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Climate Change Awareness and Mental Health: Cognitive and Emotional Implications

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Abstract

Climate change is a growing concern for policy makers and social scientists as it is hurting the cognitive and emotional functioning of the individuals. Existing literature provided strong evidence that awareness level regarding climate change varies with gender, area of residence and level of education. The current study was conducted to find out the level of awareness and how it associates with cognitive-emotional impairment. To meet the objectives of the study, quantitative, explanatory study was designed. Population of the current study was students, teachers and job holders. Researcher selected a sample size of 350 respondents out of which 200 were students and 50 each were teachers, private job holders and industrial job holders. The researcher applied regression analysis to find out the predictive relationship between the variables of the study and found that awareness level regarding climate change is

significantly associated with the cognitive-emotional impairment. The standardized coefficient value shows that one unit increase in the independent variable increase the dependent variable by .622 times. This is quite strong value keeping in view the nature of the data and survey research.

Keyword: Climate Change, Cognitive Impairment, Emotional Impairment, Regression Analysis

Introduction

The climate change happened all the way son the earth since its inception. But the ratio of this change was not as much faster as it is today. In the past, the climate change was not as much concerned issue as it became in the modern world. The issue of climate change emerged due to imbalance between coming and outgoing radiation in the atmosphere (Mc Michael & Lindgren, 2011).

Global warming and climate change are interlinked with each other. Due to the storage of radiation in the earth's atmosphere, the issue of global warming was generated which further triggered climate change. The global mean temperature is increasing day by day to numerous factors i.e., industrialization and deforestation etc. the man made activities and inventions accelerated the phenomenon of global warming. Due to global warming there are witnessed changes in the solar activity and volcanic eruptions (Wu et al, 2016).

The recent few decades further enhanced the level of global warming and climate change. The international organizations with the support of developed countries are striving to combat the speedy climate changes yet no fruitful results are gained. Despite many initiatives, global warming and climate changes are on the speedup track which is again posing serious concerns for the contemporary world (McMichael, 2013).

Climate change has become one of the concerning problems of the globe. It is not confined to particular region or country but it has prevailed all over the world. It is created by the human activities across the world and by the same token it will be overcome by the collective effort of the whole world community. All of the countries and regions will have to initiate the combating plan to counter climate change otherwise it will have far beyond effects on the future generations (Lesnikowski et al, 2011).

The human activities which caused the issue of climate change vary from country to country because a small and rural communal setting is not similar responsible for the climate change as it is made by the urban and industrial areas. So, the contributions to tackle the issue also depend on the same variation. Today's developed countries which firstly initiated the industrial plans and disrupted the natural system should contribute on the same ratio. They have become civilized nations today and have shifted the industries to third world countries (Lundgren et al, 2013).

Definition of Climate Change

According to International Panel on Climate Change, "Climate Change refers to a change in climate over time, whether due to natural variability or as a result of human activity".

Reasons of Climate Change

In the start of the industrial revolution, no attention was paid to global warming and global change because the industrial revolution granted maximum benefits to the industrialists and the capitalists. They did not pay attention to such issues which had long-lasting implication for the future generations (Becerra et al, 2020).

Climate change is a global issue which gained attention of the whole world. It emerged after the industrial revolution. The factories and industrial growth led the global warming which infiltrated the phenomenon of climate change. Climate change basically refers to long-term warming of the earth planet. It was due to increasing level of the greenhouse gasses which were absorbed in the earth atmosphere. Following are major sources of Greenhouse Gases leading towards climate change.

Burning of Fossils

Burning of fossils is the leading cause of climate change. In the post-industrial period, the level of burning of fossils continued to increase that now it has created serious concerns especially in the highly congested areas. The major burning of fossils includes use of oil, combustion of coal, natural gas, and concentration carbon dioxide etc. (Goss, Swain & Abatzoglou 2020).

Deforestation

As the population growth increased, the level of forests started to decrease. Again the factor of industrial revolution proved to be leading determinant of deforestation. The forests were cut down to build the industrial zones and factories. The chest of the earth is being filled with the building materials which is posing double effects. On one side, the forests are cut down which end the rich source of oxygen. At the same time, the industrial sectors and factories are producing more fatal gases which collectively rising the earth temperature (De, 2018).

Agricultural Activities

Massive agricultural activities also proved to be sources of climate change. The agricultural activities including livestock and crops generate such gasses i.e., methane and Nitrous Oxide which are also included in greenhouse gasses (Karimi, Karimi & Keshavarz, 2018).

Ramifications of Climate Change

Climate change has so many adverse consequences. These ramifications do not only concern with the human being but it also includes animals, nature, habitat, oceans and seas etc. As the issue of climate change is not being properly tackled, the consequences of climate are also enhancing over the period of time. Presently, following are a few prominent ramifications of climate change.

Climate change not only impedes the environment and other geographical matters but it also hampers the social and emotional well-being of the individual. It has been observed that climate change disturbs the cognitive functioning of the individual which show even minor concerns regarding the climate change. Information and social media exposures leads to the increase in knowledge regarding climate change and consequently impairs the cognitive well-being of the individual. On the same token persons with better knowledge of climate change is found to be low in emotional well-being and emotional strength. So, it is quite evident that climate change not hampers environment but also society at many ways.

Climate Change and Public Awareness

Climate change was not as much prominent issue as it is today. This is because of the prevailing information and awareness about the causes and consequences of the climate change. The world was not as much congested as it is today because the population growth evolved gradually but since the industrial revolution, one side population of the global increased and on the other burning of the fossils contributed.

The human beings started to gain awareness in the post-industrial revolution period. Education level, public policies and the ramifications of the climate change collectively contributed towards the public awareness about climate change. The international

organizations and the developed countries started to raise their concerns about climate change which slowly shifted the concern of the global community towards climate change.

The influential global organizations and agencies are based in the developed and advanced countries like US, UK, France, Switzerland so the voice of to counter the climate change factors erupted from these countries. Currently, this concern has reached to developing countries like Pakistan because the young generation is much curious that why our government policies are not shaped accordingly. They raise such questions in national and international conferences which show that they have ample awareness about climate change. These youngsters are also take stapes by their own to actually play their part to maximum level in countering climate change.

The public perceptions about climate change can further be enhanced through different programs. Such programs may include awareness sessions, holding press conferences and seminars ranging from local to international level. The international awareness programs prove more successful and effective as such programs include larger communities. At the same time, local and national level press conferences and awareness media campaigns should be launched which help in mobilizing the community in a local setting (Wolf & Moser, 2011).

Methods and Materials

Social science inquiry is broadly classified into qualitative and quantitative research which is further grounded on the nature of the topic and objectives of the study. Qualitative research inquiry is directed towards finding out the in-depth understanding of the topic while quantitative research is based on the idea of finding out the breadth of any social phenomenon (Creswell, 2012). Hence, keeping in view the objectives of the current study i.e.

finding the level of awareness among public and how it is related with other factors quantitative research is applied in the current study. In the current study major area of concern is to quantify the factors and their association which can be better understood through quantitative research (Newman, 2000). Researcher has also applied the explanatory research design. In explanatory research design, predictive relationship between the variables is assessed and in the current study level of awareness and its predictive relationship between cognitive impairment has been assessed and also how it is related with the behavioral engagement. Hence, the current study used both descriptive and explanatory research designs in the current study.

For a better understanding and in order to capture the comprehensive picture of the topic a diverse population was selected for the current study. Following are the key categories of the population used in the current study.

- Students selected from university of Okara
- Teachers selected from university of Okara
- Private Job holder (non-industrial) selected from the district Okara
- Industrial job holders

A sample size of 350 was selected for the current study. There was no proper statistical formula was applied for private job holders and industrial job holders as there was no sampling frame available for these categories. However, for the selection of the students and teachers research advisors formula was used to determine the sample size. Following is the research advisor formula.

Table No.1 Sample Distribution of the study

Sr. No	Category	Sample size
1	Students	200
2	Teachers	50
3	Private Job holder (non-industrial)	50
4	Industrial job holders	50
5	Total	350

Sampling Technique

After selecting an adequate sample size it was important to identify the respondents for data collection and in doing so researcher adopted a scientific method i.e. sampling technique. As it has already been stated that there were multiple segments of the population hence, researcher applied two different sampling techniques.

For private job holders and industrial job holders' researcher applied convenient sampling technique as there was no sampling frame available for them. Therefore, convenient sampling technique was most suited and appropriate for the current study.

However, for the selection of students and teachers researcher applied multistage sampling technique and researcher identified the respondents after passing through the following stages

- In the first step researcher obtained the list of major faculties and departments of the University of Okara. This served as the sampling frame for the current study.
- Once list of the departments was furnished, researcher randomly selected departments and tried to include major faculties such as Arts, social sciences and natural sciences.
- In the third step proportionate sampling technique was applied on the selected departments

- In the last step randomly 50 students from each of the 4 selected departments and similarly 50 teachers were selected from the same departments.

Independent variable in the current study was level of awareness about the climate change. Independent variable is vested with the objective of finding out its impact on the dependent variable. Independent variable was measured with 15 items questionnaire on liker scale.

Dependent variable in the current study has three sub levels or categories i.e. functional impairment, cognitive impairment and behavioral engagement. Each of the above categories were measured with the help of 8, 7 and 6 questions on Likert scale.

Data Analysis and Findings

Regression analysis has been applied in the current study to find out the relationship between level of climate change with cognitive-emotional impairment, functional impairment and behavioral engagement. Before applying the regression analysis following key assumptions were fulfilled.

- In the first place normality of the data was checked and it was found that the dependent variable of the study was normally distributed. This condition was very important to run the regression analysis.
- The researcher also checked the value of Multicollinearity was also checked to see any possibility of correlation within the independent variables. The value was less than 10 which shows that the issue of Multicollinearity was not there.
- The issues of heteroscedasticity and autocorrelation were also managed and negligible hence, after observing and addressing all the assumptions regression analysis was run.

Table No.2 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.622 ^a	.387	.385	.89205

a. Predictors: (Constant), Awareness Level

The above table of the model summary presents the relationship between awareness level i.e. independent variable and cognitive-emotional impairment which is the dependent variable of the study. The R-Square value in the above table explains the variance in the dependent variable on account of the independent variable. The above value of R-Square i.e. .387 depicts 38.7% change brought in the dependent variable due the independent variable. This is a moderate level of relationship between the study variable.

Table No.3 ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	174.662	1	174.662	219.490	.000 ^b
	Residual	276.925	348	.796		
	Total	451.587	349			

a. Dependent Variable: Cognitive-Emotional Impairment

b. Predictors: (Constant), Awareness Level

The above table shows various statistics regarding the model to show the relationship between awareness level and cognitive-emotional impairment. In the first place regression Sum of Squares (174.662) which represents the variation explained by the independent variable, Awareness Level. Similarly, residual Sum of Squares (276.925) represents the variation not explained by the model. Total Sum of Squares (451.587): This is the total variation in the dependent variable, Cognitive-Emotional Impairment. Degrees of Freedom (df): The regression has 1 degree of freedom, and the residual has 348, making a total of 349. Sig. (.000): The p-value is less than 0.05, indicating that the model is statistically significant.

Overall, the ANOVA results indicate that Awareness Level significantly predicts Cognitive-Emotional Impairment

Table No.4 Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.389	.131		2.978	.003
	Awareness Level	.854	.058	.622	14.815	.000

a. Dependent Variable: Cognitive-Emotional Impairment

The above table provides the direction and magnitude of the relationship between both the variables. In the first place, P-Value is less than .05 which shows the relationship is significant between both the variables. an important value in the above table is the standardized coefficient value which is .622 which shows that one unit increase in the independent variable increase the dependent variable by .622 times. This is quite strong value keeping in view the nature of the data and survey research.

Conclusion

The study also concludes that awareness level regarding climate change significantly impair the cognitive and emotional functioning of the population. Respondents having higher level of awareness suffer from emotional and cognitive damage find it difficult to manage their emotions and cognitive functioning. The findings of the study implies proper intervention should be initiated to improve the mental health and emotional health. Social media campaigns, workshops and seminar are some of the key tools to increase the mental health of the population.

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