

# A Study on Forecasting of Daily Deaths using Statistical Models and Consciousness of Students towards COVID-19 in Kashmir

**Bilal Ahmad Bhat<sup>1</sup>, Samira Khan<sup>2</sup>, Shazia Manzoor<sup>3</sup>, Aadil Tibetbaqal<sup>4</sup>, Sidrat-ul-Muntaha Anees<sup>5</sup>, Nusrat<sup>4</sup>, Intizar Ahmad<sup>6</sup>, Rahil Rafiq Rather<sup>7</sup>**

<sup>1</sup>Division of Social Science, Faculty of Fisheries, SKUAST-Kashmir, J&K

<sup>2</sup>Imam Abdur Rahman bin Faisal University, Kingdom of Saudi Arabia, Dammam

<sup>3</sup>Department of Social Work, University of Kashmir, Hazratbal, Srinagar, Kashmir, J&K

<sup>4</sup>IMFA, University of Kashmir, Hazratbal, Srinagar, Kashmir, J&K

<sup>5</sup>Government College for Women, M.A. Road Srinagar, Kashmir, J&K

<sup>6</sup>S.H.Institute of Islamic Studies, University of Kashmir, Srinagar, 190006, J&K

<sup>7</sup>Department of Computer Science, IUST, Awantipora, Pulwama, Jammu & Kashmir, J&K

Corresponding Author: Bilal Ahmad Bhat

## ABSTRACT

We have recently been hit with the news of an epidemic that is currently spreading in the world, and it is known that it could possibly lead to death. The Corona virus (COVID-19), a novel virus named for the crown like spikes that protrude from its surface which can infect both animals as well as people and can cause range of respiratory illnesses from the common cold to lung lesions and pneumonia. It has been labeled a pandemic by the World Health Organization (WHO), with more than 1274022 COVID-19 positive cases in 208 countries and more than 69468 deaths till date i.e., 4<sup>th</sup> April 2020. Further, the current death rate of the cases which had an outcome worldwide is 21% while in India it is 26% (Worldometer). It seems to spread very easily from person to person, especially in homes, hospitals and confined places. The purpose of this study was to assess awareness of students towards symptoms, causes and prevention of Corona virus in Kashmir valley. This study involves 400 students from different higher education institutions of Kashmir valley surveyed during January 2020 to March 2020. A self-administered questionnaire was developed to obtain respondents information. The secondary data on daily deaths due to Corona virus worldwide was used to forecast daily deaths using stand statistical models. The model with highest value of  $R^2$  was used for prediction

purpose. Data collected from our survey was analyzed using statistical tools like descriptive statistics, Chi-square test and graphical tools. Statistical software IBM SPSS software, version 25 was used for analysis of data. The results of our study showed that students are aware of the symptoms of Corona virus but in majority are not well aware of causes and preventions of this deadly disease. The results obtained by forecasting reveals that we are going to face tough time if this deadly disease is not controlled soon. The forecasted values although it is not possible to exactly forecast the future because of the qualitative nature of forecasting, provide us a valuable information so that we can protect and prepare ourselves for future. The current death rate if continues, the daily deaths may cross 30,000 on 15<sup>th</sup> May 2020. The respondents were of the opinion that rate of transmission of COVID-19 depends on various factors such as age, sex, climatic condition. The researchers fear Corona virus besides health problems, may result in loss of livelihood, domestic violence, mental health issues and loneliness. Finally, the researchers suggest that every individual should follow his/her religion and support advisory of health ministry to protect himself/herself from this deadly disease, Corona virus. The print and electronic media can play a crucial role in increasing awareness among people regarding Corona virus as in educational institutions seminars, workshops and periodical counseling sessions are not

possible due to lockdown to educate students and people about Corona virus.

**Keywords:** Corona virus, Kashmir, Awareness, Attitude, Practice, Forecasting, Statistics

## 1. INTRODUCTION

Corona virus disease 2019 (abbreviated “COVID-19”) is an emerging respiratory disease that is caused by a novel corona virus and was first detected in December 2019 around a seafood market in the Chinese city of Wuhan. The disease is highly infectious, and its main clinical symptoms include fever, dry cough, fatigue, myalgia, and dyspnea. The China's health authorities and CDC promptly identified the pathogen of such cases as a new type of corona virus, which the World Health Organization (WHO) named COVID-19 on January 10, 2020 [WHO, 2020]. The virus seems to have high mortality rate and at present death rate among confirmed corona virus patients crossed 17%. In China, 18.5% of the patients with COVID-19 develop to the severe stage, which is characterized by acute respiratory distress syndrome, septic shock, difficult-to-tackle metabolic acidosis, and bleeding and coagulation dysfunction [The Novel Corona virus Pneumonia Emergency Response Epidemiology Team, 2020, Chen, et al., 2019]. It has been reported that the overall case fatality rate of COVID-19 is 2.3% in China, much lower than those of SARS (9.5%), MERS (34.4%), and H7N9 (39.0%) [The Novel Corona virus Pneumonia Emergency Response Epidemiology Team, 2020, Munster et. al, 2020]. The World Health Organization (WHO), in response to the grave situation, declared it a public health emergency of international concern on January 30 and called for collaborative efforts of all countries to prevent the rapid spread of COVID-19 [WHO, 2020]. The Corona virus disease (COVID-19) which has been labeled a pandemic by the World Health Organization (WHO), with more than 118, 000 laboratory confirmed cases in 194 countries and 13391 deaths is a novel virus

named for the crown like spikes that protrude from its surface which can infect both animals and humans and can cause range of respiratory illnesses from the common cold to lung lesions and pneumonia. It seems to spread very easily from person to person, especially in homes, hospitals and confined places. The pathogen can travel through the air, enveloped in tiny respiratory droplets that are produced when a sick person breathes, talks, coughs or sneezes. The Corona virus, which originated in Wuhan, China forced to close schools in 16 countries because of the threat of spread of this disease first time in the world history. The common symptoms of Corona virus include fever, cough, and difficulty in breathing or shortness of breath. Milder cases may resemble the flu or a bad cold, but people may be able to pass on the virus even before they develop symptoms. The Scientists from Hunan province say the virus could last for days on a surface, depending on the environment. It is a disaster and we know disaster, natural or manmade is usually sudden event causing damages, affecting countless people, and because of its magnitude, exceeding the capacity for response of local or national organizations or International organizations. The high morbidity and mortality rates are often found in the affected population, which is often exposed to critical sanitary situations, both immediately after the disaster and during subsequent phases of disaster. In disasters there is an additional risk for diseases associated with crowding, lack of awareness and lack of adequate public services. It is noticed children, as well as elderly people and pregnant women are the most vulnerable populations when a disaster occurs. In addition, their physical, physiological and mental features render them more susceptible to environmental, sanitary and social changes resulting from disasters. It is important to note that COVID-19 is not all like a flood, earthquake or any other natural calamity that we met in the past, rather it is an unprecedented ever in the past and people in general need to

understand it. Worldwide Researchers are racing to develop new treatments and therapies to tackle the corona virus pandemic COVID-19. This disease was first discovered as the causative agent of the new disease, scientists have been racing to get a better understanding of the virus' genetic makeup, how it infects cells and how to efficiently treat it. There's no cure, and medical specialists at present can only treat the symptoms of the disease till some vaccine is developed to cure COVID-19, which has spread to every continent on earth besides Antarctica. It is important to understand that developing new vaccines will take time so we should follow health advisory and religious guidelines to minimize the transmission of this deadly infectious disease.

**Key messages to spread for prevention of COVID-19** (Ministry of Health & Family Welfare, Government of India)

We mention below few important points helpful for prevention of COVID-19 spread:

1. How can we avoid getting COVID-19 or spreading it?
  - a) Practice Social Distancing
    - i) Avoid gatherings such as melas, haats, gatherings in religious places, social functions etc.
    - ii) Maintain a safe distance of at least one Metre between you and other people when in public places, especially if they are having symptoms of COVID-19 such as cough, fever etc to avoid direct droplet contact.
    - iii) Stay at home as much as possible to avoid getting COVID
    - iv) Avoid physical contact like handshakes, hand holding or hugs
    - v) Avoid touching surfaces such as table tops, chairs, door handles etc
  - b) Practice good hygiene
    - i) Wash your hands frequently using soap and water;

- ii) After coming home from outside or meeting other people especially if they are ill
  - iii) After having touched your face, coughing or sneezing
  - iv) Before preparing food, eating or feeding children
  - v) While coughing or sneezing cover your nose and mouth with handkerchief. Wash the handkerchief at least daily
  - vi) It is preferable to cough/sneeze into your bent elbow rather than your palms.
  - vii) Do not spit or shout in public places to avoid the spread of droplets
  - viii) Do not touch your eyes, nose and mouth with unclean hands
  - ix) Ensure that the surfaces and objects are regularly cleaned
2. What to do if you are having symptoms or have travelled to other countries or states in past two weeks
  - i) The persons as a precaution should be quarantined for 14 days at home with health care guidance.

Islam has a unique way of dealing with the outbreak of diseases in two stages; i.e., before and after the outbreak of the disease. Islam calls its followers to protect themselves against diseases before the outbreak of the Disease through the cleanliness as Prophet Muhammad (peace be upon him) said: "Purification is half of faith." (Muslim) Islam made ablution a pre-requisite for the validity of prayer. Islam made lawful for Muslims all the good foods and drinks and made unlawful to them all what causes harm to them and their bodies. We read in the Quran what means: "Those who follow the Messenger, the unlettered prophet, whom they find written in what they have of the Torah and the Gospel, who enjoins upon them what is right and forbids them what is wrong and makes lawful for them the good things and prohibits for them the evil and relieves them of their burden and the shackles which were upon them. It has been proved that consuming unlawful

meat causes serious diseases so Islam urges Muslims to be moderate in consuming lawful food and drinks. Islam has put rules and regulations on interactions with the opposite gender and prohibits adultery and homosexuality which are the causes of many diseases. Islam calls its followers to protect themselves against diseases after the outbreak of the disease through this guideline. When a Muslim is afflicted with a certain disease, he has to look at it as a test from Allah the Almighty. Prophet Muhammad (peace be upon him) said: "How wonderful is the case of a believer; there is good for him in everything and this applies only to a believer. If prosperity attends him, he expresses gratitude to Allah and that is good for him; and if adversity befalls him, he endures it patiently and that is better for him." (Muslim) Islam orders Muslims to seek medication. Prophet Muhammad (peace be upon him) said: "Make use of medical treatment, for Allah has not made a disease without appointing a remedy for it, with the exception of one disease, namely old age." (Abu Dawud). When there is an outbreak of a disease, Islam commands Muslims to practice quarantine. Prophet Muhammad (peace be upon him) said: If you get wind of the outbreak of plague in a land, do not enter it; and if it breaks out in a land in which you are, do not leave it." (Al-Bukhari and Muslim) Prophet Muhammad (peace be upon him) used to say: "O Allah, I seek refuge in You from leprosy, madness, elephantiasis, and evil diseases." (Abu Dawud). The risk of spread of COVID-19 in rural areas is expected more than in urban areas due to a number of factors such as lack of awareness, a limited supply of clean water, low levels of nutrition, poverty, return of migrant workers to their villages, and most significantly, ill-equipped and insufficient public health centers. To students any crisis presents them the opportunity to learn, cultivate compassion and increase resilience while building a

safer healthy and more caring society. The students should be well aware of COVID-19 and precautionary measures to be adopted for stopping its spread. The information about the facts of COVID-19 will help students to diminish fears and anxieties about COVID-19 spread. The students earlier were advised to use less online technology but now it is the students' lifeline, to attend online classes, keeping in touch with family and friends, and obtaining treatment without visiting hospital. The social distancing is a matter of life and death at present. Students can be proving useful workforce in disaster situation as conscious students can work with social service system such as health screening, feeding programs or therapies for children and elders with particular needs. In the literature, we come across a number of studies which reported the role of students and youth in any disaster (Mitchell et al., 2008, Bilal et al., 2017). In the light of studies (Tao, 2003; Person et al., 2004; Ajilore, Atakiti and Onyenankye, 2017; Hackbarth et al., 2012; Freedy et al., 1992, Bilal et al., 2020, Joseph, Leung and Leung, 2020 etc) and the fact that today students are global citizens, influential agents of change and the next generation of caregivers, doctors, leaders and scientists, we chose this study. There is no denying the fact that many academicians and researchers at individual level are contributing significantly towards containment, suppression and mitigation of COVID-19 besides relief work, rehabilitation, public awareness and resource mobilization, yet there is need for a stronger integrated, innovative and intellectual response to fight the rapidly unfolding crisis and uncertainty. In the present study, we examine the awareness, attitude and practice of students towards COVID-19. Statistical models were used for forecasting of daily deaths due to this deadly disease. The forecasting will help people to take more safety measures.



**Table 1: Top 12 Country wise distribution of total cases, total deaths and total recovered cases of Coronavirus**

S. No.	Country	Total Cases	Total Deaths	Total Recovered
World		*1272,862	69,425	264,492
1	USA	36,673	9,616	17,977
2	Spain	131,646	12,641	38,080
3	Italy	128,948	15,887	21,815
4	Germany	100,123	1,584	28,700
5.	France	92,839	8,078	16,183
6	China	81,669	3,329	76,964
7	Iran	58,226	3,603	22,011
8	UK	47,806	4,934	135
9	Turkey	27,069	574	1,042
10	Switzerland	21,100	715	6,415
11	Belgium	19,691	1,447	3,751
12	Netherlands	17,851	1,766	250

\* data as on 05/04/2020 Source : Worldometer

## 2. MATERIALS AND METHODS

A well-designed pretested questionnaire (KAP) based on previous literature was used to collect the information from a sample of 400 students selected using stratified random sampling technique through Google Classroom, Social media (Facebook and WhatsApp) from different higher educational institutions of Kashmir valley. The students under study were explained the purpose of our study to get their approval. The questionnaire was designed to assess the consciousness and approach of students towards symptoms, causes and prevention of Corona virus in Kashmir Valley. The Cronbach's alpha coefficient of the knowledge questionnaire was 0.73 in our study sample, indicating acceptable internal consistency. The sample size for our study was computed using the formula given as (Cochran, 1997)

$$n = \frac{Z_{\alpha}^2 P(1 - P)}{d^2}$$

Here in this study on the basis of earlier studies, we take  $p=0.5$ ,  $Z_{\alpha}=1.96$  and  $d=0.05$ . That gives the sample size  $n \sim 384$  and we decided to chose  $n = 400$ . For forecasting of daily deaths caused by COVID-19 statistical models were used and real-time data of daily deaths worldwide from 23<sup>rd</sup> January to 4<sup>th</sup> April 2020 was used. To check the best fitted model to the daily deaths data, we use coefficient of determination  $R^2$ . Mathematically, with usual notations coefficient of determination  $R^2$  is given by (Draper and Smith, 1982)

$$R^2 = \frac{\sum_{i=1}^n \left( y_i - \hat{y} \right)^2}{\sum_{i=1}^n \left( y_i - \bar{y} \right)^2}$$

The value of coefficient of determination  $R^2$  which has a value between 0 and 1 is often used as an indicator of how well the statistical model fits the data. The value near 1 indicating a good fit and the value near 0 indicating a poor fit. The model with higher value of  $R^2$  is used for prediction purpose as higher value of coefficient of determination  $R^2$  is an indicator of a better goodness of fit for the observations.

The data collected from our online survey was tabulated and analyzed and interpreted statistically.

## 3. RESULTS AND DISCUSSION

The data collected from 400 university students studying in various universities of Kashmir valley reveals that students are well aware that COVID-19 is a deadly disease so we need to take precautionary measures to prevent its spread. The respondents in response to questions asked to them regarding awareness, attitudes, and practice towards COVID-19, 89.5% students agree to the statement (i) i.e., Do you agree that COVID-19 will finally be successfully controlled, 68.5% students agree to the statement (ii) i.e., Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19 virus, 92.5% students agree to the statement

(iii) i.e., There currently is no effective cure for COVID-2019, but early symptomatic and supportive treatment can help most patients recover from the infection, 76.5% students understudy agree to the statement (iv) i.e., Not all persons with COVID-2019 will develop to severe cases. Only those who are elderly, have chronic illnesses, and are obese are more likely to be severe cases, 84.5% students agree to the statement (v) i.e., Eating or contacting wild animals would result in the infection by the COVID-19 virus, 87.5% respondents disagree to the statement (vi) i.e., Persons with COVID-2019 cannot infect the virus to others when a fever is not present, 96.0% students agree to the statement (vii) i.e., The COVID-19 virus spreads via respiratory droplets of infected individuals, 72.0% students agree to the statement (viii) i.e., Ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus, 96.5% students disagree to the statement (ix) i.e., It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus, 98.5% students agree to the statement (x) i.e., To prevent the infection by COVID-19, individuals should avoid going to crowded places such as train stations and avoid taking public transportations, 98.5% students agree to the statement (xi) i.e., Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus, 98.0% students agree to the statement

(xii) i.e., People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days, 94.5% students do agree to the statement (xiii) i.e., the rate of transmission of COVID-19 depends on various factors such as age, sex, climatic condition, 98.0% students agree to the statement (xiv) i.e., People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days, 84.5% students agree to the statement (xv) i.e., Do you have confidence that India can win the battle against the COVID-19 virus, 81.0% students do not agree to the statement (xvi) i.e., In recent days, have you gone to any crowded place, 61.5% respondents do not agree to the statement (xvii) i.e., In recent days, have you worn a mask when leaving home. Researchers have proved that the virus can spread via human-to-human transmission, between people who are in close contact with one another (within about 6 feet) and this virus can spread through respiratory droplets produced when an infected person sneezes or coughs. The clinical trials are underway to develop a vaccine or treatment for COVID-19. Statistically, it is observed that all respondents in majority possess good awareness about COVID-19 to the all statements related to awareness and attitude. However, majority of students lack in practice.

**Table 2. Awareness, attitudes, and practice of Kashmiri students towards COVID-19**

S.No.	Statement	Response			P-value
		Agree (%)	Disagree (%)	No Idea (%)	
Awareness of Kashmiri students towards COVID-19					
1.	Do you agree that COVID-19 will finally be successfully controlled?	358(89.5)	16 (4.0)	26 (6.5)	<0.01
2.	Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19 virus.	274(68.5)	74(18.5)	52(13.0)	<0.01
3.	There is currently no effective cure for COVID-2019, but early symptomatic and supportive treatment can help most patients recover from the infection.	370(92.5)	10(2.5)	20(5.0)	<0.01
4.	Not all persons with COVID-2019 will develop to severe cases. Only those who are elderly, have chronic illnesses, and are obese are more likely to be severe cases.	306(76.5)	46(11.5)	48(12.0)	<0.01
5.	Eating or contacting wild animals would result in the infection by the COVID-19 virus.	338(84.5)	46(11.5)	16(4.0)	<0.01
6.	Persons with COVID-2019 cannot infect the virus to others when a fever is not present.	24(6.0)	350(87.5)	26(6.5)	<0.01
7.	The COVID-19 virus spreads via respiratory droplets of infected individuals.	276(96.0)	4(1.0)	12(3.0)	<0.01

**Table 2 to be continued...**

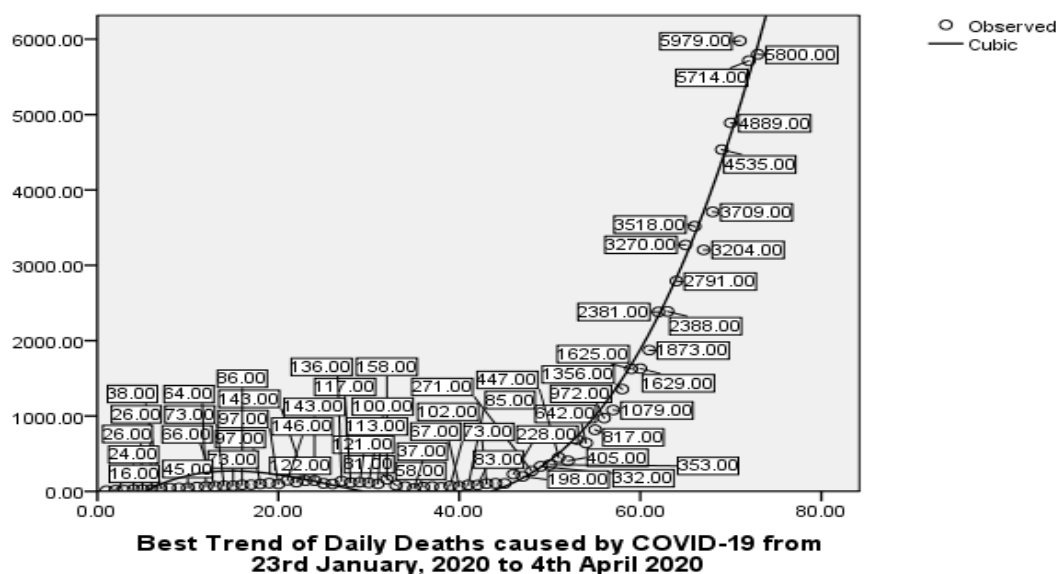
8.	Ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus.	28(72.0)	42(10.5)	70(17.5)	<0.01
9.	It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus.	6(1.5)	386(96.5)	8(2.0)	<0.01
10.	To prevent the infection by COVID-19, individuals should avoid going to crowded places such as train stations and avoid taking public transportations.	394(98.5)	2(0.5)	4(1.0)	<0.01
11.	Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus.	394(98.5)	0(0.0)	6(1.5)	<0.01
12.	People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days.	396(98.0)	0(0.0)	4(2.0)	<0.01
13.	The rate of transmission of COVID-19 depends on various factors such as age, sex, climatic condition.	378(94.5)	20(5.0)	2(0.5)	<0.01
Attitude of Kashmiri students towards COVID-19					
	Statement	Agree (%)	Disagree (%)	No Idea (%)	P-value
14.	Do you agree that COVID-19 will finally be successfully controlled?	364(91.0)	12(3.0)	24(6.0)	<0.01
15.	Do you have confidence that India can win the battle against the COVID-19 virus?	258(84.5)	16(4.0)	46(11.5)	<0.01
Practice of Kashmiri students towards COVID-19					
	Statement	Yes (%)	No (%)	No Idea (%)	P-value
16.	In recent days, have you gone to any crowded place?	76(19.0)	324(81.0)	0(0.0)	<0.01
17.	In recent days, have you worn a mask when leaving home?	154(38.5)	246(61.5)	0(0.0)	<0.01

The data presented in Table 3, shows the model fitting summary of data related to daily deaths from 23 January 2020 to April 4, 2020. It has been observed on the basis of  $R^2$  (0.985) that the best fitted trend is cubic. We use this trend for forecasting purpose in our study.

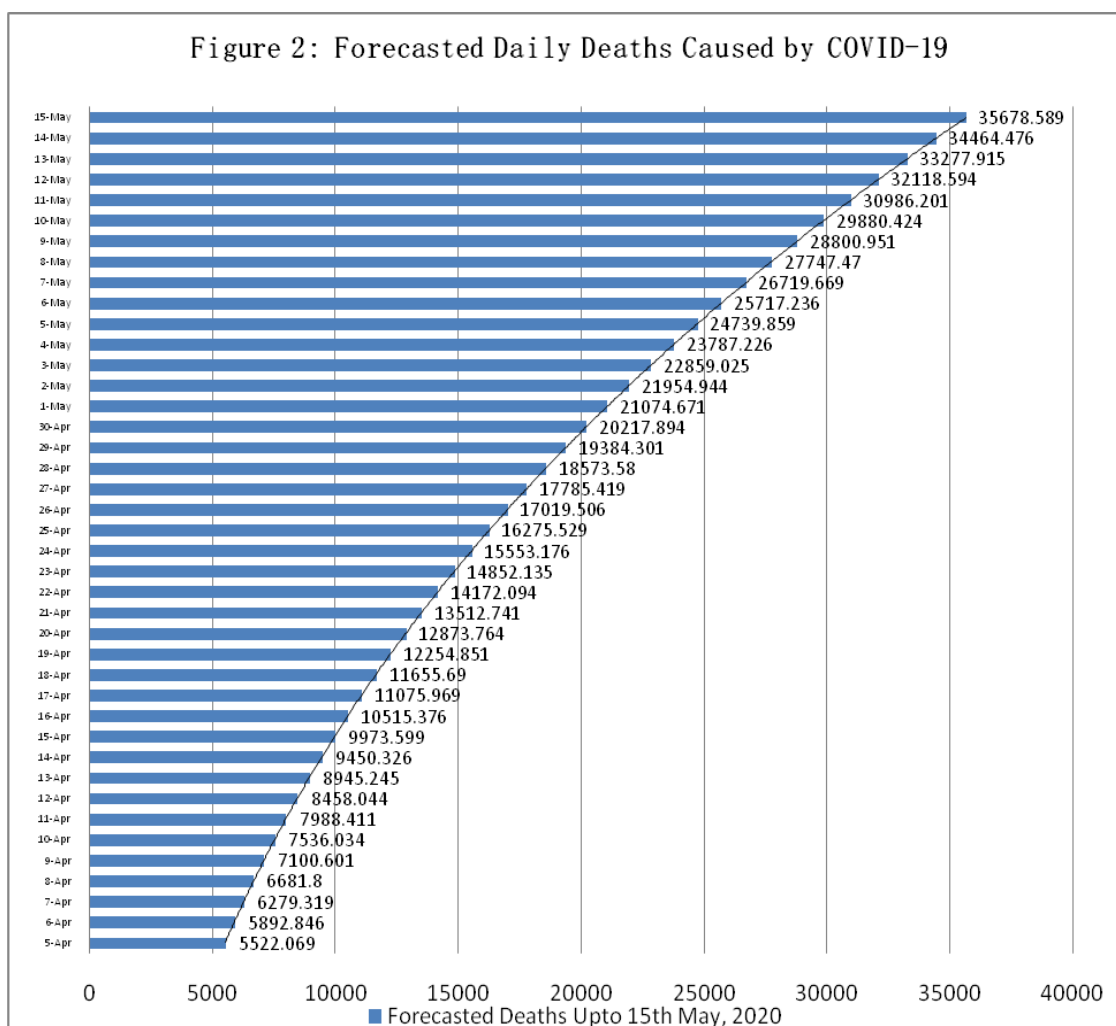
Table 3: Model Summary and Parameter Estimates using daily deaths dependent variable and independent variable date of death

Equation	Model Summary						Parameter Estimates		
	R-square	F	df1	df2	Sig.	Constant	b1	b2	b3
Linear	.542	84.004	1	71	.000	-1092	53.452		
Logarithmic	.258	24.725	1	71	.000	-1974	858.339		
Inverse	.046	3.397	1	71	.069	10493	-2444		
Quadratic	.878	252.602	2	70	.000	975.566	-111.937	2.235	
Cubic	.985	1469	3	69	.000	-457.191	112.794	-5.306	.068
Compound	.832	351.411	1	71	.000	14.443	1.076		
Power	.621	116.522	1	71	.000	1.624	1.465		
S	.240	22.426	1	71	.000	5.778	-6.166		
Growth	.832	351.411	1	71	.000	2.670	.073		
Exponential	.832	351.411	1	71	.000	14.443	.073		
Logistic	.832	351.411	1	71	.000	.069	0.930		

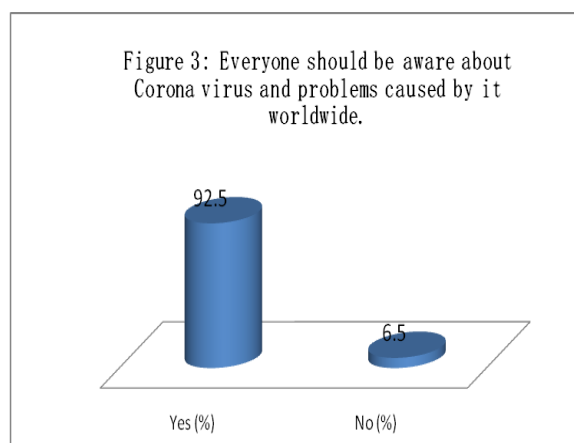
Figure 1: Daily Deaths Caused by COVID-19 upto 4th April 2020



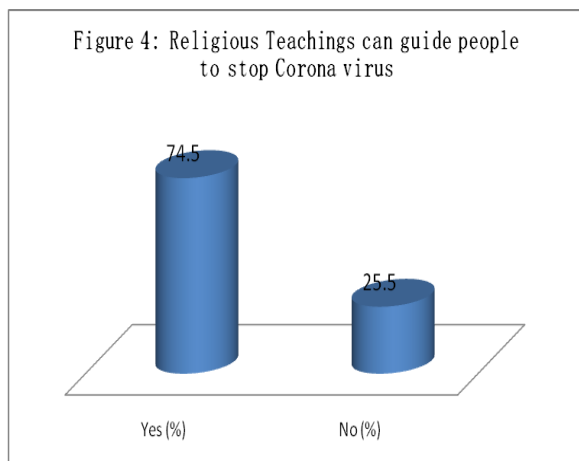
The forecasts obtained using the best fitted model reveals that the situation is going to be very bad. Wish as human our forecasting fail. It is important we took proper care to save world from this disaster. It is forecasted that on first May, 2020 there may be more than 17000 deaths worldwide due to COVID-19, if it is not controlled soon. To recognize the best fitted model for a particular time series, generally model selection criteria  $R^2$ , Draper and Smith (1982) is used. It is generally considered that the more the value of  $R^2$ , the better is the fit. Other measures like AIC, BIC etc are also used to check the model fitting. In this study, we propose forecasts on the basis of best fitted model having highest value of  $R^2$ .



The data presented in Figure 3, reveals that 92.5% respondents were of the opinion that worldwide people should be aware about Corona virus and problems caused by it. The respondents reported that in order to keep maximum people aware about COVID-19 and precautions to be taken to defend ourselves majority of educated people wanted end of e-curfew in Kashmir.



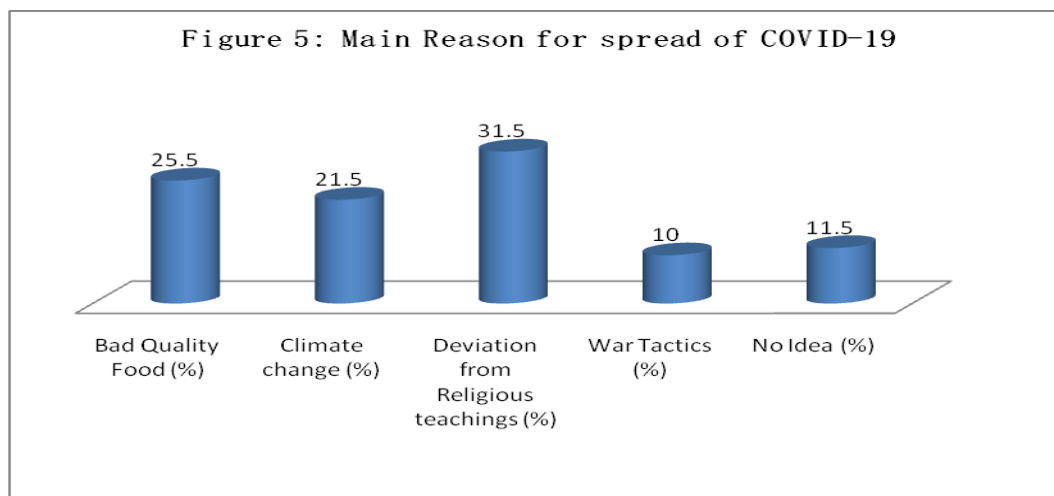




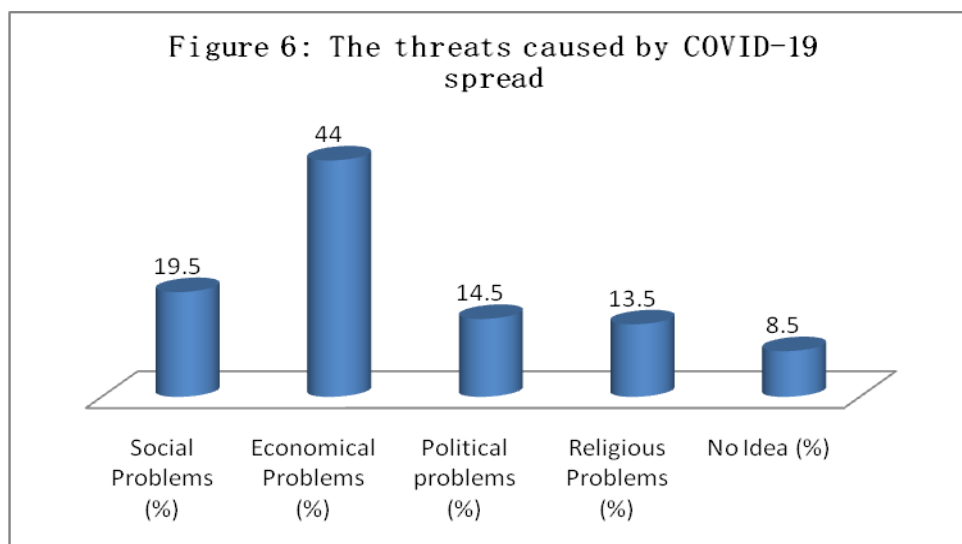
The data presented in Figure 4, reveals that 74.5% respondents were of the opinion that religious teachings can guide people to stop Corona virus spread. The respondents reported that in order to keep maximum people aware about COVID-19 and precautions to be taken to defend themselves, it is important religious leaders play their role for the benefit of humanity. The Muslim religious leaders should guide

people as per need of the hour in the light of Quran and Sunnah, keeping aside politics or their personal differences. We can stop illness by staying at home if sick, regularly clean and disinfect objects and surfaces frequently touched also immediately approach healthcare professional in case of any respiratory illness or contact with any known COVID-19 person.

The data presented in Figure 5, reveals that the main reasons of spread of COVID-19 were deviation from religion teachings (31.5%), bad quality food (25.5%), climate change (21.5%), no idea about its spread (11.5%) and 10% respondents believe it is a war tactics. Majority of respondents believe this virus is a creation of humans handled by God. The respondents wish scientists work for the benefit of humanity only and avoid weapon race.

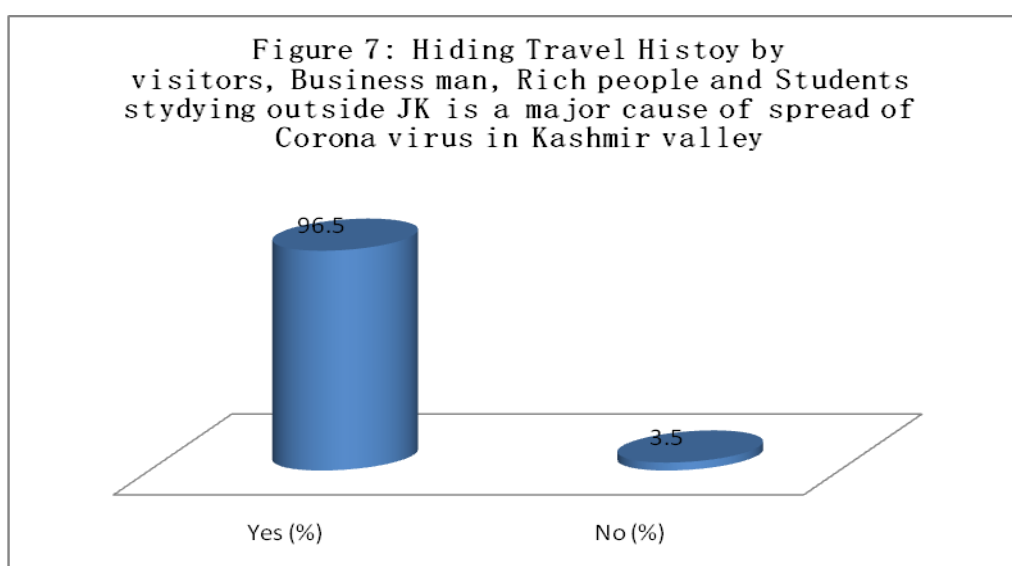


The data presented in Figure 6, reveals that the COVID-19 may result in economic problems (44.0%), social problems (19.5%), political problems (14.5%), religious problems (13.5%) and 8,5% respondents reported that they have no idea about this. The long shut down of the world trade will result in economic problems which in turn can give birth to many social problems. The religious leaders who in majority are semi religious and semi scientific can divide the society by issuing futwaa's of their choice/understanding. It is the time that we all as human beings work together for the prevention of COVID-19. It is important to note that USA and Italy like developed countries fail to control COVID-19, we stand nowhere if we don't work together at this time. It is important that every take care of himself/herself by washing hands often with soap and water, exercise daily with caution, avoid touching face with unwashed hands and avoid travelling especially to those areas designed with a level 3 risk.



The data shown in Figure 7, revealed that majority (96.5%) of respondents were of the opinion that hiding travel history by visitors, businessman, rich people and students studying outside JK or country will be major threat for the local people as no one knows they may or may not be infected with Corona virus. A number of cases surfaced recently in Kashmir where travellers hide their travel history thus created huge problem for themselves, their family and whole society. The respondents understudy were of the opinion that COVID-19 spread may result in many social, health and economical problems as noticed with the spread of other natural or

manmade disasters. The effects of a disaster last a long time as disaster-affected countries loose a large amount of their financial and material resources in the immediate post impact phase. Disasters which affect agriculture economies as well as tourism can have lasting consequences on livelihoods, economies and fiscal balances. It is important people and government work together for the welfare of the society also identify those people who hide their travel history for their welfare and for the welfare of the society. The results of our study agrees with the earlier studies related to our topic.





The pictures shown above reveal that there is a gap between citizens and government. To control spread of COVID-19 all political/religious leaders including Prime Minister of India Mr Narendra Modi appealed people to avoid non-essential travel and large gatherings to break the chain of the spread of corona virus. The 21 days lockdown announced by Prime Minister of India on March 24, 2020 is expected to help the country crack down on the chain transmission. The World Health Organisation (WHO) and Centres for Disease Control and Prevention (CDC) suggests that incubation period to control the spread of the novel Coronavirus is anywhere between 2-14 days and in most cases, symptoms of COVID-19 start to show up after five days of infection. The corona virus infection transfers quickly from one person to another so it is very important to support complete lockdown in order to break the chain of infection.

#### 4. CONCLUSIONS

COVID-19 in general causes flu-like symptoms including fever and cough. In some patients, particularly the elderly and others with other chronic health conditions, these symptoms can develop into pneumonia, with chest tightness, chest pain, and shortness of breath. It seems COVID-19 start with a fever, followed by a dry cough and after a week, it can lead to shortness of breath, with about 20% of patients requiring hospital cure.

The COVID-19 infection rarely seems to cause a runny nose, sneezing, or sore throat (these symptoms have been observed in only about 5% of patients). Sore throat, sneezing, and stuffy nose are most often signs of a cold. In summary, our study reveals that university students of Kashmir valley understudy have good knowledge, optimistic attitudes, and appropriate practices towards COVID-19 outbreak in the world. It is important that students cream of any society possess basic information through reputable sources such as UNICEF and WHO and national health ministry advisories about corona virus disease (COVID-19), including COVID-19 symptoms, complications, transmission and prevention of transmission. The developed nations of the world like USA and Italy failed to control COVID-19, so it is vital we care of ourselves by washing hands frequently with soap and water, exercise daily, avoid touching face with unwashed hands and avoid travelling those areas designed with a level 3 risk, red zones. The corona virus outbreak apart from causing huge mortality and morbidity has tremendous economic, sociological, psychological, educational, cultural, geopolitical and humanitarian implications too. The scientists, academicians and researchers need to utilize their expertise to their fullest and put forth their ideas and solutions towards countering all such challenges posed by the ongoing crisis. However not taking any cues from the present crisis shall

be marked by not exploiting any windows of opportunity and reverting back to the pre-COVID status, continuing with our misdirected goals and misplaced priorities and doing nothing in anticipation of more such possible rather impending disasters in future. It is not clear yet how this virus came into existence and corona virus may be a bioweapon as claimed by many countries. The forecasted terrifying values of daily deaths guides us to protect and prepare ourselves for tough future if COVID-19 spread is not controlled soon. It is expected, under the combined efforts of Government and all Kashmiri residents, Kashmir definitely in the near future will win the battle against COVID-19. The researchers fear, if Corona virus is not controlled soon, it may result in many problems like large number of deaths, loss of livelihood, domestic violence, mental health issues and loneliness. The researchers suggest that every individual as a responsible citizen should follow his/her religion and support advisory of health ministry to protect himself/herself and society from this deadly disease, Corona virus. It is important that public take safety measures to stem the virus spread and stay indoors. In the present lockdown, the print and electronic media can play an important role in increasing awareness among people regarding Corona virus. The COVID-19 is still an unclear infectious disease, which means we can only obtain an accurate prediction after the outbreak ends. The testing time realize people the importance of public health, personal hygiene, community hygiene, environmental hygiene, epidemiology which people generally neglect. It is important that we need to maintain hygiene at all levels to avoid deadly diseases. It is the responsibility of all responsible persons, students including true religious leaders of Kashmir to advise people to avoid visiting crowded places unnecessary and support authorities in controlling COVID-19. Disasters natural or manmade strike hardest on more vulnerable groups i.e., the poor, and especially women, children and the elderly

so it is very important we take utmost care of these. The people of J&K are facing internet problem since August 2019 and feel that government is more concerned about so-called security and terror activities than about the health and safety of the people of the region. The people demanded that political prisoners should be released and government should restore high-speed internet in the region so that people can support each other as family members and get latest information to fight with COVID-19 disease. The Kashmir Scholars Consultative and Action Network, an interdisciplinary group, also wrote a letter to the World Health Organization seeking an immediate intervention in lifting sanctions on high-speed internet in the J&K. The respondents understudy reported that Indian government worsened the situation in Kashmir by avoiding testing at the main entry points to Jammu and Kashmir and locking up citizens without adequate medical preparation. The COVID-19 confirmed cases crossed 273 in J&K till date because of negligence of people of government to some extent. The whole world is lockdown so for effective social distancing rich people especially government employee should provide financial support, ration and meals to the needy ensuring that nobody sleeps hungry. Goodness is the only investment that never fails which is a great life lesson during these challenging times for ourselves and our students. COVID-19 must shake us enough to do whatever is needed to overcome any such crisis in future. Finally, it is suggested that due to less sample size, more studies are warranted to investigate the KAP towards COVID-19 among students/residents of Kashmir valley.

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## REFERENCES

1. Ajilore K, Atakiti I, Onyenankye K. College students' knowledge, attitudes and adherence to public service announcements on Ebola in Nigeria: Suggestions for improving future Ebola prevention education programmes. *Health Education Journal*. 2017; 76: 648-60.
2. Bhat Bilal A. et al. A Study on Disaster Awareness And Preparedness Among College Students In District Ganderbal of Kashmir Valley. *IJSART*, Vol 3 (2), 2017; 2395-1052.
3. Bhat Bilal A. et al. Awareness, Attitude and Practice of Rural People in Kashmir Towards COVID-19: A Sample Survey. *IJSR*; April, 2020: 66-73
4. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet*. 2020; 395: 507-13.
5. Cochran W. Sampling techniques. (3rd edn.), Wiley, New York. 1977.
6. Diseases SCOT. Fear and stigma: the epidemic within the SARS outbreak. *Emerg Infect Dis*. 2004; 10: 358-63.
7. Draper, N. R. and Smith, H. Applied Regression analysis, second Edition. John Willey and Sons, New York. 1982.
8. Freedy JR, Shaw DL, Jarrell MP, Masters CR. Towards an understanding of the psychological impact of natural disasters: An application of the conservation resources stress model. *Journal of Traumatic Stress*. 1992 Jul;5(3):441-54.
9. Hackbarth M, Pavkov T, Wetchler J, Flannery M. Natural disasters: an assessment of family resiliency following Hurricane Katrina. *Journal of Marital and Family Therapy*. 2012 Apr; 38(2):340-51.
10. Holy Quran
11. Joseph T. Wu, K. Leung, G. M. Leung, "Nowcasting and forecasting the potential domestic and international spread of the 2019-nCoV outbreak originating in Wuhan, China: a modeling study," *The Lancet*, vol. 395, no. 10225, pp. 689-697, 2020.
12. Mitchell T, Haynes K, Hall N, Choong W, Oven K. The roles of children and youth in communicating disaster risk. *Child Youth Environ* 2008;18(1):254-79. Person B, Sy F, Holton K, Govert B, Liang A, National Center for Infectious Diseases SCOT. Fear and stigma: the epidemic within the SARS outbreak. *Emerg Infect Dis*. 2004; 10: 358- 63.
13. Tao N. An analysis on reasons of SARS-induced psychological panic among students. *Journal of Anhui Institute of Education*. 2003; 21: 78-9.
14. Taber KS. The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*. 2018; 48: 1273-96.
15. Traditions of the Prophet of Islam
16. The Novel Coronavirus Pneumonia Emergency Response Epidemiology Team. The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) in China. *Chin J Epidemiol*. 2020; 41: 145-51.
17. World Health Organization. 2019-nCoV outbreak is an emergency of international concern. 2020 <http://www.euro.who.int/en/health-topics/emergencies/pages/news/new-s/2020/01/2019-ncov-outbreak-is-an-emergency-of-international-concern>.
18. World Health Organization (WHO). Coronavirus. 2020.
19. World Health Organization. 2019-nCoV outbreak is an emergency of international concern. 2020. <http://www.euro.who.int/en/health-topics/emergencies/pages/news/new-s/2020/01/2019-ncov-outbreak-is-an-emergency-of-international-concern>
20. s/2020/01/2019-ncov-outbreak-is-an-emergency-of-international-concern
21. Wuhan lockdown 'unprecedented', shows commitment to contain virus: WHO representative in China-Reuters. January 23, 2020.



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***Corresponding Author:***



Dr. Bilal Ahmad Bhat, is working as Associate Professor (Statistics) in Faculty of Fisheries, SKUAST-Kashmir J&K since August, 2015. Dr. Bilal Ahmad (Phd. Statistics, M.Sc. Mathematics, M.Sc. Statistics, B.Ed.) was earlier working in Mathematics & Statistics Dept University of Kashmir and in SKUAST-Jammu as Assistant Professor (Statistics) before joining SKUAST-Kashmir. He has

participated and presented a number of research papers in various national/international conferences. He has published more than 180 research papers in various National/International Journals of repute and has published more than 400 popular articles. He has good knowledge of statistical softwares like SPSS, MINITAB, SAS, R and has guided a number of research scholars for their PhD programme. His field of research is probability theory, information theory and applied statistics.

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