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UNDERSTANDING THE PERCEPTION OF CLIMATE CHANGE AND HEALTH ISSUES AMONG RESIDENTS OF LAHORE

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Abstract
Pakistan is among the countries most vulnerable to the adverse effects of climate change. Investigating public perceptions regarding vulnerability, attitudes, and risks associated with climate change and its impact on health can offer crucial insights for government policies, adaptation strategies, and guideline development. This study aims to gather community-based data on the knowledge and perceptions of the people of the community concerning climate change and its health implications. A cross-sectional survey was conducted among 320 respondents residing in Lahore, Pakistan, representing diverse backgrounds. Data were collected using a structured questionnaire. Sociodemographic variables' association with climate change knowledge was examined through cross-tabulation and chi-square tests. Findings indicate that a significant portion of Lahore residents are not aware of climate change, while those who have some knowledge have identified the excessive temperatures as indicative of climate change. (83.2%). Education emerged as the most influential factor in understanding climate change and its implications on health.

Keywords: Climate Change, Pakistan, Health, Knowledge, Perception, Awareness

Public and Climate Change

The research conducted on the issue of climate change has taken into consideration the variety and range of variables but this study is limited to the three variables that include; knowledge about climate change, perception of climate changes, and recognition of health issues related to climate change. Various studies have found that public awareness and understanding play an important role in shaping climate change perceptions and subsequent behaviors toward climate change (O'Connor et al., 1999; Leiserowitz, 2006). Bord, O'Connor, and Fisher (2000) have revealed that those people who have an increased awareness of environmental problems may have more inclination to have concerns and proactive attitudes and behaviors. Other studies, such as Frumkin et al. (2008) and McMichael et al. (2006) have also reported that increased knowledge regarding climate change is of prime importance in perceiving its related health effects, including infectious diseases, respiratory diseases, and health problems due to heat. The current study does support the fact that more knowledge about climate change will most likely enhance understanding of its health implications.

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Leiserowitz's (2005) results showed that perceptions about various aspects of the risk of climate change are closely related to concern about its impact on health and well-being. This aligns with global trends identified by the UNFCCC, highlighting increased public recognition of climate change as a critical issue (UNFCCC, 2018). Findings of various studies have shown increasing public concern as climate change manifests in local weather systems and health (Leiserowitz, 2006; Howe et al., 2015). The respondents' experiences of more extreme weather conditions, such as colder winters and longer, hotter summers, reflect broader climatic trends observed globally (IPCC, 2021). Studies like Weber (2010) also point out that personal experiences with weather extremes often shape perceptions more than abstract scientific information does. More (2010) also studied the strategies of communication while studying climate change.

Design and Data

A cross-sectional research design was employed and a survey method was applied to collect data from the residential community of Lahore, Pakistan. This city is known to be more affected by climate change and every year its air index quality gets worse, with heavy rains, smog, heat waves, and decreasing in temperature in winter. A final sample size of 200 respondents is acquired, representing diverse backgrounds. Data were collected using a structured questionnaire. Socio-demographic variables' association with climate change knowledge was examined through cross-tabulation and chi-square tests. The instruments used in this study were adopted from the research conducted in Iran by Jamshidi et al. (2018) which see the effects of knowledge on climate change perception. On the other hand, the scale of human health was also adopted from Filh et al. (2022) which gauges the effects of climate change on human health.

The data were collected from 200 educated Pakistan citizens and filled out through an Internet survey created on Google Forms. This data collection has been done based on random convenience sampling. Ethical considerations have been applied while collecting the data by ensuring complete anonymity, confidentiality, and voluntary participation of the respondents. The sample consisted of 207 respondents, of whom 200 were included in the study by eliminating responses that did not meet the study's requirements. Of these respondents, 109 (53%) were male, while 97 (47%) were female. The respondents came from six different age categories, ranging between 16 years and 36 years and above. Additionally, they came from both lower and higher classes of socioeconomic backgrounds. Besides that, the set criteria in the sample chose informed citizens who can comprehend intermediate levels of English, concepts in the study, and terms applied in the questionnaire to establish the validity of the study.

Table No1: Demographics

Age	
16-19	49(23%)
20-23	33(16%)
24-27	32(15%)
28-31	30(14.5%)
32-35	24(11.6%)
36 & above	88(18.4%)
Gender	
Male	109 (53%)
Female	97(47%)

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Variables	Knowledge of climate change	Perception of climate change	Health issue
1. Knowledge of climate change	—		
	—		
	—		
2. Perception of climate change	206	—	
	0.23***	—	
	.000	—	
3. Health issue	206	206	—
	0.30***	0.25***	—
	.000	.000	—

Education	
Matric/Olevels	1(.5%)
Intermediate/A levels	25(12.1%)
Bachelors	67(32.5%)
Masters	107(52%)
Doctorate	6(3%)

Table No2: Correlations of Climate Change Knowledge, Perception and Health

Note. Conditioned on variables: Knowledge of Climate Change, Perception of Climate Change, and Health Issue

* p < .05, ** p < .01, *** p < .001

The table presents the correlation between three variables; knowledge of climate change, perception of climate change, and health issues. There is a positive correlation (r= 0.23, p =0.001) between knowledge of climate change and perception of climate change, which is statistically significant. This suggests that as people's knowledge of climate change increases, their perception of climate change also tends to improve, though the strength of this relationship is modest. There is a positive correlation (r= 0.30, p =0.001) between knowledge of climate change and health issues, which is statistically significant. This suggests that individuals with more knowledge of climate change are more likely to recognize or be concerned about health issues related to climate change. There is also a positive correlation (r= 0.25, p =0.001) between the perception of climate change and health issues, which is statistically significant. This indicates that a stronger perception of climate change is associated with greater concern or recognition of health issues related to climate change.

All the correlations are positive and statistically significant, meaning that increased knowledge and perception of climate change are associated with greater concern about health issues related to climate change. However, the strength of these correlations ranges from weak to moderate. The descriptive analysis of participants' responses on their climate change knowledge. The majority (n = 206) of the research participants (54.2 %) obtained knowledge about climate change knowledge from some source and 45.8 % had no climate change knowledge although they are well familiar with the term. The respondents who have Knowledge of climate change (53.9 %) thought that the severe change in the recent climate caused change in rainfall patterns, and unusual heat and cold waves in the city, which ultimately affect human health. As 44% of people felt more cold and harsh long summer as compared to 5 years back. 13.8% thought that regular hailing some considered a high level

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of humidity 8.7 % due to the effect of climate change. When we asked the participants about the causes of climate change, most of them said deforestation is the main cause of climate change, and urbanization is followed by the other cause. The analyses also give the sight that respondents said that in winter due to smog eye, and chest infections are more common in summer fatal heat causes of headaches, vomiting heat attack, and heat stroke.

Discussion

The results further indicate significant positive relationships between knowledge about climate change, perception of climate change, and recognition of health issues related to climate change. Such constructs would imply that the better-informed individuals become about climate change, the greater the chance that the impacts of the phenomenon would be perceived and the greater the recognition of the associated health risks. This trend is consistent with other studies, which point to the important role that public awareness and understanding play in shaping climate change perceptions and subsequent behaviors toward climate change (O'Connor et al., 1999; Leiserowitz, 2006).

Thus, what could be derived from the relationship between knowledge and perception of climate change is that information dissemination/awareness seems to be the key factor that would shape how people perceive the severity or imminence of problems related to the climate. This finding adds to the work of Bord, O'Connor, and Fisher (2000), who argued that increased awareness of environmental problems leads to increased concern and proactive attitudes.

In addition, if knowledge of climate change links to knowledge of associated health issues, such an effect emphasizes the importance of education as a tool for public health awareness. Other studies, such as those of Frumkin et al. (2008) and McMichael et al. (2006), have also reported that increased knowledge regarding climate change is of prime importance to perceive its related health effects, including infectious diseases, respiratory diseases, and health problems due to heat. The current study does support the fact that more knowledge about climate change will most likely enhance understanding of its health implications.

The positive association between the perception of climate change and health problems affirms the supposition that the assessment by which individuals perceive the threat of the changing climate may affect the understanding of related health risks. This finding supports a study conducted by Leiserowitz (2005), which says that perceptions about various aspects of the risk of climate change are closely related to concern about its impact on health and well-being.

Descriptive analysis of the responses shows trends related to participants' knowledge of climate change and their perception of its effects. More than half of the respondents have shown some knowledge of the issue of climate change, indicating a moderate awareness rate. This aligns with global trends identified by the UNFCCC, highlighting increased public recognition of climate change as a critical issue (UNFCCC, 2018).

Interestingly, a large proportion of participants reported awareness of the term "climate change" but felt they did not know a great deal about it. This disjuncture between awareness and knowledge suggests a gap in public education, previously noted by researchers such as Lorenzoni and Pidgeon (2006). It is argued that while individuals may widely recognize the concept of climate change, far fewer fully appreciate its more complex elements or underlying causes. This lack of understanding can affect public engagement and policy support.

The majority of those knowledgeable about climate change associated it with recent severe climate events such as changed rainfall patterns, increased frequency of heat and cold waves, and severe seasons. This perception matches other studies, which have shown increasing

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public concern as climate change manifests in local weather systems and health (Leiserowitz, 2006; Howe et al., 2015). The respondents' experiences of more extreme weather conditions, such as colder winters and longer, hotter summers, reflect broader climatic trends observed globally (IPCC, 2021).

Furthermore, a couple of participants attributed climate change to other weather anomalies, such as increased humidity and regular hailing. Although less common, these perceptions highlight the varied ways people experience and make sense of the effects of climate change. Studies like Weber (2010) also point out that personal experiences with weather extremes often shape perceptions more than abstract scientific information does.

Most respondents were convinced that the key drivers of climate change are deforestation and urbanization. These are well-documented contributors to climate change, as they reduce natural carbon sinks and exacerbate the urban heat island effect. However, the focus on these causes indicates a need for thorough public education on the multifaceted nature of climate change, including industrial emissions and agriculture, among others.

The findings convey that while there is some awareness of climate change among the participants, greater awareness is needed. There is a need for greater public knowledge about the numerous causes and far-reaching effects of climate change, which could lead to more informed discussions and support for action. This study adds to the emerging literature that argues for targeted communication strategies in climate change education (Moser, 2010).

On the whole, these findings point towards the need for undertaking awareness creation programs among the people regarding climate change. Such efforts, leading to improvements in knowledge and perceptions, may increase public recognition about the risks to health from climate change and thus contribute to better and more informed public health responses. Thus, the study becomes a part of a growing literature that indicates the interrelations between environmental knowledge and perception with health outcomes in order to stress an integrated approach towards communication and education about climate change.

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