



EVALUATION OF FARMERS' MENTAL HEALTH WITH REGARDS TO CLIMATE CHANGE IN JALANDHAR: AN INTERVIEW-BASED SURVEY

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Abstract

Climate change is one of the biggest challenges humanity is facing today. It is causing a significant increase in earth's temperature, water scarcity, degradation, and crop loss. Over the past few decades, scientists have documented the steady increase in global temperatures due to greenhouse gas emissions, primarily caused by human activities. Climate change has the potential to harm ecosystems and human well-being significantly. These negative effects of climate change are affecting all the different sectors of our economy but the effects of climate change are especially salient in our agriculture sector. Farmers are facing numerous challenges because of climate change and it is negatively affecting their overall production. This has a serious negative impact on our economy. This paper explores the effects of climate change on farmers and their agricultural practices. It looks at how the changing weather patterns, increase in temperature, rainfall and other factors are affecting farmers and their practices. The study examines the relevant literature review, data, research gaps and also looks at various practices that farmers have developed in order to cope with the ever-increasing problem of climate change. It also examines how farmers' mental health is being affected by climate change induced issues.

Keywords: Mental health, Climate change, Agriculture, Farmers, Global warming

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1. INTRODUCTION

1.1. WHAT IS CLIMATE CHANGE? AND WHAT IS THE EVIDENCE?

Climate change pertains to alterations that go beyond the typical atmospheric state and are brought about by both natural occurrences such as the earth's orbit, volcanic eruptions, and movements in the earth's crust, as well as artificial factors such as the amplified concentration of greenhouse gases and aerosol (Kim, 2010). It is caused by the release of greenhouse gases into the atmosphere. These gases accumulate into the atmosphere which causes global warming. Global warming is increasing because of climate change, which is causing not only changes in earth's temperature but is also resulting in many natural disasters like floods, draughts, heavy rainfall, heat waves, hurricanes etc. The impacts of climate change can be seen all around the world with increased sea level, shortened winter and early, changes in the habitat of wild animals etc (Climate Change Impacts, 2021). The effect of climate change is not just limited to wildlife animals but it is also affecting human beings. For this reason, the issue of climate change has become a hot topic globally. It has also aroused a lot of controversy at the global level. There are some who deny climate change completely while others accept it. The reality is that climate science has advanced a lot in the last few decades and there is a lot of new data that supports that climate change is a real serious issue. According to the Intergovernmental Panel on Climate Change (IPCC), "Since systematic scientific assessments began in the 1970s, the influence of human activity on the warming of the climate system has evolved from theory to established fact." Since 1900, the average temperature of the Earth's surface has gone up by approximately 1 degree Celsius (1.8 degrees Fahrenheit), with more than 50% of the increase taking place since the mid-1970s. There are numerous other pieces of evidence to support this, such as a decrease in Arctic Sea ice coverage and an increase in ocean heat content. Additionally, temperature-sensitive species of fish, mammals, and insects have been moving towards the Earth's poles, which is further proof of widespread warming on the planet. All of these observations combined leave no doubt that the Earth is experiencing a significant increase in temperature (Society, 2021).

1.2. EFFECT OF CLIMATE CHANGE AT GLOBAL LEVEL:

Climate change is affecting almost all aspects of human lives for example – Businesses, economy, education, politics, media etc. The problem of climate change is not just an ecological problem but

also a social, economic and a political problem. There are people who think that climate change is a hoax however there is strong evidence in favour of climate change being a real issue. Human activities—especially the burning of fossil fuels since the start of the Industrial Revolution—have increased atmospheric CO₂ concentrations by more than 40%, with over half the increase occurring since 1970. Since 1900, the global average surface temperature has increased by about 1 °C (1.8 °F) (Society, 2021). According to the Intergovernmental Panel on Climate Change's fourth assessment report (IPCC 2007a), the Earth's average temperature has risen by 0.748°C in the past century, and it's estimated that it will continue to rise by approximately 1.8 to 4.8 degrees Celsius by the year 2100 (Dhanya & Ramachandran, 2016). Climate change has also resulted in an increased frequency of heat waves. The number of high heat frequency days have drastically increased not just day temperatures but also night temperatures have also increased. In India, exposure to heat waves is said to increase by 8 times between 2021 and 2050, and by 300% by the end of this century (WILD, 2023).

1.3. EFFECT OF CLIMATE CHANGE ON INDIA:

Climate change is affecting all the nations around the globe, including India. India is a vast nation of 1.4 billion people and is heavily dependent on natural resources for its development, livelihood and economy. However, India faces a serious challenge in its efforts to protect its fast-depleting natural resources (Climate Change and the Developing World: A Disproportionate Impact ‐ USGLC, n.d.). The quality of water and the quality of air are worsening day by the day because of increasing urbanization and industrialization. There is proof indicating notable rises in the strength and/or frequency of various extreme weather occurrences, such as heat waves, prolonged droughts, and heavy precipitation. (Preethi Lolaksha Nagaveni and Amit Anand, n.d.). These climate changes have caused serious problems ranging from food shortages, extreme temperature changes, heavy or no rainfall, loss of livelihood and loss of lives. As per the World Bank, an increase of 2°C in the world's average temperature in the next few decades will only make India's monsoon more unpredictable. It is estimated that by the 2050s, with a temperature increase of 2°C-2.5°C compared to pre-industrial levels, water for agricultural production in the river basins of the Indus, Ganges and Brahmaputra will reduce further and may impact food adequacy for some 63 million people (Preethi Lolaksha Nagaveni and Amit Anand, n.d.). The

annual growth rates of CO₂ equivalent emissions from India between 1990 and 2000, when compounded, indicate a total increase of 4.2% each year. (Giri, 2020). Climate change has also negatively impacted India's water resource. The Ministry of Water Resources reports that the per capita availability of water in India has been decreasing consistently since 1951, dropping from 3,450 cm to 1,250 cm in 1999, and is projected to fall even further to 760 cm per person by 2050. If global warming trends continue, the annual flow of the Brahmaputra River is expected to decrease by 14% by 2050. Additionally, Himalayan glaciers could melt rapidly, potentially reducing their current size of 5,00,000 km² to just 1,00,000 km² by the 2030s (Giri, 2020). In India, a majority of the crop area relies on rainfall, making it very susceptible to changes in precipitation patterns caused by climate change. It is predicted that by the 2050s, if the temperature rises by 2°C- 2.5°C from pre-industrial levels, the availability of water for agricultural purposes in the riverbasins of the Indus, Ganges, and Brahmaputra will decrease even further, potentially affecting the food security of around 63 million individuals (Preethi Lolaksha Nagaveni and Amit Anand, n.d.).

1.4. EFFECT OF CLIMATE CHANGE ON AGRICULTURE IN INDIA:

Agriculture sector is the backbone of the Indian economy. The agricultural sector contributes to 14% of the country's Gross Domestic Product (GDP) and approximately 11% of its exports. Nevertheless, despite the sector's economic significance, half of the population still depends on agriculture as its primary source of income, and many industries rely on it as a source of raw materials (State of Indian Agricultural Report 2012 –2013). Agriculture production is very much dependent on climate. Possible changes in temperature, rainfall etc are likely to influence the production of crops. The hydrology of various water sources, such as underground water levels, water temperature, river flow, and water quality of lakes and marshes, is impacted by climate change due to its effects on precipitation, evaporation, and soil moisture content (Fecht, 2019). Specifically, an increase in precipitation caused by climate change leads to a corresponding increase in outflow, whereas rising temperatures cause more evaporation and a consequent reduction in outflow (Kim, 2010). Currently, in the north-western region of India, there is a significant issue regarding the decline in soil productivity, an increase in salinity levels, alterations to the water table, deterioration of irrigation water quality, and resistance to various

pesticides (Flaig, 2021). Simulation research shows that, in the short term, the impact of climate change on Indian agriculture would not be significant as long as pests are kept under control. However, in the long term, the production of various crops may be severely impacted depending on the season, management practices, and the extent of climate change (*Climate Change Impact on Agriculture Leads to 1.5 per Cent Loss in India's GDP*, 2017). Wheat production, especially in central and southern India during the rabi season, may be more seriously impacted. Climate change's indirect effects, such as increased uncertainty regarding rainfall patterns, the duration and frequency of droughts and floods, and access to irrigation, could also have a significant impact (Kalra et al., 2007)

1.5. EFFECT OF CLIMATE CHANGE ON FARMER'S MENTAL HEALTH:

Climate change causes significant changes in earth's temperature, precipitation and weather conditions. This results in more frequent and severe weather-related disasters such as, droughts, fires, floods, heavy rainfall, thunderstorms etc. Farmers experience a lot of stress because of the unpredictability of weather. These climate disasters can ruin their crops and destroy an entire season of crops. Farmers can lose their livelihood and their means of earning in an instant (*Climate Change Is Exacerbating Stress and Anxiety Among Farmers*, 2022). Climate change has caused a lot of unpredictability in weather. Due to this the farmers can experience chronic stress and anxiety which can affect their mental wellbeing negatively leading to depression and suicide. Some studies indicate drought as the major factor linked to the poor mental health of farmers (Berry et al., 2011). Another set of studies show that anthropogenic climate change impacts have been linked to psychological disorders in humans including anxiety, mood disorders, stress, depression, post-traumatic stress disorders, violence and feeling of hopelessness (Wilcox et al., 2013; Coyle and Susteren, 2012; Doherty and Clayton, 2011; Berry et al., 2010). Similarly, fear, despair, suicidal ideation, increased drug abuse, and heat related deaths have been linked to adverse climatic changes (Honda et al., 2013; Swim et al., 2011; Page and Howard, 2010; Fritze et al., 2008)

1.6. RELEVANCE

The agriculture sector is one of the most important sectors for our Indian economy. It is the main source of raw materials like sugar, cotton, wood etc that are used in industries, it is important for international trade, it plays a big role in generating country's revenue, it provides employment and is the source of

our food supply. However, the increase in global warming and climate change is affecting our agriculture sector negatively (*Importance of India's Agriculture Economy | IBEF, 2022*).

Global warming has adverse effects that include a decrease in crop yield and quality due to a shorter growth period caused by elevated temperatures, as well as reduced sugar content, poor colouring, and decreased storage stability in fruits. Agricultural crops are also vulnerable to an increase in weeds, blights, and harmful insects, while land fertility is diminished by accelerated organic substance decomposition. Moreover, increased rainfall resulting from global warming can lead to soil erosion (Kim, 2010).

The ongoing rise in global temperatures and the consequent increase in the frequency and intensity of its effects, farmers, and communities dependent on farming worldwide will face growing difficulties. Alterations in precipitation patterns have already initiated and are predicted to become more severe in the upcoming years. This will result in heightened occurrences of heavy rainfall as well as extended dry periods, even in the same areas. This can cause significant problem in agriculture production and failures in crop growth. Modifications in temperature patterns are expected to impact farmers in all parts of the world (*Sekar, 2021*). This includes an increase in average temperatures, more extreme heat throughout the year, fewer adequately cold days during winter, and a higher frequency of thawing during the cold season. There is also an increase in flooding in many agricultural regions. Such floods, which come with a high cost, can cause destruction to crops and livestock, speed up the erosion of soil, contaminate water, and harm infrastructure such as roads, bridges, schools, and other facilities. Insufficient water can have harmful consequences, similar to excessive water. According to scientific research, such droughts are expected to intensify due to the increase in temperatures, which will deplete water resources and, in some cases, trigger destructive wildfires (*Kish, 2023*).

Climate change is causing serious problems for farmers working in the agriculture sector. It is negatively affecting their land and soil quality, crop production, annual income etc. This is ultimately leading to poor mental health of the farmers. Farmers are also experiencing anxiety, depression, post-traumatic stress disorders and other mental health illnesses. The issue of climate change is a serious issue because it negatively effects our planet, the

agriculture sector and the well-being of our farmers (*The Climate's Effect on a Farmer's Mental Health | SIU School of Medicine, 2022*).

1.7. RESEARCH GAPS:

1.7.1. Lack of data on the impact of climate change on farmer's mental health:

There is a lack of research that's been done on the effect of climate change induced issues on farmer's mental health. While there is growing awareness of the issue, the research on the mental health impacts of climate change on farmers is relatively limited. There are several reasons for this research gap. First, mental health is often overlooked in discussions of climate change impacts, which tend to focus on physical impacts like crop yields, soil health, and water availability (<https://www.apa.org/practice/programs/rural/farmers-mental-wellness>, n.d.). Second, mental health research can be challenging to conduct, particularly in rural areas with limited access to mental health services and resources. Finally, there is a lack of funding and resources for mental health research in general, which can make it difficult to study the mental health impacts of climate change on farmers.

1.7.2. Lack of research on farmers living in different regions of Jalandhar district

There are very few researches that have been done on farmers living in different regions in Jalandhar district. This creates a research gap in our understanding of the problems the farmers are facing in Jalandhar. Without proper research there is no way to understand what problems the farmers are facing and what we can do to help them.

1.8. RESEARCH OBJECTIVES:

- To learn about farmers' awareness about climate change
- To learn about the problems faced by farmers due to climate change
- To learn about the patterns of problems induced by climate change in previous years and today
- To learn about the coping strategies of farmers to deal with climate change
- To know the involvement of government in the situation regarding climate change and how it can be better
- To learn about the level of awareness in farmers regarding mental health issues
- To learn about the effects of climate induced issues on farmers' mental health
- To learn about the response of farmers to mental health problems

2. METHODOGY

This research was conducted in the city of Jalandhar for it is considered one of the important places for farming in Punjab which is the farming capital of India (*Welcome to District Jalandhar (Punjab)--Introduction | Official Website of Department of Agriculture & Farmer Welfare, n.d.*).

Unstructured interview was used in the research. A structured interview is when a series of questions are asked in a particular order to extract some quantitative information (*Structured Interview - Wikipedia, n.d.*). On the other hand, Unstructured or Non-directive interview is where there are no strict questions that are given in a strict order, rather a number of questions are used to aid the interviewer nudge along the conversation in a productive direction (*George, 2022*). Unstructured interviews were used in this research because these help in gathering quantitative information.

Door-to-door survey method of sampling was used in this research to select the sample pool of farmers for research. Door-to-door sampling is used in researches where the sample pool must be restricted to only a certain geographical location (*Collaborators, 2022*). In this research, the location was Jalandhar. Researches went door-to-door to conduct unstructured interviews and collect proper samples. Farmers varying in age, gender, farm sizes, profit from farming, family size and type were in the sample. Total sample consisted of 50 farmers.

A questionnaire was made by the researchers to aid in the interviewing process. It consisted of 25 questions regarding farming details, awareness regarding climate change, impact of climate change on their farming, causes of climate change, their response to climate change, role of government in the climate change prevention, Mental health issues to today's time, impact of climate change on their mental health and their response to mental health problems. Questions regarding recent events were added to make the questionnaire more specific and relevant. Here the questionnaire that was used to aid in the interview process.

Farmers' response to climate change and Mental health

*SOCIO-DEMOGRAPHIC DETAILS

Name.....
Age
Gender.....
Qualifications.....
Family Type (Nuclear/ Joint)
Relation to the head of the family.....
.....
Annual income.....
Mental conditions (if any)

-
health?.....
1. How big is your farming land?.....
2. What do u grow in different seasons and why?.....
3. What is the quality of the soil in your farms?.....
4. Do you use fertilizers and are they effective or evasive?.....
.....
5. How has the weather affected your production in recent years?.....
.....
6. Do you see any difference in farming done in this generation and previous generations?.....
.....
7. How much does pollution affect your crops and your.....
8. What actions do you take to cope with pollution?.....
.....
9. Have you had any major damages into crops due to recent climate change disasters?.....
.....
10. What can you do to protect your crops from future disasters?.....
.....
11. Do you believe in climate change and global warming? Why?.....
.....
12. Do you think climate change is a serious issue and why?.....
.....
13. What do you think is the cause of climate change? Are the urban settlements to blame for this?.....
.....
14. Can you tell whether a disaster is about to come? Do u have regular supply of information regarding this type of news?.....
.....
15. In recent years, locusts have destroyed many crop fields. Has that happened to you and what do you do to protect yourself?.....
.....
16. What are you doing on individual level to cope with climate change?.....
.....
17. Do you think the government is providing

- adequate help to deal with the problem of climate change?.....
18. What steps would you like the government to take?.....
19. How has climate change affected your own mental health?.....
20. What are you doing to deal with your mental health problems?.....
21. Are you aware about the importance of mental health and dire effects of mental problems?.....
22. Is anyone in your family suffering from mental health problems?.....

23. Which do you think is the factor of climate change that has affected you the most?.....
24. Have you known any farmers that have committed suicidal?.....
25. Have you ever been in the vicious cycle of borrowing and reimbursing because of financial reasons due to a bad crop?.....

Thank You

3. DATA

The research was done on 50 farmers of varying age, gender, income, family type, literacy and mental health condition. Figure 1 is mentioning the flowchart of this research study.

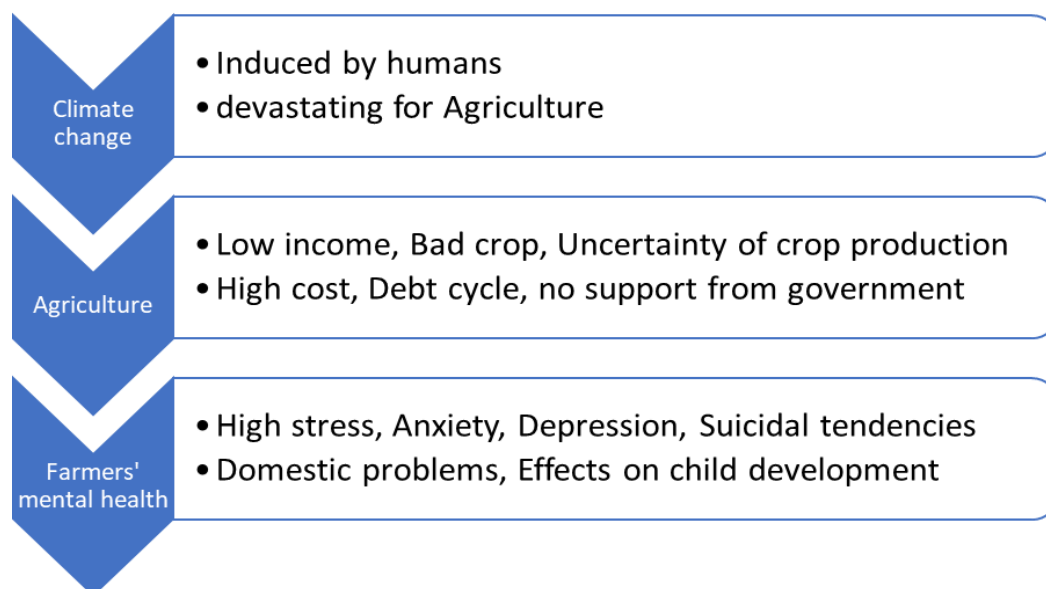


Figure 1: How climate change affects farmers' mental health

4. RESULT

4.1 DEMOGRAPHIC INFORMATION OF FARMERS AND THEIR VIEWS ON CLIMATE CHANGE

Through the following points, the results of this research work has been discussed below (Figure 2).

1. Age- 26 participants were older than 50, 17 in their 40s, 5 in 30s and 2 below 30.
2. Gender- 32 were male while 18 were female. There were no other genders.
3. Literacy- 34 farmers were literate while 16 were illiterate. Most farmers are old and come from a poor family background. That is a cause for illiteracy.
4. Income- between 1-5 lakhs are 7 farmers,

between 5-12 lakhs are 26, more than 12 lakhs are 4 and remaining 13 chose not to disclose their income.

5. Family type- 29 were living in nuclear family while 21 were living in joint family.

6. Mental conditions if any- 45 farmers denied having any mental conditions and only 5 accepted having some sort of mental condition such as high levels of stress and anxiety, depression etc. Although none of them have been diagnosed by a professional. This low number is likely due to ignorance and lack of awareness than a healthier lifestyle than general population.

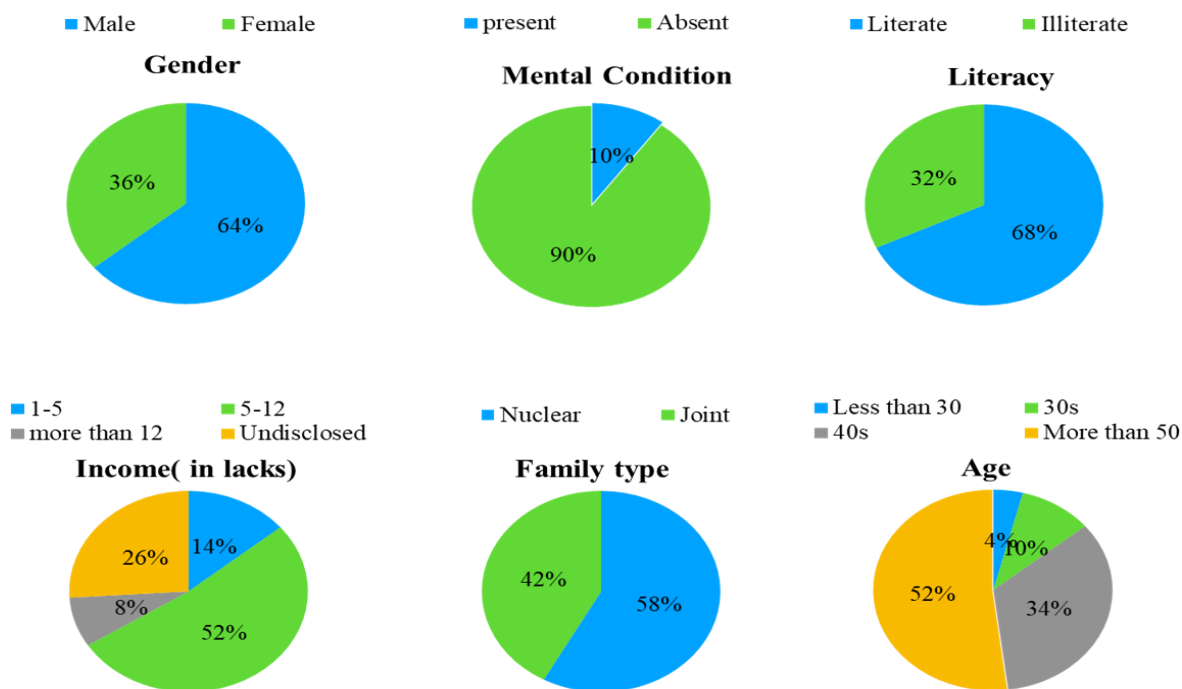


Figure 2: Important demographic information of farmers of study area, Jalandhar Table 1: Climate induced mental stressors

Major Climate Induced Stressor	Number of farmers
Crop failure	20
Increase in pests and diseases	3
Unpredictable rainfall patterns	10
Drought	5
Floods	0
Changes in temperature	12

Above Table 1 explains response of farmers when asked about the biggest stressor regarding climate change.

4.2 FRAMERS' RESPONSE TO CLIMATE CHANGE INDUCED TO AGRICULTURE PRODUCTION

A. No. of farmers that use fertilizers: The above table shows that 48 out of 50 farmers depend on artificial inputs rather than organic manure for market production (Figure 3).

B. No. of farmers whose crops were affected by extreme weather in recent years: 39 out of 50 farmers responded positive to this question stating the great financial loss and strain on mental health (Figure 3).

C. No. of farmers believe farming is better now than a generation ago: Mixed response has been received over this question. Both pros and cons were stated by the farmers. Though many of them agreed that with better technology, the process has become much easier than before but the unpredictability of the weather causes much loss (Figure 3).

D. No. of farmers who believe pollution affects the crops significantly: The lack of awareness
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among the farmers regarding the pollution problem have resulted in negative response to this question as many of them believe that pollution is problem of the cities nor rural farming areas. Though the small no. of farmers (12/50) believe that pollution does exist in farming areas and affects the crops (Figure 3).

E. No. of people that believe in climate change and global warming: 41 out of 50 farmers believed the climate was changing and getting more erratic day by day. Also, that the temperatures were more and more extreme year by year. Although the reasons given by them were mostly Act of God or that change is natural. Most don't believe in human activities being the reason for climate change and global warming (Figure 3).

F. No. of farmers that believe climate change is human induced: Only 19 out of 50 farmers believed humans have anything to do with climate change. Most believed it is an act of God (Figure 3).

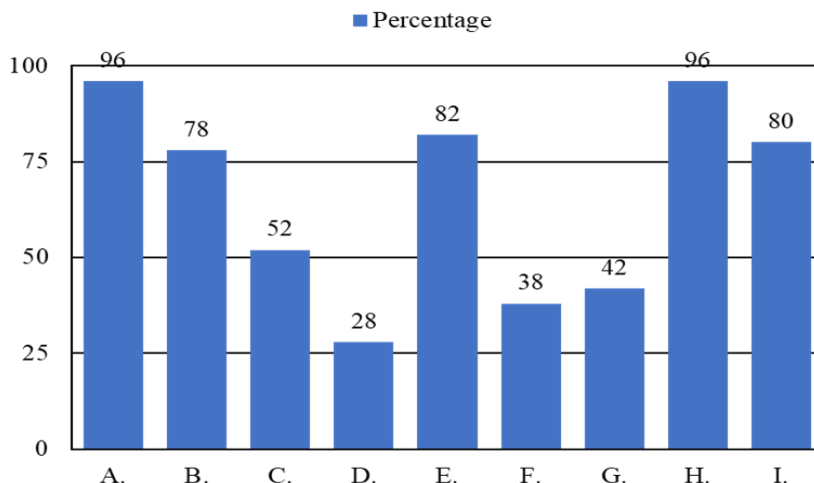
G. No. of farmers that believe that they can

predict a climate disaster in advance: Farmers have a sense of nature that city-folks lack. After living all their lives surrounded by nature 21 out of 50 believe they can predict a climate disaster in advance. They can see the minor details of disturbance in nature and predict something bad is to arrive.

H. No. of farmers that believed that government is not doing enough: 48 farmers disregarded this question stating ‘government is doing nothing, the

time jai Kisan is long forgotten by the government’ (Figure 3).

I. No. of farmers believing that climate change is affecting their mental health: 40 farmers showed the sign of mental distress because of financial, or sudden loss of crops due to the sudden attack from the climate, though they do not accept it as an illness (Figure 3).



FRAMERS RESPONSE IN 4.2 HEADINGS
Figure 3: Framers’ response to climate change induced to agriculture production unpredictable “.

5. DISCUSSION

The research was done on 50 farmers out of which 26 were in their 60s, 17 were in their 40s, 5 was in their 30s and 2 were below 30. The responses were greatly influenced by their age criteriaas well as the level of education they have received in their prime age. However, most of the famersaccept the fact that climate change has changed the way of their livelihood in great essence.

The following issues were focused:

5.1. AWARENESS AMONG THE FARMERS REGARDING CLIMATE CHANGE

Almost all the famers are totally aware and accept the concept of climate change in recent years. Though the majority of it consider the climate change as an act of God and accept it as it is. The other half of the famers think and know the reason behind the climate change and accept the role of pollution, factories, deforestation etc. behind the climate change. The concept of global warming is almost unknown to the famers. Only 3-4 farmers knew the concept and the role it plays in climate change. The most of the older farmers accepted the occurring of the climate change is visible only about few decades now. Quoting as “during our father’s time, it used to be good and simple. Now it is always

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5.2. PROBLEMS FACED BY FARMERS

Regardless of age and education the problem faced by the farmers were common in essence.

1. The decrease in the production of agriculture: - Though the output of the production is good but increasing demand of the increasing population have put lots of pressure on the farmers to meet the demand of the market. Further sudden attacks from locust, climate change, sudden rainfall also decrease the value of production than planned (*Agriculture and Natural Events and Disasters | USEPA, 2015*).
2. Dependency on the artificial inputs: - To cope up with the first problem of increasing production farmers tend to depend on the artificial inputs such as fertilizers, chemicals and other technologies which degrade the quality of soil and indirectly trap them into the cycle of using more and more chemicals rather than organic manure (*Why It’s Time to Stop Punishing Our Soils With Fertilizers, n.d.*).
3. The uncommon rain or dry spell effecting the untimely crops: - This is the direct result of the climate change due to global warming which involves sudden change in weather and because of

course in the devastation of the agriculture and ultimately loss for the farmers. This problem ultimately results in the sudden downfall of farmers hope for which they did not anticipate and thus also results in mental stress (*Thomson Reuters Foundation News, 2018*).

4. Financial or monetary problems: -The above three problems demand solution and the solution demands money which becomes a problem for the poor or middle-class farmers to cope up with. The farmers greatly face the problem with bank to gain loan and to repay it.

5. Lack of government or civil support: -Lack of financial, rights, or any support from the government or administration was highly noticeable from farmers responses. It is evident from recent years events that farmers are not satisfied with government's work regarding farmers' issues. Indian farmers protested for over a year in 2021-2022 for sufficient prices for their crop. The issue seems to not have been solved yet (*Farm Laws: India Farmers End Protest After Government Accepts Demands, n.d.*).

5.3. COPING STRATEGIES USED BY FARMERS

The increase of artificial input rather than organic manure such as fertilizers is in trend for some years now. The untimely weather changes have bound them to be depended on these chemicals more and as a result the quality of soil have decreased which again led them to use these chemicals to increase the output as well as quality of soil. Further the use of different means of irrigation and technology such as tractors have been used by the farmers. Though the level of advancement of tractor differs from farmer to farmer, none of them uses most tractor which has new technology such as new tillage and harvesting equipment etc. They mainly depend on man labor, hence limiting the output production but then again, the lack of monetary resource bound them for primitive strategies to cope up.

5.4. HELP RECEIVED FROM THE GOVERNMENT

Out of 50, 48 replied 'no' to this question. The fact that government shows no concern was greatly shown by the farmers. The false promises by the government in regards to their demands were the main agenda for the farmers. Further the right value or price of the crops into the market is not determined properly which effect their profit level each year and many of them were pushed into the cycle of debt. The small percentage of the farmers

with little education were more concerned about their rights and administration problems regarding their issues. Their problem with the bank regarding collateral is another major issue that they want government to take action on. When asked about the different schemes provided by the government for the benefit of the farmers, many of them were not aware about the schemes and those who were responded negative to the question stating 'though it is meant for farmers benefit, only government and rich lords or farmers are the beneficiaries.

Upon asking about the changes or help they want from government, the majority replied with the basic administration office should be provided for the farmers in every rural area or district where they could approach and keep their demands easily. Further they demanded to make the legal processes simpler for the farmers such as loan system. They also want their participation in determining the value of crops each year through representatives. The financial or technological help through government should be provided at least for the small farmers who could not afford it. They also want some kind of concession or help from the government when their crops are destroyed because of heavy rainfall or dry spell.

5.5. MENTAL HEALTH CONDITION IN FARMERS

The concept of mental illness or mental health is lost into the farmers. The dire problem of lack of mental health awareness is evident in the survey. Though out of 50, 24 claimed to know someone who have committed suicide because of mental pressures or were not able to cope up with the losses faced into the business. The most common reason was money for such drastic actions. Many of the mid 30s responded with headaches or common symptoms of anxiety during hard times of bad harvest. Some of them have experienced panic attacks once in a while, though they recognize it as a result of weakness not as a mental stress. Upon asking about the mental illness or problem many responded as "It's now habit to live with it, we are genetically made to endure such things." The above statement clearly determines the onset mind of the farmers regarding these issues.

These problems are not limited only to the farmers but also to their family members. Many of them claimed that their wives or other female ladies into the family have shown the sign of fatigue or hallucinations at time of drastic economical losses. The effects of climate change have evidently increased the level of stress among the farmers but

one cannot deny the fact that now the farmers are more prone to ask for help rather than indulging in self-harm activities.

The survey shows that majority of the farmers faces mental issues due to the increase in stress because of the various reasons. All the problems tend to be related to each other in the end which led them to live with poor mental health. Though the rate of farmer's suicide has decreased in the recent years but it cannot deny the fact that the mental wellbeing of the farmers has lots to achieve, for many of them are not even aware about the concepts such as anxiety, migraine, stress and other such issues. According to our findings almost all of them showed the sign of mental distress but none of them acknowledged it. For them it's a regular sign of hard work which again shows the stereotypes set on mental health by the society.

6. LIMITATION OF RESEARCH

- 6.1. Limited generalizability: Small sample sizes, which may not be representative of the greater population, are common in qualitative research. This indicates that the study's conclusions might not apply to different people or situations.
- 6.2. Potential for bias: Participant replies may be influenced by the interviewee's presence and manner of speech, which might result in bias.
- 6.3. Narrow scope: Qualitative research frequently focuses on a single phenomenon or topic, which may not adequately represent the whole variety of experiences or viewpoints associated with that issue.
- 6.4. Interpretation is subjective, which means that different researchers may draw different conclusions from the same data when it comes to the study of qualitative data.
- 6.5. Work- and resource-consuming: Collecting, transcribing, and analyzing the necessary data might take a lot of time and resources when conducting qualitative research.

7. CONCLUSION

Climate change is the change in earth's climate and its weather patterns. Climate science data clearly supports that the climate of earth is changing. The change in climate is affecting people from all walks of life but it is especially causing significant problems to the farmers working in the agriculture sector. Farmers are facing a number of problems as

a result of climate change. This study was an evaluation of farmer's response to climate induced issues and the effect of climate change on farmer's mental health. The research was done in Jalandhar city of Punjab. The study involved the use of questionnaire which had 25 questions and the researchers used door-to-door survey method to collect the data. The data was collected by the use of unstructured interviews. The study clearly shows that farmers face a lot of problems because of climate change. There is a lack of agriculture production, farmers are more dependent on artificial inputs, and their crops are failing because of uncommon rain or dry spell. However, the most significant problems that all the farmers pointed out is the lack of government or civil support. Most farmers agree that there is little to no support for farmers from the government. The study also found that most farmers are suffering from some form of mental health condition. Finally, support should be provided to farmers in form of a basic administration office in every rural area where they can communicate about their problems easily.

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