

Climate Change and Health Risks

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Abstract: Health is a serious problem which has been faced in different countries of the world including Pakistan. The main cause which effect on human health is the direct heat, unrelenting weather, ozone layer, Pollution, vector borne infective diseases and mental stress. The greenhouse Gas has obvious effect on human health. Weathering and anthropogenic actions that include metal excavating, combustion of fossil fuels and insecticide use all are the reasons of high and low level risk for human health. To reduce the effects of climate there must be adopted different kinds of strategies.

Key Words: Health, Climate Change, Effects, Strategies

Introduction

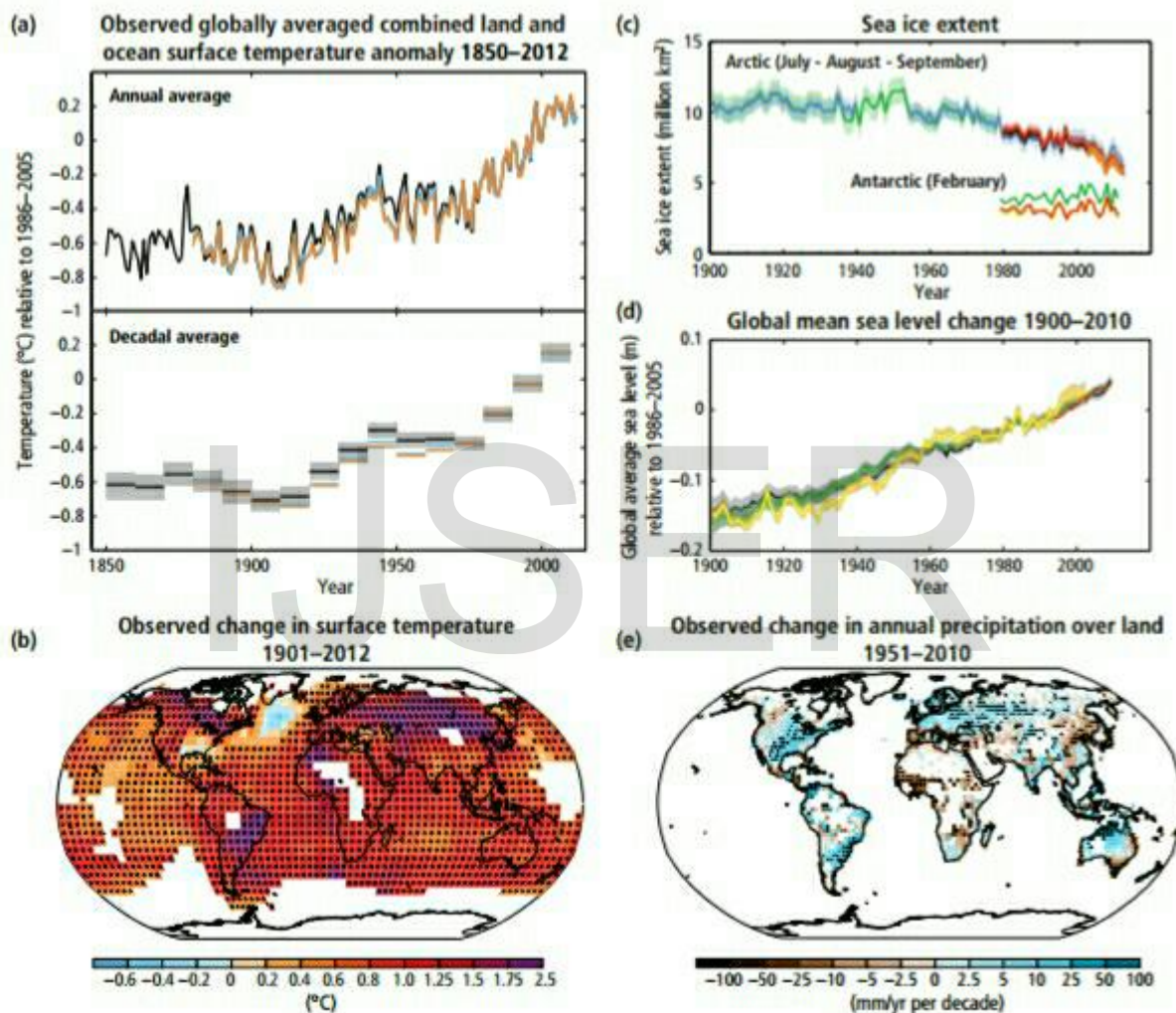
‘Global Climate Change’ concept is very complicated people’s are still fully unaware about the risk and consequences of global climate change on human health in coming decades. Mostly researcher’s discussion is about the consequences of climate changes and its risk on economic conditions, assailable industries, envoi mental resources and ecosystems. It is also necessary for the survival of human beings and societies but the human health is more important than another element of the life. We construct our societies to attain the resources, economic growth and security but these are the means of the survival of human beings and health. In developing and underdeveloped countries health sector is ignored as compare to other sectors. The government should be taken serious implementation steps for health Care system to cure the human health due to the climate change.

Health is the state of physical and psychological condition of persons. The effects of climate on human health are known since early years. The link between the climate and human health is in certain ways. Earth System Science Partnership (ESSP) and Global Environmental Change and Human Health (GECHH) a joint project on climate change observes that, *“It widely understood that human societies and the well-being and health of their populations depend on the flow of materials, services and cultural enrichment from the natural world.”*[1]

The World Health Day (2008) focused on to secure the health from the effects of global climate change. The purpose of this day is to synthesize the people about the adverse effect on health due to the climate change. [2]

In past century (1901-2012), the average temperature of the global climate has been increased by 0.6 ± 2.5 °C. The change in snow realm, Ocean surface level, sea temperature and global air IPCC analyzed that the global temperature has been warmed.[3] (See in fig 1)

Fig 1



Source: climate change 2014

Most of the warming since the Global climate change becomes increasingly, all the governments of the world are trying to overcome the threats which they are facing. Pakistan one of the most dangerous countries to climate change: in the long term risk ranking of the world Pakistan stands 8th number and in 2015 it was worst affected country. [4]The changing in climate is effecting on the daily life of the human beings. The health issues are increasingly day by day due to the climate change.

Table 1: The Long-Term Climate Risk Index (CRI): the 10 countries most affected from 1996 To 2015 (annual averages)

CRI 1996–2015 (1995–2014)	Country	CRI score	Death toll	Deaths per 100 000 inhabitants	Total losses in million US\$ PPP	Losses per unit GDP in %	Number of events (total 1996–2015)
1 (1)	Honduras	11.33	301.90	4.36	568.04	2.100	61
2 (2)	Myanmar	14.17	7 145.85	14.71	1 300.74	0.737	41
3 (3)	Haiti	18.17	253.25	2.71	221.92	1.486	63
4 (4)	Nicaragua	19.17	162.90	2.94	234.79	1.197	44
5 (4)	Philippines	21.33	861.55	1.00	2 761.53	0.628	283
6 (6)	Bangladesh	25.00	679.05	0.48	2 283.38	0.732	185
7 (8)	Pakistan	30.50	504.75	0.32	3 823.17	0.647	133
8 (7)	Vietnam	31.33	339.75	0.41	2 119.37	0.621	206
9 (10)	Guatemala	33.83	97.25	0.75	401.54	0.467	75
10 (9)	Thailand	34.83	140.00	0.22	7 574.62	1.004	136

Source: Global Climate Risk Index 2017

Verisk *Maple croft*’ a UK based global risk consulting firm highlighted three major cities of Pakistan (Lahore, Karachi, Faisalabad) is on high risk due to the drastic change in climate. [5] According to a recent study of global greenhouse gas emissions report, Pakistan stands on 137th position and his contribution of greenhouse gas emission is only 0.48 percent but due to unexpected climate condition of Pakistan it’s name is still in the list of those countries which have adverse climate effects.[6] Pakistan is top listed in those countries who are facing dangerous climate condition. In 2014-2015, Pakistan has faced a horrible situation due to the

climate change. According to Pakistan economic survey, 2011-2012 around 520 people's lost their lives and 1180 injured due to flood and estimated loss in economic was \$ 3.7 billion.[7] In 2015, a severe heat storm in Karachi, Chitral flood and scarcity in Thar, thousands of people's bereft of lives. The national institute of oceanography, Karachi on stake and could be drown in next 35 to 45 years due to the drastic increase of the temperature and Mangrove depletion across coastal line.[8]

In addition, the other adverse effects due to climate change in Pakistan is harsh weather, scarcity, heavy rain, landsliding and dangerous inflows of Indus River System (IRS). In Pakistan, heavy rains start during in the summer season rather than winter. Due to climate change, winter season is shrink and summer season will be extended. These climate change would be regorously impact on the agriculture, health and economic sectors in Pakistan.

Major Climate Change related Concerns of Pakistan

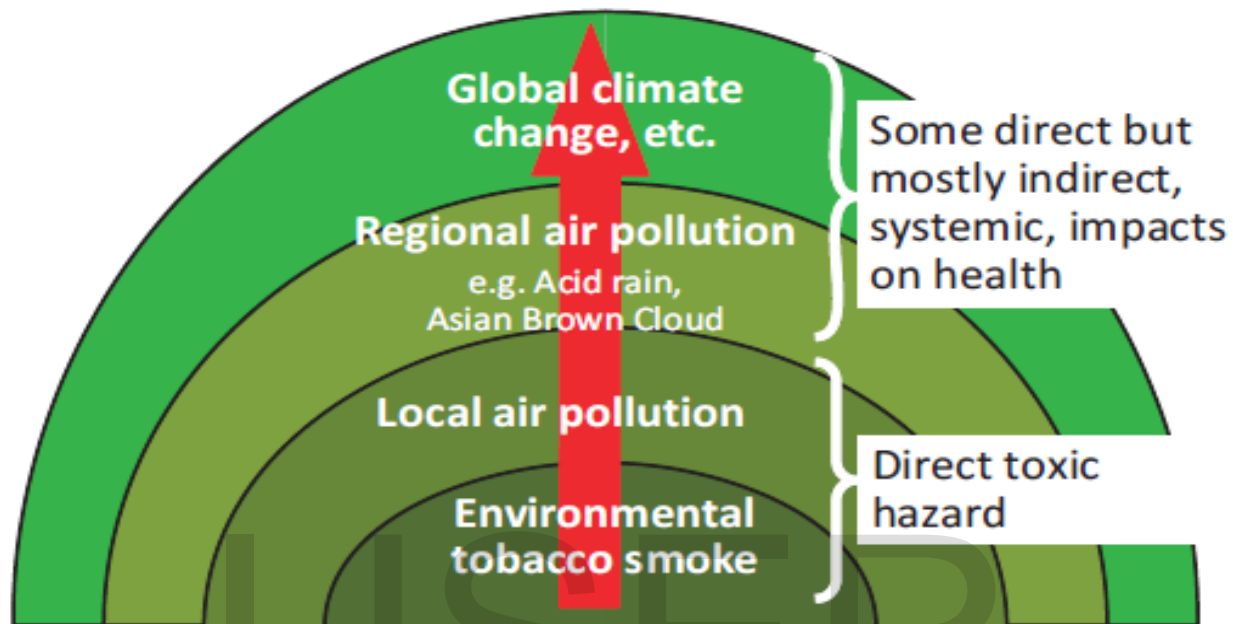
- Extension of instability in Moonsoon
- Forecast the collapse of Karakorum-Himalayas Glaciers
- Dangerous Indus River Flows
- Increase in extreme Events (floods, droughts, cyclones, extreme high / low Temperature etc.)
- Water scarcity and heat-waves conditions in desert and semi-desert regions
- Increase in Desertification; Loss of Greenery
- Health Issues

Health risks from Environmental Change

Climate change is a complex phenomenon which relate to the environmental conditions and processes that can increase the health risks. There is a direct effect on health due to increase the extreme weather condition and it is not just only weather conditions but also environmental changing, ecology and social climate changes are resulted to effect human health. The most common events that increase the health risks are heat waves, storms, cyclones, fires and floods. Due to the environmental changing different kinds of diseases are spreading which is harmful for

the human health and sometimes it resulted death. Fig 2 shows the some direct impact of environmental changes which effect human health. [8]

Fig: 2 Environmental health risks: Scale and type-from local direct-acting hazard to global system disruption



Source: Climate change: present and future risks to health, and necessary responses

Major health Consequences of climate change in Pakistan

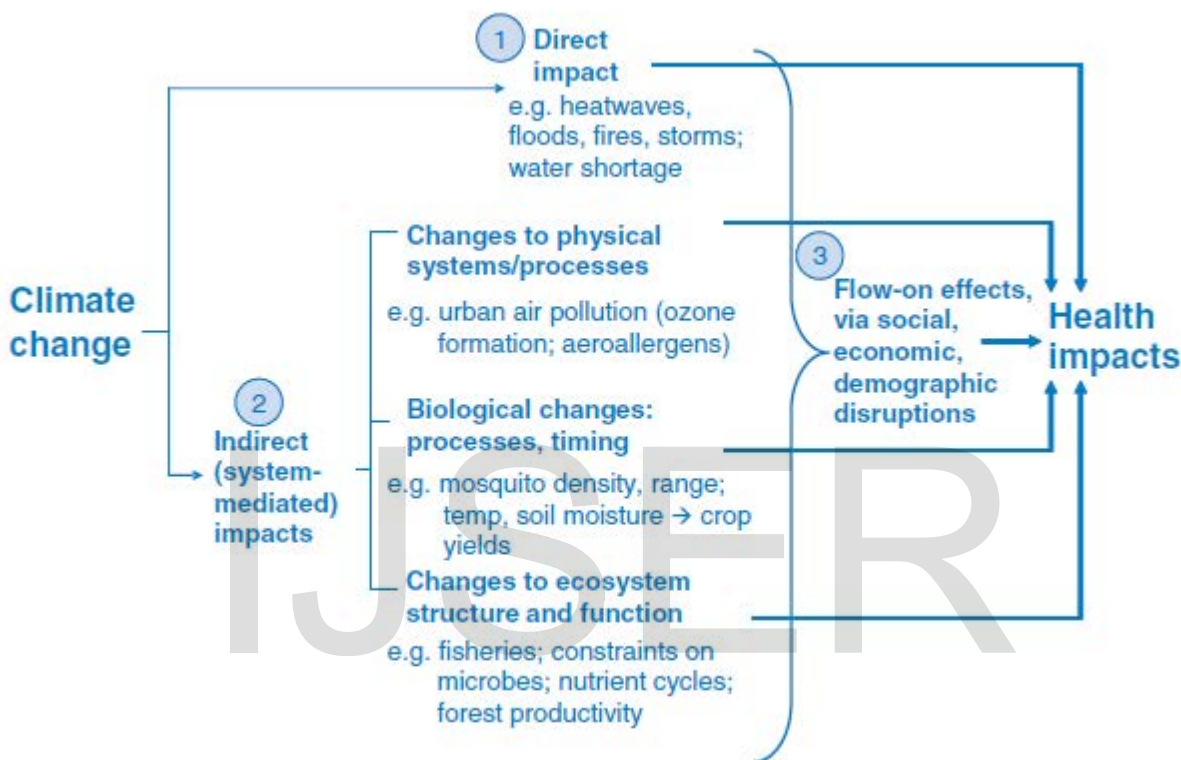
The changes in weather may increase mortality, morbidity including temperature related deaths, weather effects, pollution, skin diseases, vector borne infectious disease, shortage of food and weather, displacement of population. These adverse health impacts mostly faced by the developing and underdeveloped countries like Pakistan. [9], [10], [11]

(See for example, <http://environment.nsw.gov.au/climatechange/health.htm>). [12]

The most effected peoples through climate changes are children, elder peoples and peoples who are already suffering with any kind of disease or disability. Fig 3 shows the different kind of

ways which affects the human health. There are some positive effects of climate change in various countries where they are facing extreme cold and it reduce the cold temperature but there are mostly negative effects of the climate change on health. [13]

Fig: 3 Putative pathways between climate change and health impacts



**Source: Climate change and human health: Present and future risks
Environmental Hazards, Cyclone and floods**

Storms, scarcity and other climate threats are pretend to increase in the severity and density. [14] To control this, health security plans must be prepared. Tropical Cyclones and other storms consequences are abrasion and deaths, damage in crops, livestock and housing. There is a harmful effect on the health due to the environmental disasters like storms and flood. The outermost layer of the earth is the Pedosphere. It is made up of soil and soil processes. Pedosphere is the collection of soil, water, air and all the organisms on the earth. It is consider as the covering of the earth. It protects the earth from the dynamic interactions happening between the atmosphere and other layers like biosphere and lithosphere. The layer of the biosphere in

which life exists is thin and contain little amount of oxygen in the atmosphere due to the changing in climate.

Heat Stress

Heat can cause stress especially in those peoples who have high level physical activity. Heat stress causes more effect on children and elder peoples as compare to younger peoples because they have a less resistant power in their body. [15] Direct heat reduces the capacity of the people to work more efficiently. Peoples who work in heat like sheepshearers, cattle mutterers, fire fighter, mine workers and labourers are more suffer through heat. The capacity of the people to exercise is also reduce due to heat stress. [16], [17], [18]

Air pollution

Air Pollution is a serious issue not only in Pakistan but also all over the world. It has harmful effects on human health. More ozone is formed due to the motor vehicles emissions, spilling of oil, disposal of Gasses by the factories and increasing heat in summer due to climate changing. [19] Many excess deaths may cause by the ozone. The main disease caused by the pollution is “Asthma”. This disease is very much common in Pakistan and most of the peoples are getting affected due to the Pollution. Use of chemicals and the inappropriate system of sewerage and waste disposal contaminate the air pollution.

Vector borne infectious diseases

Many infectious diseases are caused by the climate condition. The most common infectious disease in Pakistan is dengue virus. Dengue is a virus which spread due to mosquito. It is not only common in Pakistan but also found in the sub-tropical region around the world. This disease may cause due to human made environments. It attacks on all ages but in children this disease is milder than adults. Mosquito –borne disease are interrelated with climate. Dengue is a very serious infectious disease which causes death. It affects body immune system. Body could not produce the enough white platelets which is necessary for human health that causes the death. This virus mostly spread in summer and monsoon season.

Food borne diseases

Gastro disease is most common in Pakistan. The symptoms of this disease are very mild but can be serious and resulted death. It is a food borne disease which is related to climate change. *Campylobacter* and *Salmonella* is a bacterium which found in food and it is related to the temperature indicating the causes of climate change. [20] *Staphylococcus aureus* is a bacterium which grows in food and produces a harmful toxin which result severe food poisoning. The spread of these bacterium increase when the temperature of food storage is not sufficient. When the individual eat such type of food and materials then ultimate it becomes the case of serious infection in their bodies. And after cooking r heating such type of food it becomes more dangerous for health.

Skin Diseases

Heat caused skin diseases in Pakistan and all around the world. Direct heat effects on the skin which changes in texture/colour, spots on body and face, allergies, acne, eczema. This disease mostly found in younger peoples who mostly faced sun rays. These disease effects on sun-exposed areas of the body like hands, neck, foot and face. Long-term acquaintance of heat becomes the cause of cancer of skin. It becomes the cause of skin changes like hyperkeratosis and pigmentation variations.

Health Risks and Mitigation Strategies

Table 2 explains the co-benefits of health that can be adapted strategies for health risk of climate change. There must be conducted further researches to intervene the different strategies for minimize the health risk through climate change. . For these interventions, the consequences of the climate change will be reduce on human health and the life cycle of the human life would be increased. [21]

Table 2 Examples of the main co-benefits of mitigation and adaptive strategies as a response to climate change

Mitigation strategy	Adaptation strategy	Health co-benefits
Decreased fossil fuel combustion		Cleaner, smog-free air and less respiratory and cardiorespiratory diseases
Improved public transport		More people walking (or cycling) to and from stations, increases active transport, promotes health and fitness and reduces obesity
Increased fruit and vegetable consumption and reduced meat consumption		Less obesity, lower rates of cancer and several other diseases
	Early warning systems for weather extremes and disease outbreaks	Better health protection systems overall, less impact in normal emergencies
	Improved food handling practices	Reduced foodborne infections overall
	Improved programs to adapt rural economies to a changing climate	Strengthened social capital and beneficial effects on mental health

Source: Climate change and health: impacts, vulnerability, adaptation and mitigation

Conclusion

Health impacts due to climate change happening all over the earth but the variety of these impacts is found mostly in Pakistan. To control all these climate change effect on human health, there is diversity of methods and strategies have to apply for mitigation and prepare the people for the adaptation of different environmental factors. Health communities and individuals should be encouraged for achieving the direct co-benefits to cope with environmental changes as a result of mitigation and adaptation. We should prepare the communities and the individuals of the communities for the emergency situations and services for the rapid response. One of the most common adaptive strategies that many countries are now applying to aware the people about the risk of climate change and health risk associated with them. However, they become able to manage themselves according to that environment. They manage the crop according to the seasons so that they remain save from the harmful effect of climate change. By understanding all these factors we can plan to minimise exposure and health risks and to cope with the unavoidable effects of climate change.



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