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Review article

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Modern lifestyle, an aggravating factor of janapadodhwans and role of immunity in its prevention

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ABSTRACT

People are facing severe outbreaks in the world which kills many people every year, affecting the lifestyle of individuals and causing a major downturn in the country's GDP. The use of advanced technology has replaced most of our work that involves physical activities. This has been one of the reasons for aggravating global warming and resurgence of diseases as epidemics. An epidemic is the rapid spread of disease to a large number of people in a given population within a short period of time. *Ayurveda*, an ancient system of medicine is well known for the fact of the epidemics and outbreak of infectious diseases. Concepts of *Janpadodhwans* are very similar to current theories of epidemic. *Acharyas* have clearly mentioned diseases causing epidemic under a broad term "*Janpadodhwans*". Immune system, network of cells and proteins protects us from germs and infections. Immunity is important in outbreaks and epidemics, an individual with immense immunity will be able to defend many diseases better than those weaker immunity. So, here is the attempt to emphasize on the *Janpadodhwans* and role of immunity in its prevention.

Keywords: *Janpadodhwans*, Epidemic, *Vikrut*, *Vayu*, *Jala*, *Desh*, *kala*, Immunity.

INTRODUCTION

Infectious diseases spreading through human population across a large region is known as an epidemic and an epidemic spreading over a wide geographical area affecting a larger portion of population is called *Janpadodhwans*. *Acharya Charak* has provided a detailed description of *Janpadodhwans* in *Charak Viman sathana* chapter 3. *Susruta* also has mentioned about it, but he used the term '*marak*' instead of *Janpadodhwans*. Community is formed by people with different *Ayu*, *Bala*, *Prakruti*, *Ahar*, *Deha* and *Satmya*. It is necessary to know that how the diseases can manifest to the whole locality even then people residing in that area are of different constitution, age, sex, physical strength, homologations and mental faculties. *Acharya Charka* has explained it as there are some common factors in

communities and *vikruti* of those factors are the reason for *Janpadodhwans*. The common factors existing in the community are *Vayu* (air), *Jala* (water), *Desha* (land) and *Kala* (season) and vitiation of these factors brings abnormality in the whole country with same set of symptomatology leading to destruction of that particular region is called pandemic i.e. *Janpadodhwans*.

Role of modern life style in vikruti of these factors

1. *Vikrut Vayu* (Air)

Characteristics of *vikrut vayu* according to *Charak* are following: Excessive

- Dryness
- Cold

- Hot air
- Roughness or humidity.
- Calmness or violent waves
- Presence of unwholesome smell, gases, sand, ashes and smoke in the air
- Cyclones

Air pollution is the most critical challenge we are facing at present. Most air pollution is caused by industries, transportation, household fumes and so on. Approximately 90-92% of all vehicle emissions contain toxic gases like unburned HCs, CO, and NO. Presence of these gases in the air leads to many health complications such as respiratory and heart condition along with cancer. Carbon monoxide has a great affinity for the haemoglobin in the blood and it combines with blood to form carboxy- haemoglobin, which reduces the ability of haemoglobin to carry oxygen to the body tissues. NO damage the cell membranes in the lung tissues and constrict lung passages.

2. *Vikrut Jala (water)*

Water having the following characteristics is considered to devoid of its normal attributes.

- Abnormal color
- Abnormal touch
- Excessive stickiness (*kleda*)
- Unpleasant in taste and odor
- Reduction in natural flora or fauna of any water body

Water pollution is resultant of human activities. Major causes of water pollution are discharge of domestic and industrial effluent wastes, leakage from water tanks, marine dumping, radioactive waste and atmospheric deposition. Among all city sewage and industrial waste discharge is one of the most common factors that cause water pollution. Heavy metals from industrial processes that accumulate in nearby ponds, lakes and rivers are harmful to humans and animals.

3. *Vikrut desha (land)*

Land having the following characteristics is considered harmful:

- Abnormal color, smell, taste and touch
- Abundance of serpents, wild animals, locusts, flies, rats, owls, vulture and jackal
- Having excess of grass and weeds

Improper dumping of garbage, waste and other toxins contaminate land and result in land pollution. Human elements such as industrial activity, agricultural chemicals or improper disposal of waste is the source of land pollution. Deforestation in order to plan the smart city affects the natural habitat of species which causes their extinction and directly imbalances the ecosystem. Contaminated or polluted land directly affects human health through direct contact with soil or via inhalation of soil contaminants.

4. *Vikrut Kala (Season/ Time)*

Following characteristics is considered to be harmful

- Frequent occurrence of meteorites, thunderbolts and earthquakes
- Appearances of roughness and coppery red and white colored sun, moon and stars
- Confusion, excitement, apprehension, lamentation and darkness in atmosphere
- Presence of excessive crying noise
- Extreme summer in summer or lack of summer in summer or appearance of rain, cold in summer

According to the *Ayurveda*, in particular seasons there is definite *dosha pradhanta* in humans. To balance the *dosha*, different regimens of *Ahara* and *Vihara* are mentioned in *Ritucharya*. Due to *vikrut kala*, there is imbalance in *dosha* which hampers the body equilibrium resulting in different diseases.

The above mentioned four factors along with their respective features of vitiation are responsible for epidemic disease. Impairment of air, water, place and time are more lethal in their increasing order. *Vikrut Vayu* (air), *jala* (water) *desha* (land) and *kala* (season) help the epidemic to spread fast.

Immunity

Our immune system is the most important line of defence against various diseases and microorganisms. It provides protection to an individual against foreign attacks. There are two types of immunity

1. Innate immunity- The innate response is non-specific to the pathogen and major components of the innate response are physical barriers (skin, tear film), macrophages, and natural killer cells and complement system.
2. Acquired immunity- It is specific to each invader and it is conducted by two main types of cells, T- cells and B- cells. T- Cells are highly specialized cells that coordinate immune response by T-helper cells and also destroy infected cells with help of T- Cytotoxic cells. On the other hand B-cells produce antibodies. Antibodies are proteins that mark the infected cells or a pathogen to facilitate their elimination.

Importance of immunity in addressing epidemic

Efficacy of the immune response is determined by many factors such as age, gender, physical fitness, healthy environment and nutrition of any individual. Nutrition is an important factor for the quality of the immune response of any individual. Studies show that in malnourished people there is always impaired immune response. Obesity, high-cholesterol levels, low vitamins and mineral intake are some of nutrition related causes for immune response deficiencies. Physical fitness also plays an important role in effective immune response and depends on nutrition and daily activities of the person.

Polluted air inhalation triggers the release of white blood cells into the bloodstream and results in inflammation. Also the presence of fine particulate matter triggers the imbalance in the immune system. Presence of heavy elements in drinking water results in a disproportion of natural cytokines balances and results in a negative effect on the immune system. The imbalance and negative effect of the immune system resultant of pollution hampers the normal functioning of the immune system. In people following sedentary lifestyle, there is lack of physical exertion, sports activities and a sufficient rest. At present time the young generation is avoiding outdoor games preferring indoor games more. Modern lifestyle (sedentary lifestyle and pollution) affects the immune system and results in *Janpadodhwans*. Thus, to prevent from *Janpadodhwans* good immunity is necessary together with a pollution free environment.

Summary

Modern lifestyle is a major factor in exploitation of nature. Human race is humiliating the earth in the name of advancements. Excessive use of natural resources causes depletion of resources which is dangerous for our future generation. Industrialization and automobile use have left air, water, land polluted. These activities are also responsible for the environmental changes and calamities like global warming, drought and floods. Polluted air, water, land and variations in season collectively make a favourable environment for spreading of infectious diseases.

Advancements have led people to do very less physical activities, accepting western lifestyle, eating unhealthy diets and using packed food items. Packed food contains preservatives which are oncogenic and immunosuppression. Insecticides and pesticides used by farmers to increase production is also causing land pollution and hampering quality of food. Lack of physical exertion and faulty dietary habits makes people more prevalent for obesity, hypertension, DM and for other lifestyle disorders. The lifestyle disorder makes people immune-compromised.

All the above mentioned factors explain how modern lifestyle is hampering our nature and making the human body exhausted. In recent times we can see covid-19 epidemic is fatal to people who have underlined diseases, it also aggravates with age as the general immunity reduces due to aging. In the younger generation with no underlying illnesses, the pandemic diseases can result in a minor infection, provided we have a robust immunity and do not engage in activities like smoking or vaping to combat the onslaught of the infection. Elders and diseased people are immunodeficient, it means good immunity plays an important role in prevention and cure of epidemic disease and for strong immunity a healthy lifestyle is very important. *Ayurveda* with its natural approach to nurture health, it is looked at as a potential source of health tips and interventions that can support our immune system to deal with pandemic. Many immune boosters in *Ayurveda* like *amalaki*, *tulsi*, *haridra*, e.t.c. increases immunity. Therefore life style, immunity and epidemic are interrelated.

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