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REVIEW PAPER

Concept of Epidemic Diseases in Ayurveda

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ABSTRACT

The concept of epidemic was very much well defined in Ayurveda. Acharya Charaka, the great physician of all ages had mentioned the epidemic diseases under the heading of 'Janapadodhwamsa'. Ancient ayurvedic scholars are more familiar about epidemic diseases along with mode of spread. Certain group of diseases is transmitted from one person to another by direct or indirect contact, while another group of diseases born from common source of polluted air, water, land or disturbed climate, which refers to the broad heading of 'Janapadodhwamsa'. Nature has significant impact on the health as well as diseases. The concept of epidemics in Ayurveda, conveys the message that whenever an effort is made to disturb the nature, it has a tendency to destroy it back. This paper is an attempt to highlight the concept of epidemics, its causative factors and management as mentioned in the Ayurvedic classics. The prime intention of this review study is to prevent people from getting affected by epidemic diseases and its management through Ayurveda.

***Keywords**: Janapadodhwamsa, epidemic, Ayurveda*

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INTRODUCTION

Ayurveda deals with all aspects of life including the surrounding environment where we reside. It is based on the relationship between mother nature and human beings. Nature has significant impact on health as well as in creating diseases. Whenever an effort is made to disturb nature, it has a a tendency to destroy it back which leads to the vitiation of air, water, land and climate ultimately leading to mass destruction of people and wealth. This is termed as Janapadodhwamsa in Ayurveda which is closely associated to the modern scientific knowledge of epidemics. The concept of epidemics in Ayurveda is very much well defined. Ayurveda has considered unnatural activities of people as the reason behind the vitiation of air, water, land and season which are common to all living individuals leading to epidemics.[1]

This study has been carried out critically by considering all the factors such as various human unnatural activities leading to mass destruction and diseases in the ancient days which is still relevant in the present era and its management.

There was much debate in the 19th century about the origin of diseases. During this time there were theories to explain infectious diseases in general. The Greek physician Hippocrates (460-377BC) known as 'the father of medicine' was the first person known to have examined the relationship between the occurrence of the disease and environmental influence. He believed that diseases are caused by an imbalance of four humors air, fire, water, earth or 'atom'.[2] He has coined the terms 'Endemic' and 'Epidemic'; Endemic diseases are usually found in some places, whereas 'Epidemic' diseases are those which are seen at times but not others.[3] Another theory which was most widely accepted was the Miasma theory. The Greek

word Miasma stands for pollution. Miasma was considered to be a poisonous vapour or mist filled particles from decomposed matter that causes illness.[4]

Authors of ancient Ayurvedic texts were much familiar about epidemic diseases along with the mode of spread. Certain group of diseases is transmitted from one person to another by direct or indirect contact, while another group of diseases is born from a common source of polluted air, water, land and disturbed climate, which refers to the broad heading of 'Janapadodhwamsa'.

The term 'Janapadodhwamsa' is a compound term composed of 'Janapada' and 'Dhwamsa'. 'Janapada' means community, nation, people, an empire or people belonging to a country. 'Dhwamsa' means perishing or destruction.[5]

Ancient sanskrit classics like Astadhyayi, Ramayan, Mahabharat and numerous Puranas refer Janapada to the earliest gathering places of men.

From all these points it can be concluded that the term 'Janapada' was used to denote collection of large number of people residing in a specific region. The nearest co relation for this concept in the modern contemporary science is epidemics.

According to definition, an epidemic disease is the rapid spread of infectious diseases to a large number of people in a given population within a short period of time, usually two weeks or less. Epidemics are generally caused by several factors including change in ecology of the host population (increased stress or increased density of vector species); a genetic change in the pathogen reservoir or the introduction of an emerging pathogen to a host population.[6] Generally an epidemic occurs when host immunity to either an established pathogen or newly emerging nobel pathogen is suddenly reduced below that is found in the endemic equilibrium and the transmission threshold is exceeded.[7]

An epidemic may be restricted to one location; however if it spreads to other countries or continents and affects a substantial number of people, it may be termed as pandemic. The declaration of an epidemic usually requires a good understanding of a baseline rate of incidence.[8]

ETIOLOGY OF EPIDEMICS IN AYURVEDA

According to Ayurveda, there are mainly three root causes of all diseases. They are[9]:-

1. **Pragyaparadh:** Mistake of intellect; the mistakes performed by intellect is classified into 3 groups-
   i. **Dhi (intellectual)**: mistake due to lack of intellect or ignorance.
   ii. **Dhriti**: lack of awareness produces mistakes.
   iii. **Smriti or Smritibhramsa**: mistakes due to loss of memory.

   Simply in this context 'Pragyaparadh' is disobeying the laws of nature.

2. **Asatmyendriyarthasamyoga**: Improper contact of senses with their objects, results in an over stimulation and deficiency of sensory activity. This harms the body and mind which requires moderation and harmony internally and externally for healthy functioning.

3. **Parinam or Kala**: The external environment can trigger disease by unbalancing the body through unnatural and extreme variations in temperature, rainfall or wind which in turn leads to causation of epidemics. It also refers more generally to the effects of time and natural physical transformation that occur over time. For example, seasonal influences on the disorders associated with specific phases of life and ageing are all in this category.

   As described above, in the present era we also find some of the anthropogenic factors causing air, water and land pollution along with various other factors leading to climatic change.

Anthropogenic factors for air pollution[10]

1. **Stationary source**: Include furnaces, waste incinerators and ores manufacturing facilities, power plants and all types of fuel burning heating devices.

2. **Mobile source**: Automobiles contribute 50% of carbon monoxide to atmospheric air. These include motor, aircraft and marine vehicles among others.

3. **Forest fires**: Forest fires generate fogs rich in fine particles. Apart from chemical reaction, the other major source of particulate matter is burning fire.

4. **Waste deposition**: Waste depositions in landfills generate methane which is highly inflammable and may form explosive mixtures with air. Methane is also Asphyxiants and may displace oxygen in an enclosed space.

5. **Military resource**: Military activities like manufacture

and use of nuclear weapons, use of toxic gases and germ warfare during wars and adventures into rocketry are all potential sources of air pollution.

Anthropogenic factors for water pollution[11]

1. **Industrial sources**: Water is an essential raw material in almost all manufacturing plants. In India, industries such as tanneries, sugar mills, pulp and paper mills, distilleries, oil refineries, etc., are prominent in this context.
2. **Domestic sources**: In urban areas, municipal sewage is discharged into the nearby canals, thus polluting the canals and also deteriorating the ground water.
3. **Agricultural sources**: Pollutants are discharged into watercourse due to agricultural activities like agricultural runoff, synthetic fertilizers, herbicides, insecticides and plant residue, etc. These water bodies get fertilized by nutrients resulting in Eutrophication and thus causing water pollution.
4. **Mining sources**: Natural or man-made geochemical alterations are also sources of wastewater pollution. Mining operation also produces soluble toxic materials depending upon the geological formation.

Anthropogenic factors for land pollution[12]

1. **Accidental disasters**: Accidents in the oil and mining industries cause hazardous impact on environment destroying wetlands and recreational beach proprieties.
2. **Coal Mining**: The mining process requires displacement of soil and introduces chemicals and other pollutants into the environment.
3. Waste management of landfills.
4. **Pesticides and agricultural practices**: Harmful chemicals used in agriculture collect in the soil and eventually create contaminated soil.
5. **Logging and clear cutting**: Irresponsible methods of harvesting trees can lead to soil erosion and serious land changes.
6. **Unpaved Roads**: This is one of the most overlooked causes of land pollution.

Anthropogenic factors for climate change[13]

Anthropogenic climate changes refer to the production of green house gases by various human activities. Green house effects resulted from human activity such as CO_2 emission from fossil fuel burning, gasoline for transportation, deforestation, increase usage of chemical fertilizer on croplands, etc., causes global warming which in turn results in climatic changes like rise in sea level worldwide, more killer storm, wide spread extinction of species, disappearance of coral reefs, etc.

The factors described above are responsible for the causation of epidemic diseases raising the levels of destabilization. One of the least predictable, but potentially most devastating effects is the climate change which will be increasing levels of epidemics, pandemics, infectious diseases, malnutrition, etc. As the temperature rises, so do the smog levels and the pollutant present in it as carbon monoxide, sulfur dioxide, nitrogen dioxide and ground level ozone resulting in increasing disease conditions caused by these pollutants, such as decrease immune system function, emphysema, asthma, cardio vascular diseases and decrease physical performance. Smog also greatly limits the level of photosynthesis, resulting in disappearance of plant species and decrease agricultural yields.

Many infectious diseases are expected to greatly increase their numbers as the rise of temperature helps for the production and spread of disease vectors such as mosquitoes, flies, different disease causing insects. Malaria in particular is expected to become a huge problem throughout the world. Spread of infectious diseases is also greatly influenced by large-scale migration and increase human population density, which are also likely the effects of climate change. Many of the largest pandemics in human history have been as a result of spreading human population.

MANAGEMENT OF EPIDEMICS THROUGH AYURVEDA[14]

Even with the availability of powerful pharmacological agents epidemics are unmanageable and preventive measures like limitation of spread by isolation and strengthening the immune system are key points.

The concept of microorganism has been well emphasized in Ayurveda in the context of Krimi, Bhuta and Graha, etc., due to unhygienic practices. Management is also very similar to modern microbiology. Avoiding the factors responsible for the causation of the disease removal of the microorganism from the affected site (Apakarsanam) and bringing

change in the environment has been suggested by Charaka for the management of infectious diseases.

The line of treatment should be planned at breaking of aetiopathogenesis and according to symptomatology. Some preventive measures mentioned in Ayurvedic classics are listed below:

1. Procurement of medicine or herbs in their high potential phase well before the outbreak of epidemic.
2. Improving the immunity and the strength of the body.
3. Moving to safe places away from the polluted environment/ air/ water and so on.

These measures can be taken before hand by observing the cyclical occurrence of the epidemic. The measures to foresee the outbreak of the epidemic diseases have also been mentioned in the classics as prodromal symptoms. Various techniques have been described in Ayurveda for prevention externally at the environmental level as well as internally at the individual level. Some of them are mentioned below:

At the environmental level

AIR PURIFICATION

It has been advised that air purification can be done through fumigation (Dhupan) with certain medicinal plants, which have some anti microbial potential. The fumigation acts as a disinfectant and prevents various infectious diseases. The fumigation can also control the vectors, i.e. Mosquitoes, flies and so on, which can contribute towards disease control. Some common plants used in fumigation are Nimba Patra (Azadirachta indica), Sirishabeeja, Haridra (Curcuma longa), Vidanga (Embilia ribes), Arka Patra Devodara (Cedrusdeodara) Sarja Rasa, Apamarga (Achyranthus aspera). As general precautionary measures, clothes, bed sheets, etc. should be fumigated with the help of Sarsapa (Brassica campastris), Vaca (Acorus calamus), Brahmi (Bacopa monnieri), Ashoka (Saraca indica), etc. Effects of poisonous or polluted air causing symptoms like headache, cough, rhinitis, burning eyes, etc. can be prevented by purifying air by fumigating with Laksa (Persicaria odorata), Haridra Tagara Lavanga Patra Musta, etc.[15]

WATER PURIFICATION

Impure or contaminated water is the known factor in the causation of gastro intestinal disorders like cholera which can turn into an Epidemic. Ayurveda advises strict avoidance of impure water containing worms, urine, stool, ova/eggs, dead bodies, decomposed material, leaves, poisonous materials and so on for internal as well as for external usage.

Water may be highly contaminated, slightly vitiated or minimally vitiated. Purification of highly contaminated water is to be done through boiling. Slightly vitiated water can be purified by quenching hot iron ball and minimally vitiated water may be purified by the exposure to sun rays. Nirmali is recommended in the Ayurvedic classics, which is a well-known water purifier.

At the individual level: Individual protection can be done by adopting a healthy lifestyle and taking some preventive measures as described in Ayurveda. Ayurveda advises some special modalities which are being briefly described below:

ROLE OF RASAYANA[16]

Rasayana is the Rejuvenative therapy, used to boost the immune system. Rasayana not only improves the immunity but also treats diseases at times. It can interrupt the course of the disease and prevent from becoming a full-blown stage of the disease. Various scientific studies have been carried out to prove the mode of action of Rasayana. DNA protective activities and immunomodulatory properties of the fresh juice of Cynodondactylon are being proved while validating the traditional use of the herb as Rasayana in Ayurvedic system of medicine. Drugs like Aswagandha, Satavari, Amlaki Haritaki, etc., act as Rasayana and also cure diseases.

ROLE OF AYURVEDIC ANTIOXIDANTS

Antioxidants and immunomodulators could help to prevent occurrence of infectious diseases like Swine Flu; antioxidant supplement may be used in the management of Swine Flu and it may be taken as a preventive medicine throughout any infection phase.[17] This principle can be adopted in the management of all other epidemic diseases. Some other drugs providing antioxidant property in the body are Aswagandha powder, Satavari powder, Amalaki Rasayana, etc.

ROLE OF PANCHAKARMA THERAPY

Panchakarma is the natural detoxifying therapy comprising of five purificatory measures. It has been scientifically proven that natural purificatory treatments can successfully eliminate toxic and infectious substances without damaging or causing any side effects.

ROLE OF DIET

Ayurveda also gives emphasis on the diets and regimens to maintain health and prevent occurrence of diseases.

CONCLUSION

The history of infection and epidemic diseases is as old as mankind. The references of microorganisms are available in the oldest manuscripts of Vedas and Ayurveda. Atharva Veda also mentioned microbes and infectious diseases. Throughout history there are number of pandemics and epidemics such as Small pox, Tuberculosis, Bird flu and most recent being the 2015 outbreak of Swine Flu in India affecting more than fifty thousand people. This review paper is an attempt to highlight the idea of Ayurveda in the causation and management of Epidemics.

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