



Review Article

THERAPEUTIC AND PREVENTIVE APPROACH ON SWINE FLU IN AYURVEDA: A CRITICAL REVIEW

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Article info

Article History:

Received: 25-01-2015

Accepted: 28-02-2015

KEYWORDS: Influenza, *Nasya karma*, anti viral, immunity.

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ABSTRACT

Swine flu is an acute respiratory tract infection caused by influenza virus H1N1 characterized by sudden onset of chills, malaise, fever, body ache, headache, throat pain, cough and common cold. According to *Ayurveda*, flu is caused only when there is lack of generalized immunity in the body. We can prevent the spread of flu by strengthening our *Ojas* (immunity). Prevention is always better than cure and the primary aim goal of *Ayurveda* is to maintain the health of a healthy person. Various therapeutic such as *Nasya karma*, *Rasayana* and preventive aspects are boost generalized immunity of body or ultimately protect from foreign pathogen like as viruses. Ayurvedic herbals and preventive aspects helping detoxify the liver, fight allergies, stimulate digestion, and boost immunity. Ayurvedic drugs have anti viral, cleansing and antioxidant properties. They are excellent for balancing *Vata* and *Kapha*, which are the prominent *Dosha* in Swine influenza or any other respiratory tract infections. *Ayurveda* says that daily and dietary habits play a major role in any disease. If our digestive fire is normal, our immunity will remain powerful and thus no infection can overrule.

INTRODUCTION

Influenza (H1N1) virus of swine spread with travelers worldwide, resulting in the first influenza pandemic since 1968. In 2009, its origin emerged in Mexico and was given name-pandemic influenza A (H1N1) 2009 virus^[1]. According to *Ayurveda*, flu is caused only when there is lack of generalized immunity in the body. As stated: "*Swasthasya Swasthya Rakshanam...*" here are the few therapeutic and preventive measures in *Ayurveda* which improve immunity and protect from pathogen such as virus.

AIM AND OBJECTIVES

- A conceptual and critical study of various aspects of swine flu in *Ayurvedic* as well as modern text.
- To establish its necessity for an individual and human being in present scenario.

MATERIAL AND METHODS

All the references regarding swine flu are collected from *Bruhat Trayi*, *Laghu Trayi*, and modern texts. Different lexicon present in central library & relevant matter described on journals, magazines and websites were used.

Review

Influenza (H1N1) virus of swine spread with travelers worldwide, resulting in the first influenza pandemic since 1968. In 2009, its origin emerged in Mexico and was given name - pandemic influenza A (H1N1) 2009 virus. Pandemic influenza A (H1 N1, Swine Flu) is a type of a seasonal influenza differs from its pathogenicity in two aspects. First, as a majority of human population has little or no pre-existing immunity to the virus among the wide the age group, particularly children, young adults and elderly persons. Secondly, the virus can infect the lower respiratory tract and can cause rapidly progassive pneumonia, especially in children and young adults.

Swine flu is an acute respiratory tract infection caused by influenza virus H1N1. Spreadness of disease is fast because as following causes-(1) the short incubation period (2) large number of subclinical cases (3) high proportion of susceptible population (4) short duration of immunity (8-12 months) (5) absence of cross immunity(mutation in gene of virus and change in other strains so also called genetically change strain)^[2].

Epidemiological determinants: Agent factors-

Agent: H1N1 virus belongs to family of orthomyxoviridae. Influenza virus has two distinct surface antigens– the haemagglutinin (H) and the neuraminidase (N) antigens. The H antigen initiates infection following attachment of virus to susceptible cells. The N antigen is responsible for the release of the virus from the infected cell.

Reservoir of infection: a major reservoir of influenza virus exists in animals and birds (e.g. swine, horses, dogs, cats, wild birds).

Source of infection: Respiratory tract secretions are infective.

Period of infectivity: virus is present in the nasopharynx from 1 to 2 days before and 1 to 2 days after onset of symptoms^[3].

Host factors: Age and Sex- Influenza affects all ages and both sexes. Children constitute an important link in the transmission chain. The highest mortality rate during an epidemic occurs among certain high risk groups in the population such as old people (generally over 65 year of age), children under 18 months and persons with diabetes, COPD and chronic heart diseases.

Human mobility: This is an important factor in the spread of infection.

Immunity: Immunity to influenza is sub typed specific. Antibodies against HA and NA are important in immunity to influenza. Resistance to initiation of infection is related to antibody against HA, which neutralizes the virus, whereas decreased severity of disease and decreased ability to transmit virus to contacts are related to antibody directed against the NA. Protection correlates with both serum antibodies and secretory antibodies, IgA antibodies in nasal secretions which play important role in preventing infection. Serum antibodies persist for many months, whereas secretory antibodies are shorter lived (usually only few months). Antibodies appear in about 7 days after the attack and reach a maximum level about 2 weeks^[4]. After 8 to 12 months, the antibodies level drops to pre-infection level.

Environmental factors: Season: Winter and rainy season.

Overcrowding- its enhanced transmission like as schools, institutions, markets etc.

Mode of transmission: Influenza is spread mainly from person to person by droplet infection or droplet nuclei created by sneezing, coughing or talking. The portal of entry of the virus is the respiratory tract.

Incubation period: 18 to 72 hours.

Pathogenesis and clinical feature: After entering in respiratory tract, it causes inflammation and necrosis of superficial epithelium of the tracheal and bronchial mucosa, followed by secondary bacterial invasion. The common clinical features are fever, chills, aches, and pains, coughing and generalized weakness.

Complications: these are acute sinusitis, otitis media, purulent bronchitis and pneumonia. The most dreaded complication is pneumonia.

Laboratory Diagnosis: Virus isolation nasopharyngeal secretions are the best specimens for obtaining large amounts of virus – infected cell.

Serology: routine serodiagnostic tests in use are based on haemagglutination inhibition (HI) and ELISA. **The ELISA test** is more sensitive than other assays and Real time PCR technology^[5].

Prevention: Good ventilation of public buildings, the avoidance of crowded places during epidemics, encouraging sufferers to cover their faces with a handkerchief and mask when coughing and sneezing. Strictly maintain hand hygiene with soap and water or alcohol based hand sanitizer. The duration of isolation precaution for hospitalized patients with influenza symptoms should be continued for 7 days after onset of illness or 24 hours after resolution of flu symptoms, whichever is longer, while a patient is in a health care facility.

Influenza vaccines: Killed vaccines: one dose of vaccine contains approximately 15 micrograms of Ha. The vaccine is administered by the subcutaneous or intramuscular route. A single inoculation (0.5ml for adults and children over 3 years and 0.25 ml for children from 6 months to 36 months of age) is usually given. However, in persons below 9 year of age with no previous immunological experience, 2 dose of the vaccine separated by an interval of 3 to 4 weeks are considered necessary to induce satisfactory antibody levels. After vaccination, there is an increase in serum antibodies in about one week, which reaches a maximum in about 2 weeks. Revaccination on an annual basis is recommended.

Live-attenuated vaccines: a trivalent, live attenuated vaccine administered as a single dose intranasal spray is as effective as inactivated vaccine in preventing the disease.

Treatments: Antiviral drugs: Two neuraminidase inhibitors (Zanamivir and oseltamivir) are available for prophylaxis and therapy of influenza strain. The dose of oseltamivir is 75 mg per day for prophylaxis and 75 mg twice per day for 5 days for therapy. Zanamivir is administered by inhaler (10 mg dose) and is given twice daily for therapy and once daily for prophylaxis. The duration of prophylaxis depends on the clinical setting^[6].

Ayurvedic review

According to *Ayurveda*, flu is caused when there is lack of immunity in the body. In this ancient science of healing, the concept of immunity is based on the *Beej-bhumi* (seed-land) theory. When the land (body) is fertile (laden with toxins or *Ama* which get accumulated due to improper digestion), all the seeds (viruses) are able to grow easily. In contrast, when the land is infertile, lesser number of seeds germinates^[7]. This means, when the human body contains *Ama*, it

becomes a fertile breeding ground for different kinds of viruses. On the other hand, *Ojas* is the product of a healthy digestive system, which helps the body in resisting infection. Low *Ojas* is lack of immunity at the physical level and absence of mental strength at the mind level. We can prevent the spread of flu by strengthening the *Ojas* and enhancing our body immunity. It is also placed under a class of diseases called *Sannipataj Jwar*. *Sannipataj Jwar* is basically triggered by an aggravation of three *Doshas* Such as *Vata*, *Pitta* and *Kapha* and a loss of *Ojas* in the body. Low *Ojas* is lack of immunity at the physical level and absence of mental strength at the mind level^[8].

Ideal therapeutics approach to *Ayurveda* is one which cures the diseases without causing complications. The three classical mode of therapy advocated by *Ayurveda* first is *Daivavyapasraya chikitsa* (spiritual therapy), second is *Yuktivayapasraya chikitsa* (rational therapy) and third is *Sattvavajaya chikitsa* (psycho-behavioral therapy). The *Ayurvedic* treatment methods can be grossly divided into three methods *Samsodhana* (bio-cleansing therapy), *Samsamana* therapy (palliative therapy) and *Nidana parivarjana* (avoidance of causative factor). *Anupana* is usually water, honey, ghee, jaggery, milk, butter milk and herbal decoction which are given along with main drug to help in absorption and drug delivery to the target organ to the body. The type of therapy to be administered to the patient is planned out on the basis of stage of the diseases and state of the patients which are ascertained by using manifold methods of examination. The due importance is given for a thorough clinical examination and proper understanding of the disease before planning for a treatment. Different principle like as *Satakriyakala*, *Nidana panchaka* etc. are employed this purpose.

Ayurveda advocates preventive and curative therapies along with specified techniques of *Panchakarma* (human body purification) and *Rasayana* (rejuvenation).

Panchkarma

Its literally means “five types of bio-cleansing therapies”. These five therapies of eliminating toxin from the body are *Vamana* (therapeutic induction of vomiting), *Virecana* (therapeutic induction of purgation), *Sirovirecana / Nasya* (nasal instillation), *Niruha basti* (therapeutic enema predominantly with medicated decoctions), and *Anuvasana basti* (therapeutic enema with medicated oil) according Acharyas charka. This fivefold therapy is aimed at *Sodhana* i.e. the eradication of the basic cause of disease and later to achieve *Samana*, mitigation of the diseases. *Panchkarma* is essentially applicable in a wide range of preventive, curative and promotive condition. These therapies are advocated even in a healthy person to combat seasonal imbalance of *Dosa*. *Ayurveda* quotes that the disorders treated with this mode of therapy do not recur while those treated with palliatives methods do have ample chances of recurrence. These measures

are proceeded by *Snehana* (internal and external administration of medicated oils, fats or ghee), *Swedana* (induction of sweating), and followed by *Samsarjana karma* (restorative regimen after *Panchkarma* procedures. Classically *Panchkarma* therapy is prescribed and practiced through following schedule viz (1) *Purva karma* (preparatory procedure such as local *Snehana* and *Swedana*) (2) *Pradhana karma* (main procedure such as *Nasya karma*) (3) *Paschat karma* (post procedure measure such as *Doompana*)^[9].

Purvakarma: Before the administration of *Panchkarma* therapy, the patient is prepared suitably with *Snehana* and *Swedana* as preparatory measure. The administration of oil/fat in *Snehana* renders the body soft, liquefies *Dosa* so that they become amenable to disintegration and detachment from the tissues. So this procedure uses short period to get the desired clinical effect is called *Snehana*. *Snehana* pacifies abnormal *Vata*, renders the body soft and clears the accumulated wastes which have obstructed the body channels. Oil, ghee and fats based preparation can be administered through different kinds of foods, massage etc. according to the feasibility. *Swedana* is making a person to perspire, with or without using heat generated by fire called *Swedana*. Generally the *Swedana* should be undertaken after *Snehana* therapy. It is considered that the sweating dissolves the waste products of metabolism, stagnated in the body channels which have been softened by *Snehana* therapy. *Swedana* therapy is undertaken by steam of water with *Nirgundi patra* (*Vitex nigundo* leaves). Care should be taken while performing *Swedana* at certain parts of the body such as eyes, testes and pre cordial region.

Pradhana karma

After preparing the patient with *Snehana* and *Swedana*, the patient is subjected to the main measure of *Panchkarma* such as *Nasya karma* (nasal instillation). *Sirovirecana* also called *Nasya* is the procedure by which drug (oil, liquid, fume or powders etc.) is administered through the nasal route. It is useful in all the diseases manifesting above the neck line (*Urdhvajatrugata*) because it eliminates toxin through the nostril. On the basis of its therapeutic action and the way of administration it is classified into many types such as *Virecana nasya* (cleansing) which should be used in chronic rhinitis, chronic sinusitis etc. by use of drugs like jaggery and *Adraka Swarasa* (juice of *Gingiber officinalis*) etc., *Brmhana nasya* (nutritive) which should be used for make healthy mucous membrane of nasal cavity such diseases chronic allergic rhinitis etc. by use of drug like medicated milk and ghee, *Samana nasya* (pacifying the body and mental equilibrium), *Navana nasya* (decoction *Nasya*), *Marsa nasya* (medicated oil and ghee), and *Pratimarsh nasya* (daily usable *Nasya*) which should be used early in the morning before taking meal by use of nutritive oil and cow ghee.

Nasya Matra (quantity of nasal drops): The amount of liquid that drops after immersing two digits of the index finger in any liquid and taking the finger out forms one *Bindu*- one drop. 10, 8 and 6 such drops are the maximum, moderate and minimum doses, respectively of *Marsha Nasya* (oil / fat medication). In respect of Paste (*Kalka*), fresh juice, decoction the doses are less by two *Bindu*. i.e. maximum, medium and minimum does of *Avapidaka* kind of *Nasya* are 8,4 and 6 drops respectively. After instilling the medication into one nostril it has to be thoroughly sucked up with the other nostril closed. The same repeated on the other side which improves function of nasal mucosa^[10]. *Nasya* is a routine procedure under *Dinacharya* practiced on a regular basis.

Benefits of Nasya

It regularly nourishes the eyes, nose and ears thereby ensuring their optimal functioning, Prevents the graying of hair, moustache and beard, Prevents hair fall and promotes the growth of hair, Prevents headache, stiffness of neck, facial palsy, hemi cranial headache, lockjaw, rhinitis and tremors of the head, Strengthens the various structures of the head, Promotes good voice, Retards the process of ageing. **Anu taila** (market available preparation in the form of oil) is the preparation suggested for regular use. *Pratimarsh nasya* though relatively free of contra indication but has to be avoided in case of long standing infections in head and neck, those having excess of *Dosa* in the head, after consuming alcohol, deafness. Regular use of *Nasya* ensures healthy functioning of all the senses and keeps the individual alert and agile.

Paschat karma

In order to remaining *Dosa* (toxin) is removed by medicated fumigation (*Doompana*) thereafter bring back the *Agni* and stamina to normal state after undergoing rigorous procedures, some specific diet patterns and lifestyle known as *Samsarjana karma* are adopted. In this process, initially easily digestible liquid dominant diet is given with gradual introduction of routine diet.

Safety of Panchkarma: The scientific evidence on clinical safety and efficacy of *Panchkarma* was re-validated through a number of clinical studies by adopting the classical *Ayurvedic* notation and contemporary clinical, bio-chemical and pathological parameters. These parameters have shown substantial evidence towards regression of many chronic diseases. In the current scenario, the *Panchkarma* regimen, a unique contribution of *Ayurveda* may be adopted in the management of chronic and refractory illnesses.

Rasayana therapy is therapeutic procedure used to replenish and rejuvenate structural entities of the body. Literally, *Rasayana* means the augmentation of the quality of the *rasa*, the vital fluid produced at the end of digestion of food. The aim of *Rasayana* is not only to improve the quality of *rasa*; but to provide the optimum quality to all the body tissues. Numerous

Rasayana medicines are reported for possessing diversified actions like as immune-modulation, free-radical scavenging, adaptogenic or anti-stress and nutritive effects such as *Amalki rasayana*, *Chyawanprash*, *Agastki rasayana* etc. another type of *Rasayana*, the *Aachar rasayana* is a type of non-drug management in which by practicing specified code of conduct one can the desired effects of *Rasayana*.

Prevention: Prevention is always better than cure and the primary aim goal of *Ayurveda* is to maintain the health of a healthy person. As stated: "*Swasthasya Swasthya Rakshanam...*" here are the few preventive measures according to modern science and *Ayurveda*. Prevention of swine influenza has three components prevention in swine: prevention of transmission to humans and prevention of its spread among humans. Swine flu cannot be spread by pork products, since the virus is not transmitted through food but it spreads between humans through coughing or sneezing and people touching something with the virus on it and then touching their own nose or mouth. Use standard infection control against influenza. This includes frequent washing of hands with soap and water or with alcohol-based hand sanitizers, especially after being out in public.

Chance of transmission is also reduced by disinfecting household surface, which can be done effectively with a diluted chlorine bleach solution. ^[11] The lamp of cow's ghee and *Doopan* from *Guggulu* (*Commiphora mukul*) etc. have anti viral and disinfectant properties. Steam inhalation with eucalyptus or chamomile thrice a day can relive from congestion from the lungs.

Do and don't: (1). one should avoid sleeping during the day hours. (2). one should avoid travelling or being outdoors during the early hours of the day when there is dew and cold winds blow. (3). Oil massage with oil possessing warm quality is beneficial. (4). Clean and dry clothes should be worn. (5). Individuals should avoid direct and strong cold winds. (6). Avoid skipping meals. (7). Try to avoid over exertion. (8). Not delay or skip your meals, you should take meals at regular timings & in fixed quantities. (9). Avoid damp, humid and cold weather, and environment. (10). Drink a glass of water with two teaspoons of honey every day early in the morning. (11). Always have fresh meals, prepared using minimum quantity of oil, or prepared with the help of Cow's ghee. (12). Dry *Chatni* & dry vegetables are recommended. (13). Chewing of a bite of ginger before meals with little bit of salt is helpful to improve. (14). Pickles made of 'Raw curcuma powder' are recommended. (15). Avoid regular use of sweets, butter, cheese, paneer etc. (16). Avoid Foods containing preservatives, artificial flavors, colours, Sauces, vinegar, pickles etc. (17). Make sure you get at least 7-8 hours of good sleep every night. This will boost your immune system and enhance the *Ojas* in your body. (18). Daily exercise moderately on a regular basis. It helps in increasing blood circulation and eliminating the

blockage in body channels. (19). Consult your doctor if you have a cough and fever and follow their instructions. (20). Practice *Pranayama*; especially “hot *Pranayama* like *Bhastrika* and *Kapalbhati*”, it improves your lungs capacity and immunity to combat any infections from the viruses.

According to *Ayurveda* daily and dietary habits plays a major role in any disease. If our digestive fire is normal, our immunity will remain powerful and thus no infection can overrule. So one should follow the ideal dietary regimen during seasons like monsoon and winter when the maximum chances are there for viral infections (*Ritucharya*) there are few recommendations - (1). *Sitopaladi Churna* (2). *Naradiya Laximivilas Ras* (3). *Classical Chyawanprash* (4). *Haridra Khanda* (5). *Talisadi Churna* (6). *Khadiradi Gutika* (7). *Lavangadi Gutika* (8). *Samirpannaga Rasa* (9). *Chandramrita Rasa* (10). *64 Prahari Pippali* (11). *Suvarna Vasanta Malini Rasa* (12). *Shwasa Kuthara Rasa* (13). *Guduchi ghana vati* (14) *balshuda* (15). *Vyosadi vati* (16). *Ayush 64* (17) *Amritarista* (18). *Amrita satva*.

Decoction

Juice of 10 to 15 fresh leaves of Tulasi (Basil), 5 ml of fresh ginger root juice, half spoon powder of cloves, half spoon powder of cinnamon bark, half spoon powder of *Guduchi* (*Tinospora cordifolia*), half spoon powder of cardamom, half spoon of turmeric powder, half spoon of *Guda* (jaggery) mix all these properly, add one spoon of honey when the decoction is lukewarm and have it twice or thrice a day. Herbals like *Tulsi* (*Ocimum sanctum*), *Chirayata* (*Swertia Chirata*) and *Haridra* (*curcuma longa*) are revered and worshipped throughout India for its amazing medicinal properties. It is known to: relieve stress, strengthen the immune system, enhance stamina, relieve congestion and colds, promote healthy metabolism, relieve inflammation, lower cholesterol and provide rich supply of antioxidants on the basis recent researches.

CONCLUSION

These all-around herbals and preventive aspects are helping detoxify the liver, fight allergies, stimulate digestion, and boost immunity. All these drugs have anti viral, cleansing and antioxidant properties. It helps the free flow of oxygen to the brain, helps enhance digestion and circulation and stimulates

the appetite. They are excellent for balancing *Vata* and *Kapha*, which are the prominent *Dosha* in Swine influenza or any other respiratory tract infections. According to *Ayurveda* daily and dietary habits plays a major role in any disease. If our digestive fire is normal, our immunity will remain powerful and thus no infection can overrule.

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Cite this article as:

Naresh K. Kumawat, Dhannajay, Dharmendra K. Sharma. Therapeutic and Preventive Approach on Swine Flu in Ayurveda: A Critical Review. AYUSHDHARA, 2015;2(1):11-15.

Source of support: Nil, Conflict of interest: None Declared