

An Analysis of Environment's Impact on Health

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ABSTRACT

The current body of information on how environmental exposures affect human health reflects advances in social science and medicine as well as in general technological, social, and economic growth. Human health and welfare largely depend on maintaining and defending the integrity of natural systems, including those that support life in the natural environment and reduce human impact that has a detrimental effect on ecologically sustainable development, such as clean air, safe water, biodiversity, toxic waste management, and proper land reform. Numerous scientific studies have been conducted to shed light on environmental health issues, but few studies have examined the economically significant effects of environmental change on communicable and non-communicable diseases. As a result, this review study has examined a few studies from 1990 to 2018 in an effort to pinpoint the areas of environmental health and economic challenges in South Asia and India where there are research gaps. More importantly, policymakers lack a nationally representative economic analysis of how environmental factors (such as air pollution, water resource management, toxic pollutants, and biodiversity loss) affect human infectious and non-infectious diseases, and researchers in India have not yet explored this topic. Furthermore, no scientific papers based in India have been found to have been published regarding the relationship between climate change and undernourishment, the rate of chemical exposure to human health, and human stress, including psychosocial factors. The creation and implementation of climate policies in developing countries in conjunction with universal health coverage might benefit from obtaining these under-researched literatures.

Keywords-- Human Health, Environment Change, Air Quality, Water, Solid Waste

requires a careful balancing act that sometimes hurts social equality, economic efficiency, and the environment (Oiamo, 2014).

According to the economic viewpoint on environmental change, a bad change in environmental elements, such as environmental degradation, has multiplier negative impacts on the many economic sectors of a country, particularly on the health and agricultural sectors in developing economies. According to a study (Podesta and Ogden, 2008), sudden-onset environmental events like floods significantly increase the likelihood of migration, while long-term environmental events like droughts have no significant impact on internal migration. This is a significant international socioeconomic problem. For instance, since the 1970s, storms, floods, droughts, and landslides have forced nearly 600,000 Bangladeshis and 4 million Filipinos to relocate.

Poor rural households with limited access to lands and resources for their own production, poor nutritional status, and limited labour capability are easily caught in an environment-poverty cycle (Barbier, 2010). However, research indicates that as environmental deterioration develops, social vulnerability also rises (Luers, 2005). If no special environmental action is taken, reducing poverty won't necessarily result in a better environment. According to a study conducted in Pakistan, trade liberalisation encourages environmental degradation through the export of environmental capital (Khan et al., 2001). Poor households should be the primary beneficiaries of public investments in environmental infrastructure since access to clean water and sanitary facilities improves household health outcomes, which are closely correlated with environmental factors in developing nations.

The biggest global influences on people's and populations' health are social inequality and environmental deterioration (Donohoe, 2003). In the future, it is anticipated that human despair brought on by excessive salinity, asthma, suicide, and heart disease would rise in rural regions, further increasing the burden of disease linked to environmental degradation (Speldewinde et al., 2009; Fearnley et al., 2014). By making growth more efficient, cutting down on waste, and putting the right value on resources, the negative effects on the environment can be lessened (Munasinghe, 1999).

I. INTRODUCTION

The term "environmental change" refers to the framework of natural human surroundings, which includes biophysical elements and processes of the land, water, and air, including all layers of the atmosphere, as well as inorganic and organic (both living and non-living) matter, as well as socio-economic elements and processes of the human environment, primarily related to risks to human health. Sustainable growth is hard to achieve because it



Source: <https://fairgaze.com/generalnews/environment-and-human-health.html>

For the most part, climate connotes nature to certain people. The setting in which a living thing is born and develops as shown by periodic variations is known as the "climate." It is stated that people respond to their local climate as a result of natural challenges, changes, and other factors. In this way, the environment has a variety of direct and indirect effects on the people that inhabit it.

The interconnectedness of life on earth shows that nothing we give to the earth simply disappears. People are exposed to pollutants through the food they consume, the air they breathe, and the water they drink. In some other ways, everything is connected. The young and the elderly are the people who are most helpless against the effects of the climate, as their susceptibility is mentioned for several reasons. The food we consume isn't free of synthetic chemicals or pesticides either. Numerous synthetics are used during the food production process to ensure the proper growth of food, and as a result, the technical advancements degrade the quality of the soil on the farms. Additionally, they degrade the pollinators' nature, which helps the food flourish. They can make people who eat them sick in several ways, including through disease and anti-infection blockage.

Just 2.5% of the world's total water supply is drinkable, so keeping up with the nature of water is important as well. No matter how many clean water safety initiatives we put forth, something will occasionally go wrong. Many aquatic plants are in danger of extinction. We have turned rivers and oceans into places for unloading, which has caused a gap in our hygiene in particular.

Nearly one in four of all deaths worldwide, or 12.6 million deaths annually, are thought to be caused by hazardous settings. The World Health Organization (WHO) published a bulletin that examined how environmental risk factors, including air, water, and soil

pollution, chemical exposures, climate change, and UV radiation, relate to more than 100 diseases and injuries. An econometric analysis (Ali and Audi, 2016) found that environmental degradation and income inequality have a negative and significant effect on life expectancy in Pakistan. There is a one-way causal link from environmental degradation to life expectancy.

Children in Southeast Asia and the Western Pacific face numerous environmental dangers that can cause infectious diseases like pneumonia, dengue, malaria, dysentery, measles, AIDS, and tuberculosis (WHO, 2017a; Zuckerman, 2012; Bonjour et al., 2013). The primary environmental issues in South Asia, including India, include the deterioration of air quality, drinking water, and natural resources; a lack of solid waste management; poor surface water quality; a lack of water resources; a release of toxic pollutants; a loss of biodiversity; the effects of climate change; and improper land use (CES, 2015).

The goal of this article is to point out the environmental elements that are relatively weak evidence when it comes to globally attributing the human health and other economic sectors of the WHO South East Asian area, among others, to environmental causes. Some potential research and review papers are deliberately chosen by defining criteria for each component to ensure the notion of exploring in depth an aspect of environmental changes and their consequences on human health. The first step was to gather the publications from Google Scholar, Science Direct, PubMed, and journals focusing on environmental health. For the purpose of identifying evidence gaps in India, the criteria that the paper should directly or indirectly include all three components—environment, health, and economic or econometric issues—was set when choosing which papers to review. The papers were evaluated beginning in 1990 and continuing through 2018. On the basis of a few carefully

chosen prospective pieces of historical evidence, the main aspects of environmental change that impact human health are discussed.

II. AIR QUALITY AND HUMAN HEALTH

Beginning in the 1990s, studies frequently asserted that poor air quality in cities in developing and wealthy countries causes chronic coughing and increased susceptibility to infections, while air pollution mortality disproportionately affects the elderly, the infirm, and the very young. Allergies, bronchial inflammations, and irritation of the eyes' and nose's mucous membranes are signs that air pollution has to be decreased.

Prior to 2005, the WHO estimated that air pollution-related acute respiratory illnesses claimed 2 million children under the age of five per year (Mabahwi et al., 2015). The most vulnerable to the effects of air pollution are those with respiratory conditions. In addition, the study demonstrates that air pollution can lead to stress in people in addition to having negative health effects (Mabahwi et al., 2014). The total costs of the health impacts in India, according to a WHO economic analysis, were estimated at US\$ 113 million for a 50-mg/m³ increase in PM₁₀ and US\$ 218 million for a similar increase in NO₂. In China, the total costs of health impacts from air pollution (particulate matter) were estimated to be between 2.4 and 4.9% of the city's GDP (WHO, 2016a).



Source: <https://www.niehs.nih.gov/news/events/>

Infants, kids, and teenagers; adults over 65; people with lung diseases (such as asthma, chronic pulmonary disease, chronic bronchitis, and emphysema); people with heart disease or diabetes; people who work outside; and people who are active are at risk from particulate matter, according to the American Lung Association (2013). In addition to harming human health, air pollution also has a negative impact on the environment's aesthetics, wildlife, vegetation, soils, and water quality (Mabahwi et al., 2014). Recent research appears to be considerably more focused on early warning signs of dangerous air quality for human health (Mabahwi et al., 2015; Tin et al., 2016). It's worth noting that a small number of recent papers, including reviews, have concluded that psychosocial factors are primarily responsible for informing public health messages used during air pollution episodes (Mabahwi et al., 2014; Tin et al., 2016; D'Antoni et al., 2017; Fuller et al., 2017; Prüss-Ustün et al., 2016; Singh et al., 2016; Singh Indoor air pollution from traditional cooking energy increases chronic bronchitis, asthma, and acute respiratory infections.

III. WATER CONSUMPTION AND HEALTH

By ensuring that everyone has access to safe drinking water and sanitation facilities, an estimated 2 million deaths and 15% of global child mortality can be prevented (Murty and Kumar, 2002; Prüss-Ustün et al., 2008; Gorchev and Ozolins, 2011; WHO, 2014). Safe drinking water also significantly lowers the incidence of diarrheal diseases and other illnesses like intestinal helminth infections, schistosomiasis, and trachoma. This result demonstrates that malaria control programmes that emphasise environmental management are highly effective in reducing morbidity and mortality and can lead to sustainable malaria control approaches. The burden of malaria associated with water management could be reduced by 88% through environmental and human habitation modification (Prüss-Ustün et al., 2008).

According to Prüss-Ustün et al. (2008), the economic benefit from managing drinking water resources is expected to be \$84 billion and includes savings on health care, avoided deaths, productivity benefits, and time costs. Following the publication of WHO guidelines for

safe drinking water, a multilevel modelling study encompassing all WHO member countries concluded that, if current trends continue, improved water access will benefit more than 10% of the global population, resulting in significant prevention of health hazards (Wolf et al., 2013). Depending on the kind of water supply, which is essentially piped water delivery, diarrhoea can be greatly decreased by between 28 and 45% if water quality can be ensured up to the point of consumption. Pipe supply has significantly decreased the prevalence of the disease, especially in South Asia (WHO, 2014).

According to a study conducted in Kenya among pregnant and HIV-positive women, household water insecurity has a negative influence on psychosocial well-being, the economy, and the primary means of disease transmission (Krumdieck et al., 2016). Although countries are responding to the SDGs with a high level of responsiveness, the majority of countries are currently setting or planning to set targets that take into account the SDGs in the coming years. The estimated capital investment needs to reach the SDGs are estimated to be three times higher than current investment levels, and significantly more resources will be required to address the fi

For this reason, it would be necessary to conduct research at the national level to examine potential home resources for managing drinking water, which would indirectly improve human health by preventing water-borne illnesses. According to a recent review report covering the years 2011–2015, 381 new outbreaks of water-borne diseases were the primary driver of water scarcity and environmental degradation (Efstratiou et al., 2017). However, least-developed nations like India do not have access to such recent prospective proof.

IV. SURFACE WATER AND HEALTH

According to an outdated but promising study measuring the economic benefits of improving surface water quality in relation to environmental issue analysis using a non-market valuation method, household problems like water pollution are not their top priority because they are more concerned about environmental issues like deforestation and inadequate solid waste collection and disposal (Choe et al., 1996). 90% of the world's population has access to improved drinking water, but 159 million people rely on untreated surface water, which is even riskier for their health than other water sources and provides 50% of the world's drinking water needs. Surface water is the primary means of disease transmission over long distances (WHO, 2016b). Water quality problems will spread globally as population demands rise. For the protection of human health from hazardous chemicals and waterborne infectious illnesses, the water cycle, including

surface water and wastewater, needs to be managed holistically (WHO, 2016b). However, previous research has focused solely on the substances found in surface water rather than, more critically, the causes of surface water pollution that poses health risks.

4.1 Health and Solid Waste

According to a global estimate of urban solid trash, by 2025, 4.3 billion urban dwellers will produce 1.42 kg of municipal solid waste per person per day. This could have a significant economic impact. Solid wastes from the chemical and hospital industries are more dangerous for human health than normal home garbage in developing nations, and the density of waste produced in these nations is likewise higher than in developed nations. A comprehensive, integrated, and cost-effective solid waste management system is currently being established in economically sound nations (Manaf et al., 2009). According to a study conducted in India, excreta and other liquid and solid waste from homes and the community pose a severe health risk and contribute to the spread of infectious diseases. Environmental pollution is mostly caused by improper waste management and disposal, which provides a breeding ground for dangerous organisms and promotes the spread of infectious diseases (Boadi and Kuitunen, 2005). More recently, recycling and composting have been developed to lessen the environmental impact and increase the economic benefits in South Asian countries because more than 70% of the solid wastes produced in India are of organic origin. Beyond this, there are no other publications addressing the cost burden of healthcare and solid waste management in South Asia, including India.

First, the literature is organised and reviewed chronologically according to how relevant it is to the relationship between climate and disease. Next, the literature specific to different climatic components and their effects on health is reviewed. Finally, the papers based on climatic vulnerability, adaptation, and the financial burden raised by climatic hazards are adequately reviewed, taking into account both potential publications and reports from abroad as well as those that could be published locally. A better understanding of the economic costs of climate change on health can be crucial for developing health adaptation plans and supporting health-improving mitigation measures. The significant health benefits of mitigation strategies might be examined in economic analyses, which would cover a large portion of the cost of the original expenditure. But it can be challenging to establish equity and to express uncertainty, the relative value of future gains (using techniques like discounting), and other unique cases. The costs and advantages of investing in health adaptation, at the global, regional, or local level, as well as of mitigation efforts impacting health, would be more accurate if these

methodologies were used to quantify the health costs of inaction on climate change. The country-based articles, however, have only been able to estimate a portion of the total cost of the harm caused by climate hazards.

V. CONCLUSION

Multiple negative multiplier effects of environmental deterioration lead to an unstable global health condition. Referring to a condensed assessment of the key environmental elements actually made it easier to pinpoint the current, most dangerous factor affecting human health, especially as it increased present and future health costs by encouraging the occurrence of frequent new diseases. One of the major study gaps in South Asia is the link between air pollution and human stress and the economic cost of stress, a topic of recent medical discussion. None of the papers cite any financial costs associated with water-borne illnesses as a social burden. Similar to this, researchers in India have not yet explored the effects of climate change on harmful chemicals that have unintended negative effects on health.

However, the pieces of evidence focus solely on examining issues rather than cost-effective management scenarios. Solid waste management in the South Asian region is a key challenge for the occurrence of new diseases. Humans may be able to manage air pollution, but climate change may inevitably lead to a number of diseases and other vulnerabilities or dangers. Climate change is thus the most important environmental factor that must be examined economically in relation to human health in communities that are most susceptible to or vulnerable to climate change.

Although there hasn't been any recent potential research to develop research-based efficient adaptation and mitigation action plans for implementation in India, extreme weather events related to climate change in terms of temperature, humidity, and rainfall have increased health vulnerability, taken human lives, and caused other morbidities in South Asia, including India. Almost all scientific research conducted between 1990 and 2000 used descriptive approaches to explain the connection between climate and health. A few forecasts about the risk that human diseases will pose from the climate by 2050 were briefly discussed in a few studies. The research from 2001 to 2010 is also extremely extensive in terms of how local and global climate change issues are posing threats to human health from several angles. In addition, studies on the susceptibility of climatic fluctuation to both communicable and non-communicable diseases have been published recently, from 2011 to the present.

Studies conducted in South Asia fill the evidence gap that all South Asian nations should conduct country-specific national analytical and multi-dynamic research,

taking into account both climatic and non-climatic indicators from an economic perspective, in order to generate self-motivation at the local level, particularly with regard to aquaculture productivity, reduced physical labour, floods, heat waves, draughts, undernourishment, mental health, infectious disease, etc. in the short term and long term. In India, the following major climate-sensitive health risks exist: vector-borne illnesses like chikungunya malaria, dengue fever, and Japanese encephalitis; water-borne illnesses like cholera and bacillary diarrheal disease; food-borne illnesses like malnutrition and cardiorespiratory illnesses; psychological stress; and health effects and injuries caused by extreme weather.

There are many ways that climate change affects human health, and it is becoming crucial for environmental health management to do quantitative analyses of how it affects health at the national level. The research appears to be focused on estimating the health costs associated with climate change in conjunction with damage costs; however, these cost assessments only account for a small portion of the overall societal cost. Therefore, it is vital to provide policymakers with an economic analysis of adaptation costs in order to help them develop a better health perspective related to climatic dangers. The cost of climate change is evaluated globally in terms of GDP, welfare, and investment. The evaluation of the health cost of climate change uses sum methodologies and a spatial empirical adaptive global-to-local assessment system, yielding less than ten pieces of scientific evidence. In order to reduce the current climatic vulnerability encouraging unknown outbreaks of emerging and re-emerging diseases and the private public health cost burden, it is therefore urgent to conduct an integrated country-wise South Asian level study using multivariate analysis to find the relationship between environmental change and disease incidence, including socioeconomic and household behavioural factors.

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