Original Paper

An Assessment to Human Perception to the Origin of Coronavirus by the Impact of Climate Change and Preventative Management of Pandemic Coronavirus COVID-19

Akanda Md. Raihan Gafur[1*], A S M Mahmudul Hasan Rifat[2] & Mst. Nazneen Sultana[3]

[1] Department of Water Resources Development, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

[2] Department of Environmental Sciences, Jahangirnagar University, Dhaka, Bangladesh

[3] Department of Economics, National University, Dhaka, Bangladesh

[*] Akanda Md. Raihan Gafur, Department of Water Resources Development, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

Abstract

On 12 January 2020, the WHO confirmed that a novel coronavirus was the cause of a respiratory illness in a cluster of people in Wuhan City, China. The aims of the study to assess the human perception to the origin of Coronavirus with relation to nature and find out preventative management about coronavirus. Primary data was collected for analyzing some factors regarding the Coronavirus microorganism formed by the impact of climate change. Primary data was collected through an online questionnaire survey. An online questionnaire survey is used for human perception for taking public opinion about the origin of Coronavirus and preventative management which are conducted in Bangladesh. SPSS software is used for Linear Regression analysis and correlation with some variables. A total of three variables were considered in the model estimation of which are dependent variables Coronavirus microorganism formed by the impact of climate change and independent variables such as Coronavirus microorganism formed by the impact of environmental pollution, Coronavirus microorganism formed by the impact of global heat and Coronavirus microorganism originated by the sources of the impact of ice melting polar region. From the analysis, it is found that the Coronavirus microorganism formed by the impact of climate change that makes a unique and statistically significant contribution to the prediction. Among 200 respondents, about 70% of peoples said "Maybe"

Coronavirus microorganism formed by the impact of climate change, and it's some factor. It is also found from the correlation analysis that the epidemic effects of COVID-19 will high on Bangladesh, if immigrant persons come, if Curfew doesn't issue, if peoples are not conscious, if peoples are not properly using mask and hand gloves, if they are not maintaining social distance and lock down rules. In the finding that, in the polar region, there are many ice *stacks where thousands of years ago, the animals are dead but the virus and bacteria are in a state of sleep. As the heat increases, all glaciers and permafrost start to melt in the Polar region. As a result, many types of viruses, bacteria are starting to live. These viruses including Coronavirus will be mixed with different environmental elements such as water, biodiversity. This will easily affect biodiversity and other animals including humans. Above all Climate change may play a significant role in the transmission of many infectious diseases including Coronavirus. Community responses are important for outbreak management during the early phase of major preventive options.*

Keywords

COVID-19, WHO, climate changes, preventative, epidemic, community

1. Introduction

On 31 December 2019, China reported to the WHO cases of pneumonia with unknown causes. On 12 January 2020, the World Health Organization (WHO) confirmed that a novel coronavirus was the cause of a respiratory illness in a cluster of people in Wuhan City, Hubei Province, China (Reynolds, Matt, 2020*)* since December 2019 as "2019-nCoV", which was renamed by the International Committee on Taxonomy of Viruses as "SARS-CoV-2" on 11 February 2020. In parallel, the WHO formally named the disease caused by SARS-CoV-2 as "COVID-19", short for Coronavirus Disease 2019. Back in late December 2019, a cluster of 27 pneumonia cases associated with SARS-CoV-2 with a common link to the Huanan Seafood Wholesale Market was reported (Kwok On Kin et al.).

Bangladesh faces significant challenges in combating COVID-19 as it is a densely populated country and also houses a million stateless Rohingya refugees in sprawling refugee camps that are conducive to the spread of epidemics. It also has significant migrant populations living in Italy, a COVID-affected country (IEDCR, 2020).

The 2019-2020 coronavirus pandemic was confirmed to have spread to Bangladesh on March 2020. The first three known cases were reported on 7 March 2020 by the country's epidemiology institute IEDCR. Infections stayed low till the end of March but saw a steep rise in April (IEDCR, 2020).

Climate change is identified as the most pressing concern for human health in the 21st century and climate change mitigation as the greatest public health opportunity of this generation. Epidemics, just like weather and climate can threaten human health and social stability. Since the Millennium, the emergence of the coronavirus in 2003, the novel avian influenza (H1N1) in 2009, the Ebola virus in West Africa (2014-2016) and the Zika virus in the Americas (2015), amongst others, have

demonstrated the speed at which infectious diseases can spread with devastating effect (Bloom, Black & Rappuoli, 2017*)*.

As the planet warms and the ice thaws, scientists warn we could see the re-emergence of ancient pathogens currently unknown to science. These viruses, which have laid dormant and locked away in glaciers and permafrost—permanently frozen soil—for hundreds if not thousands of years, could "wake up", researchers have said. Climate change causes ancient viruses to re-emerge. When ice melts then it will release glacial microbes and viruses that have been trapped and preserved for tens to hundreds of thousands of years. This melt could destroy microbial "archives" that may help us understand the Earth's climate regimes in the past. However, in a worst-case scenario, this ice melt could release pathogens into the environment.

It is now well understood that the impacts of climate change on global health and development are manifold. They result from changes in the extent and distribution of global warming of the atmosphere and oceans. Climate change is leading us to mass extinction. Now, the consequences of global warming are terrible (Costello et al., 2009).

In Bangladesh, adopted strategies include: border screening (measuring body temperature, imposing a health declaration form system), imposing a 14-day mandatory quarantine period on all individuals entering Bangladesh from the Mainland, social-distancing (border shutdown, reducing cross-border commuting services, deferring class resumption for schools governed by the Education Bureau, home-office arrangement for civil servants, suspension of public services from the Leisure and Cultural Services Department) and extending the Enhanced Laboratory Surveillance Program to adult patients with fever and mild respiratory symptoms presenting at accident and emergency departments or general out-patient clinics under the public sector.

The host's behaviors are important for outbreak management, particularly during the early phase when no treatment or vaccination is available and Non-Pharmaceutical Interventions (NPIs) are the only options. The efficacy of NPIs depends on the host's degree of engagement and compliance in precautionary behaviors, such as wearing masks, hand hygiene, and self-isolation. Whether individuals voluntarily engage in precautionary behaviors depends on their risk perception of the current health threat. Human risk perception is the main theme in common health behavior theories (Kwok On Kin et al.).

This study aims to assess the human perception to the origin of Coronavirus with relation to nature and Coronavirus microorganism formed by the impact of climate change and it's some factor. Considering the rapid development of the epidemic during the survey period and the potential variability in the adoption of preventive measures among hosts, this study also explores preventative management about coronavirus COVID-19 and behavioral responses of the general community during the early phase of the COVID-19 epidemic.

2. Objectives and Methodology of the Study

This paper aimed to assess the human perception to the origin of Coronavirus with relation to nature and find out preventative management about coronavirus COVID-19. An online questionnaire survey was conducted in Bangladesh within 15th march to 15th April, 2020 after the confirmed COVID-19 case was reported in the country's epidemiology institute IEDCR. To avoid duplicated responses from the same respondent, the survey could only be taken once from the same electronic device. Primary data was collected for analyzing some factors regarding the Coronavirus microorganism formed by the impact of climate change. Primary data was collected through an online questionnaire survey. An online questionnaire survey is used for demographic information (sex, age, and education level), human perception about COVID-19 for taking opinion for Coronavirus microorganism formed by the impact of climate change and preventative management about COVID-19. Microsoft Excel software is used for some simple statistical data analysis and SPSS software is used for Linear Regression analysis and correlation with some variables. A total of three variables were considered in the model estimation of which are dependent variables Coronavirus microorganism formed by the impact of climate change and independent variables such as Coronavirus microorganism formed by the impact of environmental pollution, Coronavirus microorganism formed by the impact of global heat and Coronavirus microorganism originated by the sources of the impact of ice melting polar region. Besides some variable correlation with Epidemic effects of COVID-19 will high on Bangladesh, if immigrant persons come, if Curfew doesn't issue, if peoples are unconscious, if peoples are not properly using the mask and hand gloves, if they are not maintaining social distance and lockdown rules. There are also some guidelines about preventive management of COVID-19.

3. Literature Review

In 2003, the Chinese population was infected with a virus causing Severe Acute Respiratory Syndrome (SARS) in Guangdong province. The virus was confirmed as a member of the Betacoronavirus subgroup and was named SARS-CoV (Peiris, Guan, Yuen, 2003; Pyrc, Berkhout, Van Der Hoek, 2007). A decade later in 2012, a couple of Saudi Arabian nationals were diagnosed to be infected with another coronavirus. The detected virus was confirmed as a member of coronaviruses and named as the Middle East Respiratory Syndrome Coronavirus (MERS-CoV) MERS-CoV is a member beta-coronavirus subgroup and phylogenetically diverse from other human-CoV (Rahman & Sarkar, 2019). Recently, by the end of 2019, WHO was informed by the Chinese government about several cases of pneumonia with unfamiliar etiology. The outbreak was initiated from the Hunan seafood market in Wuhan city of China and rapidly infected more than 50 peoples. The coronavirus disease (COVID-19) has been identified as the cause of an outbreak of respiratory illness in Wuhan, Hubei Province, China beginning in December 2019. The World Health Organization has declared it a Public Health Emergency of International Concern (Cui, Li & Shi, 2019; Lai, Shih, Ko, Tang & Hsueh, 2020).

4

SARS-CoV-2 is a member of the coronavirus family, named for the crown-like appearance of spikes on the virus surface. Coronaviruses belong to the Coronaviridae family in the Nidovirales order. Like MERS-CoV and SARS-CoV-1, SARS-CoV-2 is a beta coronavirus and is likely associated with an animal reservoir (e.g., bats). Coronaviruses are minute in size (65-125 nm in diameter) and contain a single-stranded RNA as a nucleic material, size ranging from 26 to 32kbs in length(Zhong, Zheng, Li, Poon, Xie, Chan et al., 2003).

All coronaviruses contain specific genes in ORF1 downstream regions that encode proteins for viral replication, nucleocapsid, and spikes formation (van Boheemen, de Graaf, Lauber, Bestebroer, Raj, Zaki et al., 2012). The glycoprotein spikes on the outer surface of coronaviruses are responsible for the attachment and entry of the virus to the host. The Receptor-Binding Domain (RBD) is loosely attached among virus, therefore, the virus may infect multiple hosts (Raj, Mou, Smits, Dekkers, Müller, Dijkman et al., 2013; Perlman & Netland, 2009).

Emerging infectious diseases pose a threat to public health, animal agriculture, and wildlife conservation (Daszak et al., 2000). The majority of emerging infectious diseases in humans are zoonosis, and two-thirds of these originate in wildlife (Jones et al., 2008).

Bats are implicated in the emergence of many zoonotic diseases, including the coronaviruses (CoVs) responsible for deadly outbreaks of the Severe Acute Respiratory Syndrome (SARS) in 2002-2003, and Middle East Respiratory Syndrome (MERS) which first emerged in 2012 (Baldwin, 2015).

Emerging viral infections in both humans and animals have been reported with increased frequency in recent years. Recent advances have been made in our knowledge of some of these, including severe acute respiratory syndrome-associated coronavirus, influenza A virus, human metapneumovirus, West Nile virus, and Ebola virus. Research efforts to mitigate their effects have concentrated on improved surveillance and diagnostic capabilities, as well as on the development of vaccines and antiviral agents. More attention needs to be given to the identification of the underlying causes for the emergence of infectious diseases, which are often related to anthropogenic social and environmental changes. Addressing these factors might help to decrease the rate of emergence of infectious diseases and allow the transition to a more sustainable society (Kuiken, Fouchier, Rimmelzwaan & Osterhaus, 2003).

Climate change is identified as the most pressing concern for human health in the 21st century. Climate interacts with health through a wide variety of direct and indirect mechanisms (Marmot, 2005). The impacts of weather and climate events, such as droughts, floods, storms, heat waves, sea-level rise, and generalized warming, threaten the health of vulnerable populations around the world. Many infectious diseases are climate-sensitive; climate acting as an important driver of spatial and seasonal patterns of infections, year-to-year variations in incidence (including epidemics), and longer-term shifts in populations at risk (Kelly-Hope & Thomson, 2008). Increasingly those responsible for the development of disease control strategies have identified. Climate may play a significant role in the transmission of many infectious diseases (Thomson et al., 2017).

According to the US Centers for Disease Control and Prevention (CDC), there is no specific recommended antiviral therapy for COVID-19 (WHO, 2020). Active surveillance for new cases and close monitoring of their contacts are necessary to control the spread of COVID-19. To improve detection efficiency, front-line clinics, apart from local centers for disease control and prevention should be armed with validated point-of-care diagnostic kits. Education campaigns should be launched to promote precautions for travelers, including frequent hand-washing, cough etiquette, and use of personal protection equipment (e.g., masks) when visiting public places. Also, the general public should be motivated to report fever and other risk factors for viral infection, including travel history to affected area and close contacts with confirmed or suspected cases (Khan, Muhammad, Khayal, Ahmed & Rahman, 2020).

4. Data Analysis Result and Discussion

4.1 Respondent Characteristics

Complete data from 200 respondents were analyzed. Respondents were asked about their demographics information (including sex, age, and education). Many of the respondents are male (69%), of young age (25-54 years) (80%), education level Honors (68%). Most of the Respondents were asked about Coronavirus microorganism formed by the impact of climate change and its some factor. It is also asked about the Epidemic effects of COVID-19 and some preventative measures.

4.2 Human Perception of Coronavirus Microorganism Related to Nature

Respondents were asked about coronavirus microorganism related to nature. Coronavirus microorganism formed by the impact of climate change and its some factor. These factors are Coronavirus microorganism formed by the impact of environmental pollution, Coronavirus microorganism formed by the impact of global heat, and Coronavirus microorganism originated by the sources of the impact of ice melting polar region.
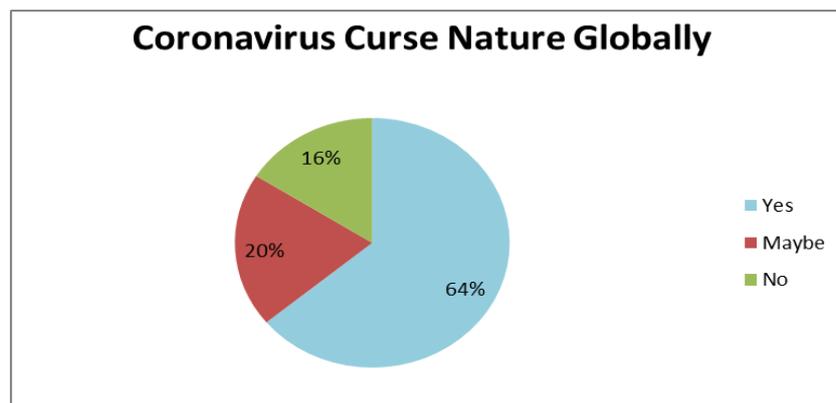
Figure 1. Coronavirus Curse of Nature Globally

Source: Author Preparation, 2020.

6

Among 200 respondents, about 64% of peoples said that Coronavirus is a curse of nature. As the form of nature is changing day by day. There needs to be given more attention to the identification of the underlying causes for the emergence of infectious diseases, which are often related to anthropogenic social and environmental changes.
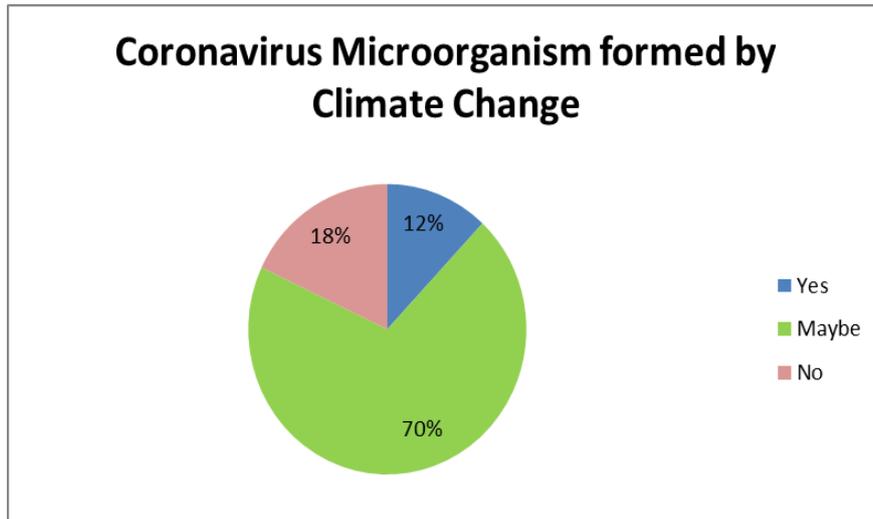
Figure 2. Coronavirus Microorganism Formed by Climate Change

Source: Author Preparation, 2020.

According to human perception, about 70% of peoples said "Maybe" Coronavirus microorganism formed by the impact of climate change, and it's some factor. Global warming increasing day by day on the earth which causes massive environmental change. Many infectious diseases are climate-sensitive; climate change acting as an important role to exposed many viruses.

4.3 Result and Interpretation of Statistical Analysis

SPSS software is used for Linear Regression analysis and correlation with some variables. A total of three variables were considered in the model estimation of which are dependent variables Coronavirus microorganism formed by the impact of climate change and independent variables such as Coronavirus microorganism formed by the impact of environmental pollution, Coronavirus microorganism formed by the impact of global heat and Coronavirus microorganism originated by the sources of the impact of ice melting polar region.

Table1. Results from the Regression Analysis

Model Summery				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
Linear Regression	.534[a]	**.285**	.255	.566

ANOVA						
Model Type	**Model**	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
	Regression	12.130	4	3.032	**9.467**	**.000[b]**
Linear regression	Residual	30.430	95	.320		
	Total	42.560	99			

Co-efficient					
Dependent Variable	**Model Variables**	**Coefficient**	**Std. Error of the Estimate**	**T**	**Sig.**
ln (V)	Constant	.741	.253	2.926	**.001**
	Coronavirus microorganism formed by the impact of environment pollution	-.152	.118	-1.289	.201
	Coronavirus microorganism formed by the impact of global heat	.453	.116	3.911	**.000**
	Coronavirus microorganism originated from the sources of the impact of ice melting polar region	.198	.118	1.681	**.004**

Note. Dependent Variable: Coronavirus microorganism formed by the impact of climate change.

Source: Author preparation, 2020.

The coefficient of determination R^2 is calculated by linear regression of SPSS software. Rafiq explains that "The R^2 measures the proportion of the variation in the dependent variable explained by the independent variables" (Rafiq, 2012, p. 67). A higher R^2 would suggest that the calculated regression equation line fits closer to the data points (Azyyati et al., 2007).

The R^2 for the regression equation of the study is **28.5%** (Table 1 (model summary)). This result means that the model explains 28.5% of the variance in Coronavirus microorganism formed by the impact of climate change. The value of R^2 is low which means that there may be other possible variables that may influence the Coronavirus microorganism formed by the impact of climate change which is not included in the regression analysis. Another possible factor is people's perception of answering any decision which changes from time to time.

ANOVA table can be used to evaluate the statistical significance of the result. Table 1 indicates that **F value** is **9.467** where significance level is 0.000. The computed F value is given as which exceeds the critical value of F which is 1.94 where significance level is 0.05. It can be concluded from F value that at least one of the regression coefficients are not equal to zero.

From Table 1, the Beta values can be observed as a coefficient of each independent variable. Coronavirus microorganism formed by the impact of global heat, Coronavirus microorganism originated by the sources of the impact of ice melting polar region makes the stronger unique contribution to explain the dependent variable Coronavirus microorganism formed by the impact of climate change for their larger beta coefficients (0.453 for Coronavirus microorganism formed by the impact of global heat, 0.198 for Coronavirus microorganism originated by the sources of the impact of ice melting polar region). The Beta values for other variables are very low, indicating there less contribution to the model. The column labeled as Sig. in Table 1 (coefficient) shows whether the variable is making a statistically significant unique contribution to the model or not. If the Sig. value is less than 0.05, the variable is making a significant unique contribution to the prediction of the dependent variable. And if the value is greater than 0.05, it can be said that that variable is not making a significant unique contribution to the prediction of the dependent variable. From the Sig. value of this Table 1 it can be seen that only Coronavirus microorganism formed by the impact of global heat and Coronavirus microorganism originated by the sources of the impact of ice melting polar region make a unique and statistically significant contribution to the prediction of Coronavirus microorganism formed by the impact of climate change because in this case the Sig. value is less than 0.05. Other variables make no unique and statistically significant contribution to the prediction of the Coronavirus microorganism formed by the impact of climate change because of their Sig. value which is more than 0.05.

Table 2. Correlation between Coronavirus Microorganism Formed by the Impact of Climate Change and Coronavirus Microorganisms Formed by the Impact of Environmental Pollution

		Coronavirus microorganism formed by the impact of climate change	Coronavirus microorganism formed by the impact of environment pollution
Coronavirus microorganism formed by the impact of climate change	Pearson Correlation	1	.302[**]
	Sig. (2-tailed)		**.000**
	N	200	200
Coronavirus microorganism formed by the impact of environment pollution	Pearson Correlation	.302[**]	1
	Sig. (2-tailed)	.000	
	N	200	200

Table 3. Correlation between Coronavirus Microorganism Formed by the Impact of Climate Change and Coronavirus Microorganisms Formed by the Impact of Global Heat

		Coronavirus microorganism formed by the impact of climate change	Coronavirus microorganism formed by the impact of global heat
Coronavirus microorganism formed by the impact of climate change	Pearson Correlation	1	.507[**]
	Sig. (2-tailed)		**.000**
	N	200	200
Coronavirus microorganism formed by the impact of global heat	Pearson Correlation	.507[**]	1
	Sig. (2-tailed)	.000	
	N	200	200

Table 4. Correlation between Coronavirus Microorganism Formed by the Impact of Climate Change and Coronavirus Microorganism Originated from the Sources of the Impact of the Ice Melting Polar Region

		Coronavirus microorganism formed by the impact of climate change	Coronavirus microorganism originated from the sources of the impact of ice melting polar region
Coronavirus microorganism formed by the impact of climate change	Pearson Correlation	1	.386**
	Sig. (2-tailed)		**.000**
	N	200	200
Coronavirus microorganism originated from the sources of the impact of ice melting polar region	Pearson Correlation	.386**	1
	Sig. (2-tailed)	.000	
	N	200	200

Source: Author preparation, 2020.

It is apparent from Table 2, 3 and 4 that Coronavirus microorganism formed by the impact of environmental pollution, Coronavirus microorganism formed by the impact of global heat and Coronavirus microorganism originated by the sources of the impact of ice melting polar region of 200 respondents who have Coronavirus microorganism formed by the impact of climate change directly is positively correlated with Coronavirus microorganism formed by the impact of climate change and. Sig. the value in the table shows whether the variable is making a statistically significant unique contribution to the other factor or not. If the Sig. value is less than 0.05, the variable is making a significant unique contribution to the prediction of other variables. And if the value is greater than 0.05, it can be said that that variable is not making a significant unique contribution to the prediction of other variables. From the Sig. value of these tables it can be seen Coronavirus microorganism formed by the impact of environmental pollution, Coronavirus microorganism formed by the impact of global heat and Coronavirus microorganism originated by the sources of the impact of ice melting polar region that make a unique and statistically significant contribution to the prediction of the Coronavirus microorganism formed by the impact of climate change because in case the Sig. value is less than 0.05.

4.4 Preventative Management about COVID-19 in the Context of Bangladesh

Respondents think that epidemic effects of COVID-19 will high on Bangladesh, if immigrant persons come, if Curfew doesn't issue, if peoples are not conscious, if peoples are not properly using the mask and hand gloves, if PPE and masks distributed properly among Medical Staff, if they are not maintaining social distance and lockdown rules. Respondents were asked whether they performed precautionary measures and what their perceived efficacies of those measures are. Three types of

precautionary measures were considered: hygienic practices, social distancing, and travel avoidance. Enhanced personal hygiene practices (including wearing masks, cleaning hands and better coughing and sneezing etiquette) and avoid traveling to Coronavirus affected country. For social-distancing measures were considered useful in preventing COVID-19. The table shows the correlation analysis results for the epidemic effects of COVID-19 will high in Bangladesh.
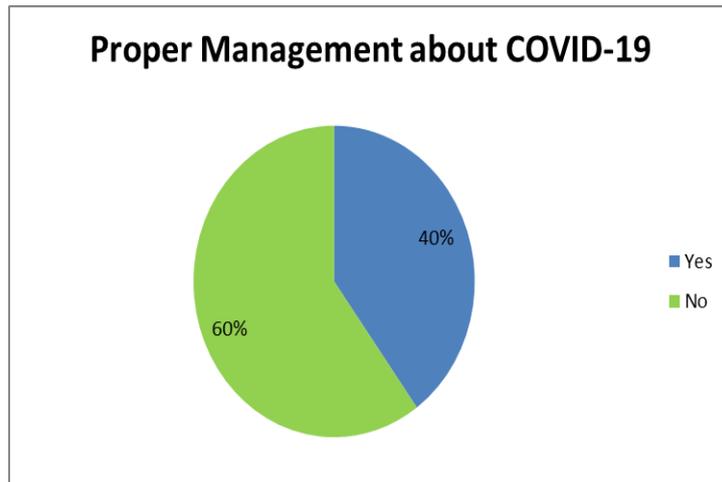
Figure 3. Proper Management about COVID-19

Source: Author Preparation, 2020.

It is apparent from figures that about 60% of respondents think that there was not any proper management taken by the Government of Bangladesh about COVID-19. It isn't the right decision to let immigrant persons come to Bangladesh and Curfew doesn't issue due to this reason the epidemic effect of COVID-19 will high on Bangladesh. About 40% respondents said that Bangladesh government take a necessary step about COVID-19 adopted strategies include: border screening measuring body temperature, imposing a 14-day mandatory quarantine period on all individuals entering Bangladesh from the Mainland, social-distancing (lockdown, border shutdown, closing religious place, closing all educational institution, home-office arrangement for civil servants, suspension of public services from the Leisure and Cultural Services Department).
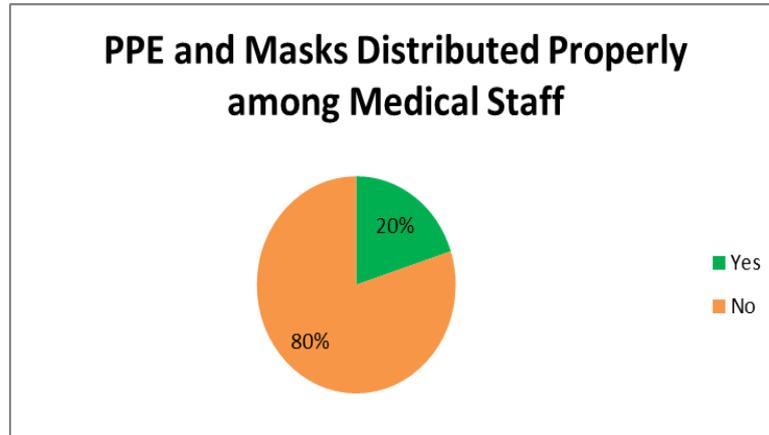
Figure 4. PPE and Masks Distributed Properly among Medical Staff

Source: Author Preparation, 2020.

It is apparent from figures that about 80% of respondents think that there was not any proper distribution of PPE and Masks among the Medical Staff. If there was no proper distribution of PPE and Masks among the Medical Staff, epidemic effects of COVID-19 will high in Bangladesh. Medical staffs are in direct contact with patients. So they are at high risk in COVID-19. If they get affected, then community transmission will be high. So PPE and Masks should be distributed properly among the Medical Staff and the government should take proper steps for it.

Table 5. Correlations between the Epidemic Effect of COVID-19 Will High on Bangladesh and If Immigrant Persons Come

		Epidemic effect of COVID-19 will high on Bangladesh	If immigrant persons come
Epidemic effect of COVID-19 will high on Bangladesh	Pearson Correlation	1	.230[**]
	Sig. (2-tailed)		**.001**
	N	200	200
If immigrant persons come	Pearson Correlation	.230[**]	1
	Sig. (2-tailed)	.001	
	N	200	200

Source: Author preparation, 2020.

A Pearson product-moment correlation coefficient was computed to assess the relationship between the Epidemic effect of COVID-19 will high on Bangladesh and If immigrant persons come. There was a positive correlation between the two variables that make a unique and statistically significant contribution to the prediction. If the number of immigrant persons comes to Bangladesh increases, the epidemic effect of COVID-19 will also increase in Bangladesh.

Among 200 respondents, about 84% of peoples said that it isn't the right decision to let immigrant persons come to Bangladesh and due to this reason the epidemic effect of COVID-19 will high in Bangladesh.

Table 6. Correlations between Epidemic Effect of COVID-19 Will High on Bangladesh and If Curfew Doesn't Issue for COVID-19

		Epidemic effect of COVID-19 will high on Bangladesh	If Curfew doesn't issue for COVID-19
Epidemic effect of COVID-19 will high on Bangladesh	Pearson Correlation	1	.662[**]
	Sig. (2-tailed)		**0**
	N	200	200
If Curfew doesn't issue for COVID-19	Pearson Correlation	.662[**]	1
	Sig. (2-tailed)	0	
	N	200	200

Source: Author preparation, 2020.

It is apparent from the table there was a positive correlation between the two variables that make a unique and statistically significant contribution to the prediction. If Curfew doesn't issue then the Epidemic effect of COVID-19 will increase in Bangladesh. One the other hand If Curfew issue then the Epidemic effect of COVID-19 will decrease in Bangladesh. Among 200 respondents, about 96% of peoples said that the Curfew issue should be a necessary action for COVID-19. As people aren't conscious of social distance and lockdown rules. They are making any excuse to go outside and the defense force can't control them. For this reason, the Government should have issued curfew as a necessary action to prevent the outbreak of COVID-19.

Table 7. Correlations between the Epidemic Effect of COVID-19 Will High on Bangladesh and If Peoples of Bangladesh Conscious about COVID-19

		Epidemic effect of COVID-19 will high on Bangladesh	If peoples of Bangladesh conscious about COVID-19
Epidemic effect of COVID-19 will high on Bangladesh	Pearson Correlation	1	-.175[*]
	Sig. (2-tailed)		**.000**
	N	200	200
If peoples of Bangladesh conscious about COVID-19	Pearson Correlation	-.175[*]	1
	Sig. (2-tailed)	.013	
	N	200	200

Source: Author preparation, 2020.

It is noticed from the table there was a negative correlation between the two variables that make a unique and statistically significant contribution to the prediction. If peoples of Bangladesh are low conscious then the epidemic effect of COVID-19 will high on Bangladesh. About 72% of people responded that if peoples of Bangladesh are not conscious about COVID-19, the Epidemic effect rate will be high in Bangladesh. As peoples of Bangladesh are not properly using masks and hand gloves, they are not maintaining social distance.

Table 8. Correlations between the Epidemic Effect of COVID-19 Will High on Bangladesh and If Curfew Doesn't Issue for COVID-19

		Epidemic effect of COVID-19 will high on Bangladesh	Opening religious places for COVID-19
Epidemic effect of COVID-19 will high on Bangladesh	Pearson Correlation	1	.302[**]
	Sig. (2-tailed)		**.000**
	N	200	200
Opening religious places for COVID-19	Pearson Correlation	.302[**]	1
	Sig. (2-tailed)	.000	
	N	200	200

Source: Author preparation, 2020.

It is apparent from Table there was a positive correlation between the two variables that make a unique and statistically significant contribution to the prediction. If open the religious places then the epidemic effect rate for COVID-19 will high in Bangladesh. About 80% of people responded that it's the right decision of the government to close all religious places for COVID-19.

4.5 Prevention and Control Measures to Prevent Transmission of Infection

- Avoid physical contact (e.g., hugs, hands shaking, etc.) and social contacts and wash your hand with sanitizer and soap. Isolated from the affected people and use mostly Vitamin-C for its controlling whiles it is also identified to use chlroqeen for its controlling. Besides ginger tea and hot water drink frequently.

- Wear a face mask that covers the nose and mouth as much as possible, especially when in shared areas. The face mask should be changed frequently; always change the mask when it becomes soiled or wet.

- When the face mask is taken off, it should be removed by touching only the elastic bands or strings; front and inside parts should be never touched. Hands should be washed/cleaned immediately (and thoroughly) after removing the face mask.

- Use disposable towels, Gloves, and mask if available. If not available, then change towels, Gloves, and mask frequently and wash them with regular laundry detergent in a hot-water cycle (90 ℃). If an item cannot be washed in a hot water cycle, use bleach or other laundry products for the decontamination of textiles.

- Used gloves, paper tissues, and face masks should be immediately put in the waste bag.

- These waste bags can be collected together and placed in a clean general garbage bag.

- After handling waste bags, strict hand hygiene should be performed: use water and soap or alcohol-based hand disinfectants.

- Toilet, bathroom sink, floor, etc. should be cleaned daily, avoiding splashes. Surfaces and objects should be disinfected with regular household bleach, in a dilution corresponding to 0.05-0.1% sodium hypochlorite (20 ml of household bleach should be diluted in 1 liter of water). This solution should be used immediately and prepared fresh every time it is needed.

4.6 Personal Protective Measures at Home in Case of Corona Virus COVID-19

- Mix 1 teaspoon of bleaching powder in 1-2 liters of water and mix well. If there is a spray bottle, you can fill it with spray bottles. But after 24 hours the bleaching solution will reduce it's effectiveness.

- In any material and metal, wood furniture, plastic, books, paper, steel, fridge, watch, mirror, Thai window, toilet, bathroom basin, floor the corona virus survives for 1-5 days. So spray with bleaching water every day. Take these items after spraying 10 minutes.

- The virus survives for five days in the water glass, tea cups, plates and silver and steel basins. Wash them with detergent or veem.

16

- Don't bring any outsiders to home. Because the corona virus can now be infected for 14 days without any symptoms. When you talk to a person, you should talk with a mask or a 3-6 foot distance because the virus can spread by breathing.

4.7 Personal Protective Measures on Market Place in the Context of COVID-19

- Gloves, masks and full-sleeved clothes to be worn when you go to the market.
- You need to take a polythene bag when you go to the market. You have to take the money in a polythene bag without taking the money in your pocket. Because the virus is alive for 6 to 8 hours in the money. You have to go home and throw money out of that polythene bag. We'll have to catch that money after 24 hours. If you have a coin, you need to wash it in a bleaching wash.
- The bag you carry in the market has to be put in the sun, and after 24 hours, you have to catch it.
- You have to put the items from the market on paper. The vegetables, fish, and meat from the market should be soaked with 1 to 1.5 teaspoons of baking soda for 10-15 minutes or wet for 1 hour with saltwater.
- Whoever visits the market will put the goods in the paper. Then he will go straight to the bathroom and wash his gloves, masks, and clothes with detergents and take a bath.

4.8 Personal Protective Measures on the Workplace in the Context of COVID-19

- Gloves, masks and full-sleeved clothes to be worn while going to work.
- You need to kill germs desks and tables, laptops, desktop telephones, keyboards with regular germs-kill in your workplace or office.
- When you get home from the office, you'll knock the door with your elbows rather than hand. The switch of the elevator or calling bell will touch with the tissue paper.
- After entering the house, you have to go straight into the bathroom without touching any person or object. If you have a bag in your hand, you must place it in a specific place so that no one touches. Go to the bathroom and wash your clothes with detergents and bath with soap.
- Put things you carry in the office, such as bags, wallets, mobiles, etc. in a table or a box. Spray them with a mixture of bleaching powder and clean them thoroughly.
- After taking a bath at home from the office, drink light hot water, tea, lemon juice and take hot steam from hot water. Because the virus dies at a temperature of 70 degrees Celsius.

5. Major Finding

The study was conducted for two purposes: to assess the human perception to the origin of Coronavirus with relation to nature and find out preventative management about coronavirus. According to human perception, about 70% of peoples said "Maybe" Coronavirus microorganism formed by the impact of climate change, and it's some factor. In the polar region, there are many ice stacks which among them glaciers and permafrost are natural freezers of the world. Thousands of years ago, the dead bodies were buried in a state of unsightly condition. The animals are dead but the virus and bacteria are in a state of sleep. The glaciers and permafrost are melting due to global warming. As a result, thousands of old bodies have begun to be exposed. As a result, the virus, bacteria are starting to live. These viruses including coronavirus will be mixed with different environmental elements such as water, biodiversity. This will easily affect biodiversity and other animals such as bats. There are many countries where these animals are served as food, and then it affects the people. Climate change may play a significant role in the transmission of many infectious diseases including coronavirus. Climate change is leading us to mass extinction. Now, the consequences of global warming are terrible. If climate change continues to escalate, the rate of emergence and re-emergence of infectious diseases will only increase in the future.

The correlation analysis results for Epidemic effects of COVID-19 will high on Bangladesh, if immigrant persons come, If Curfew doesn't issue, if peoples are not conscious, if peoples are not properly using mask and hand gloves, if they are not maintaining social distance and lockdown rules. There are some guidelines for prevention and control measures to prevent transmission of infection in the market place and workplace.

In the finding that according to Regression analysis, correlation, and human perception Coronavirus microorganism formed by the impact of climate change. Community responses are important for outbreak management during the early phase of major preventive options.

6. Conclusion

To conclude, we identified human perception towards COVID-19 in the community, with the Coronavirus microorganism formed by the impact of climate change. Most respondents are alert to the disease progression of COVID-19 and adopt self-protective measures. Precautionary measures were considered: hygienic practices, social distancing, and travel avoidance. Enhanced personal hygiene practices (including wearing masks, cleaning hands and better coughing and sneezing etiquette) and avoid traveling to Coronavirus affected country. For social-distancing measures were considered useful in preventing COVID-19. In the finding according to Regression analysis, correlation, and human perception Coronavirus microorganism formed by the impact of climate change, this study contributes by examining that if we cannot balance the environment, there are many virus are exposed in the environment. Climate change may play a significant role in the transmission of many infectious

diseases including coronavirus. If climate change continues to escalate, the rate of emergence and re-emergence of infectious diseases will only increase in the future.

Reference

Alonso, D., Bouma, M. J., & Pascual, M. (2011). Epidemic malaria and warmer temperatures in recent decades in an East African highland. *Proceedings of the Royal Society B: Biological Sciences*, *278*, 1661-1669. https://doi.org/10.1098/rspb.2010.2020

Azyyati, A. K., Syamsul, H. M., & Ahmad, S. (2007). *Economic Value of Perlis State Park as a Recreational Area*. Retrieved from http://info.frim.gov.my/cfdocs/infocenter/Highlight /IRPA_2007/NikAzzya ti.pdf

Baldwin, J. H. (2015). *Epidemiology and ecology of virus and host: Bats and coronaviruses in Ghana, West Africa*.

Bloom, D. E., Black, S., & Rappuoli, R. (2017). PERSPECTIVE: Emerging infectious diseases: A proactive approach. *PNAS*, *114*, 4055-4059. https://doi.org/10.1073/pnas.1701410114

Costello, A. et al. (2009). Managing the health effects of climate change. *Lancet*, *373*, 1693-1733. https://doi.org/10.1016/S0140-6736(09)60935-1

Covid-19 Status Bangladesh. (2020). Institute of Epidemiology, Disease Control and Research (IEDCR). Archived from the original on 10 April 2020.

Cui, J., Li, F., & Shi, Z.-L. (2019). Origin and evolution of pathogenic coronaviruses. *Nat Rev Microbial*, *17*(3), 181-192. https://doi.org/10.1038/s41579-018-0118-9

Daszak, P., Cunningham, A., & Hyatt, A. (2000). Emerging infectious diseases of wildlife- threats to biodiversity and human health. *Science*, *287*(5452), 443-449. https://doi.org/10.1126/science.287.5452.443

Elsevier. (2020). Novel Coronavirus Information Center. *Elsevier Connect*.

Kelly-Hope, L. A., & Thomson, M. C. (2008). *Seasonal Forecasts, Climatic Change, and Human Health* (M. C. Thomson, R. Garcia-Herrera, & M. Beniston, Eds., pp. 31-70). Springer Science+Business Media, Berlin, Germany. https://doi.org/10.1007/978-1-4020-6877-5_3

Khan, Z., Muhammad, K., Ahmed, A., & Rahman, H. (2020). Coronavirus outbreaks: Prevention and management recommendations. *Drugs & Therapy Perspectives, Springer Nature Switzerland AG*. https://doi.org/10.1007/s40267-020-00717-x

Kuiken, T., Fouchier, R., Rimmelzwaan, G., & Osterhaus, A. (2003). Emerging viral infections in a rapidly changing world, Elsevier. *Current Opinion in Biotechnology*, *14*, 641-646. https://doi.org/10.1016/j.copbio.2003.10.010

Kwok, O. K. et al. (2020). *Community responses during the early phase of the COVID-19 epidemic in Hong Kong: Risk perception, information exposure and preventive measures*. CC-BY-NC-ND 4.0 International license. https://doi.org/10.1101/2020.02.26.20028217

Lai, C.-C., Shih, T.-P., Ko, W.-C., Tang, H.-J., & Hsueh, P.-R. (2020). Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and Coronavirus disease-2019 (COVID-19): The epidemic and the challenges. *Int J Antimicrob Agents*, 105924. https://doi.org/10.1016/j.ijantimicag.2020.105924

Marmot, M. (2005). Social determinants of health inequalities. *Lancet*, *365*, 1099-1104. https://doi.org/10.1016/S0140-6736(05)71146-6

Peiris, J., Guan, Y., & Yuen, K. (2004). Severe acute respiratory syndrome. *Nat Med*, *10*(12), S88-97. https://doi.org/10.1038/nm1143

Perlman, S., & Netland, J. (2009). Coronaviruses post-SARS: Update on replication and pathogenesis. *Nat Rev Microbial*, *7*(6), 439-450. https://doi.org/10.1038/nrmicro2147

Pyrc, K., Berkhout, B., & Van Der Hoek, L. (2007). Identification of new human coronaviruses. *Expert Review of Anti-infective Therapy*, *5*(2), 245-253. https://doi.org/10.1586/14787210.5.2.245

Rafiq, R. (2012). *Determining the economic value of a wetland of Dhaka*.

Rahman, A., & Sarkar, A. (2019). Risk factors for fatal middle east respiratory syndrome coronavirus infections in Saudi Arabia: Analysis of the WHO Line List, 2013-2018. *Am J Public Health*, *109*(9), 1288-1293. https://doi.org/10.2105/AJPH.2019.305186

Raj, V. S., Mou, H., Smits, S. L., Dekkers, D. H., Müller, M. A., Dijkman, R. et al. (2013). Dipeptidyl peptidase 4 is a functional receptor for the emerging human coronavirus-EMC. *Nature*, *495*(7440), 251-254. https://doi.org/10.1038/nature12005

Reynolds, Matt. (4 March 2020). *What is coronavirus and how close is it to becoming a pandemic?* Wired UK.

Thomson, M. C. et al. (2017). Using rainfall and temperature data in the evaluation of national malaria control programs in Africa. *American Journal of Tropical Medicine and Hygiene*, *97*, 32-45. https://doi.org/10.4269/ajtmh.16-0696

Van, B. S., de Graaf, M., Lauber, C., Bestebroer, T. M., Raj, V. S., Zaki, A. M. et al. (2012). Genomic characterization of a newly discovered coronavirus associated with acute respiratory distress syndrome in humans. *MBio*, *3*(6), e00473-e512. https://doi.org/10.1128/mBio.00473-12

World Health Organization. (2020). *Novel coronavirus (2019-nCoV) situation report: 8*. Retrieved February 15, 2020, from https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200128-sitrep-8-ncovcleared.pdf?sfvrsn=8b671ce5_2

Zhong, N., Zheng, B., Li, Y., Poon, L., Xie, Z., Chan, K. et al. (2003). Epidemiology and cause of Severe Acute Respiratory Syndrome (SARS) in Guangdong, People's Republic of China, in 2003 February. *The Lancet*, *362*(9393), 1353-1358. https://doi.org/10.1016/S0140-6736(03)14630-2