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Prevention & Management of Viral Fevers and Respiratory Tract Infections – An Ayurvedic Approach

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ABSTRACT

Fever is the most common manifestation of infection and refers to a core temperature of greater than 100.4°F (38.0°C), which occurs due to an increase in hypothalamic ‘set point’ for temperature. Respiratory tract infection refers to any kind of infection especially bacterial or viral involving the respiratory tract. There is no direct explanation regarding virus, viral fever, and associated respiratory tract infections in *Ayurvedic classics*. The basic concepts of which were taken from *Jwara* (fever) and *Kasa* (cough) *Prakarana* (chapter). Viral fever can be considered as *Abhishanga Jwara*, a type of *Agantu* (caused by external factors) *Jwara* which is caused by *Bhutadi* (microorganisms) and is *Sannipathika* (vitiation of three *Dosha*) in nature. Respiratory tract infections are due to exposure to *Agantu* factors like *Rajas* (dust), *Dhooma* (fumes), and they are mostly *Kapha Vata Pradhana Sannipathika* in nature. This review is an attempt to understand viral fever and viral infections of respiratory tract through *Ayurvedic* principles and thereby utilizing the preventive and curative principles mentioned in *Dinacharya* (daily regimen), *Ritucharya* (seasonal regimen), *Jwara*, *Kasa* and *Swasa* (breathing disorders) for the preventive and management aspects of the emerging deadly viral infections.

Key Words *Viral Fever, Respiratory tract infection, Abhishanga Jwara, Kapha Vata Pradhana Sannipatha*

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INTRODUCTION

Fever is the commonest symptom found in many infectious conditions. One of the most important causes for the development of fevers is viral

infections (viral fever) and it produces symptoms of respiratory tract infections also¹. There is no direct explanation regarding virus, viral fever, and associated respiratory tract infections in



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Ayurvedic classics. But various symptomatologies of viral fevers and respiratory tract infections come under the context of *Jwara* (fever) and *Kasa* (cough) *Roga* (disease) *Adhyaya* (chapters) and *Swasa* (dyspnoea) as symptom.

The present review is a humble attempt to understand the concept of viral fevers and respiratory infections in *Ayurvedic* view for providing correct and better advice as prevention and management to the community.

Fever

Fever refers to a core temperature of greater than 100.4°F (38.0°C), i.e., just above the upper limit of a normal human temperature, irrespective of the cause. Pyrogens are substances causing fever that may be exogenous or endogenous. Exogenous pyrogens are molecules that interact with host cells to induce the secretion of pyrogenic cytokines. Endogenous pyrogens are cytokines in which most important ones are IL-1 (Interleukin-1), IL-2 and TNF α , the synthesis and release of which are induced by a wide spectrum of exogenous pyrogens most of which are bacterial, fungal or viral origin. Hence one of the important causes for the development of fevers is viral infections¹.

Jwara

Jwara (fever) is considered as the chief among the diseases² and it affects the body as well as the mind simultaneously³. *Jwara* develops as an independent disease and also as a symptom in almost all diseases. *Jwara* as an independent disease occurs either due to an endogenous cause

or exogenous cause. As an endogenous cause, vitiation of anyone/ two/ together of the fundamental bodily substance i.e., *Tridosha* (*Vata*, *Pitta* and *Kapha*). As exogenous cause, *Jwara* occurs directly and thereby produces the *Dosha* vitiation⁴.

Etiology of Jwara:

The main etiological factors of *Jwara* said by *Acharya* *Susrutha*⁵ are wrong use and excess use of unctuous therapy. Various types of traumas, exertion, suppuration, wasting, indigestion, poison, contrariness of suitability and seasons, grief, *Abhichara* (magical spell), *Abhisapa* (curses), *Mana* (emotions), *Bhuta* (invasion of evil spirits/microbes) etc.

Types/classification of Jwara:

Jwara is of 8 types *Ekadoshaja*, ie *Vata*, *Pitta* and *Kapha* (by the vitiation of one *Dosha*), *Dwidoshaja*, ie. *Vatapitta*, *Vatakapha* and *Pittakapha* (by the vitiation of two *Dosha*), *Sannipataja* (by the vitiation of three *Dosha*) and *Aganthu Jwara* (fever due to exogenous factors)³. *Agantuja Jwara* is of 4 types- *Abhigata* (by external injuries), *Abhishanga* (by contact with the source of infection), *Abhichara* (by sinful act) and *Abhisapa* (result of anger of God etc.). There are 7 *Dhatugata Jwara* (fever located in body tissues) explained by *Acharya* *Caraka*. They are *Rasadhatugata Jwara* (fever located in *Rasadhatu*), *Raktadhatugata Jwara* (fever located in *Raktadhatu*), *Mamsadhatugata Jwara* (fever located in *Mamsadhatu*), *Medodhatugata Jwara* (fever located in *Medodhatu*), *Asthidhatugata Jwara* (fever located in

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Asthidhatu), *Majjadhatugata Jwara* (fever located in *Majjadhatu*), *Sukradhatugata Jwara* (fever located in *Sukradhatu*)⁶.

Similarly, fever can be also divided as *Sharira* (physical) and *Manasa* (mental), *Saumya* (predominated by cold) and *Agneya* (predominated by heat), *Antarvega* (internal) and *Bahirvega* (external), *Prakruta* (according to seasons) and *Vaikruta* (unseasonal), *Sadhya* (curable) and *Asadhya* (incurable)⁷.

According to the nature, there is another type of fever namely *Vishamajwara* (fevers that show periodicity) which is subdivided as *Santata* (continuous fever), *Satata* (double quotidian), *Anyedhyu* (quotidian), *Triteeyaka* (tertian) and *Chaturthaka* (quartan)⁷.

Pathogenesis of *Nija Jwara* in general:

The above said etiology causes the vitiation of *Dosha* in *Amasaya* (stomach). The digestive fire will be diminished and displaced causes *Agnimandya* (loss of appetite) leads to the formation of *Ama* (undigested form of food). This undigested food gets absorbed by the first *Dhatu* (tissue element) i.e., *Rasadhatu* (plasma) which without proper assimilation produces *Rasavaha Srotodushti* (contamination in channels) and vitiated *Kapha Dosha*. It also circulated in the body through *Rasavahasrotas*, leading to obstruction and lack of perspiration by obstructing the *Swedavahasrotas* present in hair follicles. *Dhatvagni* (fire residing inside the *Dhatu*) which is circulating the body with increased *Ushnaguna* (hot property) produces a rise in temperature. As a result of undigested

food and vitiated phlegm, blockage of channels occurs and it causes the impairment of normal movement of *Vata Dosha*. It leads to aggravation of *Vata* and produces *Sarvanga Grahana* (pain all over the body). So, on and finally manifest as fever⁷.

Fever which is *Agama Apagama* in nature (temperature is on and off in nature), back pain, pain of break bone, and catching pain over chest region, difficulty in chewing due to pain over tempero-mandibular joint, headache, loss of taste, difficulty in voiding of feces, urine etc., dry skin, loss of concentration, indigestion, shivering, giddiness, irrelevant talk etc. are the important symptom in *Vatapradhana Jwara* (fever due to vitiation of *Vatadosha*).

Fever, irrelevant talk, inflammation in nose and oral cavity, giddiness, diarrhoea, acid regurgitation, spitting of blood, red rashes over the body, excessive sweating, excessive thirst etc. are the important symptoms of *Pittaja Jwara* (fever due to vitiation of *Pittadosha*).

Fever which is *Alpavegi* in nature (mild fever), anorexia, watering of mouth, coating over chest, dyspnoea, cough, and rhinitis like respiratory symptoms, vomiting, lassitude etc. are the important symptoms in *Kaphaja Jwara* (fever due to vitiation of *Kaphadosha*).

In *Vatapitta Jwara* the symptoms are headache, giddiness, vomiting, burning sensation, dryness of throat and mouth, joint pain, excessive thirst etc.



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In *Kaphavata Jwara* the main symptoms are mild fever, *Aruchi* (loss of taste), joint pain and headache, rhinitis, cough and lassitude etc.

In *Kaphapitta Jwara* the important symptoms are uncertainty in temperature, cough, coating of mouth etc.

In *Sannipata Jwara*, symptoms of all three *Doshaja Jwara* are seen. The important symptoms are fever, pain in head joints and bone, giddiness, ear ache, sensation as if the throat and mouth filled with bristles, a feeling of congestion in the throat, *Siraso Atiruk* (severe headache), discomfort over chest region, debility etc.⁷.

Pathogenesis of *Agantu Jwara* in general:

In *Abhigataja Jwara* (fever due to external injuries), the main causative factors are- injury caused by weapons, stone, hunter, wood, fist, sole of palm, teeth etc. It causes *Abhigataja Jwara* in body without producing much *Doshakopa*. As a result of injury, vitiation of *Vatadosha* and *Rakta* occur simultaneously. Due to *Rakta* vitiation, related *Pittadosha* also undergoes vitiation. So, symptoms like pain – due to *Vatakopa*, swelling due to *Vataraktakopa*, discoloration due to *Vatapittakopa*.

Abhishanga Jwara is caused by affliction of passion, grief, fear, anger, *Graha* (exogenous factors), poison and medicines. In these, exogenous factors or microbes poison and medicines cause *Abhishanga Jwara* which is *Sannipatika* in nature.

By *Abhicara* (evil tantric rituals) and *Abhisapa* of *Siddhas* (saints who have attained spiritual perfection), serious types of fever occur

which is *Sannipatha* in nature. These are called *Abhicharaja* and *Abhisapaja Jwara* respectively⁸.

Pathogenesis of *Dhatugata Jwara* in general:

Etiology of vitiation of channels can also be taken as etiology of *Dhatudushti* in *Dhatugata Jwara* along with general etiology of fever. These etiologies lead to different *Dhatudushti* based on the affected channels and vitiation of any of the *Dosha* occurs in any of the respective *Dhatu*. It causes adhering of *Dosha* leads to *Dhatwagni Dushti* and produce *Dhatugata Ama*. This causes suppuration of *Dhatu*s which leads to destruction of various *Dhatu*. This suppuration occurs due to the presence of vitiated *Pittadosha* and *Vatadosha*. This Vitiated *Pittadosha* causes respective *Dhatugata Jwara* (fever residing in *Dhatu*).

General signs and symptoms of *Jwara*:

According to *Caraka Samhita*, increased body temperature, anorexia, burning sensation, muscle pain, and discomfort in chest region are considered the *Prabhava Lakshana* (invariable manifestations) of fever⁸.

According to *Susruta Samhita*, loss of perspiration, pain all over the body, and increased body temperature are the signs and symptoms of fever⁵.

General etiology of *Kasa*:

In the etiology of *Kasa* (cough) it has been mentioned that excessive exposure to smoke, dust, over exercise, wrong entry of food in to other passages like respiratory orifices and suppressing the urge of sneezing⁹, the
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administration of food having the properties like dry, cold, pungent, sour taste, sweet, heavy, *Abhishyandi* (ingredients which cause obstruction to the channels of circulation)¹⁰ etc. are the causes which provoke the *Dosha* thereby cause the disease *Kasa*. *Kasa* also occurs as a *Nidanarthakararoga* (disease caused due to another disease) of *Pratisyaya* (rhinitis)¹¹.

Pathogenesis of *Kasa* in general:

The above said etiology produces vitiation of *Pranavata* (the air which is circulating in the respiratory tract) which in turn causes vitiation of *Pranavahasrotas* (the channels associated with the respiratory system). This vitiated *Pranavata* along with the *Prathilomagati* (opposite movement) of vitiated *Udanavata* (the air which is located in chest region) causes the development of *Kasaroga*¹⁰.

In another way the factors like sweet, *Abhishyandi* and heavy food provokes *Kaphadosha* and causes obstruction of free flow of *Udanavata* and *Pranavata* in the chest region and throat. This *Vata* afflicts and fills up all the channels (cavities) of the head and causes bending and flexing of the body, jaws, sides of the neck and eyes gives rise to *Kasa* (coughing) and later it may lead to *Swasa* (dyspnea). Depending upon the vitiation of *Dosha* it may be dry or with phlegm. Specific varieties in the pain and sound associated with different types of *Kasa* are caused by the specific nature of obstruction to the forcefully moving *Vata*¹².

Prodromal symptoms of *Kasa*:

Sensation as if the throat and mouth filled with bristles, a feeling of congestion in the throat, itching sensation in throat, obstruction to the movement of food in the gullet and anorexia¹².

Types/classification of *Kasa*¹²:

According to *Ayurveda*, *Kasa* (cough) are five types – *Vatika Kasa* (due to the predominance of *Vatadosha*), *Pittaja Kasa* (due to the predominance of *Pittadosha*), *Kaphaja Kasa* (due to the predominance of *Kaphadosha*), *Kshataja Kasa* (due to the injury to the chest) and *Kshayaja Kasa* (due to the emaciation of the body).

Viral fever

Viral fevers can range in temperature from 99°F to over 103°F (39°C), depending on the underlying virus. Fluctuations of body temperature from low to high or vice-versa. Shivering and cold, burning sensation in eyes, sore throat, muscle aches and pains, a feeling of weakness, dizziness, loss of appetite, severe headache, sometimes rashes. Nasal congestion and chest congestion due to cough and cold, vomiting and diarrhoea may also occur¹³.

Viral fever in Ayurvedic concept

Virus and viral fevers are not directly mentioned in *Ayurvedic* classics. But the concept of *Agantu Nidana* (exogenous factors) and *Agantu Jwara* (fever due to exogenous factors) mentioned in *Jwara* can be taken. The exogeneous factors may be *Bhuta* (exposure to microbes), poison, exposure to polluted air, exposure to fire and external trauma¹⁴. Viral fever can be taken as *Abhishanga* (by contact with the source of
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infection) type of *Agantu Jwara* which is caused by *Bhutadi* (microbes) and is *Tridoshika* (aggravation of all the Dosha) in nature¹⁵.

Respiratory tract infections

Respiratory tract infection refers to any of several infectious diseases involving the respiratory tract. A variety of viruses and bacteria can cause respiratory tract infections. Symptoms of respiratory tract infections commonly include cough, expectoration of sputum, hemoptysis, sore throat, runny nose, nasal congestion, dyspnoea, head ache, low grade fever, sneezing, malaise, myalgia etc.

Respiratory tract infections and *Kasaswasa*:

Almost all respiratory infections are either due to viruses or bacteria or due to the exposure to pollen, dust, hair or any other inhaled allergens which is mentioned in Ayurveda as *Aganthu* (exposure to microbes etc.) factors, smoke, dust etc. All the premonitory symptoms of *Kasa* can be seen in respiratory tract infections also. *Swasa* is mainly seen in lower respiratory tract infections along with severe cough.

Recurrent cough is the common manifestation of recurrent respiratory tract infections which is more akin to the disease *Kasa* (cough) delineated in Ayurveda. On moving through the symptoms of various types of *Kasa* majority of the symptoms can be visualized in respiratory tract infections. Among these the symptoms of first three types of *Kasa* more seen. The later can be seen in serious pathological conditions.

Kasa is explained as an independent disease and also mentioned as a symptom in many other diseases like *Jwara*, *Swasa Roga* etc.

Respiratory infections and *Jwara*

The symptoms of respiratory tract infections can be seen in *Kaphaja Jwara* (rhinitis, dyspnoea, cough) and *Kaphavata Jwara* (low grade fever, rhinitis, head ache, dyspnoea, cough, malaise) context. In serious respiratory infections such as pneumonia, concept of *Sannipata Jwara* can be taken. In almost all respiratory infections the causative agents are microbes including viruses and bacteria. So, concept of *Abhishanga Jwara* (diseases due to microbes) can also be taken under consideration.

Probable general pathogenesis of viral fever and respiratory infections in Ayurveda:

Based on the principles of Ayurveda, probable pathogenesis of viral fever is explained here. According to Ayurveda Sastra, exogenous cause of disease is taken as *Agantuja Nidana*. These are *Sannikrushta Nidana*¹⁶ (immediate causative factor) and produce the disease directly. In the case of viral fever, etiology is taken as *Agantu* i.e., *Bhuta* (microbes) and produce *Abhishanga Jwara* (fever caused by external factors) immediately without much *Doshakopa* in the body. The entry of pathogenic agents leads to various pathophysiological changes in the body which in turn leads to disturbances of *Doshas* in the body. *Bala*¹⁷ (immunity) is another factor which influences the development of a disease in man. Then this *Abhishanga Jwara* reasons *Tridoshakopa* in body. It affects *Dhatwagni* (fire

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resides inside each *Dhatu*). The *Dhatu* (body elements) affected in this condition are based on the nature of exogenous factors. It may be *Rasa* (plasma), *Rakta* (blood) or *Mamsa* (muscle

tissue) etc. and corresponding *Dhatwagnidushti* (vitiation of fire residing inside the body elements) occurs and produce different types of symptoms. In *Rasadhatwagni Dushti*,

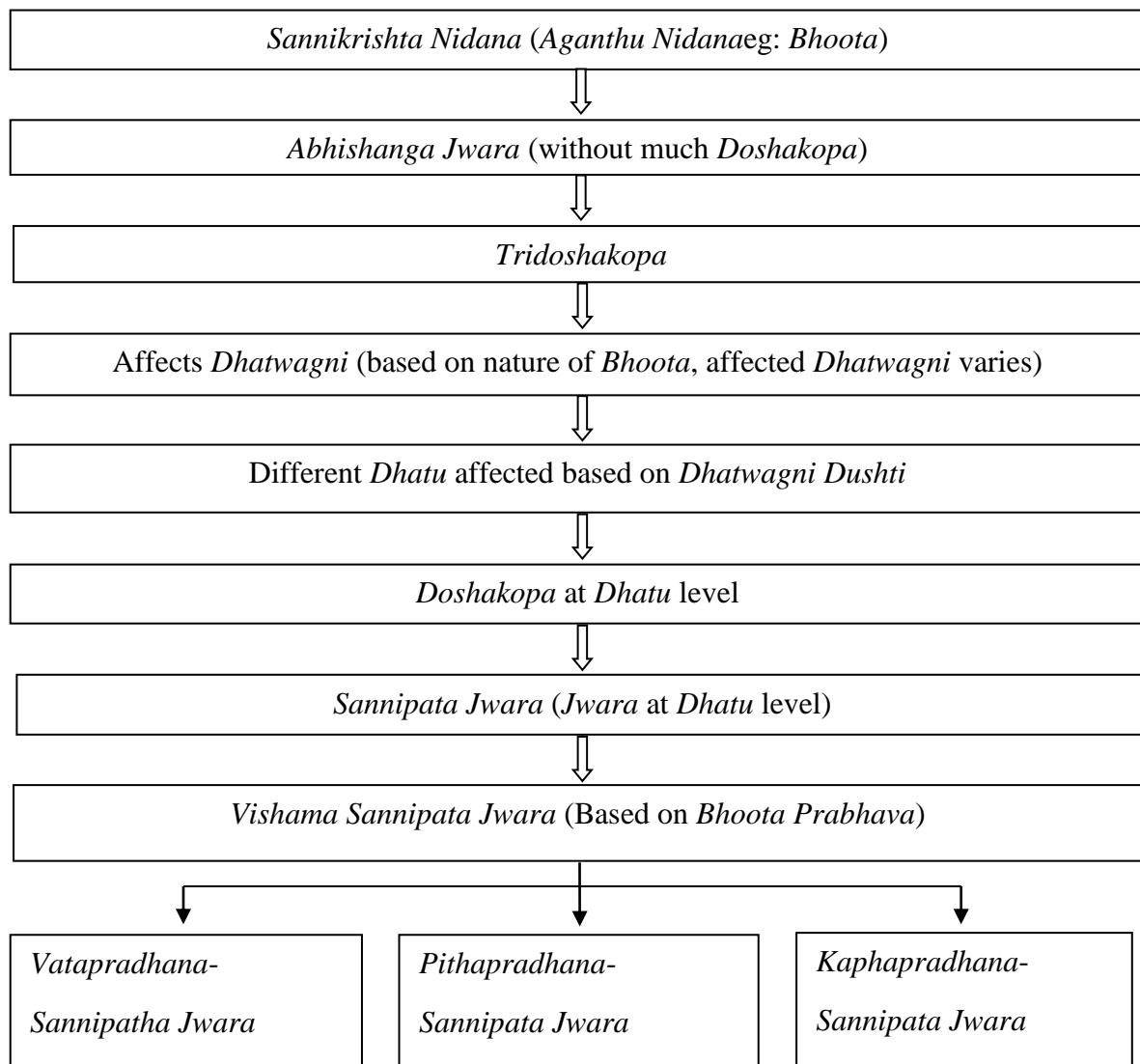


Figure 1 Schematic Representations of Ayurvedic Pathogenesis of Viral Fever Infection

Improper *Rasadhatu* formation occurs and further *Dhatuposhana* (nourishment of body elements) does not occur properly. Here symptoms of vitiation of *Rasadhatu* occur. So, the resultant *Jwara* is *Sannipatha Jwara* (comparable with the general symptoms of viral fever). Based on the nature of *Bhuta* (causative agent), different

Vishama Sannipatha Jwara occurs. *Dosha* predominance in *Tridoshakopa* may vary. It may be *Vatapradhana Sannipatha Jwara* (fever caused by *Vata* predominant *Tridoshakopa*), *Pithapradhana Sannipatha Jwara* (fever caused by *Pitta* predominant *Tridoshakopa*), *Kaphapradhana Sannipatha Jwara* (fever caused



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by *Kapha* predominant *Tridoshakopa*) and so on (Fig. 1). In short, all most all viral fevers may come under *Sannipata Jwara* and the *Dosha*

predminance should be determined by the *Bhuta*, i.e., the nature of exogenous factor.

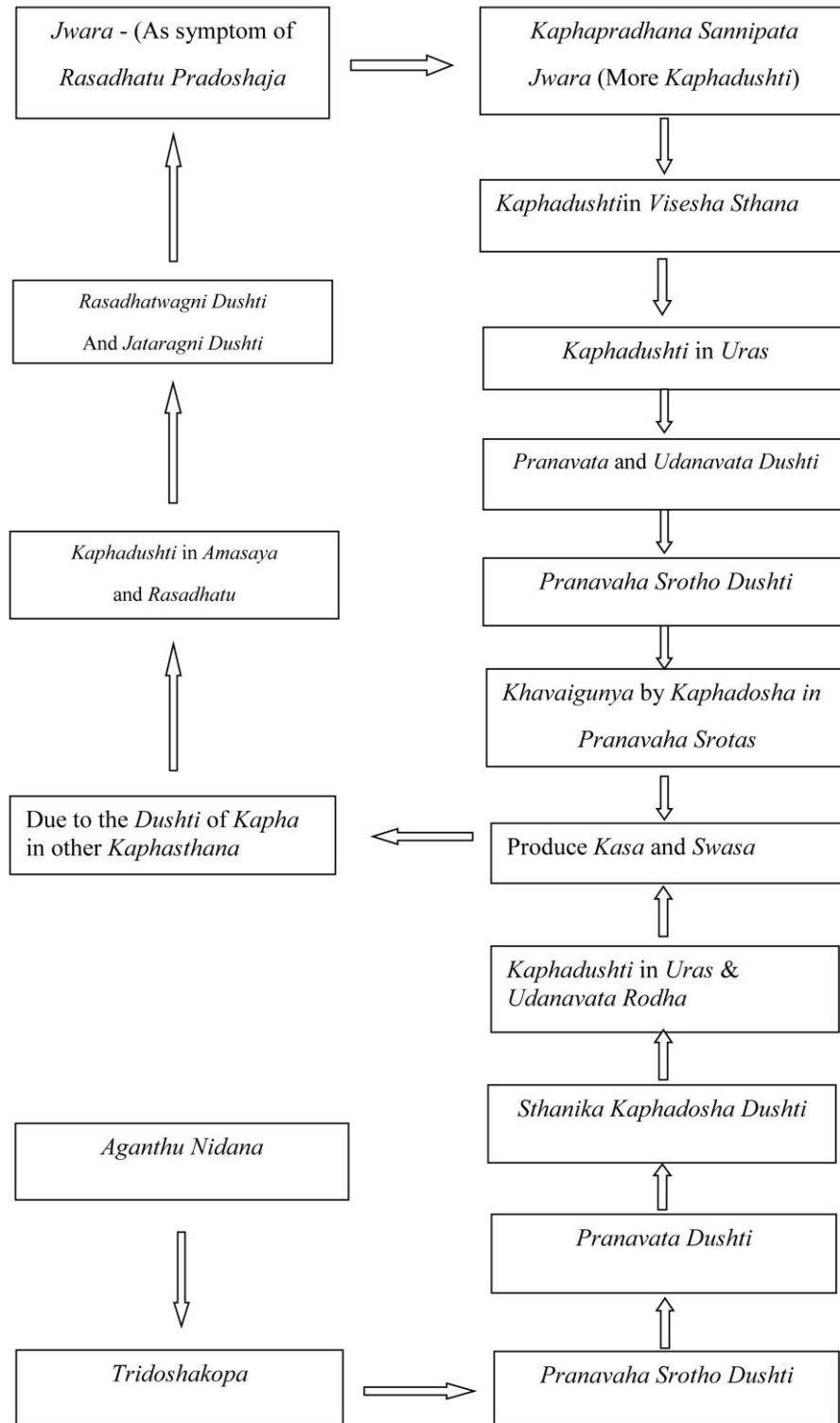


Figure 2 Schematic Representations of Ayurvedic Pathogenesis of Respiratory Infection



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In *Kaphapradhana Sannipatha Jwara* the more vitiated *Dosha* is *Kaphadosha* based on the nature of *Bhuta*. Due to this there is an increase in *Kaphadosha* at the *Viseshasthana* (special sites) of *Kapha* which is *Uras* (chest region). *Uras* is the region where *Pranavata* moves freely⁴⁸ and it is the *Sthana* (sites) of *Udanavata* also¹⁸. It leads to *Prana* and *Udanavata Dushti* (vitiating of *Pranavata* and *Udanavata*) and affects *Pranavahasrotas*. Due to the increase in *Kaphadosha*, *Khavaigunya* (vitiating of *Srotas* or path) occurs here and produce *Kasa* and *Swasa*.

In another way, due to *Agantu* factors there occurs vitiating of all the *Doshas* (*Vata*, *Pitta* and *Kapha*) especially in the *Pranavahasrotas* (Channels of Respiratory system) in the case of respiratory infections. Since *Uras* is the *Viseshasthana* (special site) of *Kapha* there occurs a *Kaphadushti* in special sites also. This *Kaphadosha* obstructs the free movement of

Pranavata in throat and chest. Due to increase of *Kaphadosha* in special site there occurs increase of *Kaphadosha* in its other sites like throat, head, joints, stomach, *Rasadhatu*, nose, tongue etc. and leads to the development of various symptomologies in those sites. Due to increase of *Kaphadosha* in *Amasaya* (stomach) and *Rasa*, *Agnimandya* and vitiating of *Rasadhatwagni* occur. It further leads to the development of *Jwara* also. This *Jwara* occur here is *Kaphapradhana Sannipatha Jwara*. If we analyze the symptoms of respiratory infections, most of them come under *Vatakapha Pradhana Sannipata Jwara Lakshana* (Fig. 2).

Viral fever can be considered as *Sannipatha Jwara* (Table 1). Depending upon the nature of virus, different *Vishama Sannipatha Jwara* occurs based on the predominance of *Dosha* in *Tridoshadushti*.

Table 1 Comparison of General Symptoms of Viral Fever & *Sannipatha Jwara*

| General symptoms of viral fever | Symptoms of <i>Sannipatha Jwara</i> |
|--|---------------------------------------|
| Body temperature keeps on fluctuating from low to high or vice-versa | <i>Muhurmuhur Daham Tadwat Seetam</i> |
| Burning sensation in eyes | <i>Kalusharaktaakshi</i> |
| Sore throat | <i>Kande Sookairivaachitam</i> |
| Muscle aches and pains | <i>Pindikaruk and Parvaasthiruk</i> |
| Feeling of weakness | <i>Balabramsa</i> |
| Severe headache | <i>Sirasoatiruk</i> |
| Rashes may also occur | <i>Syava Rakta Mandalam</i> |
| Nasal congestion and chest congestion | <i>Hridvyadha</i> |
| Vomiting and diarrhoea | <i>Atimalapravruthi</i> |

Some of the viral diseases which have got importance in the current era are Influenza, NIPAH and SARS. The symptoms of these diseases are compared with the symptoms of *Vishama Sannipatha Jwara*.

1. Influenza: The main symptoms of influenza¹⁹ are fever, chills, cough, fatigue, nasal congestion etc. By comparing these symptoms with different *Vishama Sannipatha Jwara*, most of the symptoms are similar with *Kaphapradana*



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Vishama Sannipatha Jwara (Table 2). So, it can be said that Influenza, a disease caused by Influenza virus come under the spectrum of *Kaphapradana Vishama Sannipatha Jwara*.

Table 2 Symptoms of Influenza and *Kaphapradana Vishama Sannipatha Jwara*

| Symptoms of Influenza ⁵³ | Symptoms of <i>Kaphapradana Vishama Sannipatha Jwara</i> |
|-------------------------------------|--|
| Fever | <i>Jwara</i> |
| Chills | <i>Saithya</i> |
| Cough | <i>Kasa</i> |
| Fatigue | <i>Tandra</i> |
| Nasal congestion | <i>Swasa and Peenasa</i> |

2. NIPAH: The main symptoms of NIPAH²⁰ virus infections are moderate temperature, sleepiness, malaise, headache, early respiratory symptoms. By comparing these symptoms with different *Vishama Sannipatha Jwara*, most of the symptoms are similar with *Vata Kaphapradana Vishama Sannipatha Jwara* (Table 3). So, it can be said that NIPAH, a disease cause by NIPAH virus come under the spectrum of *Vata - Kaphapradana Vishama Sannipatha Jwara*.

Table 3 Symptoms of NIPAH virus and *Vata - Kaphapradana Vishama Sannipatha Jwara*

| Symptoms of NIPAH virus ⁵⁴ | Symptoms of <i>Vata - Kaphapradana Vishama Sannipatha Jwara</i> |
|---------------------------------------|---|
| Moderate temperature | <i>Santapo Madhya Vegascha</i> |
| Sleepiness | <i>Nidra</i> |
| Malaise | <i>Gouravam</i> |
| Headache | <i>Sirograham</i> |
| Early respiratory symptoms | <i>Pratisyaya, Kasa</i> |

Table 4 Symptoms of SARS virus and *Vata Kaphapradana Vishama Sannipatha Jwara*

| Symptoms of SARS virus ⁵⁵ | Symptoms of <i>Vata Kaphapradana Vishama Sannipatha Jwara</i> |
|--------------------------------------|---|
| Fever | <i>Santapo Madhya Vegascha</i> |
| Coughing | <i>Kasa</i> |
| Malaise | <i>Gouravam</i> |
| Headache | <i>Sirograham</i> |
| Breathing difficulty | <i>Swasa</i> |

3. SARS: The main symptoms of SARS²¹ virus infections are Fever, malaise, headache, cough, breathing difficulty. By comparing these symptoms with different *Vishama Sannipatha Jwara*, most of the symptoms are similar with *Vata-Kaphapradana Vishama Sannipatha Jwara* (Table 4). So, it can be said that SARS, a disease cause by SARS virus come under the spectrum of *Vata-Kaphapradana Vishama Sannipatha Jwara*.

Prevention and management of viral fever and respiratory infections through Ayurveda

Ayurveda emphasize the preventive measures of epidemics through personal hygiene, social hygiene and immunity enhancement.

General prevention methods:

To prevent a viral disease, we should focus on improving personal health and social health by following certain regimen. Since epidemics cannot be managed by focusing only on individual health, Ayurveda addresses the social health care also.

Proper *Dinacharya* (daily regimen): Proper cleanliness including bath, mouth cleaning and timely elimination of urine and faces. *Nasya* (nasal medication), *Gandoosha* (gargle and mouth wash with medicine), chewing of medicine etc. are advised to perform daily. Proper exercise according to strength and health of a person is advised. Bathing not only helps to clean external body, but also help to energize mind and body. Food should be taken in proper quantity, proper time and proper manner.

Ayurveda emphasis a universal truth that all living beings are spending life for *Sukha*
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(happiness) and the science advises not to attain happiness without *Dharma* (ethics). Epidemics and pandemics are mainly the results of fight for happiness without ethics. Ayurveda consider all living beings as self (*Atmavat Satatam Pashyet*). One should not torture sense organs and motor organs, should use protective measures like chappal, umbrella. Ayurveda advocates covering the nose and mouth while coughing and sneezing. Ayurveda is against excessive exercise, unhealthy sex and abuse of substances like alcohol. In short, environment is the teacher and protector²². One who follows the above-mentioned regimen, person as well as the society will be healthy.

Proper *Ritucharya* (seasonal regimen): Properly followed seasonal regimen can prevent epidemics especially seasonal epidemics. Ayurveda considers six seasons in a year and advocates to follow different regimens in each season and even in *Ritu Sandhi* (transition phase of seasons). *Hemanta Ritu* is the season where *Kaphachaya* (*Kapha* starts aggravation) is happening and *Vasanta* is the season for *Kaphaprapakopa* (aggravation of *Kapha*). If we start regimen to prevent *Kaphachaya* in *Hemanta Ritu*, aggravation of *Kapha* in *Vasanta Ritu* will not occur. Similar way for other *Dosha* also, hence if one can follow seasonal regimen properly, epidemic outbreaks can be prevented and there by pandemic diseases also²³.

Bhootaghna (Antimicrobial): The word *Bhootha* is used to denote microorganisms. Hence *Bhootaghna* is the modality of treatments against

microorganisms. It mainly includes cleaning and disinfecting the surroundings and external body. *Dhoopana* (fumigation) and *Dhoomapana* (medicated smoking) are some among them.

Prevention of *Jwara*²³:

- ❖ Antimicrobial: fumigation (*Aparajitha Dhooma*) can prevent *Agantu Jwara* (fever caused by external factors).
- ❖ *Pachana* (Digestion): If proper digestion and metabolism is happening in the body, it can help the body to resist against microorganisms. *Shandanga Paneeya*, water boiled with ginger and coriander seed etc. have the above-mentioned property.
- ❖ *Agnideepana* (Carmination): For proper digestion and metabolism *Agni* is important (digestive fire/enzymes). Ghee, *Ajamoda*, *Indukanta Ghrita* etc. can improve this property.
- ❖ Following daily regimen and seasonal regimen as mentioned above.

Prevention of *Kasa Swasa*:

- ❖ Antimicrobial: *Dhoopana* with *Haridra*, *Manasila*, *Jatamansi*, *Shallaki*, *Guggulu* etc.
- ❖ Carminative
- ❖ Digestive
- ❖ Nasal medication: *Pratimarsha Nasya* is a method of administering nasal medication in a very low dose and a regular manner will help to clean the upper respiratory tract. The medication used will help to vitalize the respiratory system. *Anutaila* can be used for nasal administration for a healthy person as a daily regimen to prevent respiratory system diseases.

Management:



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Jwara Chikitsa (treatment of fever)²⁴:

❖ *Langhana* (proper rest and cleanliness to digestive system) is mentioned as the first line of treatment in *Jwara*. For that, methods like fasting, emesis, warm water drinking etc. are advised.

❖ *Malapachana* (proper digestion of waste products) is a major aim of treatment. If waste products remain in the body it can act as toxin or it can affect the immune mechanism. *Shandanga Paaneeya* will be helpful in digestion and *Anulomana* (eliminating the waste).

❖ After the above methods properly done, patient should be given medicated rice gruel which is nourishing, easy to digest and alleviate *Jwara*. *Panchakola Yavagu* is a good choice for this condition.

❖ This is followed by administration of medicated decoction which has the property of *Dosha Pachana* and *Jwara Shamana*. Examples: *Amrottaram Kashaya*, *Pathyakusthumbaryadi Kashaya*, *Vyaghryadi Kashaya*, *Sudarshana Choorna*, *Vettumaran Gutika*, *Vilvadi Gulika*, *Amrtarishta* etc.

❖ Then to regain strength and prevent recurrence medicated ghee is advised. Ghee is *Pitta Shamana* and will help as a vehicle for medicine to act. *Indukanta Ghrita* is commonly practicing formulation which can even prevent the recurrence of fever.

Swasa- Kasa Chikitsa (treatment of respiratory disorders)^{25,26}

❖ *Kasa* (cough) with *Kevala Vata* should be treated with medicated oil or ghee, then food and

medicines which are *Vata Shamana* (alleviating *Vata*). Eg; *Kantakari Ghrita*, *Amrtaprasha Ghrita*, *Vidaryadi Ghrita*, *Swadamshtadi Ghrita*, *Madhukadi Ghrita* etc.

❖ If *Pitta* associated with *Kapha*, emesis is the first line of treatment and followed by medications.

❖ For *Kapha* dominant *Kasa*, strong elimination therapy (emesis or purgation) after proper preparatory procedure should be done.

For *Swasa*, *Saindhava* (rock salt) and oil should be applied externally, followed by sudation and then emesis to be done.

Medicated smoking will help to remove deeply adhered *Dosha* persisting even after purification procedures²⁶.

Drugs which can be used for fumigation are *Haridra*, *Manasila*, *Madhuka*, *Jatamamsi*, *Musta* etc.

Other medicines in common practice are *Taleesapatraadi Choorna*, *Sitopaladi Choorna*, *Vyoshadi Vataka*, *Agastya Hareetaki*, *Nayopayam Kashaya* etc.

Role of Ayurveda in post viral disease management

❖ Following daily regimen and seasonal regimen.

❖ Dietary supplements can be used to regain the strength lost during the disease period, including milk, medicated milk, *Shashtika Shali*, and gruel preparations (*Manda*, *Peya*, *Vilepi*) *Mamsarasa* (meat soup preparations) etc²⁷.

❖ Proper rest including sleep.



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❖ *Roga Apunarbhava Chikitsa* (treatment for preventing recurrence): *Indukanta Ghrita*, *Agastya Rasayana*, *Chyavanaprashya*, *Vidaryadi Ghrita* etc. are useful.

DISCUSSION

Jwara is a disease that includes descriptions and treatments of majority of infectious diseases. The pathology of *Jwara* is explained in such a way that even the recently emerging fevers can also be included. Here it is a trial to explain recently evolved infectious diseases under the principles of *Jwara* with the help of principles adopted from *Swasa Kasa*. So that we can come up with preventive and management strategy for such infectious diseases.

Ayurveda explains general health care methods through daily regimen and seasonal regimen. This includes personal and social hygiene in physical and psychological level. That will help to prevent epidemic and pandemic diseases.

Treatment principles from *Jwara* and *Kasa Swasa* are taken here in both preventive and management aspects. Carminative and digestive are the important principles which aim for proper digestion and metabolism. This will prevent the accumulation of toxins and oxidants in the body. Thereby body can easily and effectively fight against the microorganisms. Elimination therapy (emesis, purgation, nasal medication) mentioned in the management aspect also plays an important role in eliminating accumulated Dosha from the body. *Bhoota* is the word used to denote invisible

actions. Here microorganisms are also taken under the concept of *Bhoota*. *Bhootaghna* are the methods adopted against *Bhoota*. This includes mainly fumigation having antimicrobial action will help in disinfecting the atmosphere effectively and conveniently than other means like spraying and wiping.

Rasayana is a unique concept of *Ayurveda* which can be used effectively in disease prevention and post disease management. *Rasayana* therapy helps to nourish the body in *Dhatu* (tissue) level. If all the *Dhatus* are properly nourished it will result in the formation of *Ojus* (essence of all *Dhatus*) responsible for immunity. Medicines, dietary habits and regimen are aimed to improve general health and there by promoting *Ojus*.

CONCLUSION

Viral infections even though not directly mentioned anywhere in *Ayurvedic* classics, we can understand treatment principles of the same can do all those with the basic principles mentioned and management.

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Conflicts of Interest

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Ethical approval

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