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Accessing the Impact of Climate Variability on Public Health in Rural Bangladesh: A Mixed Study in Patuakhali District

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ABSTRACT

This study planned to evaluate the existing adverse impact of climate change on public health in Kalapara Upazila. For this purpose, the Najibpur ward of Mohipur union was selected randomly from Kalapara Upazila under the Patuakhali district. Fifty respondents were selected following a systematic sampling technique. The necessary data was collected by conducting the questionnaire survey. In addition, five in-depth interviews were conducted to collect qualitative data. Finally, the collected data were presented and analyzed through producing percentile results, cross table and significance test. The study findings showed that most of the people addressed that members of their families are affected by almost every seasonal changes by the adverse impact of climate change. In the study area, natural disaster is a recurrent event that discontinuous their traditional living activities by destroying peoples crops, fisheries and other native occupations. Such incessant and adverse climatic impacts forcing people belong to the unexpected impoverished and filthy health conditions. A mixed method strategy was followed to conduct the study. The duration of the study was January 2024 to February 2024. This study results showed temperature change directly or indirectly contributes to physical and psychological states among the study community. At the end, a few recommendations provided that may help to resolve the climate related filthy health conditions and to improve national policy.

Keywords: Climate variability, Coastal village, Public health, Bangladesh

INTRODUCTION

Najibpur ward under Kalapara upazila of Patuakhali district is a remote coastal region of Bangladesh. Besides poverty health issues of its residents are at a risk due to the impact of rapid climate change. This study tried to reveal the community voices regarding the climatic impact on health. Islam and Amstel (2018) mentioned that Bangladesh has fast growth as well as 168 million, however, the acreage is proscribed, and that's why it's thought of as a densely inhabited country. Moreover, the majority square measures poor, and they wholly rely on others. Chowdhury et al. (2021) described that global climate change is enumerated because of the dynamic pattern of weather. The rising temperature, sea level, and natural disasters square measure expected to be the results of global climate change, and these results in people's vulnerability. Huq and Ayers (2008) mentioned that the physical, social, and financial condition of Bangladesh has relevancy to its standing mutually of the foremost vulnerable countries to global climate change. Biswas (2021) described that due to its geographical location and climatic condition, Bangladesh is taken into account as one of the disaster-prone countries in the world. Every year, Bangladesh has experienced completely different sorts of

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natural disasters like tropical cyclones, floods, periodic event surges, etc. Shahid (2010) focused that though, most of the population board rural areas and rely on agricultural production, global climate change influenced their life and livelihoods primarily through monsoons. Islam (2008) claimed that extreme climatic events cause a decrease in food production and have an effect on the health and financial gain sources of the family and additionally raise food costs and suffering. Ahmed (2006) explained that the public health sector is in an exceeding danger as a result of global climate.

This study focused on the public health sector which is plagued by numerous aspects of global climate change in Kalapara Upazilla within the Patuakhali district. The key findings of the study may be useful for understanding how climate impact is dynamic in the study region. The study is a major endeavor in promoting awareness concerning the causes, state of affairs, and potential health risks of global climate change on public health.

Key concepts

IPCC (2014) defined climate change as "significant changes in global temperature, precipitation, wind patterns and other measures of climate that occur over several decades or longer".

Climate variability refers to the situation when it is noted that seasonal changes are noticeably occurring over the years in a certain region.

Public health refers to the health issues related to the whole community population.

Linkages between climate variability and health issues

Woodward (2014) described that changes in temperature are already impacting health in a completely myriad of how, additionally ensuing dying and sickness from progressively frequent extreme climate activities, like heat waves, storms, and floods, the disruption of meal systems, will boom in several sicknesses, and mental issues.

The health effects of global temperature are determined using the vulnerability of populations, their resilience to the prevailing rate of temperature change, and consequently the extent and motion of adaption. In the long term, the effects can gradually rely on the quantity of transformational motion taken currently to reduce emissions.

THEORETICAL FRAMEWORK

Theory of alienation from nature

Benton (2018) addressed that Marx's thinking on there's a relationship between humans and nature, the connection is steady however fast destruction by the trendy capitalist economy of the terrible conditions that sustain all life-together with human life is arguably the foremost basic challenge facing humanity nowadays. For Marx below the capitalist system, the basic supply of alienation was our estrangement from nature. This began with the enclosure of pastureland that left several rural people with no means of meeting their wants aside from selling their labor power to the new industrial category.

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The contingency theory

Alves et al. (2017) Contingency theory is a structural principle that says that there's no quality manner to organize an organization, manual an agency, or shape alternatives. Few studies cope with the dangers of climate alternate-connected contingencies in offer chains in growing economies and subsequent vital responses from enterprises. It describes how corporations shape and keep their low carbon operation management and the way the concept of the limitations springing up from international weather alternate at the provision chain stage.

Conceptual Framework of the Study

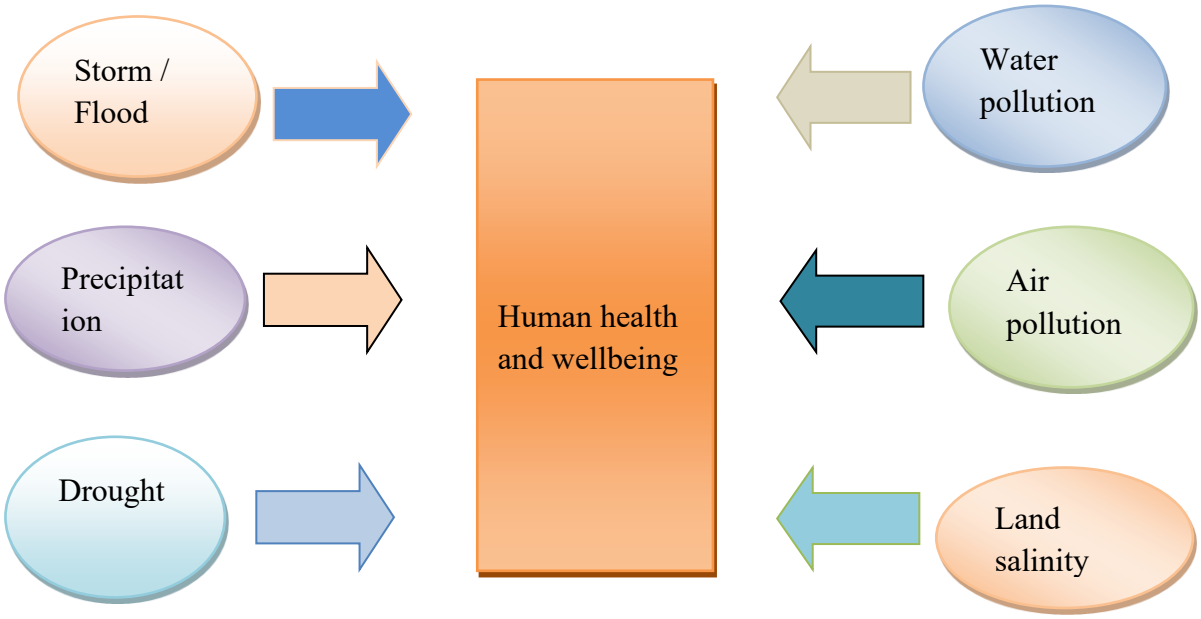

Figure 1 Conceptual Framework

The above conceptual framework shows the study dependent variable (Human Health and Wellbeing) depends on surrounding independent variables. The independent factors in the framework address the causal relationship between dependent variable and independent variables. The independent variables are resulting from unpredictable climate change which is triggering climate variability.

Objectives of the Study

The broad objective is to explore the potential health risks associated with climate variability in Kalapara Upazila.

Other specific objectives of this study are as follows:

To identify the social, economic, and environmental impact of climate variability on public health;

To evaluate the relationship between climatic variability and different health vulnerabilities.

Research Questions of the Study

How does climate variability's social, economic, and environmental impact affect public health?

How does climatic variability relate to potential health threats?

LITERATURE REVIEW

Social, economic, and environmental perspective

Uddin et al. (2017); Sattar and Cheung (2019) mentioned that the modification in climate pattern has severely affected the socio-economic conditions of the farmers on the idea of their observation within the coastal areas of the People's Republic of Bangladesh. Due to increasing temperature and salinity level rise, cyclones, droughts, floods, etc., and drop by downfall, farmers square measure to suffer loads at yield production. Sarkodie and Strezov (2019); Skoufias et al. (2011) have recognized global climate change jointly as a vital problem with pro-poor growth, impoverishment, and difference. Poor people are usually the foremost prone to global climate change as they sleep in remote areas wherever they need the minimal capability to adapt to the shocks. Javed et al. (2020); Roberts (2001) found that environmental condition revision, directly and indirectly, affects individuals' health. Wright et al. (2015) declared that Climate change could fully frustrate LDC's ability (The Least developed countries) to earn the goal, including poorness, hunger, water, growth infrastructure, marine resources, and ecosystems. Guigan et al. (2002); Raub et al. (2021) mentioned that each country, nation, and communities are at risk of climate change; poorer nations are disproportionately most at risk of extreme weather events for lacking the ability to adapt and deal with natural disasters, less infrastructure, and technological development, lack of social safety nets and their living space are unwell ready for providing coastal people protection including warning system, and response team and relief as well as recovery to help low high discharge situation. Nwoke et al. (2010); Rahman and Rahman (2015) delineated that the planet's temperature is increasing daily; therefore, the earth is turning hotter, and this warming rate is fast, and human actions are accountable for this action. Buloshi and Ramadan (2015) conducted a study on the inhabitants living in Muscat and represented people's information and consciousness regarding the changes. The researchers showed individual capacity is on the top of other remedies. Below et al. (2012) developed an activity-based adaptation index (AAI) and found the connection between socioeconomic variables and farmers' adaptation behavior. Skoufias et al. (2011); Minar et al. (2013) have recognized global climate change jointly as a vital problem with pro-poor growth, impoverishment, and difference. Poor people are usually the foremost prone to global climate change as they sleep in remote areas wherever they need and the minimal capability to adapt to the shocks. They are obsessed with scheme services and merchandise for their living.

From the view of health vulnerability

Hasib and Chathoth (2016) mentioned about breeze in Bangladesh, human health is in peril of temperature change, and therefore the kids, the senior and underprivileged team square measure a lot prone to this understanding. Mondol (2014) claimed that temperature changes a lot or less affects everybody. UNICEF (2016) reported that Bangladesh is considered one of the only vulnerable countries in the world. Temperature change influences public health and mainly hurts the poorest children by destroying their academic facilities, increasing psychological stress, and biological process challenges. Kabir et al. (2016) showed that the marginalized populations of Bangladesh square measured in danger of climate change within

the matter associated with their health problems as a result of their suffering loads because of the impacts of climate change and additionally urged the country's public health care system to require immediate steps relating to adapting the changes in climate and its effects within the future. Mahmood (2012) explained that global climate change is becoming the most significant world health threat of the twenty-first century and is increasingly received as a public health priority. In Bangladesh, the natural disaster may be joint development, and recently Bangladesh has been facing many natural disasters for its geographical location. The international panel on global climate change (IPCC) foreseen that by 2050, Bangladesh will lose its land and half-hour of its food production. Kabir et al. (2016) highlighted that the breathing patterns and overall health standing of Bangladesh square measure seriously suffering from natural calamities like cyclones, drought, floods, etc., and these adverse effects result from the changes in climate and their impact. Hassan and Hadwen (2017) displayed that facilities and services regarding water, sanitation, and hygiene are vulnerable to temperature change nowadays. WHO (2018) asserted that temperature change affects the social-environmental determinants of health such as clean air, safe drinkable, decent food, and secure shelter. Bhukta (2019) analyzed the impact of temperature change on the health state of affairs in the Asian nation in conjunction with south Asian countries such as Sri Lanka, Pakistan, Nepal, and Bangladesh and supplied information to deal with the negative consequences of temperature change. Bush et al. (2011) wrote that modification of weather patterns and temperature are thought of as the world threats to public health in the Asian nation, each directly and indirectly through increasing temperature, rising water levels, water and food offers, and extreme weather events like- floods, droughts, earthquake, etc. All of those result in endemic infection and chronic disease. Monday (2019) mentioned that Human health is a lot of devastating state of affairs in African countries due to the vulnerabilities and low coping capabilities of individuals. Chhinh and Cheb (2013) tried to live with the vulnerability of families due to the changes in temperature among communities in Kampong Speu Province (KSP), Kampuchea by victimization 3 indicators together with accommodation capability, sensitivity, and exposure, whereas the direction was relatively low. Markandya and Chibai (2009) showed that the enormous implications of climate change on human health are linked to different illnesses owing to life-threatening temperatures, effects associated with air pollution, and impacts of maximum weather patterns. Haque et al. (2012) conducted a study and explored that like inflated heat, reduced rain pattern; overall hotter winters, etc. have several negative impacts in most cases on matters associated with human health, bread, and butter pattern, agricultural system, and comprehensive life variety of the creature. Tvinnereim et al. (2017) declared that Chinese respondents appear that the amendment in a climatic way has negative impacts on humans' health, and most of the respondents are aware of the distinction between the physical manifestation of pollution and heating chargeable for things and lowland crops. Toan et al. (2014) mentioned that headaches, fatigue, and sickness moreover as high-pressure levels and different diseases touching the people because the most typical symptoms found in the flesh because of climate change. Tiwari et al. (2010) displayed that the ordinary temperatures have inflated from 0.6˚C to 0.98˚C over the last thirty years, and the precipitation pattern has changed in the previous 5 years. Gbetibouo (2009) conducted a study regarding farmers' perception and adaptation to global Climate change and explained that the farmers of the river basin of African nations perceive climate change impacts like the temperature inflated whereas rain has been considerably attenuated. Sour et al. (2014) declared that Asian countries could be in the most vulnerable position at the moment time because of natural disasters. Nigatu et al. (2014) declared that a higher rate of females is aware of the health problems resulting from climate change. Shahid (2010) delineated that Bangladesh is one among the essential prone to international weather exchange. Kabir et al. (2016) regarding a study about temperature change and proved that the

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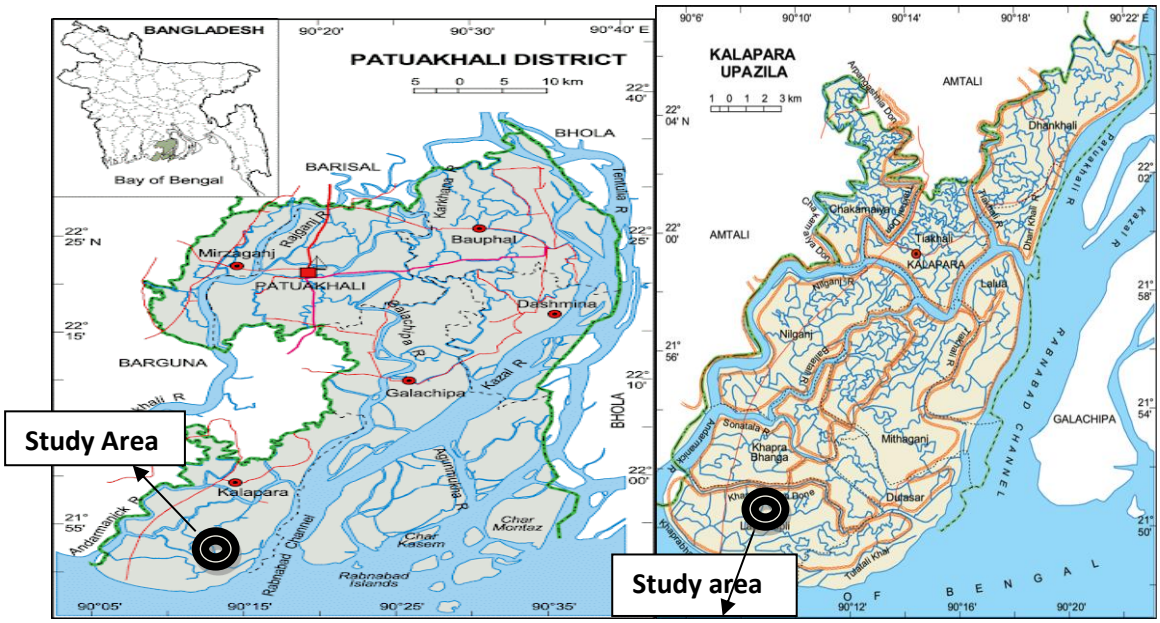
marginalized populations of Bangladesh are at high risk because of changing pattern of climate in the matter associated with their health problem because they are suffering heaps because of the negative impacts of climate.

Above literature reviews show human health is vulnerable because of temperature change or variability. Also, social, economic and environment issues are also posed in potential threats as a result of climate variability. Most of the findings exhibited the potential health risks of temperature change and additionally represented why specific cluster individuals like women, children, and disabled individuals are in worst vulnerable group. It is worth mentioning that those studies merely mentioned about the threats to the coastal population. Distinctively this study focused on the vulnerable conditions of coastal population in a southern district of Bangladesh.

METHODOLOGY OF THE STUDY

The Study area

This analysis has been conducted at Kalapara Upazila of Patuakhali district, located within the southern part of Bangladesh and additionally a neighborhood of the Barishal division. The realm of Kalapara Upazila is 483.08 sq. km, placed between 21°48' and 22°05' north longitudes and between 90°05' and 90°20' east longitudes. As is coastal space, the population of this Upazila is highly exposed and vulnerable due to . Kalapara Upazila has ten unions, among them Mohipur union selected randomly. Then Mohipur union has nine wards among the Najibpur ward (study area) chosen by following the same way, the more precisely simple random sample has been used, for selected study area for the study.



(Source: Banglapedia and edited by the researchers)

Figure 2 Map of the study area (Dots show the study areas Kalapara Upazila and Mohipur Union)

Sample size

The total population of the Najirpur ward is the study population of the analysis. According to the Election Commission the population size of the study area is 2027. The desired sample size is 50. So, the sampling interval is 40.54 (Around 41). Randomly select one respondent between one and forty one (sampling interval), i.e. the 1st sample of the study, and repeatedly add the sampling interval to pick the desired sample size. For the survey, fifty respondents were selected following systematic sampling technique. Also, the limit of financial cost considered to determine the sample size. In addition, five In-depth Interviews were conducted following the respondents expertise on the study subject.

Sampling technique

The study involves probability sampling. More precisely systematic random samples have been accustomed to drawing the required sample size from the target population. The interval used here is the sampling interval calculated by dividing the population by the specified sample size.

Data collection technique

The researchers used two data collection strategies to collect primary data for the study. One was the survey technique that is used for quantitative research. In this regard, the researchers used a semi-structured questionnaire for the survey. In addition, Indepth Interview (IDI) was conducted through face-to-face interview employing a listing with those who are concerned with the relevant ojectives of the study and can share insightful thoughts regarding the issue.

Data entry and presentation

Data entry was administered by handling SPSS (Statistical Packages for Social Sciences). The processed data are presented through frequency distribution, Graphical techniques, including Bar graphs, histograms, pie charts, and line graphs. Qualitative data were classified and described as per objective of the study and feedback from the respondents.

Data Analysis Process

The collected data was analyzed, sorted, summarized, calculated, emended, formatted, tabulated, and classified per the objectives of the study. Furthermore, the researchers processed data consistently in numerous analysis approaches as per the preset variables like age, education, occupation, position, etc. were classified as per quantitative method. Besides, qualitative data were narrated systemetically.

Limitation of the study

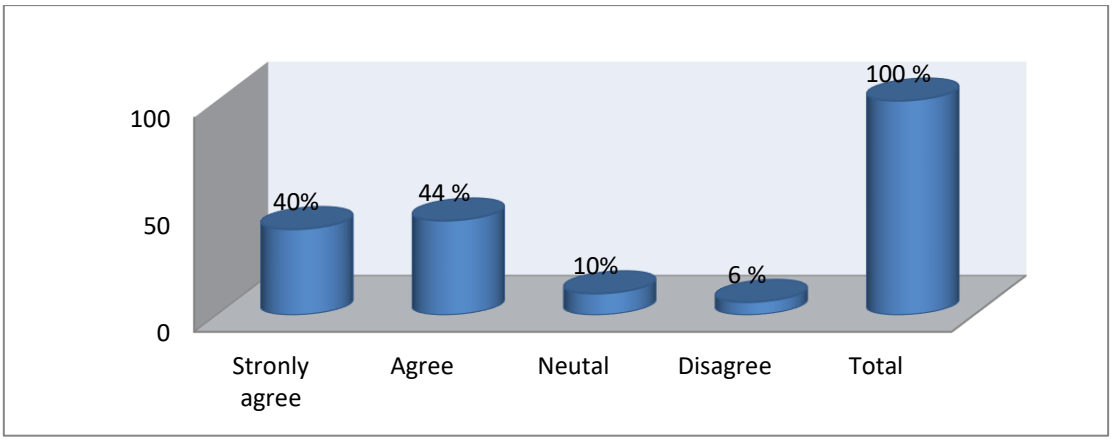
The sample size of the study determined systemetically due to the time and financial constrains. The researchers were involved in the data collection procedure to meet the financial crises.

Strengths of the study

The study was conducted in the most vulnerable coastal union of the namely Mohipur Union of Kalapara upazila under Patuakhali disctrict of Bangladesh. Though the data collection duration was two months but survey questionnaire and checklist covered round the year health impact due to climate variability.

FINDINGS

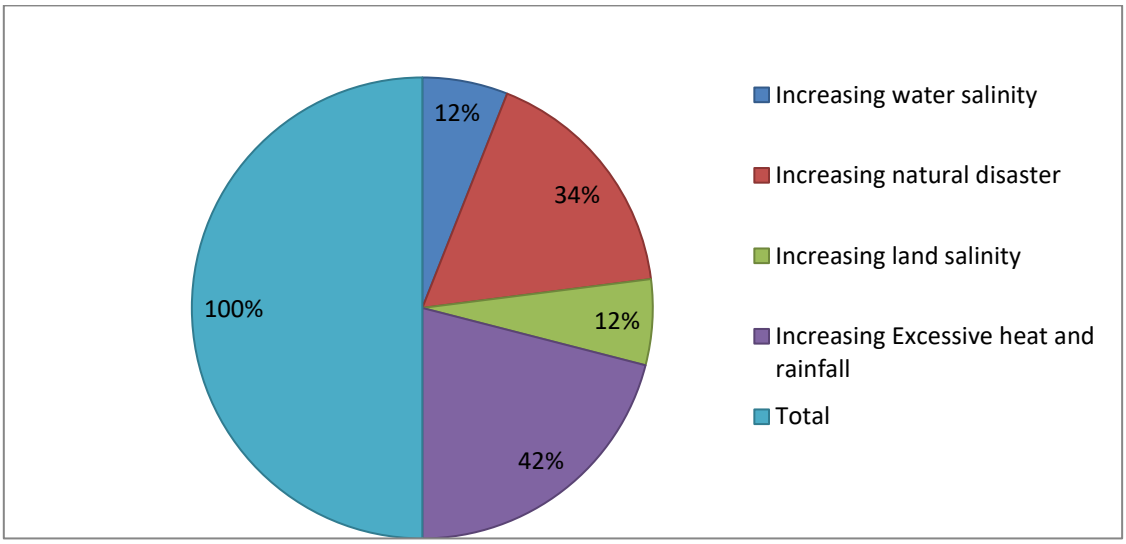
Quantitative Data analysis and discussion



(Source: Field survey 2024)

Figure 3 Analysis of causing health risks of climate change

The Statistics above show that 50 respondents give their opinion about climate change's most common health risks. In addition, 44% of respondents agree, 40% strongly agree, 10% of respondents remain neutral, and only 6% disagree.



(Source: Field survey 2024)

Figure 4 representing how climate change affects public health

The figure above represents that among total respondents, 12% face health problems for increasing water salinity, 34% face growing natural disasters, 12% face increasing land salinity, and 42% face health problems due to excessive heat and rainfall.

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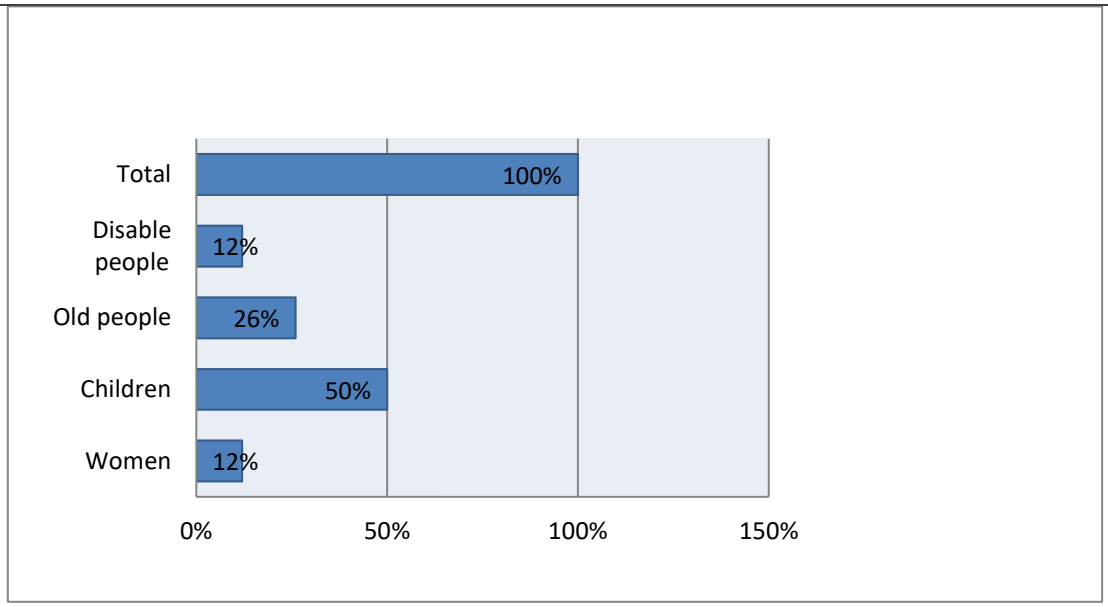
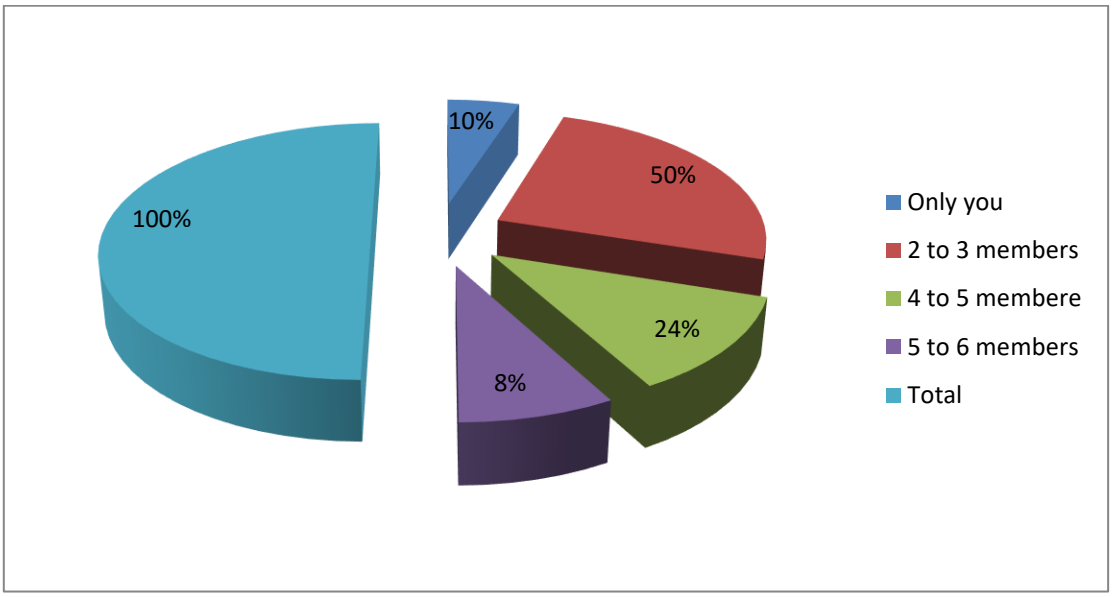


(Source: Field survey 2024)

Figure 5 represents of most vulnerable people to health risks

The Above figure illustrates that among 50 respondents, 12% say women are most vulnerable to health problems due to climate change, 50% say children are most susceptible, 26% Say older people are most vulnerable, and 12% say disabled people are most vulnerable situation.



(Source: Field survey 2024)

Figure 6 Analysis of affected family member for climate change

The above figure shows that every family faces health problems from climate change. Here, one people become sick in 10% family, 2 to 3 members become sick in 50% family, 4 to 5 members become sick in 24% family, and 5 to 6 become sick in 8 % family.

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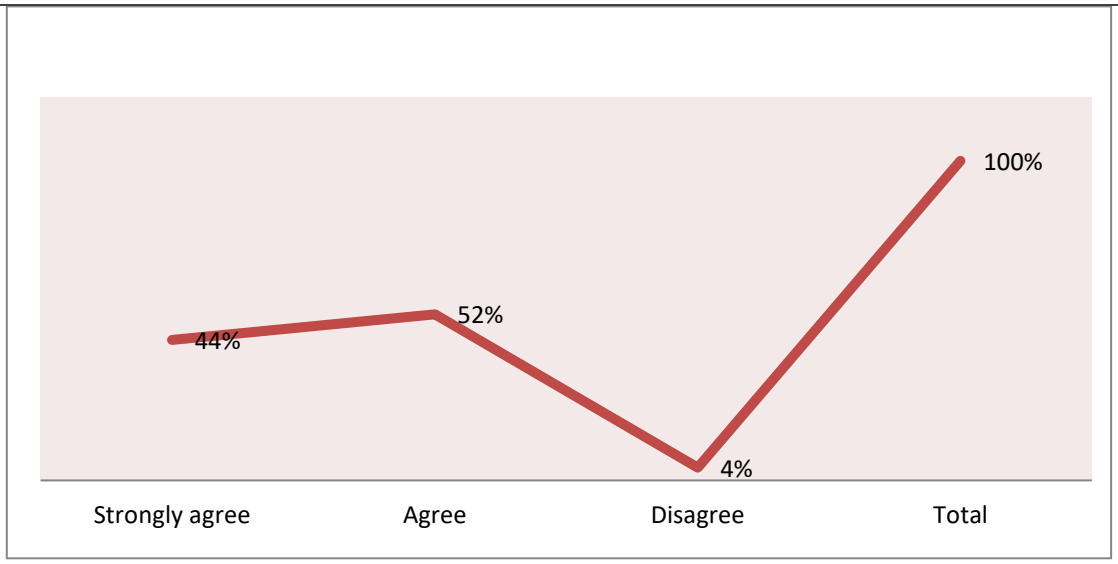
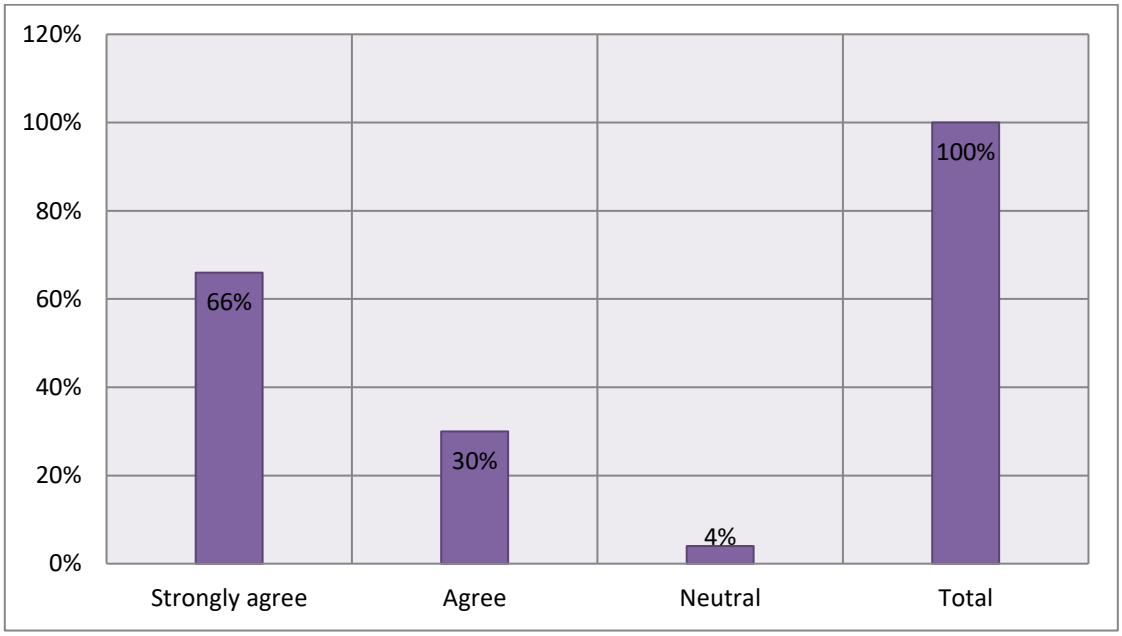


(Source: Field survey 2024)

Figure 7 representing Air Pollution and poor water quality reduce health and wellness

The above figure shows that 50 respondents give their opinion about Air Pollution and poor water quality reducing health and wellness. Among them, 44% of respondents strongly agree with the statement, 52% agree with it, and 4% remain neutral.



(Source: Field survey, 2024)

Figure 8 Analysis of Excessive rainfall and drought damage agricultural yields and create food shortage

Here, statistics show that among the 50 respondents, 66% strongly agree that excessive rainfall and drought damage agricultural yields and create food shortage. Whereas, 30% agree with the affirmation, and 4% remain neutral.

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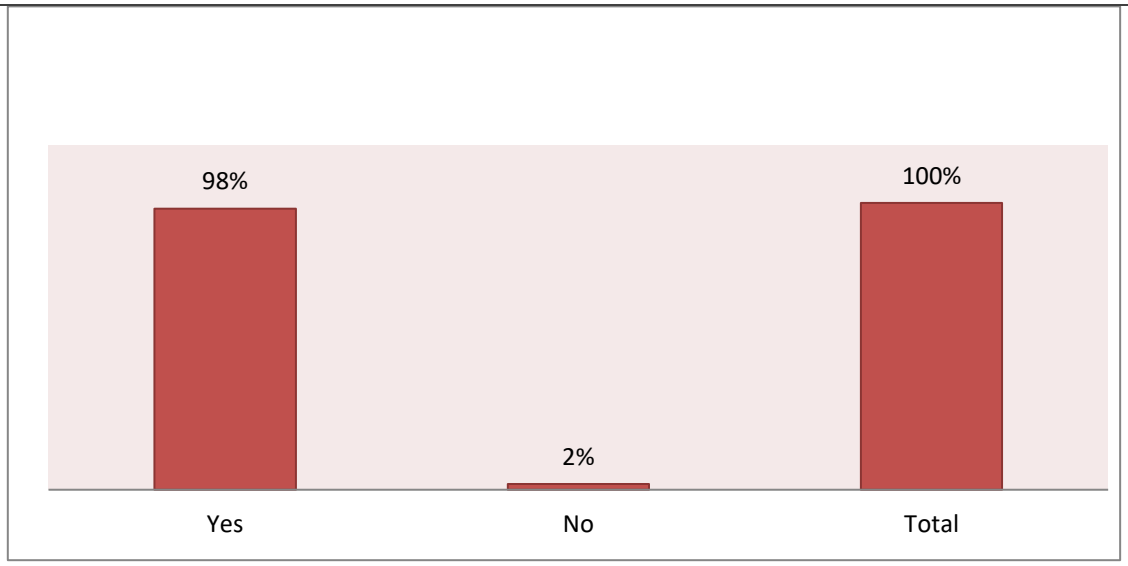
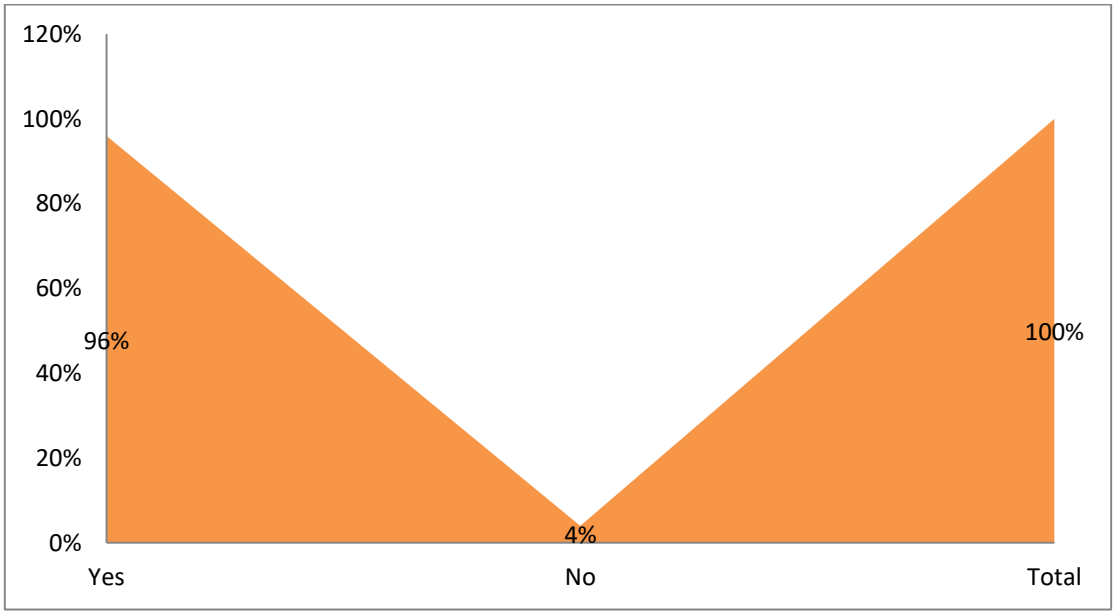


(Source: Field survey 2024)

Figure 9 representing crops failure and rising food prices as the consequences of climate change

The above figure represents that about 98% of crop failures and raised food prices are the consequences of climate change, and only 2% of respondents do not agree with the assertion.



(Source: Field survey 2024)

Figure 10 Represents of Climate change affects the income sector and increases Poverty

The above figure shows that 50 respondents give their opinion about the statement that climate change affects the income sector and increases poverty. Here, 96% of the total respondents respond positively, and only 4% respond negatively.

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Table 1 Linear regression result of consequences of climate change

Model Summaryb					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.150[a]	.022	.002	1.168	2.121
a. Predictors: (Constant), Drinking water crisis is the consequences of climate change					
b. Dependent Variable: Family member get sick in a year					

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.505	1	1.505	1.103	.299[b]
	Residual	65.475	48	1.364		
	Total	66.980	49			
a. Dependent Variable: Family member get sick in a year						
b. Predictors: (Constant), Drinking water crisis is the consequences of climate change						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.794	.755		3.699	.001
	Drinking water crisis is the consequences of climate change	-.730	.695	-.150	-1.050	.299
a. Dependent Variable: Family member get sick in a year						

(Source: Field survey 2024)

Above regression result shows significant negative impact of climate variability on drinking water sources of the study area. As a result, people are often getting sick for the lack of safe drinking and household required water. Here, the R square is .022 which is appears in the 'R Square' column. The coefficient table shows the drinking water is highly significant which results .001 in the significant column. Overall, the regression tables show climate variability has adverse impact on water sources.

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Table 2 Climate change can be prevented * Sex of the participants

Crosstabulation

			Sex of the participants		Total
			Male	Female	
Climate change can prevent by	Start using eco-friendly produce	Count	12	9	21
		% within Q 31-Climate change can prevent by	57.1%	42.9%	100.0%
		% within Sex of the participants	40.0%	45.0%	42.0%
		% of Total	24.0%	18.0%	42.0%
	Banning deforestation and enforcing afforestation	Count	14	5	19
		% within Q 31-Climate change can prevent by	73.7%	26.3%	100.0%
		% within Sex of the participants	46.7%	25.0%	38.0%
		% of Total	28.0%	10.0%	38.0%
	Use of plastic should be prohibited	Count	2	2	4
		% within Q 31-Climate change can prevent by	50.0%	50.0%	100.0%
		% within Sex of the participants	6.7%	10.0%	8.0%
		% of Total	4.0%	4.0%	8.0%
	Use of renewable resources	Count	2	4	6
		% within Q 31-Climate change can prevent by	33.3%	66.7%	100.0%
		% within Sex of the participants	6.7%	20.0%	12.0%

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		% of Total	4.0%	8.0%	12.0%
Total		Count	30	20	50
		% within Q 31-Climate change can prevent by	60.0%	40.0%	100.0%
		% within Sex of the participants	100.0%	100.0%	100.0%
		% of Total	60.0%	40.0%	100.0%

(Source: Field survey 2024)

The above table shows that about 73% of males and 26% of females thought climate change could be prevented by starting using eco-friendly produce, 58% of males and 42% stated about forestation, besides 33% of males and 66% of females said using renewable resources climate change can be stopped.

QUALITATIVE DATA ANALYSIS AND DISCUSSION

Causes of climate change

Most of the respondents of the study aforesaid that human is the most accountable. They consciously or subconsciously do several activities that amend the weather pattern.

Ferdaus Hawlader (In-depth Interview - 01) aforesaid that

'The fast growth of population and their activities are liable for increasing the harmful gases within the atmosphere and this can bit by bit amendment the regular weather pattern that's called global climate change'(A 37-year respondent, own narration).

In a similar question, Shipon (In-depth Interview - 02) aforesaid that

'Over population escalate great amount of temperature by burning fuels, scaling down forests, and farming livestock'(A 27-year respondent, own translation).

Similarly, Raliya (In-depth Interview - 03) stated that

'The modification of climate emerges from different activities such as deforestation and environmental pollution'(A 28-years respondent, own interpretation).

Social, Economic, and Environmental Impact of Global Climate Change On Public Health

The increasing rate of climate change, shortage of food production, and increasing the poorness are associated with one another. Such unexpected climate threats drives to low agro production and increasing high value of daily living grains, which leads to insufficient food intake of the poor households that leads to several diseases. Besides, once floods or disasters occur, the

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population movement, clean water, and food management system hampers and the situation leads to risks of infectious diseases.

Ferdaus hawlader (In-depth Interview - o1) aforesaid that

'Global climate change copes with an important role in natural disasters or several adverse effects on society, like excessive rain or no rain and raising the H2O that are increasing water and land salinity. Those discontinuous the agricultural production and farming system and raise the food prices. At the time, the poor suffered as they failed to meet daily intakes resulting helth risks for the households.' (A 37-year respondent, own narration).

In a similar question, Alamin Islam (In-depth Interview - 04) stated that

'The dynamic climate pattern directly or indirectly affects humans and destroys people's livelihoods and communities. Natural disasters raise the poorness rate by hampering their working chance and destroying their existing functional sectors, and they also destroy the agricultural yields, farming and fishing sector. All theses fall the inhabitants to vulnerability and suffering. He added that the adverse impact of global climate change is directly linked with individuals' health conditions (A 36-year respondent, own interpretation).

Similarly, Putul Shaha (In-depth Interview - 05) said that.

'Global climate change brings frequent and intense floods, droughts, storms, heat waves, rising ocean levels, etc. As global climate change worsens, dangerous weather events have become more frequent or severe. These are directly hurt animals, destroy the places they live, and disrupt people's livelihoods (A 23-year respondent, own narration).

Likewise, Ferdaus Hawlader (In-depth Interview - 01) opined that

'The effects of global climate change vary from class to class, person to person, and age to age. The poorer category is most vulnerable, particularly kids and disabled individuals. This global climate change generates less power or assets' (A 37-year respondent, own narration).

Health impact

The dynamic pattern of the weather causing seasonality which encompasses a slightly different impact on anxiety and depression. The dynamical temperature and humidity increase the extent of anxiety and mental disorders. Additionally, the individual suffers from depression throughout winter. Here, girls as at high risk for depression than men. The changes in temperature increase infectious disease prevalence.

Putul Shaha (In-depth Interview - 05) aforesaid that

‘The health system already suffering from disruption of physical, biological and ecological systems of society. Excessive humidity and precipitation are thriving the rise of unusual temperatures that triggering physical and psychological anomalies among people. Moreover, climate determinants are associated with nursing obstacles to developing health care services and maintaining aid routines. In a word, global climate change plays a key role in increasing mortality and morbidity rate’(A 23-year respondent, own narration).

In a similar question, Raliya (In-depth Interview - 03) stated that

'It threatens the essential parts of sound health like clean air, safe water, food supply chain, and secure shelter. These are resulting poor progress in healt services. affects public health by increasing excessive heat and cold. At times, completely different viruses and microorganism related sickness reported. Kids and aged individuals are the most vulnerable groups due to (A 28-year respondent, own interpretation).

Similarly, Ferdaus Hawlader (In-depth Interview - 01) described that.

'Due to climate change seasonal variations are observed. It results completely different types of diseases and weakening people's immune systems. Thus, viruses and germs becomes prevalernce. With the seasonal variety public health sector recording variation of diseases'(A 37-year respondent, own narration).

In a similar question, Shipon (In-depth Interview - 02) aforesaid that

'A variety of climate-sensitive diseases like dengue fever, cholera, common cold, and respiratory disease as most common to us, and this climate-sensitive illness resulted in higher temperatures and a lot of extreme weather events' (A 27-year respondent, own translation).

Similarly, Alamin Islam (In-depth Interview - 04) stated that

'It is not solely contributed to increasing the physical health issues by spreading the virus, bacteria, etc. but these are contributed to increasing the psychological state by increasing anxiety, depression, and loneliness. For this climatic variability, individuals become sick nearly every seasonal variations, and once they become sick, it remains within 5-7 days (A 36-year respondent, own interpretation)'.

CONCLUSIONS

From the pinnacle of the discussion, it is clear that global climate alternate impacted individuals' health issues in a diverse approach. Worldwide climate change has boomed frequent floods, warmth waves, higher precipitation, water contamination, intense humidity, increase the land and water salinity, and additionally impure the groundwater that resulted in the number of diseases. So, climate change becoces a global challenge. Besides, the seasonal change has displaced its natural rule and created an imbalance on earth. This imbalance is responsible for being illness and booming psychological disorders. Health issues are fall in threat in the study region due to the unpredicted adverse impact of climate change. Therefore, it is hightime to address the issue seriously to meet the future sustainability of the livelihood.

RECOMMENDATIONS

The following recommendations based on this present research may add value to the prevailing national action plans such as the Bangladesh climate change strategy action plan (2009), the sixth five years (2011-2015), and National health policy (2011).

- The ministry of health and family welfare must take essential steps and a few policies to evaluate the everyday health situation of the affected people and their dat to day situations. It should create a few special provisions and monetary aid rules for the people who are most susceptible to climate change.

- The environment, forest, and climate change ministry should take a proper step toward deforestation, ensuring property development and choicest woodland insurance. They should consider the weather dynamic and resolve the reasons for global climate exchange.
- Besides concerned government agencies, NGOs should play vital role for awareing people about the brutal impact of climate change.
- The visible impact of climate change should address vividly through road show, seminar, symposium and conferences.
- Several afforestation activities should incorporate in the root level of the country.
- Use of renewable energy have to encourage and ensure countrywide through national policy initiatives.
- Environment friendly gadgets should get policy privileges to encourage people to be more environment friendly.

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