

DESCRIPTION OF RESEARCH METHODOLOGY IN AYURVEDA

Hem Raj^{1*}, Balbir Singh² and Manju Saini³

¹Phd Scholar Sri Krishna Ayush University Kurukshetra Haryana/Professor Kayachikitsa,
Mai Bhago Ayurvedic Medical College Muktsar.

²Professor and Head, Department of Kayachikitsa, Sri Krishna Ayush University Kurukshetra
Haryana.

³Associate Professor Govt. Ayurvedic College Patiala Punjab.

Article Received on
20 Feb. 2022,

Revised on 10 March 2022,
Accepted on 30 March 2022

DOI: 10.20959/wjpr20224-23719

Corresponding Author*Dr. Hem Raj**

Phd Scholar Sri Krishna
Ayush University
Kurukshetra
Haryana/Professor
Kayachikitsa, Mai Bhago
Ayurvedic Medical College
Muktsar.

INTRODUCTION

Ayurveda is a science of life with a holistic approach to health. Ayurveda has ability to treat many chronic diseases such as arthritis, chronic sinusitis, cancer, diabetes, irritable bowel syndrome and asthma. Evidence-based research is highly needed for global recognition and acceptance of ayurveda, which needs further advancements in the research methodology. The *vimana sthana* is a unique and detailed section having an explanation contributed by *Charaka on research*. The *vimana sthana* has been positioned between the *nidan sthan* and the *sharir sthan*. The position after the *nidan sthan* is valid as it is the confirmation of the need of the measurement of the *doshadi factors* i.e., *dosh, desh, kaal, bheshaj, sharir, sar, ahar, sattav, satmya prakriti* after the assessment of the diagnosis described in the *nidana sthana*. The *viman sthan* therefore is

the specific section dedicated to the measurement or the knowledge unit. The research is the fact supported with figures that involve the measurement which is the root of discussion in the *vimana Sthana*. In fact, the eighth chapter of the *Vimana Sthana* is the treasure of the Basic Principles of research in *ayurveda*. Thus, the *Vimana Sthana* of the *Charaka Samhita* is the foundation stone or the guiding principle for the research activity.

Ayurvedic treatment is although highly effective; proper mode of action, pharmacology, pharmacokinetics, and pharmacovigilance of many important Ayurvedic drugs are still not fully explored. Moreover, the comprehensive knowledge of the basic ideologies of ayurveda is poorly acceptable scientifically due to lack of evidence. In the modern time, when the

Western medicinal system is reached almost at the top because of validated research and advanced techniques, there is an urgent need to validate basic principles as well as drugs used in the ayurvedic system of medicine with the help of advanced research methodology. Therefore, advancements in the ongoing research methodology are highly required for the promotion of ayurveda.

Research and Research Methodology

Research comprises defining and redefining problems, formulating hypothesis or suggested solutions, collecting, organizing and evaluating data, making deductions and reaching conclusions, and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis.^[1] Research methodology is a way to solve the research problem systematically. It may be understood as a science of studying how research is done scientifically. We study the various steps that are generally adopted by the researchers in studying research problem. Research follows a scientific way of establishing facts. All those methods which are used by the researcher during the course of studying the research problem are termed as research methods. Like any other organized work, research requires proper planning, that systematizes the research work. *Ayurveda* experts have followed certain research methods and methodology. The traditionally established truths need to be validated in scientific manner. Validation of ancient methods of investigation or research will ultimately lead to establishment of ayurveda as a science which will contribute to broad domain of Indian research methodology. The critical scientific approach of ayurveda is evident from various ancient methods.

***Dashavidha Parikshya Bhava* Tenfold of investigation)**

According to Acharya Charaka – An ancient method of research

Dashavidha Parikshya Bhava (tenfold of investigation)^[2]

- | | |
|---------------------|--|
| 1. <i>Karan</i> | Researcher/Physician |
| 2. <i>Kaaran</i> | instrument |
| 3. <i>Karyayoni</i> | Area defined for Research |
| 4. <i>Karya</i> | Aim and objectives |
| 5. <i>Karyaphal</i> | Outcome of Research |
| 6. <i>Anubandh</i> | Long term effects |
| 7. <i>Desh</i> | Habitat |
| 8. <i>Kaal</i> | Time and Stage when Research is being carried out. |

9. *Pravriti* Execution - Entire Research

10. *Upaya* Research plan

Karan (Researcher/Physician)

Acharya Charaka has defined doer, performer of the task or subject (*Karta*) as a *karan*. *Karta* (doer) is an agent who initiates action independently.^[3] *Karta* is considered to be the cause of an action. Physician is given prime importance in treatment among *chtushpada*. Research is an attitude complemented effectively by action. The attitudes conducive to research have two aspects: One is curiosity; the other is courage. The action needed for research also has two aspects: one is acquiring existing knowledge and skills necessary to do the research activities and the other is the determination to follow a plan. One should have the above-mentioned qualities to become a good researcher. According to *charak samhita*, a physician is considered to be endowed with qualities such as examiner, a person knowing logical planning, a person with insightful understanding, endowed with prescribing knowledge and many more.^[4] These are nothing but the qualities of a researcher such as motivation, interest, commitment and critical scientific approach. Qualities of a physician as given in *charak samhita* can be compared with that of a researcher, as both of them are involved in the critical study of their respective subject matter.

Kaaran (instruments/ Research method)

The instrument which helps an agent to perform an action is called as *Karana*. Drugs are considered as *kaaran* or instrument of a physician for the accomplishment of treatment.^[5] For a researcher, instruments can be considered as research methods employed by him during the course of studying his research problem. All those methods which are used by the researcher during the course of studying the research problem are termed as research methods. Scientific research methods call for explanations based on collected facts, measurements and observations and not on reasoning alone. The investigational product or procedures under trial can also be considered as *kaaran*.^[6]

Karyayoni (Area defined for Research/ Source of an action)

Which becomes an action by the process of transformation is called as source of an action.^[7] It can also be said that *Karyayoni* is that which attains the status of action after transformation. Source of an action remains in inseparable relation with action or effect. A cause transforms itself into an effect. This is considered to be the origin of action. *Karyayoni* is a state of imbalance of *Dosha-Dhatu-Mala* or diseased condition of a

patient which is the area of interest for a physician.^[8] In research, source of an action (*Karyayoni*) can be considered as a Research problem or Research question.^[9]

***Kaarya* (Aim and objectives/Action)**

Karya is a state of equilibrium of *dosha-dhatu-mala* (*dhatu-samya*) which is the objective of a Physician.^[10] For a researcher, *Kaarya* can be considered as aims and objectives or purpose of a research study. The purpose of research is to discover answers to questions through the application of scientific procedures.^[11] The main aim of research is to find the truth which is hidden and which has not been discovered yet. Operational phase of research which consists of construction of tools of data collection, processing of data and analysis of data and interpretation of results can also be considered as a *kaarya*.^[12]

***Kaaryaphal* (Outcome of research)**

Karyaphala or object for which the action is initiated.^[13] For a physician, outcome is an attainment of happiness, i.e., the state of freedom from disease. For a researcher, outcome can be considered as endpoints or outcomes of the research study.^[14] The variable capable of providing the most clinically relevant and convincing evidence related to the primary objective of the trial is called as an endpoint of the study. There are two types of endpoints: direct and surrogate. Direct endpoint is directly related to the primary objective of the trial and crucial to specify its precise definition and rationale for selection. A surrogate endpoint of a clinical trial is a laboratory measurement or a physiological sign used as a substitute for a clinically meaningful endpoint that measures directly how a patient feels, functions, or survives. Both these endpoints can be compared with *Karyaphala* (outcome), which the researcher tries to achieve through various operations.^[15]

***Anubandh* (Long term effects /Subsequent manifestation)**

After effect good or bad is Anubandha. Longevity is subsequent manifestation in treatment.^[16] Long-term effects of research study can be considered as subsequent manifestation in case of research study.^[17] Teleological ethics can also be thought of in this context. Teleological ethics is a theory of morality that derives duty or moral obligation from what is good or desirable as an end to be achieved. Thalidomide tragedy is a realistic example of teleological ethics. Impacts of research on society can also be considered in subsequent manifestation.

***Desh* (location or habitat)**

Desh represents the site favourable or unfavourable to an action.^[18] Both the land and the patient constitute *Desh* in case of a physician. Selection of study site plays an important role in any research study.^[19] Geographical distribution is considered for selection of samples as well as interpretation of results. Ecological studies can be considered under *Desh* factor, which are meant to explore the statistical connection between disease in different population groups and estimated exposures in groups rather than individuals. The geographic information is a very useful tool that improves the ability of ecological studies to be able to determine a link between health data and a source of environmental exposure.^[20]

***Kaal* (Time and Stage)**

Time and Stage when Research is being carried out. *Kaal* is nothing but a process of transformation into seasons etc.^[21] Time period is also an important aspect for a research study. Inference of the cause from the effect relates to the past. This can be correlated with the case-control study design (i.e., retrospective study). Inference of the effect from the cause relates to the future. This can be correlated with prospective study design. The commonly observed events at present can be correlated with cross-sectional study design. Time also relates to season in which study is to be conducted. Epidemiological studies (pertaining to time) also require time factor to be taken into consideration.

***Pravriti* (Execution - Entire Research/ initiation of action)**

Pravritti (initiation of action) represents the initiation of action as a means to accomplishment of an objectives and this is beginning of action.^[22] *Pravritti* is the effort taken for the accomplishment of objective. In the context of treatment, *pravritti* is the initiation of therapeutic action. For a researcher, motivation in research can be considered as a *pravritti*.^[23]

***Upaya* (means of action/ Research plan)**

Upaya (means of action) stands for bringing about excellence in the agent, the instrument, and the origin of action and their proper setting. The excellence of the physician and the correctness of the therapy constitute *upaya* (means of action).^[24] Excellence of researcher, suitable research methods, proper selection and definition of research problem, and formulation of hypothesis helpful for smooth operation of plan of work can be considered as *upaya* (means of action). *Dashavidha parikshya bhava* can be correlated with one of the major steps involved in research, i.e., planning. Proper planning before performance of any task is always praised by the authoritative persons.

Description of *Dashavidha Parikshya Bhava*

It is required to show the applicability of ancient methods of research in the present era in various fields of research confined to Ayurveda such as fundamental, literary, clinical and drug research. The traditionally established truths need to be validated in scientific manner. Validation of ancient methods of investigation or research will ultimately lead to establishment of *ayurveda* as a science which contributes to broad domain of Indian research methodology.

ROLE OF *PRAMANA* AS A RESEARCH TOOL

Research can be considered as a journey from an idea that is formulating a research problem to a valid conclusion. In *ayurveda praman* can be considered as a scientific tool of research. These *pramanas* are not only useful in *rog* and *rogi pariksha* but also it is useful to understand the principles of *ayurveda* thoroughly. *Charak* has advised to adopt these *pramanas* as a tool to get clear and entire knowledge of *ayurveda*. *Praman* can be considered as one of the ancient methods of research in developing the research methodology in *ayurveda*.^[25] According to Charaka the things of universe such as *sat* (existence) or *asat* (non-existence) can be investigated by these *trividh pramanas* and the same are helpful in *swasthaya rakshanam*, *rog pariksha*, *rogi pariksha*, *dravya pariksha* and *chikitsa*. Real knowledge or actual happening is known as *prama* or the truth, whereas the means by which the truth is checked is known as *pramana*. In other words, it can be said that *praman* is the means that detect the difference between truth and lie, actual and virtual. *Charak* considers *pramana* as means of *pariksha karam* and those are important in diagnosis, prognosis and treatment namely *pratyaksh*, *anuman*, *Aaptopadesh*.^[26]

1. *Aaptopadesh Pramana*
2. *Pratyaksh Pramana*
3. *Anuman Pramana*

These *Pramanas* are very much useful at all steps of research such as

1. Planning of research work,
2. Executing the plan of research and
3. Finding the conclusion

Aaptopadesh

Term *Aaptopadesh* is generally confined only with the individual or personality. Aapta is not merely an individual but also it includes written documents like vedas, samhitas, different manuscripts etc.^[27] Nowadays various research journal, different scientific website can be taken or considered as *aapta*. Before any research or proposed study, we follow the steps i.e., a review of the literature which can be correlated with *aaptopadesh*. It helps to get fundamental understanding about any research problem and on the basis of previous research work done, one can plan further on next study as for the scope of research. *Aapta vachana* is universal truth. In short *aapta* means precisely speaker and the things which are said by these *aaptas* are considered as *aaptopadesh*. The knowledge given by *aapta* is considered as *praman*.

Qualities of Aapta

1. Those who were free from *raj and tam*.
2. They have knowledge of all the three *kalas* past, present and future.
3. They have un-doubtful knowledge.

A researcher who wants to research on one topic get idea about that topic with the help of previous researches. Hence the work which was previously proved scientifically will become Aapta for that new research study. Researcher should acquire the existing knowledge and training in physical and mental skills which is necessary to do the activities implied in research. The existing knowledge of science can be acquired through Aaptopadesh.^[28]

Importance of Aaptopadesh Pramana

Aaptopadesh is helpful in *Rog Pariksha and chikitsa*. Thus, *Aaptopadesh* is considered as reliable source of existing knowledge, which suggest new ideas for Research and also it helps in the development of research methodology.

Pratyaksh Pramana

The knowledge which is perceived by the sense organs and mind is called as *pratyaksh* and the medium of it is called as *pratyaksh pramana*.^[29] Charak in *vimana sthan* said that the proper knowledge of the disease can be gained through three *pramanas*; *aaptopadesh pramana*, *pratyaksh pramana* and *anuman pramana*. Out of these, by using *pratyaksh pramana* except *rasa*, other senses i.e., *shabd*, *sparsh*, *roop* and *gandh* can be perceived directly.^[30] Thus, *pratyaksh pramana* helps in *rogi* and *rog pariksha*. To make any research,

one should collect the data first, then after that analysis and final conclusion will be drawn. So, for the collection of data for any research, there are two main approaches:

1. information which is required is already exist or available and only we have to extract it.
2. New and fresh information we have to collect
3. Also, as we know that, the types of data according to sources are primary and secondary data. Among these, the data which is collected from primary sources are known as primary data. this can be achieved by observation and through questionnaire or by the direct interview method.
4. These methods of Collection of data more or less depend upon *pratyaksh pramana*. Out of other methods of observation like experiments, survey and records, the experiment and up to some extent of survey method depends upon this *pratyaksh pramana*. *Pratyaksh pramana* is depending upon five senses organs and mind and this type of knowledge gained directly. But it has some limitations which were mentioned in our *samhitas* as *pratyaksh badhak bhav*.^[31]

Importance of Pratyaksh Pramana

in this way *pratyaksh* helps in *rogi pariksha* and *rog pariksha*. For *darshan*, *sparshan* and *prashan pariksha*- it is the base for the diagnosis and prognosis of a disease. To check the improvement in a patient *pratyaksh* is compulsory. *Ashatwidha pariksha*, *dasvidh pariksha*, *sthanik pariksha* need mostly the support of *pratyaksh*. It gives reliable information about physical and mental changes in patient.

Anuman Praman

Anuman is indirect knowledge which is based on reasoning or inference and the inference is based on prior perception.^[32] On the basis of direct perception, inference of three *kalas* i.e., past, present and future will be drawn. *Anuman praman* is very essential in *rog* and *rogi pariksha*. It also helps to establish the cause effect relationship according to ayurveda. As we know in direct perception there are many obstacles i.e., *pratyaksh badhak bhav* and indirect knowledge cannot be gained by *pratyaksh praman*, hence to overcome this the *anuman praman* helps. it helps in getting knowledge and plays an important role in interpretation of results.^[33] This interpretation of results is done by drawing the interference from collected data after doing its analysis or experiments.

Anuman praman is of two types:

1. *Swarthanuman*: it is for one's own self, the effort was made to get knowledge for that person himself.
2. *Prarthanuman*: it is used to provide knowledge to others. after getting knowledge by own it should be demonstrated to others and for that purpose five component of reasoning are stated. so, with help of these Panchvayavay Vakya (5 component of reasoning) the inference is drawn is known as *prarthanuman*.

Panch Vakya

Ancient Ayurvedic scholar adopted *Panch Vakya* as method of research.^[34]

1. *Pratigya*
2. *Hetu*
3. *Udaharan*
4. *Upnayan*
5. *Nigman*

1. *Pratigya*: *Pratigya* is a statement of what is to be proved. it can also be defined as an assertion about the object to be proved. first step of our research is to find out problem and then define it in a proper way. *Pratigya* can also be called as proposition of hypothesis. After the statement of hypothesis next step is to establishment of the fact that is *sthapna*. The confirmation of the hypothesis is done on the basis of *hetu*, *udharan*, *upnayan* and *nigman*.

2. *Hetu* is defined as the cause of the knowledge or observation of object. *Hetu* can be considered as aims and objectives based on need for taking research activity which is based on valid knowledge that is *pramana*.

3. *Udaharana* or *drishtant* is what arouses same understanding in both fool and learned persons. *Drishtant* can also be called as universal truth, established work, active instance or example. it supports the validity of the statement.

4. *Upanaya* is relation between the two things i.e., correlation. it can also be called as comparative study on facts and figures to prove the hypothesis. it helps to illustrate the problem and give logical sequences to previous steps.

5. *Nigman* is conclusion which is drawn through logical sequence, example and correlation. *nigman* validates the *pratigya* or hypothesis.

All these Steps from *pratigya* (statement of the problem), *hetu* (tools of Collection of data and means and methods of Investigation), *drishtant* (Collection of data example and instance) *upanaya* (assessment of observed data) and *nigaman* (conclusion by interpretation of the data)

and the results obtained) leads to establishment of theory. So *panchavyaya vakya* along with other *vaad marg* is methodology adopted by ancient *aacharya* for establishment of facts.

SYSTEMATISED ANALYSIS OF VADAMARGPADAS /SCOPE AND UTILIZATION FOR RESEARCH

Vaad Marga

Acharya Charaka divides methods of gaining knowledge in to three categories as

1. *Adhyayana* – Method of study
2. *Adhyapana* – Method of teaching
3. *Tadvidya Sambhasha* – (Seminars / Symposium/ Debate)

for these 44 terms are narrated with the word of *vada marga*. *Vada* aims to establish new creative ideas/ research work. *Vada marga* lays a border for discussion.^[35] It makes discussion essentially end with conclusion. In *charaka samhita* the concepts are established on the basis of the *vada's* in several places. Organizing the knowledge gained and power of expression will be achieved with the use of *vada marga padas* in debates and it is the essential component for the demonstration and presentment of research. *Vada* (debate) is that in which one holds academic discussion with an opponent. This is briefly of 2 types *jalpa* and *vitanda*. *Jalpa* of speaker's own view as well as the opponent's view. During debate, they advance arguments in support of their own views and expose the opponents' view, this is *jalpa*. *Vitanda* is opposite to *jalpa* one holds the view that rebirth is there while the other holds the view just against it. *Vitanda* is opposite to which the speaker without having any positive approach only finds faults in the opponents view point.

CONCLUSION

Today, the cost of health care is constantly rising, and affecting people's ability to afford health coverage. Ayurveda has evolved as a holistic system having an understanding of physiology enabling it to maintain and restore health with a few side effects and will focus rather on health. The critical scientific approach of *ayurveda* is evident from various ancient methods such as:

1. *Dashavidha parikshya bhava* (Tenfold of investigation)
2. *Praman*
3. *Vada marg* (logical terms useful in discussion)

Classical literature of *ayurveda* has encapsulated wisdom of protocols for documentations and research in *ayurveda*. Ayurveda requires more researches in the areas of fundamental

principles and diagnostic tools in place of drug research. In the present scenario, the research methodology of ayurveda needs further advancements in the development and promotion of Ayurveda.

BIBLIOGRAPHY

1. Kothari CR. *Research Methodology Methods & Techniques*. 2nd Revised ed. New Delhi: New Age International Publishers; 2009. p. 2.
2. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana*. Ch. 8, Ver. 68. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 272.
3. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana*. Ch. 8, Ver. 69. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 272.
4. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana*. Ch. 8, Ver. 86. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 274.
5. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana*. Ch. 8, Ver. 70. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 272.
6. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana*. Ch. 8, Ver. 84. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 274.
7. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana*. Ch. 8, Ver. 71. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 273.
8. . Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana*. Ch. 8, Ver. 88. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 275.
9. Kothari CR. *Research Methodology Methods & Techniques*. 2nd Revised ed. New Delhi: New Age International Publishers; 2009. p. 24.
10. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana*. Ch. 8. Ver. 72. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 272.
11. Acharya YT, editor. *Charaka Samhita of Agnivesha Vimana Sthana*. Ch. 8, Ver. 89. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 275.
12. Kothari CR. *Research Methodology Methods & Techniques*. 2nd Revised ed. New Delhi: New Age International Publishers; 2009. p. 4.
13. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana*. Ch. 8, Ver. 73. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 273.
14. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana*. Ch. 8, Ver. 90. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 276.

15. <https://www.fda.gov/downloads/Training/ClinicalInvestigatorTrainingCourse/UCM337268.pdf>.
16. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana. Ch. 8, Ver. 74. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 273.*
17. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana. Ch. 8, Ver. 91. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 276.*
18. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana. Ch. 8, Ver. 75. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 273.*
19. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana. Ch. 8, Ver. 92. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 276.*
20. Wiecek WF, Delmerico AM. *WIREs Computational Statistics. Vol. 2., Ch. 1. Wiley Online Publications; 2009. [Last accessed on 2018 Feb 21]. Geographic Information Systems; pp. 167.*
21. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana. Ch. 8, Ver. 76. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 273.*
22. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana. Ch. 8, Ver. 125. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 28.*
23. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana. Ch. 8, Ver. 77. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 273.*
24. Acharya YT, editor. *Charaka Samhita of Agnivesha, Vimana Sthana. Ch. 8, Ver. 78. Reprint edition. Varanasi: Choukhambha Surbharati Prakashan; 2005. p. 273.*
25. *Nyayadarshana by Gautamacharya with commentary by Vatsyayana, edited by Nyayacharya Shri Padmaprasada Shastri, Choukhambha Sanskrit Bhavan, 6th edition 2006, page no. 24.*
26. *Charaka Samhita of Agnivesha elaborated by Charaka & Drudhabala with Ayurveda Dipika Commentary by chakrapanidatta, edited by Vaidya Jadavaji Trikamji Acharya, Sutra sthana chapter 11, verse no.17, page no.70, Choukhambha Surbharati Prakashan Varanasi Reprinted 2005.*
27. *Charaka Samhita of Agnivesha elaborated by Charaka & Drudhabala with Ayurveda Dipika Commentary by chakrapanidatta, edited by Vaidya Jadavaji Trikamji Acharya, Sutra sthana chapter 11, verse no.18-19, page no.70 Choukhambha Surbharati Prakashan Varanasi Reprinted 2005.*
28. *Sushruta Samhita of Sushruta with Nibandhasangraha Commentary of Shri Dakhanacharya & Nyayachandrika Panjika of Shri Gayadasacharya edited by Vaidya*

- Jadavaji Trikamji Acharya & Narayana Ram Acharya, Sutra sthana chapter 41, verse no.19-20, page no.180- 181, Choukhambha Krishanadas Academy Varanasi Reprinted 2004.*
29. *Charaka Samhita of Agnivesha elaborated by Charaka & Drudhabala with Ayurveda Dipika Commentary by chakrapanidatta, edited by Vaidya Jadavaji Trikamji Acharya, Sutra sthana chapter 11, verse no. 20, page no.71, Choukhambha Surbharati Prakashan Varanasi Reprinted 2005.*
30. *Charaka Samhita of Agnivesha elaborated by Charaka & Drudhabala with Ayurveda Dipika Commentary by chakrapanidatta, edited by Vaidya Jadavaji Trikamji Acharya, Vimana sthana chapter 4, verse no.4, page no.247 Choukhambha Surbharati Prakashan Varanasi Reprinted 2005.*
31. *Charaka Samhita of Agnivesha elaborated by Charaka & Drudhabala with Ayurveda Dipika Commentary by chakrapanidatta, edited by Vaidya Jadavaji Trikamji Acharya, Sutra sthana chapter 11, verse no.8, page no.69, Choukhambha Surbharati Prakashan Varanasi Reprinted 2005.*
32. *Sushruta Samhita of Sushruta with Nibandhasangraha Commentary of Shri Dakhanacharya & Nyayachandrika Panjika of Shri Gayadasacharya edited by Vaidya Jadavaji Trikamji Acharya & Narayana Ram Acharya, Sharir sthana chapter 1, verse no.16, page no.4, Choukhambha Krishanadas Academy Varanasi Reprinted 2004.*
33. *Charaka Samhita of Agnivesha elaborated by Charaka & Drudhabala with Vd. Vinay A. Pawarp: Ramana Vidnyana - An Ancient Method Of Research W. S. R. T. Charaka Samhita 477 www.iamj.in IAMJ: Volume 2; Issue 4; July- August- 2014 Ayurveda Dipika Commentary by chakrapanidatta, edited by Vaidya Jadavaji Trikamji Acharya, Sutra sthana chapter 11, verse no.21-22, page no.71, Choukhambha Surbharati Prakashan Varanasi Reprinted 2005.*
34. *Shastri G. Charak samhita with vidhyotani hindi commentary. Reprint ed. Varanasi: chaukhamba Bharti Academy.*
35. *Mahamahopadhyaya Satish Chandra Vidyabhusana, verse 1/2/1, Nyaya Sutra of Gautam, Panini office, Bhadurganj, Allahabad, Bhuvaneswari Ashrama, 1913, Vol 8, p. 14 8. Harishchandra Singh Kushwaha, Vimana Sthana chapter 8.*