

Panoramic Description of Airborne Disease in Ayurveda- A Review

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ABSTRACT:

Dating back to the third century B.C epidemiology commenced with Adam and Eve by appreciation of “forbidden fruit”. The fundamental ideas defined in Ayurveda are none the less the same as these days’ scientific technological know-how. Ayurveda does no longer have a specific text as epidemiology in context to air born epidemics, but the principles described in piecemeal may be compiled, analyzed, and interpreted inside the mild of current theories of air born epidemics. An initial systematic literature review by the help of internet-based search engines revealed very negligible work in the field of Ayurveda and epidemiology in connection to air born epidemics. Hence, an attempt was made to analyze various principles of Ayurveda relevant to epidemiology in concern to air born epidemics and its proper interpretation and their contemporary significance. The present review study carried out by collecting the literatures and research findings from various classical and modern text book, online reports and research articles in Google Search and PubMed database. Age-vintage practices of our ancestors and broadly accompanied with the principles which can be compared with the concepts of air born epidemics. In the process of theoretical analysis, the following concepts were found relevant, such as the concept of causation of disease, etiology of disease causes of air born epidemic, classification of disease, modes of communicable disease transmission, and natural history of disease. In this study, attempt has been made to understand these concepts in the light of air born epidemics with their most approximate delineation. However, being a classical medical doctrine, it has its own appeal that cannot exactly be compared with the concepts of air born epidemics. In connection to the present era it is to mention that the tenets described centuries back are very much relevant and their importance is apprehended.

Keywords: Airborne disease, AoupasargikaRoga, Communicable Disease, Janapadodhwansa, Airborne epidemics.

I. INTRODUCTION:

Human pursuit being furnished the desire to belongings is explicit through the enlightened path of Ayurveda. Manifestation of inauspiciousness had been proceeding through sinful acts from the very beginning of creation^[1]. By the progress of each Decade the reverent customs and qualities of mankind got reduced in successive quarters. In this manner prorogation is faced by the entire creation. In each transit of 1/100th of the decade the life span of individual get diminished by one year from the definite span to the relevant age^[2]. Ayurveda miles a comprehensive technique to fitness and homeostasis that includes body, mind, feelings, spirit, and surroundings by emphasizing on non-public hygiene, social hygiene and environmental hygiene. All psycho-somatic maladies in terms of miseries being manifested by the ignorance whilst proper knowledge leads to happiness of both body and mind indeed provides instructions for the beneficial acts of present and future life may not be perceived devoid of proper knowledge^[3]. Perhaps the sinful acts commenced during the present and previous life both are intimate factors for the vitiation of Vyau (Air), Jala (Water), Desha (Soil and location) and Kala (Time). The citation is remarkable for their conspicuousness and manifestation of seasonal alteration are also been mentioned in accordance to indicate the intimate factors^[4]. Elaboration about handling epidemics template as Janapadodhwamshabecause of polluting air, water or land. In addition explains the role of Vayu (Air), Jala (Water), Desha (Soil and Location), and Kala (Time) are the factors liable for Janapadodhwansaor related with the term epidemics. It includes the infectious disorder, and narrates infection of bodily, chemical & natural factors in prevalence of ailment. In the modern

medical science, distinctive description has been mentioned for endemic, epidemic and pandemic depends upon the degree of intensity including outbreak^[5]. Epidemic confers with prevalence of more instances of a disease than anticipated in a given area or among a selected institution of people over a specific duration in exclusive value. Outbreak is associated with nearby prevalence and pandemic is related with wider occurrence consisting of several international locations or continents^[6]. According to the Centers for Disease Control and Prevention (CDC) Trusted Source, airborne diseases can unfold thru an instantaneous or an oblique form of transmission, relying on the pathogen concerned. The pathogens may additionally enter the air in wet droplets, as an instance, while someone breathes or sneezes. There, they will be suspended within the air, and a few droplets dry out, leaving microscopic pathogens. Even as suspended inside the air, those particles can connect to or input the body systems of human beings nearby^[7]. This is the most scientific era in correlation to the modern air born epidemics with disease mentioned under the section of altered characteristics of Vayu in context to Janapadodwamsha and other relevant text where those diseases are mentioned.

II. MATERIALS & METHODS:

A preliminary systematic literature review via the assist of internet-based search engines revealed very negligible work within the field of Ayurveda and epidemiology in connection to air born epidemics. Hence, a try turned into made to analyze various concepts of Ayurveda applicable to epidemiology in problem to air born epidemics and its right interpretation and their cutting-edge importance. The prevailing review observe achieved via collecting the literatures and studies findings from numerous classical and cutting-edge textual content e-book, on line reports and studies articles in Google search and PubMed database.

Causative factor of Air born epidemics:

Relying at the type of pathogen, the degree of exposure, and character elements, airborne microorganism may also motive contamination to develop if exposure takes place. Many diseases can get up after exposure to airborne particles, together right with some traits that droplet residuals might also have been persisting. Transmission of airborne pathogens has varying capabilities. Airborne diseases can travel distances greater than 6 feet and remain infectious in

the air from minutes to hours. This largely depends on the type of ventilation and preventative measures inside the building.^[8] Comparison between the description of causative factors given in CharakaSamhita^[9] as well as modern science has been furnished by the following manner:

Ritu-Vaishama: It refers Alteration or complete absence of specific characteristic features of Vayu in respect of specific season results into air pollution and its consequences like Global warming. These mal characteristics of Vayumay interfere with the structure and stability of pathogen.^[10]

AtiStimita: It is indicative of very stagnant air where the indoor locations have improper ventilation which keeps the bacteria and viruses in a compact space and these types of stagnant air encourages airborne diseases to spread rapidly.^[11]

Atichala: It refers to very high speed wind flow which affairs the ventilation. It is recognized as an important factor influencing the transmission of airborne diseases. The inference of the mechanism of dispersion of airborne droplets known as droplet nuclei are depends upon the space, the risk estimation of airborne infection, the role of airflow rate, the impact of airflow pattern etc. Pathogen-laden droplets, which are expelled into air while a patient sneezes, coughs, speaks, sings or simply breathes ,subsequently dry out in the air and produce droplet nuclei, the fine particles that can suspend in air.^[12]

AtiAbhishyandi: It refers to very moist air or air mixed with aerosols which include the droplet nuclei with an aerodynamic diameter of 10 μm or less, typically produced through the process of rapid desiccation of exhaled respiratory droplets. Strong ambient air cross-flows such as large droplet may act as aerosols with the potential to transmit infection.^[13]

AtiRukshya: It suggests the very dry air having low relative humidity. Whilst the relative humidity drops underneath approximately 40%, the air feels dry to pores and skin. If very low relative humidity persists it is able to make the pores and skin dry, lips chapped and may put greater static inside the air. In some instances, air will be called dry even when the out of doors relative humidity is high however the dew factor (temperature at which air can preserve no extra water) is low. this is due to the fact even supposing the air has an excessive relative humidity of 90% outside, once that air is introduced inside and heated the relative humidity will lower substantially. In situations in which the dew factors are low outdoor (much less than round

32 F) that air will regularly be known as dry through weather forecasters especially if the skies are clean.^[13]

AtiParusha: Extremely dry air, containing least amount of water vapors and it may cause rapid spread of airborne pathogens.^[14]

AtiSheeta: Very cool air may also intervene with the airway harm, however usually not because of the direct effect of temperature fall. It moreover relies upon on the hyperventilation. Cooling of the airways is better by way of increasing the airflow in the airways. Consequently, hyperpnoea of temperate air stocks comparable effects to the inhalation of bloodless air. Very cool air may interfere with the airway damage affecting the air way surface fluid, but always not due to the direct effect of temperature fall.^[15]

AtiUshna: It considers the very hot air. The temperature and relative humidity have an impact on pathogen viability. Combos of temperature and relative humidity to reduce airborne infection danger. A part of the issue is the lack of know-how for aerosolized pathogen survival conduct in various environmental conditions. Also, a few environmental situations are against human comfort or the healing approach.^[16]

AtiRukshoshna/ AtiAbhishyandi-ushna: It refers to very dry and hot/ moist and hot air. Dry tropical (DT) and moist tropical plus (MT+) weathers bring about a fourfold and twofold expanded prevalence of an excessive pollution occasion (top 5 % of pollution concentrations at some stage in the 28 years).^[13]

AtiBhairavaAtiPratihataraspargati,AtiKundalinam:It refers to wind with big uproar and severe pace. Cyclones natural differences in wind speed and path over one-of-a-kind heights inside the environment, referred to as 'wind shear', normally preserve cyclones in take a look at -efficaciously tearing the storms apart in advance than

they attain a fine length. however emissions from assets along with biomass burning and diesel cars have interfered with wind patterns, reducing wind shear and permitting cyclones to expand twice as extreme, in keeping with a examine published in Nature.^[14]

Asatmyagandha-bashpa-siktapanshu-dhumaupahata:It refers to air with stressful scent/ vapors/ dust/ smoke. Air containing gases, dirt, smoke from fires or fumes, aerosols or high-quality particulate depends amount in dangerous portions which might also moreover reason 'sun is

dimming', as noted above. Air pollution may be caused by the air which contains gases, dirt, smoke from fires, or fumes in risky quantities. Tiny atmospheric debris - aerosols - is a subset of air pollution this is suspended in our environment. The composition of atmospheric aerosol debris varies broadly relying on their supply—they will consist of salts (predominantly sulphates), minerals (which consist of silicon), herbal materials, and, in maximum instances, water.^[17]

Modes of transmission and pathogenesis

Airborne diseases are caused by microorganism or viruses that are referred to as Nidan are maximum typically transmitted thru small breathing droplets. By means of the vitiated Vayuthe Mukha and Nashika^[18] will be affected and droplets are expelled when someone with the airborne disorder sneezes, coughs, laughs, or otherwise exhales in some way. Those infectious cars can journey along air currents, linger in the air, or hang to surfaces, wherein they are ultimately inhaled via a person else. Airborne transmission can occur over notably long distances and spans of time. In case you cross into the rest room that someone coughed in mines earlier than, it is able to be a risk. This makes it possible for airborne diseases to infect large numbers of people and more tough to decide the reasons because of a loss of man or woman-to-individual contact. Airborne transmission has various talents. Airborne diseases can journey distances more than 6 feet and stay infectious inside the air from minutes to hours. This largely relies upon at the kind of air flow and preventative measures inside the construct.^[19]

III. DISCUSSION:

Configuration of airborne disease is vividly explained in Ayurveda in a totally scattered manner inside the context of various situations. However prevention & control of such diseases could be very exactly mentioned even though out the complete literature. Time or Kala is a critical parameter that's accountable for the manifestation of the ailment. Three methods of transmission of airborne diseases are described by modern science as direct contact, indirect contact & droplet infection.^[19] However, Ayurveda had extensively though about these factors at a minute level by stating that such as Aoupasargika^[20] & JanpodadhwasmasaVyadhi^[21] are mainly transmitted through one to another by expired air, by physical contact, by eating with others in the same plate, by sharing same bed & using clothes, etc. All these Nidan compromises



in above broader classification given by contemporary science. Nowadays, health is not inherited, but it is developed by following laws of nature. Environment and human health are interdependent. In the present era; the atmosphere is composed of biological, physical, social, economic factors. Environmental hygiene must be maintained to make a healthy environment of man. The internal characteristic environment includes Dosh, Dhatu, Malas, Strotas, Prakriti and external factors includes Jala, Vayu, Desha, Kala. So it is crucial to balance or to maintain it to avoid diseases. In such a condition Panchakarma therapy is the best way to treat. There was great emphasis was given for the maintenance harmony between the internal and external environment. For this purpose, an excellent dietetics regimen, various lifestyle recommendations and good code of conduct are given in a very explorative manner. Proper dietetics & seasonal regimen is advised to rational bridging between human body & external environment. Rasayana Chikitsa again accentuates their effects by improving one's immunity. Time is an essential factor which cannot be avoided in etiology of the disease. To prevent any disease at primary stage and to prevent its recurrence, the basic methods mentioned by Ayurveda should be followed. Prevention of such diseases is extensively appreciated rather than its curing. Primordial prevention is the best way to prevent the development of risk factor in population. So the methods mentioned in Ayurveda can act as primordial prevention in airborne infectious diseases. The airborne disease can be prevented or stopped from transmission by merely following proper Dinacharya, Ritucharya Sadvritta, Achararasayana and Ashtanga Yoga. The three basic measures which prevent the infectious disease are, first one is to control the source of infection, which includes following proper Dinacharya or daily regimen, Ritucharya or seasonal variation. The second one is interrupting the routes of transmission, which contents following proper Sadvritta. The third one includes immunization to take Rasayana Chikitsa,^[22] which can promote and maintain health. The composite approach of Ayurveda, i.e. prevention as well as management, can make a good benchmark in the field of such infections.

IV. CONCLUSION:

Ayurveda, an ancient science of life in world, has holistic approach in prevention and management of diseases, broadly classified as

communicable and non-communicable, depending upon their mode of transmission. In the present era, airborne pathogens most burning difficulty causes the diseases like cardiovascular illnesses, lung cancers and plenty of different deadly lifelong Non-Communicable diseases. The average life of a person is decreasing due to the current urbanization. The knowledge mentioned by several Ayurvedic literatures is the essence of their productive life experiences narrates the identical circumstance underneath the call of vitiated Vata which reasons epidemic sicknesses and deaths mentioned as Janpodadhwasana Vyadhi. Apart from the acknowledged causes of Air pollutants, the treatise indicates Unrighteousness, generated because of errors of mind, as the basis reason of it. When government of country and society and their subordinates don't follow the codes of righteousness, it in the long run causes vitiation of air, water, soil and climate. As a result, acid rain, extreme cyclones, worldwide warming, land sliding, reduced properties potency-manufacturing of herbs and crops and extinction of species take location. Subsequently, aside from all realistic solutions, there may be awesome need to make honest efforts to rectify the mistakes of intellect so as to manage the righteousness and save the arena from numerous extreme consequences of Air borne disease. To manage the airborne disease in terms of Dinacharya,

Ritucharya, Sadvritta, Rasayana Chikitsa which are mentioned by our ancient Ayurvedic scholars' decades before and with their treatments this cannot be neglected in the current era of civilization. Despite that, strict following of such Ayurvedic principles and creating awareness of such knowledge may become a proper lifeline in a current dangerous pandemic state to overcome it and to avoid such circumstances in future also.

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