Minimal focus on what is needed to understand the fundamentals

# Hierarchy of Evidences

Ayurvedic  
Researches do  
not find a  
comfortable  
place in  
existing  
hierarchy of  
evidences



**Fig. 1 – The hierarchy of evidence (adapted from: Evans, 2003).**

King George Medical University, Lucknow

# Evidences in Ayurveda: Soaring Gaps ?

- Dose and response relationship
- Special population dosing
  - Pediatric
  - Geriatric
  - Pregnancy and lactation
- Doses in the presence of a concomitant illness
- Interactions
  - Herb-herb interaction
  - Herb Food interaction
  - Herb Drug Interaction
- Primary and secondary end points of the interventions
- Deliverables in reference to the time
- Cost effective analysis
- Essential and supportive therapy
- Primary and maintenance therapy

**And the list continues further .....**

# What if the Rigorous Research Based Evidences are absent ?

- Difficult to answer the questions related to the course of the therapy and expected out comes.
- Patient's choice of health care system will remain belief based and not evidence based.
- **Benefits or No benefits** is just the matter of chance

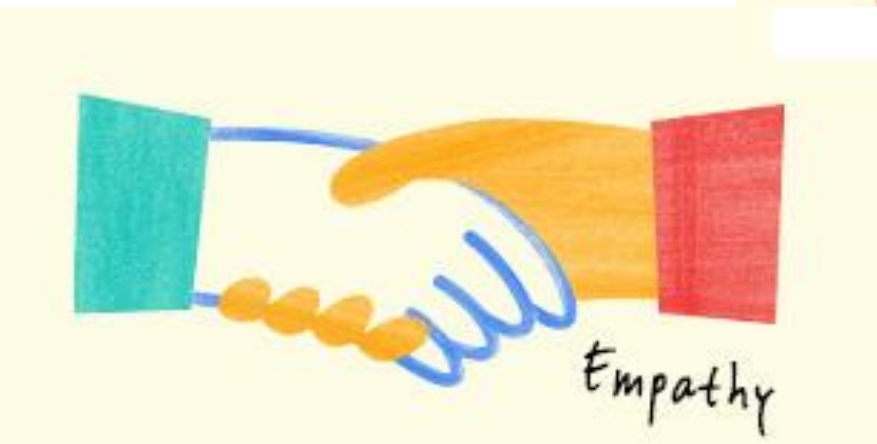




# Immediate Crisis in Ayurveda?

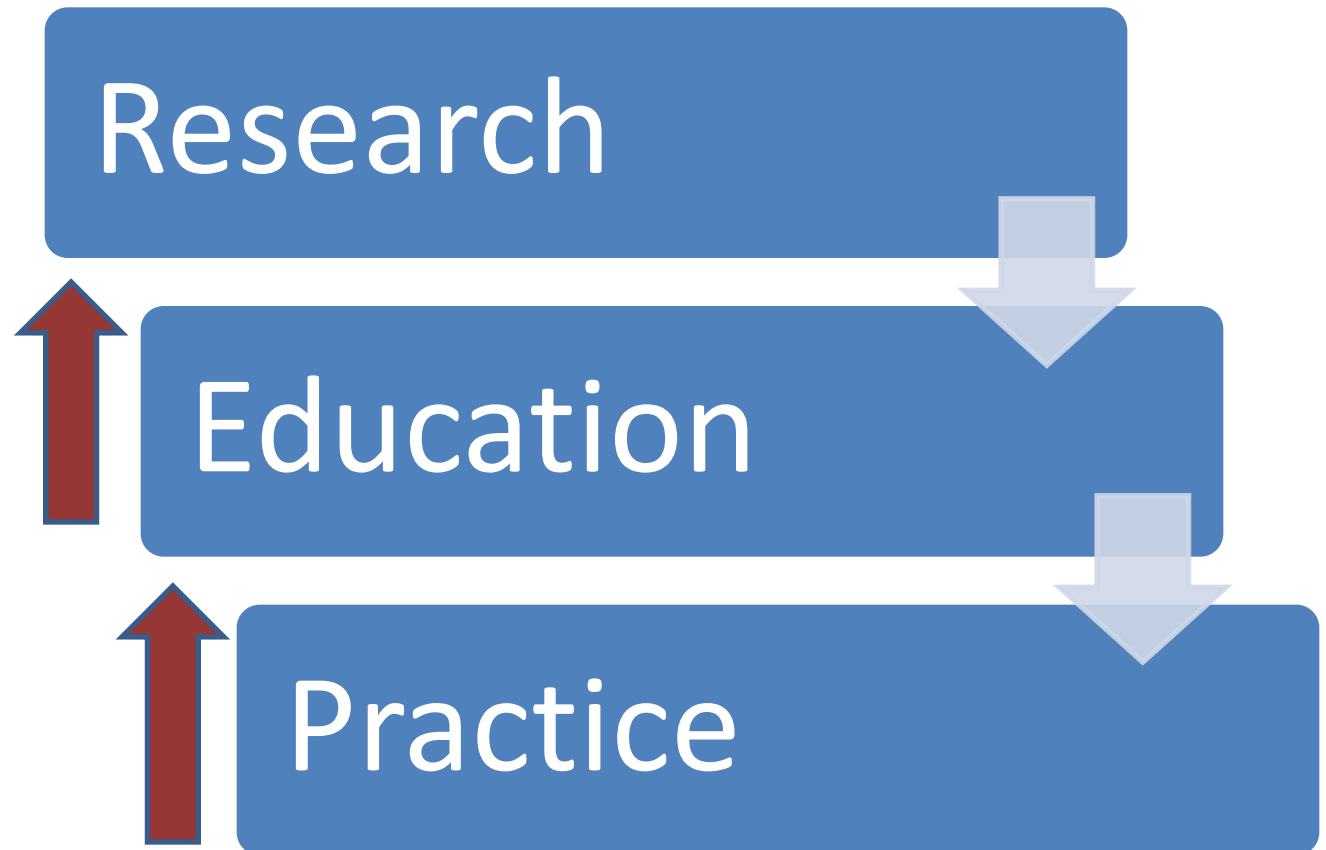
- Lack of Dependability
  - Uncertainty of the results
  - Inability to deliver what is needed
- Inability to address the immediate needs of the people
  - Millions of people in world are ready to give up modern medicine if ayurveda can give them a promise for better life without using modern medicine

# What People Look From a Service Provider : Putting RATER to Ayurveda



# Steps for Generating Dependability

- Percolating principle of knowledge transfer



# Future Trends: Global and Indian

- Increasing demand of Ayurveda in public
- Increasing awareness about principles of healthy living including food and routine
- Increasing willingness of getting away from modern medicine and considering it as a last option
- Increasing tendency to prefer conservative management than surgical management
- Increasing inclination of modern scientists to understand ayurveda better
- Increasing investment on research in Ayurveda

# The World is All Set to Embrace Ayurveda



It is time for Ayurveda to show its  
responsiveness now