

Perception towards Influence of Climate Change on Human Health and Environment

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ABSTRACT

Climate change has a number of immediate and long-term impacts. The threat of climate change at present increases from various interactions between environments, economic, social, religious and political systems. The living of the society can be badly affected directly or indirectly due to the climatic changes. Climate change causes storms and other form of extreme weather which effect agricultural production as well as human health. In this paper, a well-designed questionnaire was used to collect the information from a sample of 400 people selected randomly to get the Participants' perception at small scale. The main aim of this paper was to understand the people's perception of climate change and influence of climate change on human health and the environment in Central Kashmir of J&K State. The results of present study revealed from people's perception that increase in temperature, unpredictable storms has direct influence on human health and the environment. Climate change and health were significantly related to each other. Majority of the respondents under study were aware of the climate change and its impacts on health and environment. However, the respondents were not aware of the technologies to be adopted under climate change scenario. The socio-economic profile had significant effect on people's awareness regarding health have to be modified to handle with climate change impact.

Keywords: Climate change, perception, health, environment

Climate change refers to long-term statistical shifts of the weather. According to the European Environment Agency (EEA, 2008), the global average surface temperature has increased by 0.74 °C in the 20th century, the global sea level has been rising 1.8 mm per year since 1961, and the Arctic sea ice has been shrinking by 2.7% per decade. Moreover, mountain glaciers are contracting, ocean water becomes more acidic, and extreme weather events happen more often. The Intergovernmental Panel on Climate Change (IPCC) predicted an average temperature rise of 1.5–5.8 °C across the globe during the 21st century, accompanied by

increased extreme and anomalous weather events including heat-waves, floods and droughts (IPCC, 2001). In the literature, we come across various studies (Costello *et al.* 2009; Epstein, 1999; Kovats *et al.* 2000; Willox *et al.* 2015) which showed that climate change can effect human health, especially when infectious diseases are concerned (Altizer *et al.* 2013; Epstein, 2001a). Research on the health effects of climate change has focused mainly on direct physical health impacts, primarily death and injury from extreme-weather events, impacts of increased temperatures and heat waves, spread of vector-borne disease, air quality and respiratory

illness, and changes in food and water quality and availability (McMichael, Campbell-Lendrum, *et al.* 2003; Frumkin, Hess *et al.* 2008). The WHO estimates that climate change already accounts for more than 60,000 deaths globally from climate-related natural disasters every year, (WHO; 2008) along with at least another 100,000 deaths from malaria, malnutrition, and child diarrhea (McMichael, Campbell-Lendrum, *et al.* 2004). Studies have found that long-term climate warming tends to favor the geographic expansion of several infectious diseases (Brunner, 2012), and that extreme weather events may assist create the opportunities for more clustered disease outbreaks or outbreaks at non-traditional places and time (Epstein, 2000). It is expected that there will be changes in airborne pollutants, leading to increased respiratory problems. The incidence of some infectious diseases, like gastroenteritis, is predicted to rise, and there will be changes in the distribution and intensity of mosquito-transmitted diseases, like malaria, yellow fever, and dengue fever. The studies suggested that the risks of diarrheal disease may be augmented by the increased temperatures that result from climate change. According to a study, for every degree of increase in temperature, the rate of hospitalization of children with diarrhea increased by 8%. Researchers have also predicted that gastrointestinal infections, which are already common in our community, are likely to increase with higher temperatures (Blashki, McMichael and Karoly, 2007). The more vulnerable members of our community will be most affected by climate-related illnesses, that is, elderly, who cope less well with changes in temperature, and young children, whose developing lungs are susceptible to ambient air pollution. The potential child-health impacts of harsh weather include drowning, gastrointestinal disease, malnutrition, and psychological trauma. The key studies reported that common people perceive climate change have found that in general people exhibit misconceptions about the causes and consequences of climate change (Bickerstaff and Walker, 2001). Further, it was found that these misunderstandings had the tendency to cause fear about the consequences of climate change. It is important for the people who are willing to understand the climate change recognize the importance of environmental change management for their own lives. Awareness and knowledge of

issues are needed precursors for people to take appropriate action. This paper provides insight to the community's perspective on climate change and its impact on rural health in this environment in Central Kashmir of J&K State.

MATERIALS AND METHODS

The present study is based on survey of 400 respondents, including 200 from district Srinagar, 100 from district Budgam and 100 from Ganderbal (Central Kashmir). The information was collected through a well-designed questionnaire. The respondents who participated in this study were given a verbal explanation regarding the purpose of present study and were assured that confidentiality would be carried out throughout this study. The data collected using stratified random sampling technique (Cochran, 1977), was tabulated and analyzed with the help of standard statistical tools using statistical software SPSS version 20.

RESULTS AND DISCUSSION

Characteristics of respondents

The population distribution as per the age, characteristics, economic status and education status etc. (Table 1). The majority of the respondents under study were graduate, from middle class families and in the age group >50 years.

Table 1: Distribution of population in Central Kashmir

District	Character-istics	Type	Frequen-cy	Percent-age (%)
Srinagar	Education Level	Upto 12	48	24.0
		Graduate	98	49.0
		PG and Above	54	27.0
	Economic Status	Low	15	7.5
		Medium	185	92.5
	Age (years)	30-40	47	23.5
		41-50	73	36.5
		>50	80	40.0
Budgam	Education Level	Upto 12	28	28.0
		Graduate	51	51.0

	PG & Above	21	21.0
Economic Status	Low	11	11.0
	Medium	89	89.0
	High	0	0.0
Age (years)	30-40	26	26.0
	41-50	62	62.0
	>50	12	12.0
	Upto 12	32	32.0
Ganderbal Education Level	Graduate	49	49.0
	PG and Above	19	19.0
	Low	07	7.0
Economic Status	Medium	93	93.0
	High	0	0.0
Age (years)	30-40	21	21.0
	41-50	70	70.0
	>50	09	9.0

Perceived awareness on climate change

The perception of respondents based on 5 point Likert scale have been presented in Table 2. In response to the statements 1, 2, 5 and 6, the respondents displayed good awareness with average score of greater than 3, whereas in response to statements 3 and 4, the respondents showed poor awareness (average score < 3.0). However, the difference was statistically insignificant among three districts ($p > 0.05$).

Perception regarding physical impact of climate change (using 5 point likert scale)

The perception of respondents regarding physical impact of climate change based on 5 point likert scale has been presented in Table 3. The respondents agreed with all the statements regarding perceived physical impact of climate change with average score of more than 3.0. Again, the difference among three districts in all the statements was statistically insignificant ($p > 0.05$).

The main environmental problems perceived by the farmers (Fig. 1) included overpopulation (48.5%), water pollution (14%), noise pollution (13.5%), cutting of trees (11.5%) and sewage (12.5%). Statistically, the opinion of the respondents was not uniform ($p < 0.01$). The results are in agreement with the earlier study (Bilal *et al.* 2016).

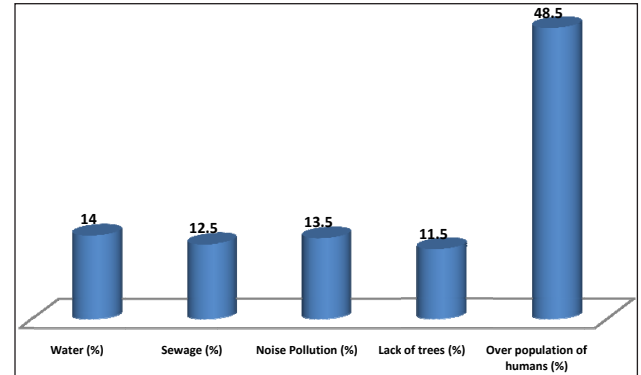


Fig. 1: Main Environmental Problem as per survey

Table 2: Perceived awareness on climate change

Item	Srinagar	Budgam	Ganderbal	p-value
	Mean \pm S.D	Mean \pm S.D	Mean \pm S.D	
Awareness of the effects of climate change through community involvement	3.73 \pm 0.92	3.68 \pm 1.02	3.72 \pm 0.99	>0.05
Community involvement in mitigating the environmental pollution	3.11 \pm 0.95	3.12 \pm 1.15	3.15 \pm 1.04	>0.05
Improved climate impact by integrating water resources management system (approaches to mitigate the climate change)	2.94 \pm 1.23	2.79 \pm 1.17	2.87 \pm 1.12	>0.05
Media role in informing about the topic of climate change	2.47 \pm 1.08	2.37 \pm 1.15	2.44 \pm 1.13	>0.05
Awareness of Environmental damages	3.76 \pm 1.04	3.79 \pm 0.89	3.74 \pm 0.93	>0.05
The issue of climate change must take an important consideration by the respective groups (researchers, policy makers)	3.81 \pm 1.12	3.68 \pm 1.16	3.78 \pm 1.12	>0.05

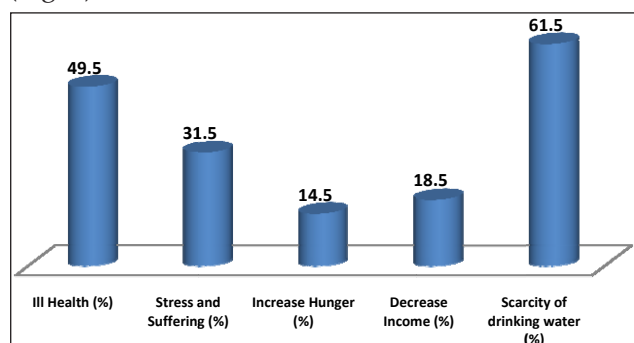
Note: $p < 0.01$: Significant at 0.01 level and $p < 0.05$: Significant at 0.05 level.

Table 3: Perceived physical impact of climate change

Item	Srinagar	Budgam	Ganderbal	p-value
	Mean \pm S.D	Mean \pm S.D	Mean \pm S.D	
People in Kashmir understand the effects of climate change	3.28 \pm .88	3.21 \pm 0.96	3.29 \pm .90	>0.05
Mass media can play an important role to aware the climate change	3.71 \pm 0.49	3.78 \pm 0.44	3.69 \pm 0.41	>0.05
Are you aware about the negative impact of the potential effects of climate change	3.13 \pm 0.94	3.09 \pm 1.21	3.17 \pm 0.97	>0.05

Note: $p < 0.01$: Significant at 0.01 level and $p < 0.05$: Significant at 0.05 level.

49.5% respondents believed that climate change leads to ill health, 31.5% respondents believed that climate change led to stress and suffering, 14.5% respondents believed that climate change led to increase hunger, 18.5% respondents believed that climate change led to decline of incomes and 61.5% respondents believe that climate change led to scarcity of drinking water (Fig. 2).

**Fig. 2:** Perceived effects of climate change on humans

Similarly, the steps suggested by the respondents for preventing climate change included Government intervention (19.5%), prayers (63.5%) and avoiding greed (37.5%). 17.5% of respondents were pessimistic in a way that they believed that nothing can be done for avoiding change in climate (Fig. 3).

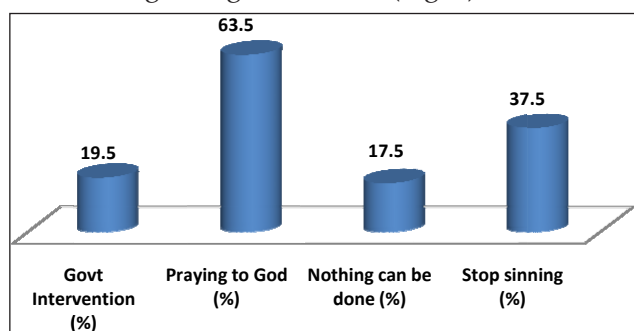
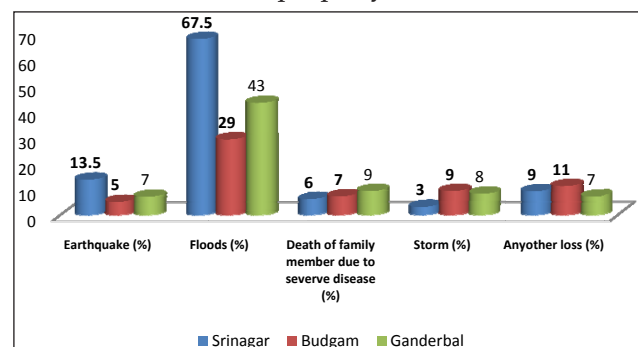
**Fig. 3:** Suggested measures to prevent climate change

Fig. 4 reveals that 13.5% in Srinagar, 5% in Budgam and 7% in Ganderbal district faced earthquakes, resulted in huge loss of property; 67.5% in Srinagar, 29% in Budgam and 43% in Ganderbal faced floods, resulted in huge loss of property. Similarly, 6% in Srinagar, 7% in Budgam and 9% in Ganderbal faced death of family member due to severe disease; 3% in Srinagar, 9% in Budgam and 8% in Ganderbal faced storm, resulted in huge loss of property. Also, 9% in Srinagar, 11% in Budgam and 7% in Ganderbal districts faced loss of property and health.

**Fig. 4:** Natural disaster faced causing any family loss

CONCLUSION

Climate change results in variations in weather and happening of extreme weather events. Every nation is both contributor and observer of climate change phenomena through industrialization, burning of fossil fuels, deforestation, unlimited use of resources and GHG emissions. The health effects of climate change include occurring of infectious diseases and transmission. The common transmissible diseases subtle and endemic to climate change are malaria and cholera, meningococcal meningitis, dengue, leptospirosis and rickettsia infections. Firstly, the variations in magnitude of

change in climate posing more challenges and stresses to some societies than others. Secondly, given the same magnitude of climate change, some population groups and areas are more vulnerable to the elevated risks due to their lack of the ability and resources to effectively respond to the stresses and challenges. Recognizing that infectious diseases do not confine themselves within a vulnerable population group, developed countries and capable societies should work together with developing countries and less capable societies to reduce their vulnerability to climate change induced health risks. The vulnerability to the infectious diseases may be altered through proper adaptation measures. The society as a whole can play a significant and active role by adopting proactive adaptation measures in order to control and alleviate the negative health impacts of climate change.

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