Impacts of Environmental Changes on Health in the Gulf Region
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From the mid-20th century, there has been quite a radical change in environmental and climate patterns regionally as well as globally. The reason behind these changes is primarily linked to deforestation, industrialization, expanded use of fossil fuels, and the extreme production of carbon dioxide (CO2) in the atmosphere. The environment comprises the surrounding conditions such as the complex of biological, physical, and chemical factors that act upon the ecological community and ultimately determine its form and survival. Environmental change encompasses the disturbances caused either by ecological processes or by the human influence which can be in the form of man-made disasters including but not limited to wars, oil spills, pollution, cyclones, etc. Environmental changes are a huge threat to humanity as a whole. These changes can be detrimental to health in a multitude of ways. Most significant ones being exacerbating existing health conditions or causing unforeseen health problems. These environmental changes affect human health by polluting the air we breathe, the water we drink, and the food that we eat. As a result of accelerated progressions in technology, active industrialization, ongoing wars, irrational use of pollutants like petroleum, etc., the whole of our planet is susceptible to environmental changes, but some areas like the Gulf region have been more sensitive to these 1.

The gulf has shown climate deviations that have transmuted into various environmental extremes such as rising sea levels, melting of the arctic ice caps, droughts, and floods. According to the widely cited, “The Stern Review”, a temperature rise of 2 degrees Celsius will see a 20-30% decrease in water availability in one of the regions of the globe, and a 4 Celsius rise will result in up to 50% decrease in water availability1. The latest example of this is Kuwait; where due to the environmental changes world’s most scorching day was recorded recently in 2019 2. The Gulf region is the largest producer of oil and gas in the world fulfilling 1/3rd of the world’s needs 3. According to world bank statistics, UAE, Saudi Arab, and Qatar produce around 22.9, 19.4 & 43.9 metric tons of CO2 per capita against the global average of 5.0 metric tons of CO2 per capita 4. These materials when processed to make electricity and other products release greenhouse gasses which are highly susceptible to environmental changes that have a direct or indirect effect on the health in the region. The byproducts include particulate matter (PM2.5) that cause chronic respiratory diseases and also aggravate the asthma condition in many. Furthermore, the overall increase in urban smog also has an impact on the psychological health of a human being by making the environment dark and hazy 5.

All the oil exported from the gulf region has to pass through the straits of Hormuz, a small channel between UAE and Iran, therefore it is a busy shipping route, having 25000 ships and 60% of them carrying oil, with a minimum margin for error. About two million barrels of oil are spilled annually from the routine discharge of dirty ballast waters and tank washing, partly due to the lack of shore reception facilities. Therefore, contribute towards polluting marine environment 6. Oil spills have been linked to a higher prevalence of depression, post-traumatic stress disorder, increased levels of anxiety among exposed populations. The most vulnerable population to suffer from mental health disorders due to oil spills are the people living in the surrounding area, fishermen, and workers that clean up the oil spill. In addition to the mental health effects of oil spills, they also have a multitude of physical implications. These include dermal irritation, eye irritation, breathing problems.
headache, nausea, vomiting, etc. In addition to this, the gulf region is largely dependent on seawater as a source of drinking water. After processing at a desalination plant or a Reverse-Osmosis membrane, high-quality drinking water is then pumped to the nearby cities for consumption whereas the filtrate of this is discharged back in the sea, creating hot pools of concentrated brine. These concentrates usually contain various chemicals that pass through aquatic life and enter the food chain resulting in chemical-induced food poisoning.

An often-overlooked aspect of the link between environment and health is communicable diseases. We have seen a rise in Malaria cases in the region in the past few years due to environmental changes. These changes influence the vector breeding and transmission of the virus. The results of a study indicate that with the increase of temperature by 1 °C, the malaria infection increased by 337% over the 3 previous years. Not only has there been an effect by the changes in the weather and atmosphere but also the changes in our oceans and seas have had a great impact on the spread of infectious diseases in the region. Natural and man-made disasters that lead to stagnation of water have led to an increase in the diseases spread by waterborne microorganisms. Unanticipated changes in the trends of water temperature have led to the presence of conditions like Vibrio cholera at different and unexpected times of the year which have resulted in epidemics.

Floods are another consequence of environmental changes. Deforestation is directly linked to the increased proportion of floods. Desertification has doubled the frequency of floods, as forests hold more water and prevent the sediment runoff. Floods increase the risk of vector-borne diseases such as malaria and dengue fever, transmitted by mosquitoes, and also an increase in water-borne diseases such as typhoid and cholera. As per the stern review, a 2-degree Celsius rise would result in 40-50 million people being exposed to malaria alone. Furthermore, both droughts, as well as flooding, have a negative impact on the food supply and with an ever-increasing population, the percentage of malnourished individuals will see a sharp rise.

The gulf region has borne the implications of many conflicts. These man-made environmental changes have dramatically affected the health of people living in these dispute zones. According to WHO, living in a war-affected territory automatically causes an outbreak of transmissible and respiratory diseases. These outbreaks are caused by a combination of factors like the destruction of sanitation systems and the non-availability of clean water along with the pollutants created by the war. In the past decade, we have seen one of the largest outbreaks of cholera in Syria that eventually transformed into an epidemic. Syria has not only experienced an epidemic of cholera but also of shigellosis and typhoid. Another example is Iraq which experienced an outbreak of polio along with Syria between 2013 and 2014 because of decreased neonatal polio immunization coverage during the Iraq war.

Environmental changes have had an array of adverse health consequences in the gulf region. In the past few years, there have been a lot of natural and man-made fluctuations in the ecosystems and environment of the region. In the following years, these are expected to have even bigger outcomes. It is the need of time to build the capacity of the region to deal with the challenges that lay ahead. All these changes are directly or indirectly linked to human activities and are also having a significant implication on the health of our future generations. All these devastating changes can still be controlled. More forests should be planted to avoid desertification. Industrial waste should be discarded safely to avoid contamination and industries should shift to biodegradable means of energy consumption. In the same way, there is an intense need to realize that unnecessary and unreasonable use of petroleum products is damaging to health. We need to choose Eco-friendly sources of energy. Committees should be made on a regional level and these matters should be highlighted on a larger scale. Change beings at home, so as a whole everyone needs to understand these facts and take steps in order to avoid further catastrophic shifts.

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