



Climate Change Awareness and Its Effects on Cognitive and Functional Abilities and Behavioral Responses: A Review of Literature

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Abstract

Climate change awareness has been identified as a critical factor influencing various aspects of human cognition, functional capabilities, and behavioral engagement. This literature review explores the intersection of climate change awareness with cognitive and functional impairments, and how these factors collectively influence behavioral responses. Studies suggest that heightened awareness of climate change can lead to increased cognitive load, potentially exacerbating cognitive impairments, particularly in older adults and individuals with pre-existing cognitive deficits. Functional impairments, such as reduced physical mobility and mental health issues, have also been linked to the stress and anxiety associated with climate change awareness. Furthermore, the relationship between awareness and behavior is complex; while awareness can lead to proactive environmental behaviors, it can also result in maladaptive responses like eco-anxiety and climate inaction due to perceived helplessness. This review synthesizes current research to highlight the multifaceted impacts of climate change awareness and underscores the need for targeted interventions to support cognitive and functional health while promoting positive behavioral engagement.

Keywords: Climate Change, Social Functioning, Cognitive Impairment, Behavioral Engagement

1. Climate Change

Climate change is the issue which has encompassed the whole world under its intensity. The global community is much curious about the futuristic aspects of climate change. In the recent decades, the issue of climate change is on its peak which has started to depict its implications on the world. The sudden changes in the weathering conditions and effects on the physical and mental health of the human beings are a few notions of the ramifications of climate change (Butler & Mathews, 1987).

In the previous few decades, the climate change emerged as an issue on one side and world started to take initiatives on the other. The initiatives in the form of creating awareness among the international community about the implications of climate change. Since eighties up till now so many international conferences and seminars had been conducted for the same issue which highlight adverse effects of climate change (Chang et al, 2005).

Climate change is one of the key problems the global community is facing in contemporary period. The climate change is causing about so many ramifications for the world in the form melting of glaciers, rising the sea level, sinking of the islands, and water scarcity. Apart from their tangible implications, climate change is also causing about creating mental stress and anxiety among the people especially those who have awareness about this issue (Costello et al, 2009).

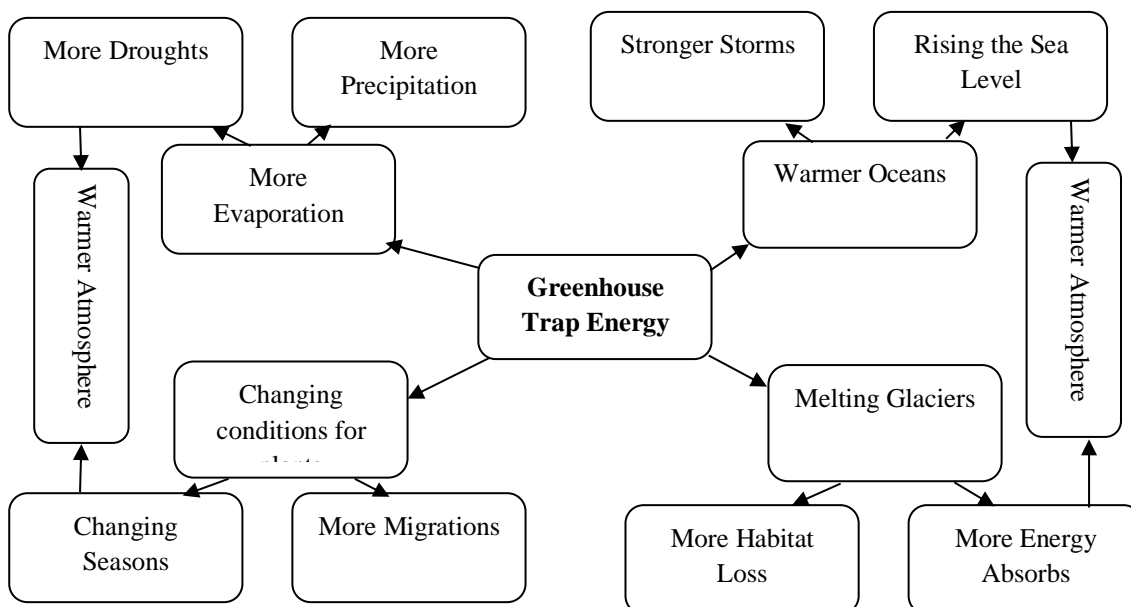


Figure No: 1 Model of Climate Change

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The educated people especially the youth is very much curious about the issues being generated by climate change. They are well aware about the implications of climate change in the future. They want to adopt some tangible steps to control this issue because they know that if this issue is not properly tackled, it will give birth to many other problems. Climate change is not a sudden phenomenon rather it evolved gradually which has comprehended its roots across the global community (Fritze et al, 2008).

The youth and the other people having awareness about climate change and its consequence want to develop local and international level plans so that this can be stopped. The current situation regarding taking possible measure is not encouraging because only a few communities are active regarding this matter. The developed and modern countries are taking some measures within their countries' boundaries but on the other hand, the same countries are investing in industrial developments in the backward countries. They just preserve their environment but don't take into account the hazardous environment in these poor and under-developed countries (Gardner, G. T., & Stern, 2002).

Under this situation, the community members especially in the third world countries are suffering from the psychological impacts. They are unable to get rid of this issue because of international political dominance and lack of resources. This chapter deals with exploration of the literature review regarding the climate change, its psychological impacts and solution of this issue (Geller, 2002).

2. Climate Change Awareness

Awareness about climate change is prerequisite to handle this issue. This problem can only be sorted out through public attention. The awareness level varies from individual to individual and society to society. The societies where people have awareness about climate issue strive to foster positive developments to get rid of this problem. For example, the European countries are more conscious about climate change than the third world countries. This is because of their historical efforts to handle this phenomenon.

The climate change awareness is comprehended with numerous positive aspects but at the same time it is also encircled with problems as well. The people who have more awareness about this phenomenon become the victim of psychological issues i.e., anxiety and depression. In the contemporary world, the youth is the victim of this problems because due to availability of in-hand information through mobile phones, they become more curious that why this world is not making efforts to control the wave of climate change. They start taking initiatives by their own to do something to preserve their planet through imparting awareness among the rest of the community members but when they observe that rest of the community is not doing the same, they become frustrated. They know that if they do not take appropriate measures in right time, they will have to face fatal consequences.

According to the findings of Eurobarometer survey (2019) the majority of citizens of Slovakia reported that climate change is a serious problem which needs attention on urgent basis. Accordingly, 78% of the people reported that climate change will be fatal if we don't strive to culminate this issue from today. This is an example of Europe and likewise the rest of the countries' populations are also very conscious about the concerns of climate change.

According to European Commission (2019) the awareness about climate change aroused some activities among the people. In almost across the whole Europe, the NGOs and CBOs are working with collaboration of the local community to perform some activities in order to resist climate change. The recent studies on the same topic revealed that now more than 90% of the community members in this region are aware about the disastrous elements of climate change. Accordingly, they are adopting a collective approach which does not create depression or anxiety among them but satisfaction that they are working in right way and right.

The ratio of climate change awareness differs across the countries due to multiple factors. One of the prominent factors is level of education. The developed countries have higher level of literacy rate which is why there is higher is level of climate change awareness among the community members. But at the same time, a country in Africa does not have same level of literacy. This is the reason that African country has limited level of awareness about climate change as compared to a European country (Lee et al., 2015).

Another factor which aids is varying the level of awareness about the climate change is the intensity of factors of climate change. A country which faces severe threats of climate change will automatically work to handle this situation. But again it depends on level awareness and understanding because there are countries which face climate threats but do not focus on developing anti-climate change strategy. The anti-climate change strategy also depends on the resources as well (Lee et al., 2015).

Table No.1: Top 10 Countries with Most Risk of CC 1999-2018

Sr#	Country	Carbon Foot Print (Annual tonnes per capita)
1	Puerto Rico	--
2	Myanmar	0.47
3	Haiti	0.27
4	Philippines	1.22
5	Pakistan	1.01
6	Vietnam	2.08

7	Bangladesh	0.53
8	Thailand	4.79
9	Nepal	0.31
10	Dominica	1.95

Source: www.germanwatch.org

Czarnek et al. (2020) conducted a study to highlight the relationship between climate change and level of education. This study found that factor of education is dependent on many other sub-factors and out of all these the political factor is closely linked with education. An education policy of country of largely based on the political policy about the direction of education. Here again the studies show that education policies of the developed countries are also oriented towards climate change. In some countries, the topic of climate change is more politicized because the local feudal lords and industrial tycoons make investments to hide the threats to climate change because in disclosing the actual factors, their businesses will be under the radar of inspections.

Hornsey et al. (2016) explicated that there are so many factors attached with level of awareness of the climate change. These factors have wider range of association with awareness about climate change. Some of such factors are discussed in the aforementioned discussion but the factor which has more importance about the concrete steps is the international political orientation. The international political orientation is oriented towards the implantation of the internationally recognized policies. This involves the political representative across the globe and send a strong message to whole world through their representatives about climate change phenomenon.

The awareness about climate change is also based on the factor of identity. The New Ecological Program provided a set of identities, values and beliefs about the climate change. This paradigm motivated the people to think first about the existence and severity of climate change issue. It also motivated that people should take steps about this concern by their own which led to the movements like “Green” and people also started to do something for this matter due to awareness.

3. Factors Related to Perceptions of Climate Change Hazard

Public perception about a certain issue is based on variety of the factors. These factors assist in developing a comprehensive approach towards a collective understanding of the topic. the perception about the climate change is also based on numerous factors which shape an image in the mind of the community members. The existing literature depicts that there are variety of environmental, social and individual factors which predict the climate change risks and perceptions (Sevä & Kulin, 2018).

According to Brulle et al (2012) an individual perception are based on certain factors including the level of individual knowledge, awareness about certain issue i.e., climate change, the levels of civic engagements and his/her orientation towards the topic collectively develop a perception about that particular issue. The current study is related about the topic of climate change and effect of awareness level about the behavior and attitudes of the individuals, so all of the above-mentioned factors will contribute to develop a compressive approach towards risks of climate change. Following are a few factors which contribute in building the perception of people about the issue including all levels of ages.

First of all, educational factor is one of the prominent factors which helps the individuals regarding their approaches towards certain topics. According to Aikens et al (2016) education has been playing a key role in developing awareness and providing the ways to sort out the problems related to climate change. Although, climate change adopted some serious poses which are not properly tackled but education assisted to creating awareness among the community members. The educational policies inducted the chapters and even courses about the environmental changes and threats to upcoming eras which created awareness among the students about climate change (Johnson & Činčera, 2015).

Table No.2: Top 10 Countries with Highest Level of Awareness

Sr#	Country	Awareness Percentage
1	Japan	98.9
2	United States	97.7
3	Finland	97.6
4	Norway	97.5
5	United Kingdom	97.4
6	Australia	97.3
7	Sweden	96.1
8	Germany	96.0
9	Netherlands	95.6
10	Canada	95.4

Source: Lee et al, (2015)

Shi et al (2016) conducted a study on the area on knowledge as a driver to public perception which found that education is the predominant factor in developing awareness among the people. It provides the to the point strategy

about climate change. The student starts to gain information about climate change since their school days to university levels. At the same time, there are studies which reported that knowledge has negative relationship with climate change risk perceptions. For instance, Luís et al. (2018) stated that education just provide overall picture about climate change but in most of the cases the students are kept out of the implications of climate change because education largely based on the educational policies driven by the political factors.

Busch et al., (2019) stated that educational learning about climate change should cover all sides of climate change. Mere focusing on the theoretical knowledge, it should also promote inter-generational learning programs, providing depth knowledge in relation with particular society and involving the community members of all age groups through initiatives of local administration.

According to Blais & Rubenson (2013) civic engagement is another factor which contributes towards the climate change. Through civic engagements, the people come to know about the issues and available resource to handle these issues. The involvement of youth in the civic activities is helpful in making them realize about the concern of climate change. In the present age, the youth is already engaged in the civic matters due to NGOs and CBOs. They want to do something for their community. They participate in the social matters' discussion which highlights the importance of the topic of climate change. The study conducted by Blais & Rubenson (2013) disclosed that when education and civic engagements are merged among the youth, something productive is generated.

Luís et al (2018) carried out research on the area of climate change which highlighted that when civic knowledge and engagements collaborate with each other, specific attitudes are developed. Likewise, the civic engagements and awareness about climate change can arouse the young blood to work for the betterment of the society. The youth will further promote this awareness among the community and initiatives are taken accordingly.

4. Effects on Attitude and Behavior

It is obvious from the discussion about the climate change awareness that it is necessary to make concrete effort. On one side, climate change awareness is important in highlighting the issue of climate change and its consequences but at the same time, the higher level awareness about climate change can lead towards the effecting the behavior of the individuals. Those who have more awareness about climate change can be victim of psychological pressure and may even face psychological ailments.

Leiserowitz et al (2021) explore that the existing literature reveals that a vivid ratio of many countries have significant level of anxiety due to climate change. The majority of this population belongs to educated segment and young generation. They continue to think about the roaring rate and effects of climate change which makes them victim of anxiety. For example, Leiserowitz et al (2021) conducted a study on international public opinion about climate change which found that more than 76,000 individuals are suffering from psychological pressures in thirty countries just because of climate change awareness.

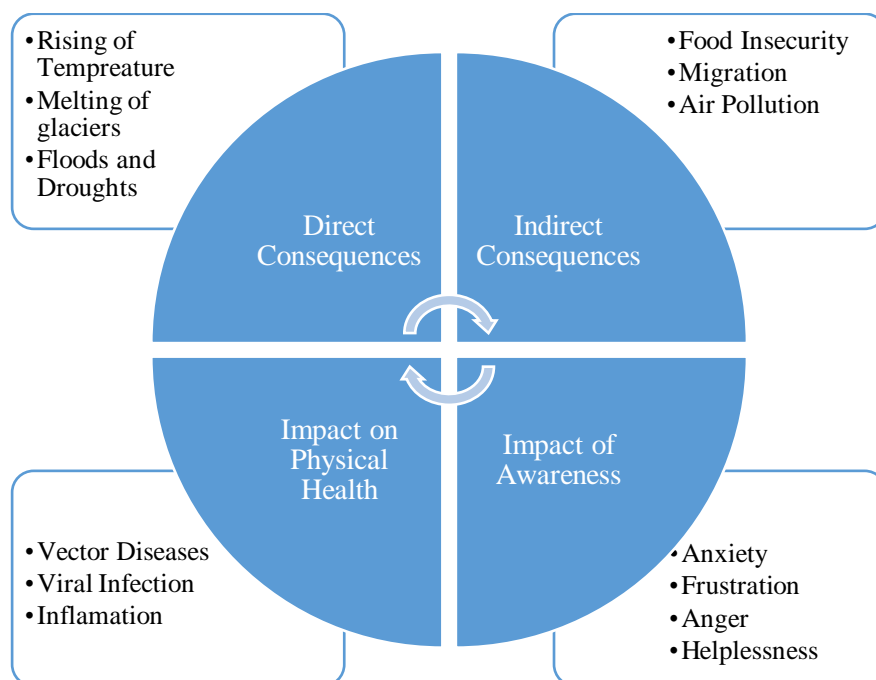


Figure No: 2 Physical and Psychological Impacts of Climate Change

The psychological worries about climate change are higher among the developed countries. For example, Clayton et al (2017) carried out research on the topic of mental health and its relationship with climate change which explained that more than half of the American population has higher level of worries about the consequences of

climate change. They know this issue is not about to stop due to lack of interest of the international community and they are worried that it may have more challenging implications in the future.

The existing studies also reported about the different affected segments of the society due to climate change. The literature review finds that the majority of psychological affected segment of the climate change is the youth. The young generation knows that limited efforts are being made to tackle the issue of climate change. For instance, the report of United Nations (2020) explicated that climate change was the apex concern of the young generation. This young generation includes the individuals below the age of 24 which is victim of psychological pressures.

Climate change gives birth to many other issues including rising of temperature, precipitation and other which are mainly caused by the human activities. There is a natural system through which the regular routine of nature works but since the massive induction of industrial setups, burning of fossils and other activities led to alter this routine work and modified this natural system (Rawat et al, 2023). The rising of temperature and sudden precipitation also led to create psychological issues like anger and imbalance of the mood swings. All these factors and consequences of the climate change collect put deep impact on the psychological well-being of the human beings. The studies also depict that people in the affected areas of climate change have are short-tempered as compared to those living in the rural areas. This is because of their daily routine work under the certain environment. The rural people have a list of specific tasks which they have to perform on regular routine but other have to face many external factors which contribute to psychological issues (Daeninck et al, 2023).

Clayton & Karazsia (2020) carried out a research on the topic development and validation of a measure of climate change anxiety. The research findings disclosed that climate change gives birth to different psychological emotions like depression, anxiety and haste in attitude. All of these emotions are generated due to awareness of the people regarding impacts of climate change in present and future generations. Apart from these emotions, people also suffer from feelings like fears, depression and helplessness. They think that while knowing the facts and ramifications of the climate change, they are unable to adopt some suitable measures to control this issue.

5. Psychological Impacts of Awareness

The studies also highlighted the relationship between psychological impacts of the climate change and the youth. The youth is the future of the world but due to such issues they are suffering from psychological ailments. It depends on the local and international political arenas that how well they manage this situation and overcome the issue of climate change. The youth looks pessimistic regarding this concern because they don't see any concrete developments but just to pump and show in international organizations and conferences. This demands the urgency regarding this matter so that youth emotions and feelings can be preserved.

Walinski et al (2023) termed the psychological impacts of climate change as "Climate Anxiety". Accordingly, climate anxiety has impact on both physical and psychological well-being of the people. When people suffer from the psychological impacts, it leads towards physical declining as well because the both of them have deep connection. You cannot be physically active and strong if you are suffering from the psychological ailments. The study resulted that higher level of awareness and limited initiatives to handle the problem leads towards emotional disorders which consequently leads to danger of traumatic stress disorders.

Dodds (2021) also investigated the traces of psychology of crime anxiety. The study specifically found that there is association between psychological impacts of climate change and with mental illness. Accordingly, psychological pressure is developed due to severity of climate change which gives birth to other issues i.e., increased morbidity and mortality that closely linked with mental illness. The author termed this issues as psychiatric emergencies.

Zacher & Rudolph (2023) conducted a study on the area of environmental knowledge and climate change anxiety which explored that there is positive correlation between environmental attitudes and climate change. The environmental attitudes are built through having plenty of knowledge about the environmental surroundings. The more the individuals have knowledge about climate change, the higher the level of climate anxiety is found among them. This develops climate change-oriented attitude which has positive and negative aspects. If these people find that the governments are taking steps to manage the issue in appropriate way, they feel relaxed and motivated but contrary to it they face climatic anxiety which affects their behavior and attitudes with others as well.

The deep connection of climate change and individual's thinking including thoughts, emotions and actions towards the environmental surrounding gives birth to the term known as environmental attitude. The environmental attitude is oriented to the people who strive to know about their environment on the regular basis. This habit develops awareness about climate change which is composed of so many negative impacts. This habit is composed of their beliefs, values, attitudes and their commitment to work for the betterment of societal environment. They gather information and motivate their community fellows to imitate programs for environmental impacts.

After having knowledge about the environment, the individuals are divided into two categories. In the first category, the individuals remain positive and develop plans to implement with positive attitudes. Such people relatively have strong emotions and long working experience. They are normally middle aged people because they know how to overcome their psychological impacts (Lukacs et al, 2023). On the other hand, there are youngsters

who face psychological issues with more intensity and most of them fail to handle their psychological control. The positive-minded people chalk out their plans and try to implement on local levels which normally include reduce the usage of energy and alternative source of transportation. They try to reform the routine which is environmental friendly (Ogunbode et al, 2022).

6. Local Level Solutions

The aforementioned discussion elaborated that climate change has many ramifications for the entire world. It does not just belong to a specific country or nation but has encompassed the global community. owing the ramifications of climate change it is very important to take some measures to tackle this issue. There are so many ways to control the wave of climate change. This section explains a few ways that how to overcome this fatal concern.

The issue of climate change is of concern for local as well as the national and international community. so, the efforts to tackle is this should be started from the local level. The local level initiative is of main concern due to its grass-root level efforts. The local level initiative may not have importance for wider boundaries but it can motivate the other local communities to take on their responsibilities in the availability of their limited resources (Metag et al., 2015).

One of the key tools adopted at the local level is imparting awareness among the community members. It is important to note that in the third world countries the majority of population does not know about the futuristic implications of climate change. They are regularly cutting trees and converting their agricultural lands into the industrial zones. In such scenario, the awareness proves to be a helpful tool to motivate the people to quit such practices which can harm their natural environment (Rhead et al., 2018).

Another local level initiative can include to run a campaign for tree plantation. The tree plantation can help in preserving the natural environment. The plantation activities can be undertaken through different techniques. The local setting of the community can assign the tasks of tree planation on the basis of ratio of population. Furthermore, this activity can also be assigned on individual level that he/she has to plant 2-3 plants. This process does not reverse the climate change at once but it has long lasting positive implications on the coming generation (Kuthe et al., 2019).

Leiserowitz (2009) pointed out that there are many cities in the contemporary world which don't face climate change as a serious issue but in accordance to the level of climate change, there are chances that such cities will also be under the pressure of climate change. Such cities should take some precautionary measures before it is too late. There should be developed sense of responsibility among the inhabitants about the implications of their acts in relation with climate change. For example, Kosice one of the important cities of Slovakia which does not have specific issue of climate change but in the recent period, it is also facing the threats regarding the same. The responsibility lies upon the local administration to adopt some measures so that they may preserve this city from the destructions of climate change.

The steps to cater climate change can be categorized into two categories i.e., micro and macro. The micro level developments include the initiatives adopted by the local planning and the steps taken by a specific group, community or individual. The individual effort is the basis which further leads towards local, national and international approaches. The micro level approach is basically practiced in such communities which have limited population. In most of the cases, the smallest communities reside in the rural setting which are away from the effect of climate change but the modern education and technology is imparting awareness among them to control such practices which can create climatic issue.

The individual approach is widely practiced among the educated societies because it works only on the basis of level of awareness. If an individual or group has awareness about their problem, it can move forward to find suitable solution. Contrary to that, the uneducated people have limited level of awareness so they take such steps which they don't know that such steps are contributing towards climate change. For example, they regularly cut down the trees because they don't know about the rich source of oxygen through these trees (Araos et al., 2016).

7. Conclusion

The review underscores a significant relationship between climate change awareness and cognitive and functional impairments, affecting behavioral engagement. It highlights the dual-edged nature of awareness—promoting proactive behaviors while potentially exacerbating cognitive and functional challenges. These findings suggest a need for comprehensive strategies that address the psychological and functional impacts of climate change awareness, fostering both mental resilience and active environmental engagement. Future research should focus on developing interventions that mitigate cognitive and functional impairments while enhancing adaptive behaviors in response to climate change.

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